IVM Institute for Environmental Studies

Challenges and Opportunities for REDD at Lake Naivasha, Kenya

Reducing Emissions from Deforestation and forest Degradation from a Technical, Institutional and Socio-Economic Perspective.

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Foreword

This report could not have been realised without the support of several people in the Netherlands and in Kenya. First, I would like to thank our client Bart Geenen from the WWF in the Netherlands, for providing me the opportunity to travel to their East African Regional Program Office in Naivasha, Kenya. In this way, I was able to conduct field-research for this Final Thesis of the Master study "Environment & Resource Management, hosted by the Free University of Amsterdam in the Netherlands.

Upon completion of this report, I would also like to thank my first supervisor Frans Oosterhuis, for assisting me with support and guidance throughout this study. I would also like to thank my fellow student Marijke Boonstra, for her advice and her pleasant company during our internship in Kenya. Special thanks go out to Robert Ndetei for welcoming us in Kenya and facilitating our research in Lake Naivasha's water catchment, to Nancy Njenga for providing key-stakeholders and background information, and to the whole staff of the East African Regional Program Office (Johnston, Josephat, Chepkonge, George, John and Catherine). They have all been very welcoming and made my period in Naivasha not only informative and productive, but also a wonderful experience with lots of fun.

In addition, information from interesting meetings has contributed extensively to this report. I therefore would like to thank all respondents for their time to discuss their views, opinions and knowledge during the interviews.

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Utrecht, Netherlands

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Summary

The Kyoto Protocol of the United Nations Framework Convention on Climate Change does currently not recognize carbon-trading mechanisms on Reduced Emissions from Deforestation and forest Degradation (REDD). However, REDD will address a source of greenhouse gas emissions larger than the entire global transportation sector and without it, the 2°C climate stabilization goal will not be reached.

REDD carbon credits can be derived by designing a project according to REDD standards and several universal criteria. Although the exact amount of derivable REDD carbon credits in Naivasha could not be estimated, enough technical potential (300 hectares) has been found. The next steps contain defining the project boundaries; develop a cost-benefit analysis, and hence a Project Design Document. However, several Community Forest Associations implemented Participatory Forest Management Plans and therefore have limited potential to become included in a REDD scheme due to the "Additionality" criteria. These communities can benefit from other carbon credits through Afforestation, Reforestation and Re-vegetation (ARR) projects.

This study showed that stakeholders are willing to engage in a REDD scheme in Naivasha, but the majority lacks capacity or resources to invest in it. The Kenya Forest Service (KFS) can be a crucial partner in developing a REDD project and they cooperated with the Green Belt Movement in an ARR project in the Aberdares Forest. Their ARR Project Design Document differs from a REDD Project Design Document but it can contribute significantly in developing REDD for Lake Naivasha`s water catchment.

It has been found that National Kenyan REDD policy is expected within 2 years and although it will support and facilitate REDD projects, it could also impose regulations that reduces the flexibility of project proponents. The best strategy is to develop a REDD project in advance of national policy and monitor its developments to adjust accordingly. At the moment, REDD project proponents can negotiate with KFS in designing their projects benefit distribution scheme. The latter has been raised as a key-concern during stakeholder consultations. Since the WWF has an excellent reputation amongst stakeholders and local communities, it is recommended that a REDD project and its benefit distribution will be designed by the direct management of the WWF, in partnership with KFS. The currently expanding benefit distribution system for Payment for Environmental Services provides a solid starting point for carbon credit distribution.

This study showed that Naivasha is a strong case for a REDD project. If thoroughly designed, REDD offers an opportunity to achieve multiple benefits: conserve the forests, reduce additional CO_2 emissions, improve biodiversity and the livelihoods of local communities, and generate revenues for WWF and the Kenya Forest Service.

1 Introduction

This chapter provides background information on Forests and Climate Change (1.1). Next, the Problem Description is provided (1.2), followed by a brief introduction of the Linking Futures Program and motives for this study (1.3). This is followed by the Research Approach (1.4), which provides an overview of the Research Objectives, Research Questions and Research Methods used, and an outline of this report. The last section (1.5) provides the Limitations of this Study.

1.1 Forest and Climate Change

Forests provide a variety of valuable goods and environmental services around the world. Locally, they regulate hydrological cycles, provide a rich habitat for biodiversity, and provide resources for livelihoods. Especially in the developing world, forests play a crucial role in the livelihood of forest dependent communities by providing resources such as timber, fuel wood, charcoal, paper, fodder, honey and medicines (WWF-Naivasha, 2009). In addition, forests also regulate water levels and sediment loads in rivers, ground water discharge, rainfall patterns, flooding, retain air moisture and serve as a habitat for biodiversity (NEMA, 2004).

On a global scale, forests play a key role in the mitigation of climate change by acting as a carbon sink that sequesters carbon dioxide (CO_2) from the atmosphere into biomass (Malhi et al, 2002). Global climate change is driven by the accumulation of greenhouse gas concentrations in the atmosphere, which poses a serious threat to society (IPCC, 2007). A key strategy in combating climate change is to reduce the amount of CO_2 in the atmosphere. According to the Intergovernmental Panel on Climate Change (IPCC, 2007*)* forest conversion accounts for 20 percent of global annual emitted CO_2 emissions.

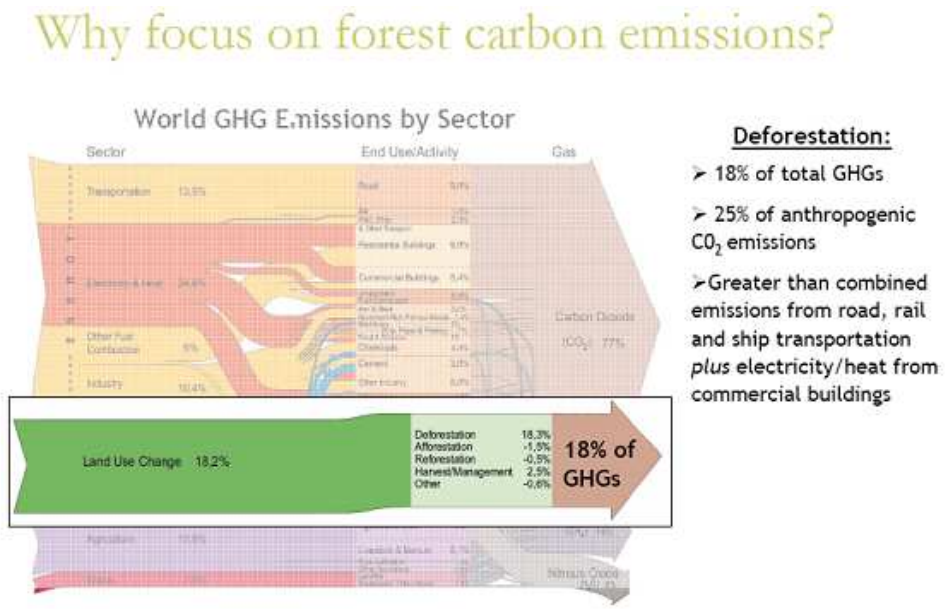


Figure 1, World GHG Emissions, Data from 2005 (World Resource Institute 2010)

1.2 Problem description

In spite of its ecological and economical significance, pressures to convert forested land for economic development are driving deforestation in an alarming rate (Bumpus, 2008). Activities such as unsustainable timber- and fuel wood harvesting and conversion of forests for agricultural purposes are contributing to the continuous shrinking of forest cover (Kahn, 2005).

In developing countries, population growth has stimulated these activities, leading to even more pressure on the forests. Poverty is a determining factor in deforestation since the poor communities in rural areas are disproportionately dependent on forests resources (Sunderlin, 2005). Alleviating poverty could therefore be seen as a key strategy in forest conservation. Also, forests provide a variety of resources and services so that improved and sustainable forest management could contribute to the alleviation of poverty.

In the perspective of a landowner in a developing country, one must take in consideration that the decision of the usage of land is determined by its opportunity costs. If someone is able to make money with expanding his agriculture or livestock feeding area, this probably outweighs the opportunity costs of forests conservation since the benefits from conserving the forests are not necessarily linked to the landowner's individual welfare but to the society as a whole. In this way, attempting forest conservation without sufficient incentives would fit the principle of "The Tragedy of the Commons" (Hardin, 1968).

However, recent developments in climate change policies focused on the global carbon market have led to an alternative in this perspective of opportunity cost. Since Existing mechanisms do not sufficiently protect forested regions in developing countries; the international community considers REDD (Reducing Emissions from Deforestation and forest Degradation) as a mechanism for achieving the global emissions reduction targets (IPCC, 2007). REDD provides actors in Annex 1 countries (developed countries) with an opportunity to offset their carbon emissions in Annex 2 countries (developing countries), by means of providing financial incentives for improved forest conservation management.

Through the REDD mechanism, landowners in developing countries are provided with an alternative in opportunity costs. REDD enables them to earn financial incentives in the form of carbon credits (priced on the equivalent to one metric ton of CO_2) by protecting trees on their land through international best practices in forest conservation. Protecting the forest with economic incentives can lead to a reduction in deforestation and forest degradation in developing countries which in turn contributes to the mitigation of climate change.

1.3 The Linking Futures Program

Lake Naivasha is the second largest freshwater lake in Kenya and offers a diverse habitat for a range of fish, bird and animal species (Pegasys). Economic and social pressures to convert land in the Lake's water catchment for development are driving deforestation (Bumpus, 2008). These amongst other unfavorable developments contributed to the initiation of the program 'Linking Futures' hosted by the World Wide Fund for Nature Netherlands (WWF-NL). The program is operational from 2007 until 2011 in Kenya, Cameroon and Mozambique. In this program, three main goals have formulated: Poverty reduction, building civil societies and influencing policies by means of tackling local problems by actions on different levels of governance e.g. local (micro) regional (meso) and international (macro). Recent studies linked to the Linking Futures program have opted for researching the possibilities for REDD carbon credits in the Lake Naivasha water catchment, as part of the sustainability mechanisms that can be implemented by the WWF (Schilt, 2009).

In the perspective of poverty reduction, there is a strong belief that poverty and environmental degradation (e.g. deforestation) have a causal relationship. The program aims to reduce poverty by increasing community's ability to produce and distribute agricultural and forestry products through sustainable practices. In addition, the program provides knowledge for alternative livelihoods like ecotourism, bee- and butterfly keeping, new agricultural products and sustainable land management. The WWF is building capacity for local communities in Naivasha by making community groups active in the co-management of forest resources and potential (REDD) carbon credits.

1.4 Research approach

The aim of this study is to research the conditions for generating Carbon Credits from Reducing Emissions from Deforestation and Forest Degradation (REDD) in Lake Naivasha`s water catchment, as well as to involve key-stakeholders to determine the feasibility of this mechanism in local practice. The study focuses at challenges for Naivasha to qualify for a REDD mechanism from a technical, institutional and socio economic perspective, and how these could be addressed. Therefore, the following three research questions have been developed:

Research question A: What are the conditions (e.g. prerequisites) in accessing the global Carbon Credit Market in forest management for the Lake Naivasha region, what are the challenges and how can these be addressed?

Research question B: Who are the key-stakeholders (e.g. community representatives, local government), what are their motives, and to which extend are they committed and capable to perform the activities needed for Reducing Emissions from Deforestation and forest Degradation (REDD)?

Research question C: What kind of effective and equitable scheme for monitoring, enforcement and financing can be designed?

This study has used several methodologies to attempt answering the research questions. In May 2010, a literature study has been conducted in the Netherlands in order to retrieve background information on the subject and the case-study. For a period of six weeks, from the end of May and throughout June, several potential REDD sites have been evaluated through observation and meetings in the Lake Naivasha water catchment in Kenya. In addition, 14 interviews were conducted (see Table 1) by which key stakeholders determined challenges and opportunities for a REDD scheme. Back in the Netherlands, the literature study has been resumed in order to retrieve additional literature where necessary. Time constraints made a more quantitative analysis of the current situation in the whole water catchment impossible. However, the qualitative data presented in this report will give suggestions for where more quantitative research may be necessary.

This report consists of four chapters. Next to this introduction, the second chapter Forestry and Global Carbon Markets provides an overview of current international climate change policy. Next, the compliance- and voluntary carbon markets are described of which REDD has been originated. It will explain how the REDD mechanism works and under which conditions it can generate carbon credits. This chapter end by providing an overview of the support and criticism on REDD.

The third chapter, The REDD Assessment at Lake Naivasha, will provide a brief introduction with background information on Lake Naivasha, Kenya. This is followed by an overview of how universal REDD criteria relate to this case study. Next, the REDD assessment is divided in three sections called the Technical-, Institutional-, and Socio-Economic Assessments in which key-elements in these perspectives are provided. The fourth and last chapter contains the Lessons Learned in which the conclusions and recommendations are described. A list of abbreviation and a glossary of terms is to be found in the appendix.

1.5 Limitations of this study

Time constraints made it impossible to define finite project boundaries for a REDD scheme in Lake Naivasha's water catchment. Also, this constrain imposed the inability for developing a cost-benefit analysis for REDD in Naivasha, including the determination of project implementation costs, transaction costs, and compensation costs for providing alternative livelihoods or the potential re-allocation of forest dependent communities. If project boundaries were determined and time was available to enhance expertise in carbon pool estimations, this could have led to the development of baseline scenarios and hence a cost-benefit analysis.

A concurrence of circumstances has led to the initial inclusion of GETA and Kingangop as potential REDD sites. During the second half of the internship in Naivasha, it was found that these communities were organizing Participatory Forest Management Plans. This led to a reducing potential for REDD since they became limited in matching the "Additionality" criteria. The author was initially unaware and misinformed of the development of this conservation policy and unable to change the course of this development to still include these communities in a REDD scheme. Nevertheless, it has been found that these communities are able to benefit through other forms than REDD carbon credits such as Afforestation Reforestation and Re-vegetation projects.

2 Forestry and Global Carbon Markets

This chapter begins with an overview of current International Climate Change Policy (2.1). Sections 2.2 and 2.3 describe respectively the Compliance- and the Voluntary Carbon Markets and explain the difference between them. The following sections explain how the REDD mechanism works (2.4) and under which conditions REDD carbon credits can be generated (2.5). This chapter ends with an overview of Support and Criticism on the current state of REDD (2.6).

2.1 International Climate Change Policy

The United Nations Framework Convention on Climate Change (UNFCCC) is an international treaty that considers various strategies to reduce global warming (UNFCCC 2008). This convention provides a framework for intergovernmental actions to undertake the challenges of climate change, such as sharing information on GHG emissions and develop strategies for addressing and adapting to climate change (UNFCCC, 2008) In addition, the convention encourages countries to stabilize GHG emissions.

Currently, the global carbon market consists of an obligatory and a voluntary market. The dominant and obligatory carbon market is regulated by the Kyoto protocol under the United Nations Framework Convention on Climate Change (UNFCCC 2008). Policies under the Kyoto Protocol, such as the Clean Development Mechanism (CDM), awards carbon credits for Afforestation, Reforestation and Re-vegetation (ARR) activities. However, there is currently no mechanism that provides economic incentives to avoid deforestation and forest degradation, although recent negotiations in climate change policies have let to its potential inclusion in a post-Kyoto regime (Karousakis, 2007**)**. For the moment, it is the voluntary carbon market that engages in REDD and many developing countries already use this mechanism as a primer for developing a National REDD framework for the post-Kyoto regime (Grogan et al, 2009).

In December 2007, participating nations of the United Nations Climate Change Conference on the island Bail in Indonesia adopted the Bali Road map, which is a two-year process to finalize a binding agreement on the Climate Convention in Copenhagen. The Bali Road Map should have led to a Copenhagen agreements that is committed to climate stabilization with a maximum 2°C temperature increase, consistent with consistent with atmospheric CO_2 concentrations below 450 parts per million (ppm). REDD will address a source of greenhouse gas (GHG) emissions larger than the entire global transportation sector. Without REDD, the 2°C climate stabilization goal will not be reached (Angelsen et al, 2009)

2.2 The Compliance Carbon Market

Since the global carbon market consists of an obligatory and a voluntary market, it is important to recognize the difference between the two trading systems: the cap-and-trade system, and the baseline-and-credit system. Both systems trade carbon in metric tons of CO_2, generically known as carbon credits, but consist of different types of carbon transactions.

Under a "cap-and-trade" system, a central authority sets an overall emission cap (or limit) on the amount of a pollutant that can be emitted. Each participating member within the cap-and-trade system is allocated a fraction of allowances of the total cap, and is given an emission reduction target. The total amount of emissions cannot exceed the cap and will eventually create a shortage in emission allowances. This scarcity drives demand and market prices. The parties that have lower emission abatement costs will reduce their emissions internally and therefore have a surplus of allowances that can be sold, while bodies that have higher abatement costs will need to buy allowances to emit more. This design allows mandated participants to meet compliance requirements for the lowest cost (Capoor and Ambrosis, 2008.) Under this cap and trade system, carbon transactions are referred to as allowance based transactions.

The baseline-and-credit system does not involve a finite amount of emission allowances. Instead, carbon credits are created on a project-by-project basis by reducing emissions below a business-as-usual scenario, also known as the baseline scenario. These credits must come from a certified project that can demonstrate GHG emission reductions that are additional to the status quo. Carbon credits generated from this system can then be sold to offset emissions. Carbon transactions is this market are referred to as project based transactions. Cap-and-trade systems of compliance carbon markets allow a small fraction of offsets to come from a baseline-and-credit system (Grogan et al, 2009).

The Kyoto Protocol established two project-based transaction mechanisms which, to a limited extend, can be used for allowance based transactions in the compliance carbon market: the Clean Development Mechanism (CDM), and Joint Implementation (JI). The CDM allows carbon transactions for Afforestation, Reforestation and Re-vegetation (ARR) projects. JI allows carbon transactions to occur between Annex I countries and economies in transition e.g. Russia, Ukraine, and Bulgaria (Capoor and Ambrosis, 2007). However, there is currently no mechanism under the Kyoto protocol (and thus the compliance market) that provides economic incentives to 'Reduce Emissions from Deforestation and forest Degradation' (REDD). Although the concept of REDD is based on the baseline-and-credit system, it operates in a niche market referred to as the voluntary carbon market.

2.3 The Voluntary Carbon Market

In addition to the Kyoto Protocol based carbon market, a voluntary carbon trading markets has evolved. The Voluntary Carbon Market operates outside of international agreements and the compliance market and enables individuals, companies and governments without mandatory emission reduction targets to optionally offset some or all of their GHG emissions. Voluntary offsets have captured increasing interest and motives for involvement vary from concerns in climate change, public relations and image, preparing for upcoming regulations (REDD readiness) or to make profits by trading carbon credits (Hamilton et al, 2008). The difference between the compliance and the voluntary market is that the latter allows carbon credits from forestry projects which reduce emissions from deforestation and forest degradation.

The voluntary carbon market can also be divided in 2 distinct categories: The Chicago Climate Exchange (CCX) and the Over-The-Counter (OTC) offset market (Hamilton et al, 2008).

CCX members make a voluntary but legally binding commitment to meet annual GHG emission reduction targets. The CCX allows carbon credits to be generated from avoided deforestation through “Combined Forestation and Forest Conservation Projects” (CCX, 2006). However, reforestation and avoided deforestation activities must be combined in a single project and the amount of carbon credits that can be derived from the “forest conservation” component may not exceed the offsets generated by the “forestation component”. This limitation significantly reduces the potential of the CCX market in relation to avoided deforestation (Grogan et al, 2009).

In contrast with the CCX market which is based on a cap-and-trade system, the voluntary OTC market operates on project-based transactions and has no limitation on avoided deforestation carbon offsets. Carbon credits generated in the OTC market are referred to as Voluntary Emission Reductions (VERs). The demand for OTC credits has grown steadily but recently there have been concerns regarding the aspect of “additionality” of carbon projects. Unlike the CCX and the CDM, the OTC market has no official project guidelines for quality standards and project validation. To tackle this problem, third party standards were developed which insured more quality and legitimacy of VERs.

2.4 Reducing Emissions from Deforestation and Forest Degradation (REDD)

Carbon credits can be generated through REDD by comparing GHG emissions of a "without REDD project" scenario with a "with REDD project" scenario. The "without REDD project" scenario presents the business as usual case or status quo, which will lead to additional GHG emissions due to expected deforestation and forest degradation. The "with REDD project" scenario involves REDD intervention which consist of strategic activities that reduce drivers of deforestation and forest degradation. The difference in GHG emissions between these scenarios represents the carbon credit potential that can be sold in the voluntary carbon market. This mechanism is most feasible for areas where deforestation and forest degradation occurs in alarming rates since the difference in GHG emission between the scenarios will be significant, as well as the potential amount of carbon credits.

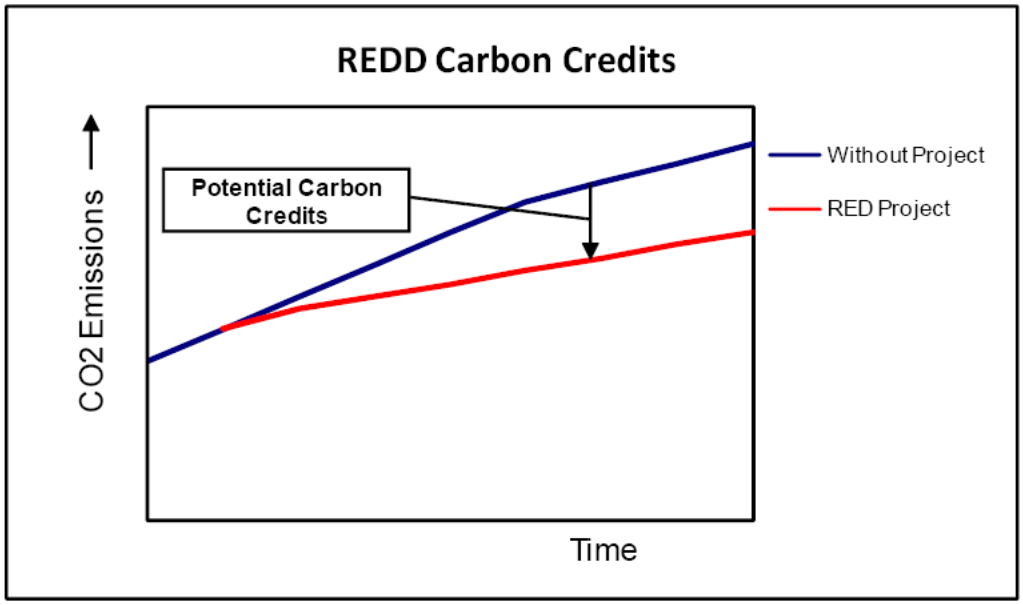


Figure 2, illustration of difference in CO_2 emissions through REDD intervention

The strategic activities to reduce deforestation and forest degradation vary and depend on the REDD standard that is used. However, there are several universal issues that must be considered when organizing a REDD project to ensure the quality of emission reductions: Additionality, Leakage and Permanence (VCS, 2008; CCBA, 2008).

2.4.1 Additionality

Additionality is to demonstrate that REDD projects result in real, measurable and long-term GHG emission reduction, beyond the reduction that would have occurred in the absence of project activities (CCBA, 2008). Being able to proof additionality is critical because many developing countries do not have a national baseline in carbon emissions since they do not have legally binding emission reductions under the Kyoto Protocol. If a forest is already protected from deforestation and forest degradation, additional protection is not necessary and no additional financial incentives through carbon credits can be derived. In order to certify carbon credits by any of the REDD standards, project proponents must first demonstrate that REDD intervention will protect additional forest carbon pools to the status quo, before the verification can proceed.

2.4.2 Leakage

Leakage occurs when a REDD project leads to the displacement of deforestation and forest degradation activities outside the project area (VCS, 2008). Auckland et al. (2002) identified two types of leakages that cause negative externalities: 'Activity Shifting' and 'Outsourcing'. Activity shifting means that deforestation and forest degradation is simply displaced to another area outside the project boundary. Outsourcing occurs when forest-dependent communities purchase their commodities (such as wood and charcoal) from deforestation activities that originated outside the project boundary. According the Leakage Tree of the Sourcebook for Land Use, Land-Use Change and Forestry Projects (LULUCFP), published by the BioCarbon Fund, there is a third type of leakage: super acceptance. This occurs when the REDD project creates an alternative livelihood that is so successful, it draws individuals from outside the project boundaries, that could result in either positive or negative emission externalities. Positive leakage occurs if migrants from outside the project boundary adopt the new, less carbon intensive livelihood. Negative leakage occurs when migrants consume additional resources from the land that leads to an increase in emissions. To avoid leakage, REDD projects should consider potential sources of leakage and provide alternative livelihoods, compensation or other sustainable solutions to this problem. Also, CO_2 emissions resulting from leakage should be monitored and accounted for in estimating net emission reductions (CCBA 2008).

2.4.3 Permanence

Addressing permanence refers to the requirement that emission reductions of REDD projects will last over time. It functions as a guarantee that no natural disturbances such as fires, pests, unusual weather events and especially land use activities will lead to a reversal of carbon pools during the project lifetime (CCBA, 2008). Permanence of carbon benefits is related to the amount of risk that can be attributed to a REDD project. Many forms of natural risk are difficult to mitigate but human induced risk can be minimized through good project design. REDD projects with a high amount of risk are like to produce less carbon credits or carbon credits of low value. Therefore it is necessary to develop strategies which minimize risks early in the project to ensure long-term benefits (EcoSecurities, 2007).

2.4.4 Reference levels for Baseline Scenarios

The baseline scenario is designed upon the deforestation and forest degradation rate in a project area and acts as a reference level in the "with and without project scenarios". In order to determine how much carbon could be saved by REDD, it is necessary to determine the difference in carbon pools in both scenarios. Carbon is found not only in the threes and its roots, but also in the leaf litter, and the soils of the forests (Grogan et al, 2009). Developing the baseline scenario involves profound implication for the environmental effectiveness, efficiency and equitable benefits sharing of REDD funds among participating countries (Angelsen A, 2008). There are several guidelines and best practices for REDD project proponents to establish reference levels for credible baseline scenarios. These can be found in REDD standards that are discussed in section 3.4, Generating carbon credits through REDD standards.

2.4.5 National, Sub-National and Hybrid Approach

REDD projects can be implemented at a national, sub national scale or at both levels simultaneously. The latter consist of a nested approach by which REDD projects are implemented in the context of national REDD facilitation. REDD projects in a sub national approaches are based on baseline scenarios for individual project such as those for a particular forest or region. Also, the measurements and monitoring of the reductions in emissions are conducted in a sub national scale and the carbon credits generated are assigned to the project proponent such as private companies, NGOs or landowners. (Angelsen et al, 2008). In national approaches, baseline scenarios are established at the national level and the measurements and monitoring of emission reductions are based on national performance. In nested approaches, measurements and monitoring take place at both scales and the government facilitates REDD projects throughout the country without imposing much regulation for REDD project proponents. The difference between the three approaches is illustrated in figure 3:

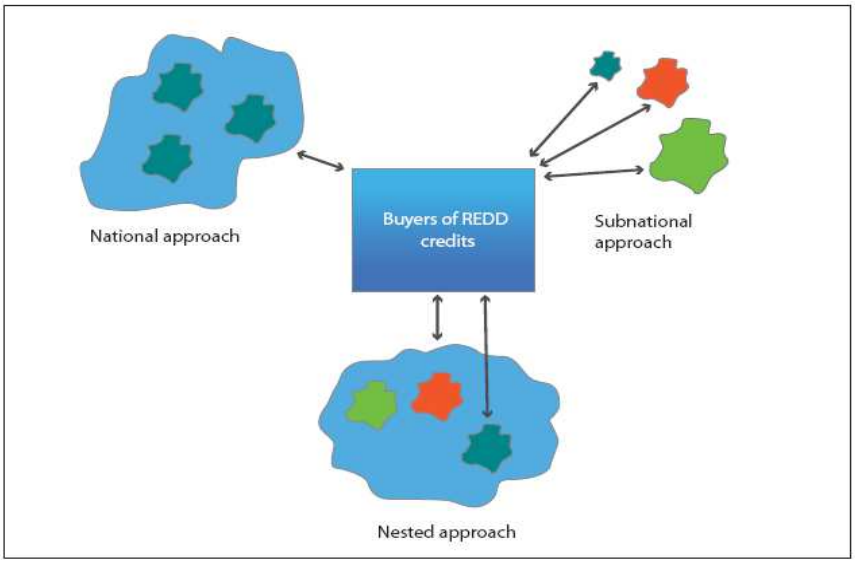


Figure three, 3 approaches for REDD accounting and crediting, arrows indicate money and information flows from and to international buyers (Angelsen, A. 2008)

2.4.6 REDD+

In December 2007, participating nations of the United Nations Climate Change Conference on the island Bail in Indonesia adopted the Bali Road map. The Bali Road Map includes the Bali Action Plan, which states that there is a need for enhancement on climate change mitigation. Hence, the concept of REDD has recently been changed to REDD+, of which the plus sign indicates enhancement of forest carbon pools, also referred to as forest regeneration, forest rehabilitation or carbon removal.

Carbon enhancement has significant implications for REDD since forest were previously only protected by REDD projects from further deforestation and forest degradation. The inclusion of carbon enhancement provides REDD project proponents the ability to restore natural forests and thereby replant threes on land once forested. This leads to an unclear boundary of carbon enhancement through REDD projects with other carbon sequestration projects such as Afforestation, Reforestation and Re-vegetation, allowed by the CDM. From this point forward, the term REDD refers to forest conservation and protection of existing carbon pools. The term REDD+ refers to potential carbon enhancement of degraded forest and reforestation activities.

2.5 Generating carbon credits through REDD standards

In the absence of UNFCCC sanctioned REDD standards, growing support for REDD has led to voluntary certification standards developed by non-governmental organizations and research institutes. Although REDD standards are not obligatory for REDD project coordinators, they contribute to the credibility and legitimacy of projects and higher carbon prices. There are many standards that can be used for forestry projects such as the Voluntary Carbon Standards (VCS), Climate, Community & Biodiversity Standard (CCBS), Plan Vivo Standard, CarbonFix, California Climate Action Registry (CCAR), Chicago Climate Exchange (CCX) and the American Carbon Registry (ACR).

The amount of carbon credits attributed to forestry projects differ substantially from the standards used but also due to price vitality for carbon credits on a yearly basis. The voluntary carbon markets were valued at USD$705 million in 2008, more than twice the value of USD$ 335 million of 2007. The average price of a voluntary carbon credit transacted on the OTC market was $7.34/t CO_2 equivalent in 2008, up 22% from $6.10/ CO_2 equivalent in 2007 and up 79% from $4.10/ CO_2 equivalent in 2006 (Hamilton et al, 2009).

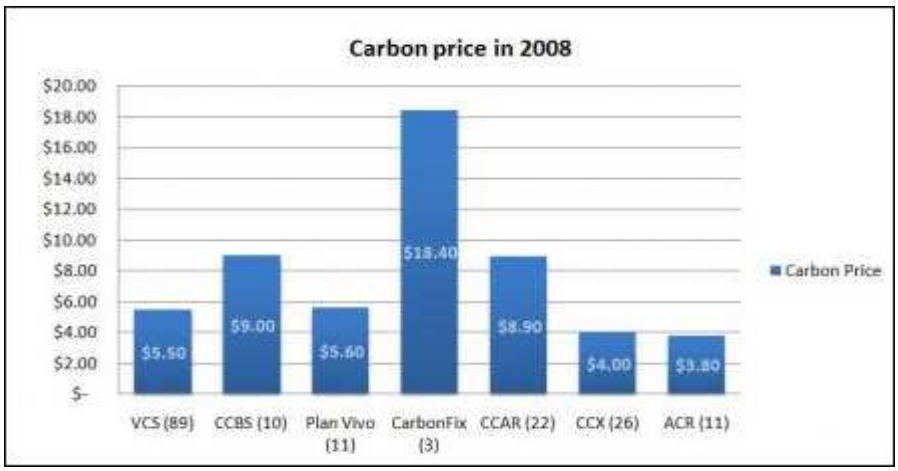


Figure 4 – Average Carbon Price 2008, Numbers in parentheses indicate number of data points source (Hamilton et al, 2009)

Only three of these standards incorporated the ability to generate and certify REDD based carbon credits: The Voluntary Carbon Standard (VCS), the Climate, Community and Biodiversity Standard (CCBS), and the Plan Vivo Standard (Merger 2008). The other standards can be used for Afforestation, Reforestation and Re-vegetation (ARR) and Agriculture, Forestry and Other Land Use (AFOLU) carbon projects. These project guidelines focus for example on CO_2 emissions from biomass combustion for energy generation or CO_2 emissions regarding peat land extraction.

2.5.1 The voluntary carbon standard

The voluntary carbon standard (VCS) is the first carbon standard which covers all major land-use activities. Credits from the VCS are referred to as Voluntary Carbon Units (VCUs) and represent one-third of the voluntary carbon market, making it the world's leading voluntary market standard (Hamilton et al. 2008). It has been developed in 2005 by The Climate Group, the International Emissions Trading Association and the World Economic forum and provides best practices to deal with additionality, leakage, permanence and REDD project design. The VCS also incorporates a trading platform to register, transfer and retire VCUs from the market which allows for transparent trading and avoids double counting of carbon credits (Grogan et al, 2009).

VCS criteria require land-use projects to identify 'potential negative environmental and/or socio-economic impacts, and mitigate them prior to generating VCUs'. Although potential risks will be identified and possibly mitigated during the beginning of the REDD project, the VCS criteria does not require to monitor these impacts over time. In addition, the VCS does not put much emphasis on a local stakeholder approach and neither on enhancing additional co-benefits (Kolmuss et al, 2008).

For now, it is not possible to validate REDD projects under the VCS standard since it became obsolete after December 2008 and is currently being revised (VCS, 2008). It should be highlighted that the VCS requires two independent audits for REDD project validation and verification, costing between $30.000 and $60.000 USD (Merger, 2008). In 2009, the VCS provided a price range between $12 to $18 USD per metric ton of CO_2 and charged $0.04 USD for every metric ton of CO_2 certificated (Merger, 2008).

2.5.2 The Climate, Community and Biodiversity Standard

The Climate, Community and Biodiversity Standard (CCBS) focus exclusively on carbon mitigation projects that deliver credible GHG reductions in combination with co-benefits to local communities and biodiversity. The standard consists of three types of validation: Approved, Silver- and Gold Standard. For approval, A REDD project must comply with at least 15 mandatory criteria of the 23 in total. A silver or gold standard will be attributed depending on the compliance on the remaining criteria.

The CCBS utilizes project guidelines (e.g. carbon pool estimations) which are based on methodologies of the Intergovernmental Panel on Climate Change (IPCC). The standard conceals a screening and evaluation for negative impacts on community and biodiversity and requires a comprehensive stakeholder approach with net benefits for communities and biodiversity. In addition, the CCBS provides good methodology for issues related to additionality, leakage and permanence. Unlike the VCS, the standard does not provide a carbon trading platform and recommends combining the standard with other voluntary standards such as the VCS (CCBA, 2008).

The validation and verification costs of the CCBS range between $5.000 and $40.000 USD, depending on the complexity and the size of the REDD project and whether the auditor simultaneously validates multiple projects during one visit or projects under multiple accounting standards. REDD project with CCBS certification can expect to retrieve a premium price of other projects since the CCB standard ensures premium quality of carbon credits (Merger, 2008).

2.5.3 The Plan Vivo Standard

The Plan Vivo Standard aims to include aspects of both the VCS and CCBS. This standard requires the design of a 'living plan' for long term sustainable development which includes carbon sequestration, conservation activities and poverty alleviation. This plan must be developed with guidance from local experts who place special interest on transferring knowledge and skills to local communities. Carbon credits retrieved from the Plan Vivo Standard are referred to as Plan Vivo Certificates (Plan Vivo, 2008). Much like the CCBS, projects are required to promote sustainable practices in land-use and economic development by local communities through agro forestry, ARR projects, and restoration of degraded land or avoid deforestation activities. In addition, Plan Vivo recommends community-based project coordination (Plan Vivo, 2008).

Plan Vivo differs from the VCS and the CCBS in terms of separate processes for project validation and verification. In the beginning of a REDD project under Plan Vivo, an expert reviewer conducts an initial validation and provides, if compliances are met, relevant Plan Vivo Certificates. This verification process costs between $5.000 and $12.000 (Merger 2008). The third party verification will be postponed until the communities retrieve substantial benefits in terms of knowledge and skills, but also through sufficient carbon finance to fund and learn from verification, which comes with a price between $15.000 and $30.000 USD (Plan Vivo 2008). Plan Vivo Certificates equal one metric ton of CO_2 and were sold between $8 and $30 USD in 2009. The agency charged $0.30 USD for each certificate sold (Merger 2008).

2.5.4 Generating carbon credits with alternatives

Next to the REDD mechanism, there are alternatives in which project proponents are able to generate carbon credits. The VCS for example, has developed guidelines for Afforestation, Reforestation and Re-vegetation (ARR) projects aimed at carbon sequestration to combat climate change. Another alternative to generate carbon credits is the VCS guideline for Agriculture, Forestry and Other Land Use (AFOLU) projects. These and other alternatives are to a limited extend allowed by the CDM to count as certified emission reductions. Although these alternatives for carbon credit generation are not part of the focus of this study, it might be of interest for the WWF to execute a feasibility study for additional ARR projects in Lake Naivasha`s water catchment.

2.5.5 Project Design Document (PDD)

Project proponents willing to generate carbon credits through REDD (or ARR projects) have to design a Project Design Document (PDD). In this report, project proponents provide information on the location and size or their project area, how they aim to comply to REDD standard(s), provide information on how the project relates to additionality, leakage and permanence, how they have set up a credible baseline scenario, and how the carbon credits are distributed or potentially invested. The PDD and the project in practice need to become validated by an agent under the REDD standard that is used in order to verify whether the project complies with the prerequisites accessing carbon credits. PDD templates are available on the websites of the corresponding REDD standards.

2.6 Support and criticism on the current state of REDD

It has been found that REDD seems like a good solution in combating climate change while at the same time providing additional co-benefits to forest-dependent communities and biodiversity. The Forest Carbon Partnership Facility of the World Bank and the UN-REDD program express high expectations on REDD (UN-REDD, 2009) and the variety of REDD standards that are constantly being improved contribute to the success of REDD projects. However, concerns are raised particularly in additionality, corruption and equitable benefit sharing, perverse incentives, and human rights.

2.6.1 Additionality

One of the most critical elements on REDD is the design of (national) baseline scenarios on deforestation and forest degradation. Although REDD standards provide guidelines and best practices on setting reference levels for baseline scenarios, there is no official standard on how to set them. Most REDD projects use historical deforestation rates but many countries lack reliable data on this (Angelsen, A. 2008). Hence, claims of REDD projects covering the additionality concept can be plausible since it is be difficult to trace the actual deforestation and degradation rates.

2.6.2 Corruption and equitable benefit sharing

Corruption is widespread in most developing countries that are eligible for REDD schemes. Unless corruption is controlled, REDD is unable to combat climate change effectively and benefit sharing will not occur in an equitable manner (Taconi, 2009). Corruption itself could result in deforestation and forest degradation in several ways. First, logging companies can bribe forestry officials to harvest timber without legal permits which makes legal logging less competitive (Smith et al, 2003). Second, logging companies can pay bribes to over-harvest the land or harvest outside the boundaries of their concessions without being monitored (Taconi, 2009). Thirdly, corruption could affect monitoring, reporting and verification mechanisms. REDD project coordinators could have an interest in overstating avoided emissions and understating problems with additionality, leakage and permanence of REDD projects (Taconi, 2009). Lastly, corruption could also affect the revenue distribution system in a REDD scheme aimed at benefitting local communities. This could lead to a significant misallocation of funds and undermines the effectiveness of REDD.

2.6.3 Perverse incentives

REDD could also impose a risk to biodiversity by providing perverse incentives to deforest and degrade an area in advance of a REDD mechanism (e.g. to manipulate the baseline scenario for additional REDD credits). In addition, the use of mono-plantations and genetically modified organisms (GMOs) in afforestation and reforestation activities for REDD+ could derive more carbon pools (and thus more carbon credits) than the natural mixed native forest species. This imposes a risk for the biodiversity in and around the project area (Karousakis, 2007).

2.6.4 Human rights

Much of the opposition to the inclusion of REDD in a post-kyoto cimate regime is based on concerns that REDD could have negative consequences for human rights. By adding additional value on forested land, REDD could create incentives for governments and the private sector to deny or ignore the right of forest-dependent communities to access and control forest resources (Earth Peoples, 2010).

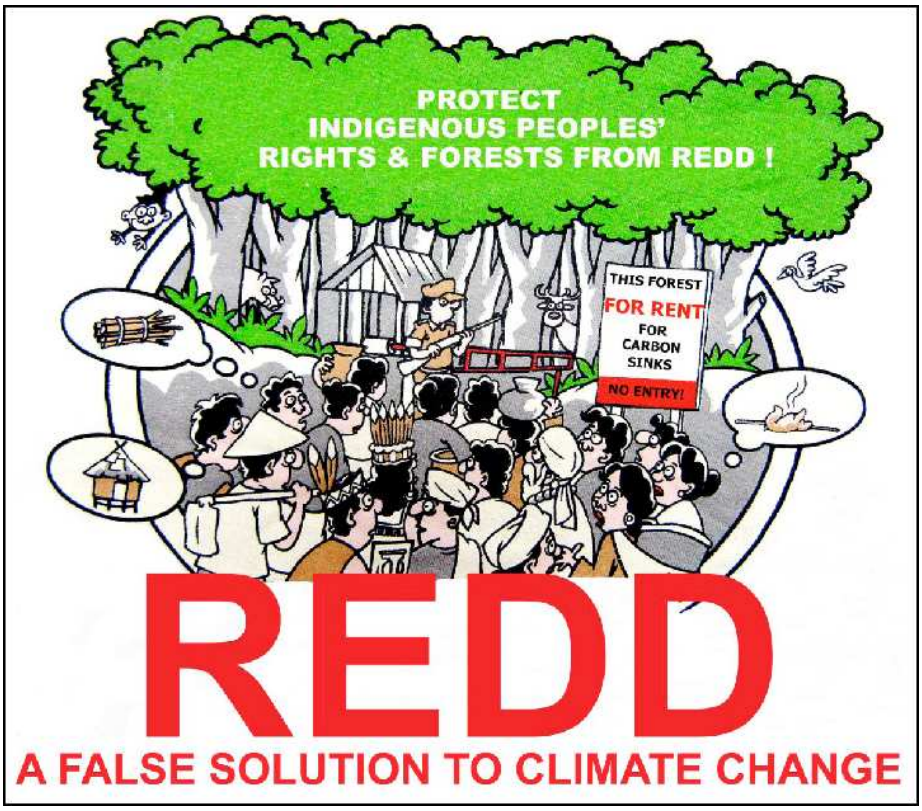


Figure 5, cartoonist impression of REDD criticism, (Earth Peoples, 2010).

This chapter provided the origins of REDD through the incapability of current international climate change mechanisms and the compliance based carbon market to further reduce deforestation and forest degradation in developing countries. It also showed how the REDD mechanism works and under which conditions REDD carbon credits can be generated. Lastly, REDD is not a flawless mechanism and should be carefully designed to minimize project risks and to retrieve support instead of oppression from indigenous peoples. These findings place the concept of REDD in perspective for the case study of REDD at Lake Naivasha.

3 The REDD assessment at Lake Naivasha

First, this chapter provides an introduction of Lake Naivasha and briefly outlines the way the REDD assessment was organized and conducted. The next section provides commentary on aspects of additionality, leakage and permanence for Lake Naivasha specifically. The third section entails the 'Technical Assessment' in which potential project boundaries are suggested and the potential amount of carbon credits in Lake Naivasha`s water catchment is estimated. The fourth section 'Institutional Assessment' presents the key-findings of the stakeholder consultations. The last section 'Socio-Economic Assessment' provides information on social and economic aspects in Lake Naivasha`s water catchment in relation with the feasibility of a REDD project.

3.1 Lake Naivasha

Lake Naivasha is located in the Kenyan Rift Valley, approximately 100 km north-West of the Capital Nairobi. The lake lies at 1980m above sea level, covers an area of 139 km2 and is fed by two perennial rivers, the Malewa and Gilgil rivers that discharge respectively 80 and 20 percent of the lake´s total inflow. Lake Naivasha is the second largest freshwater lake in Kenya and offers a diverse habitat for a range of fish, bird and animal species. A papyrus forest has historically acted as a filter capturing nutrients, pollutants and sediment from flowing into the lake. The lake is a world-renowned RAMSAR site and generates income by means of tourism and horticulture (Pegasys, 2009). Lake Naivasha offers fresh water resources for irrigation, fishing, watering livestock and provides fertile soil for grazing and farming. In addition, a geothermal spring is situated near the lake which provides hot water and steam that is used for electricity generation. It is the only geothermal power plant in the country.

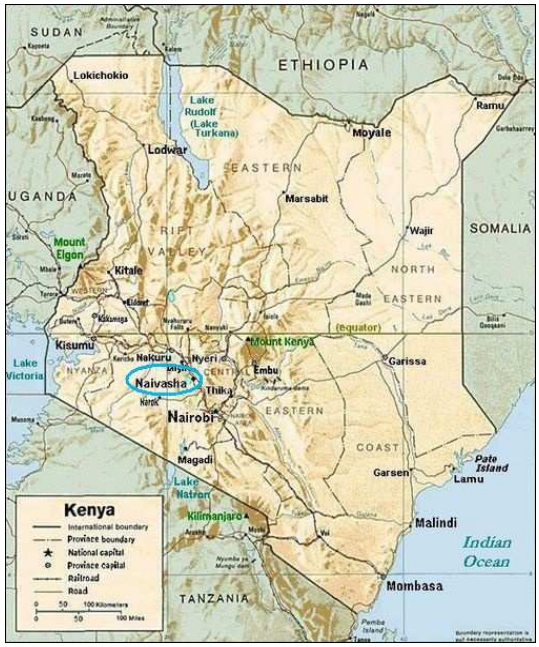


Figure 1, location of Lake Naivasha, Kenya

Unfortunately, the environmental quality of Lake Naivasha in Kenya is rapidly deteriorating due to watershed degradation and weak institutional governance. Since the prosperous development of the horticulture industry, many unskilled communities were migrating to one of the few centers of economic opportunity in the country. The uncontrolled population growth has resulted in increased use of water and land, and an increase of pollution (Kut & Agevi, 2007). The rapid economic development of Lake Naivasha imposes the risk of reaching a tipping point in its environmental sustainability. Some of the key-concerns that lead to the watershed degradation include: poor land use and water quality leading to increasing nutrient flows, deforestation, a reduction in biodiversity, and falling lake levels due to unsustainable abstraction and drought.

During the internship in Lake Naivasha's water catchment in Kenya, potential REDD sites and relevant stakeholders were identified in four ways; first, with the help of the local WWF-staff, areas of deforestation and forest degradation which could match the universal REDD criteria (such as additionality, leakage and permance) were identified in the regions where the WWF is active. In addition, a stakeholder list has been developed to determine which organizations are active in these regions and should be involved in a REDD scheme for Lake Naivasha's water catchment. Secondly, guests at the local WWF-office such as community and NGO representatives were informed on REDD (criteria) and invited to evaluate the potential REDD sites and the list of identified stakeholders so far. They were asked to identify potential REDD sites and organizations on the stakeholder list. Lastly, during the interviews, respondents were asked to verify the list of stakeholders and potential REDD sites and add additional areas that could be involved in a water catchment wide REDD scheme. The potential REDD sites are illustrated on a map in figure 6.

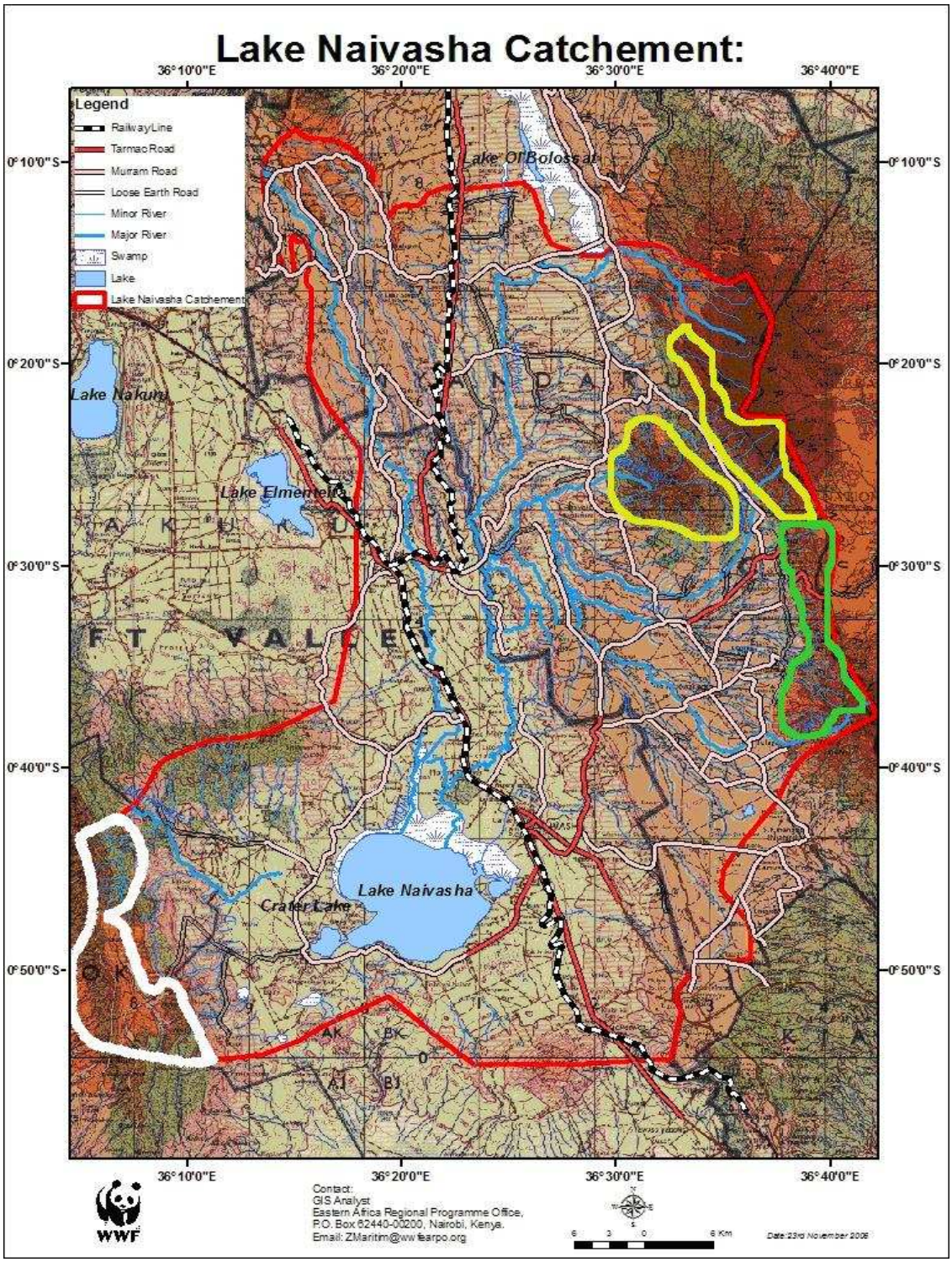


Figure 6, Map of Lake Naivasha`s water catchment and evaluated potential REDD sites. Forests of the GETA and Kingangop in the Aberdares are marked yellow and green. Forests controlled by the communities in MAU Narok are marked white.

3.2 Additionality, Leakage and Permanence

This section provides an overview of how the universal REDD criteria of Additionality, Leakage and Permanence relate to Lake Naivasha's water catchment specifically. Next, it provides potential resources that can be used in order to develop the baseline scenarios for a REDD Project Design Document (PDD).

3.2.1 Additionality

During meetings with stakeholders, most of the respondents mentioned the forest of the Aberdares (East of the lake), the Riparian Land near the lake and Mau Narok (West of the lake), as potential REDD sites since there is deforestation and forest degradation occurring up till today. During several field trips to the forested areas, conducted in the second half period of the internship, these sites were evaluated in terms of suitability for REDD and possibly other forms of carbon credit mechanisms. It was found that the potential for REDD sites for the communities in the Aberdares Forest such as GETA and Kingangop is limited, since conservation policy was being developed by Community Forest Associations (CFAs).

Communities become organized in CFAs according to the Kenyan law called the 'Forest Act 2005', as a mechanism for community empowerment in forest management. In order for communities to acquire rights in co-management and benefit sharing of forest resources, they have to develop a Participatory Forest Management Plan (PFMP), in accordance with the KFS. Since these communities have started with developing PFMPs, and thus conservation policy for most of their lands, they are only to a limited extend able to become involved in a REDD scheme, since the majority of their land will not match the Additionality criteria. Nevertheless, ARR and possibly AFOLU (Agro-Forestry and Other Land Uses) might be feasible alternatives for generating carbon credits, which can be derived through ARR and AFOLU project procedures by the CDM. The development of a REDD scheme in Naivasha could be combined with these types of carbon credit project to enhance economies of scale and lower implementation and transaction costs of carbon projects throughout the water catchement.

Other forest dependent communities that still need to develop CFAs and implement their PFMPs have more potential to become involved in a REDD scheme since these communities are able to match the Additionality criteria. Unfortunately, time constraints have not allowed field trips to other forest dependent communities than GETA and Kingangop in the Aberdares forest. It is recommendable for the WWF that in advance of developing PFMPs for other CFAs, they evaluate whether these communities are willing to become involved in a REDD scheme. During a field trip to the Masai communities in the forest of Narok, it has been found that much of the forested land is being converted to agricultural purposes and no conservation policy was developed. These communities are willing and capable to become involved in a REDD scheme.

3.2.2 Leakage

If deforestation is detected outside the project area compared with the situation prior to the REDD project implementation, it is considered leakage and the emissions should be assessed, minimized , monitored and subsequently subtracted from the projects net emission reductions (VCS, 2008; CCBA 2008). Since deforestation is primarily caused by land conversion to agriculture, closing the agricultural frontier without intensification technology creates land shortages and incentives for leakage. (Angelsen A, 2008).

Leakage can be measured by analyzing deforestation trends in a leakage belt. A leakage belt is the area surrounding the project area in which deforestation activities from inside the project area might be reallocated. If drivers of deforestation are identified, much of the potential leakage could be minimized in the project design (Aukland et al, 2002). Leakage could be managed by providing alternative livelihoods such as eco-tourism, community forestry, sustainable agriculture and bee-keeping. Villages located closely to project boundaries imposing a risk to leakage since residents could easily migrate outside the project area if restrictions are not well enforced.

Due to time constraints, potential project boundaries and a leakage belt could not be defined. It has been found that the majority of the Aberdares Forest have been fenced, which will affect the leakage belt for REDD projects in Naivasha. When a PDD is being developed for REDD at Lake Naivasha, the project proponent should consult the REDD standards in defining the leakage belt and design the project accordingly by providing alternative livelihoods and subtract the loss of emissions from the project net benefits.

3.2.3 Permanence

Permanence of carbon benefits is related to the amount of risk that can be attributed to the project. In contrast with naturally attributed risks, one of the most important anthropogenic sources of risk is social acceptance. If forest dependent communities benefit from the project, either by carbon funding, compensation, alternative livelihoods or community co-benefits, they could be become forest conservation agents e.g. guardians of the forest. If they do not have the impression to benefit and being treated equally, they could become anti-conservationist and propose a risk to the project.

To mitigate the risk of losing carbon storage, the VCS developed a “Tool for AFOLU Non-permanence Risk Analysis and Buffer Determination” to create risk profiles for REDD projects. This tool provides an analysis that scans the project through a step-by-step risk clarification to determine the probability of losing carbon pools. Depending on the amount of risk attributed to the project, a ‘buffer’ account is required in which a fraction of carbon credits are attributed. REDD projects with ‘High’ risk are recommended to attribute up to 30% of their carbon credits in a buffer account. ‘Medium’ risk project 10-20% and ‘Low’ risk projects between 5-10%. REDD projects that deliver both environmental and social benefits are more likely to become classified as ‘Low’ risk projects and hence more attractive to investors.

Since this study was unable to define definite project boundaries, the Tool for AFOLU Non-permanence Risk Analysis and Buffer Determination could not be implemented. However, the positive attitudes of the stakeholders for a REDD scheme in Lake Naivasha resulted in the impression that social acceptance is unlikely to impose a risk to the aspect of permanence. More detailed information about stakeholder views on REDD in Naivasha can be found in chapter 3.4, Institutional Assessment.

3.2.4 Baseline scenarios

Another limitation for this study due to time constraints and a lack of information of deforestation and forest degradation rates for Naivasha, has been the design of the baseline scenarios. If project boundaries for a REDD scheme are determined, its carbon pools need to be calculated and compared with historic and current deforestation and forest degradation rates. In this way, a conservative estimation of the amount of carbon that can be saved will provide an overview of the potential revenue in terms of carbon credits. Next, these and other potential economic benefits from REDD intervention can be compared with the costs of developing a REDD scheme in a cost benefit analysis.

Since the majority of the Aberdares has been fenced, REDD will not meet the additionality criteria in this region. However, this might also influence the baseline scenario for REDD projects. If no measures for leakage outside the Aberdares have been organized, this could increase the pressure on forests outside the fenced area and impose additional risks of deforestation and forest degradation throughout Lake Naivasha`s water catchment.

In addition to universal REDD criteria, this study aims to determine the feasibility of a REDD scheme at Lake Naivasha in terms of technical potential according to stakeholder views and REDD site evaluations, determination of the institutional capacity, and a socio-economic analysis for Lake Naivasha`s water catchment. The evaluation of these aspects will not provide a detailed cost-benefit analysis for REDD but does illustrates whether required components for a REDD scheme are present to a sufficient extend. The next sections will provide an overview of the feasibility of REDD at Lake Naivasha from a technical, institutional and socio-economic perspective.

3.3 Technical Assessment

The main focus of a technical assessment is to determine the quantity of carbon credits that could be generated by the implementation of a REDD project in Lake Naivasha`s water catchment. This can be done by comparing the expected emissions in the "without project scenario" with the expected emissions in the "with project scenario". The differences in emissions between these scenarios represent the total technical potential. For a thorough technical assessment for REDD, all of the following aspects described below had to be evaluated, but due to time constraints and a current lack of expertise in ecology and specific mathematics on carbon pool calculations, several aspects of the technical assessment could not be estimated. If one ought to develop a Project Design Document (PDD) for generating carbon credits with REDD, all aspects of the technical assessment need to be thoroughly fulfilled by an expert in ecological- or environmental economics. This study will only discuss parts of this assessment that will have to become included in a REDD PDD for Naivasha.

3.3.1 Determination of forest-cover and project boundaries

The first step to determine whether an area is suitable for a REDD project is to trace the forest cover and to design the potential project boundaries. The forest cover must be stratified into different categories or zones since forest have different carbon densities and different carbon pools. Carbon pools may not only vary between forest types but also within a single forest, depending on factors such as geology, altitude, slope, type of soil, local climate and land-use history (Grogan et al, 2009). It is also recommendable to further divide the forest cover into intact and disturbed zones, since intact forests holds more carbon than disturbed or degraded forests. Secondly, each of the zones needs to be quantified in terms of the amount of carbon they contain. Combined, these steps provide an overview of the total carbon pools for the project area and an estimation of the average carbon density per acre of forest. The last step is quantifying the amount of carbon that will be lost in the "without project scenario".

Although this study has been unable to define finite project boundaries, it has been found that there are opportunities for additional ARR projects in the Aberdares and opportunities for a REDD scheme mostly in Mau Narok. According to the WWF staff in Naivasha, forest dependent communities in Narok have not yet developed CFAs and PFMPs and these forests are endangered by deforestation and forest degradation. During one of the field trip to the Masai communities in the forest of Narok, it has been found that much of the forested land is being converted to agricultural purposes. It is therefore recommendable for the WWF that before community forest associations develop CFAs and PFMPs, and hence conservation policy, these communities should be able to become involved in a REDD scheme, since they meet the additionality criteria for REDD projects.

3.3.2 Estimation of carbon pools

An important discovery has been made during one the field trips to the upper catchment in the Aberdares. It has been found that the Green Belt Movement (GBM) has conducted an ARR project in the Aberdares on land of the Kamae and Kipipiri communities. The project has been developed on behalf of the CFAs in association with the Ministry of Environment and Natural Resources and the Kenya Forest Service (KFS). A PDD has been developed and states that the project only replants indigenous trees that are naturally occurring in the Aberdares Forest. The PDD has been submitted for the Kamae-Kipipiri sites and covers an area of 227.1 ha and calculated a total removal of 179,423 t CO_2 equivalent during its first 20 years of operation (GBM, 2009). According to the WWF-staff and stakeholder consultations, the Aberdare forest and the Eastern Mau Forest (Narok) are very similar in terms of vegetation, thus the Aberdares carbon pool estimations could be partially used for a REDD+ PDD in the Eastern Mau forest.

The PDD of the GBM and its carbon estimations could also be very useful for other ARR projects for the private sector, CFAs such as Geta, Kingangop and other communities in the Aberdares and the Eastern Mau forest which are willing to engage in carbon credits but already have conservation policy in place. In addition, extensive technical parts of this PDD could also be used for activities under REDD+ such as carbon enhancement (reforestation and restoration of degraded forest) and for estimations of carbon pools for young trees and sections of forest. However, additional data is required for the calculation of carbon pools for mature trees and other site specific aspects of the forest in Mau Narok. An ARR project is somewhat able to control the amount of carbon that will be absorbed during the project lifetime since there is control over the types and the amount of trees that will be replanted. A REDD project uses a different perspective and protects the amount of carbon that is still left in a forest. More complementary data on REDD projects and carbon pool calculations could be obtained by FAN (Forest Action Network), KEFRI (Kenya Forestry Research Institute) and Universities such as the Kenyatta University. Although carbon pool calculations are not part of this study, a conservative estimation of the potential for REDD can be provided.

During the interviews, stakeholders have identified several potential REDD sites in Narok and the Riparian area, which combined, cover an area of roughly 300 ha. These areas are scattered throughout the water catchment but could individually be linked in a REDD scheme. This gives rise to the question of how much land is needed for a REDD project. There is no straight forward answer but it has been found that ARR projects in Kenya are feasible from 5ha onwards (Lung, 2010). Even if less than half of the REDD sites are actually feasible for REDD, it seems that there should be enough technical potential for developing a REDD project. However, the feasibility for a REDD scheme in Naivasha is also determined by the costs for developing a REDD project and its validation by an agent of the standard that is used.

3.3.3 Determine deforestation and forest degradation rates

This can be done by acquiring historical deforestation and forest degradation rates of the project area or for a comparable reference area with a land-use pattern and land-use dynamics not significantly different from the project area. If such information is unattainable, national data on deforestation and forest degradation rates or information from international NGOs and research institutes can be used (IPCC, 2006), depending on the requirements of the REDD standard. Since there are uncertainties in future deforestation and forest degradation rates, a deforestation and degradation range or boundary needs to be developed which contributes to more conservative carbon estimations. This is consistent with current REDD and carbon accounting methodologies of conservative estimations (CCBA 2008; BioCarbon Fund 2008)

For Lake Naivasha specifically, only scarce information on forest degradation could be found. The KFS zonal manager of the forest dependent communities in the Western slopes of the Aberdares (Olbolosat, Ndaragwa, North- and South Kingangop and GETA) has provided information on the hectares of natural forest under his jurisdiction and the amount of it which has been degraded. However, no historical deforestation and forest degradation rates for Naivasha specifically could be retrieved. Instead, national deforestation- and degradation rates of Kenya have been found on the Internet. According to scientific databases posted by Mongabay, Kenya lost 5% of its forest cover (38,000 hectares) between 1990 and 2005. Between 2000 and 2005, the deforestation rate decreased by 1.4% to 0.34% per annum and the degradation rate rose from 0,13% to 1,95% (Mongabay, 2010). Figure 7 shows the national deforestation rate of Kenya compared with the world average. This is followed by maps provided by the WWF that show historical deforestation in the Eastern water catchment of Lake Naivasha.

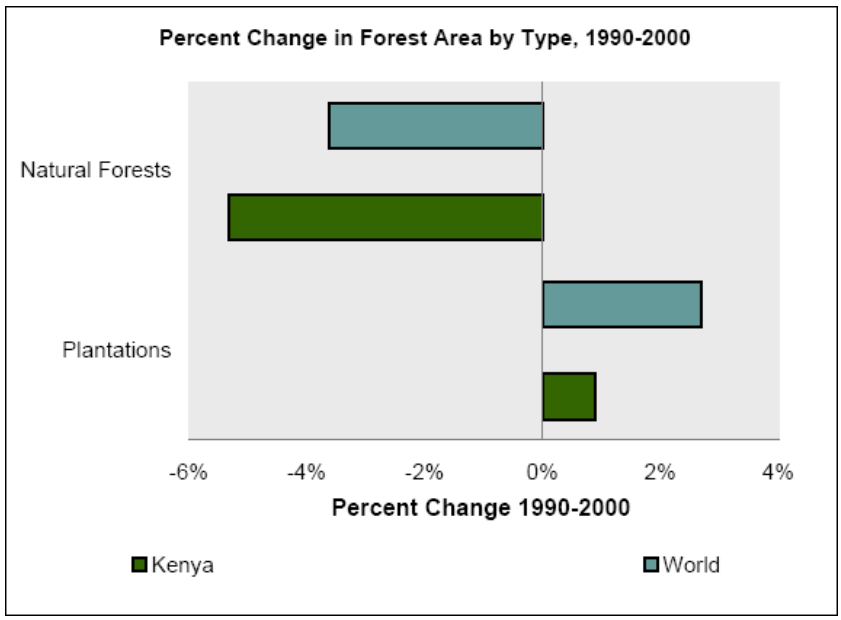
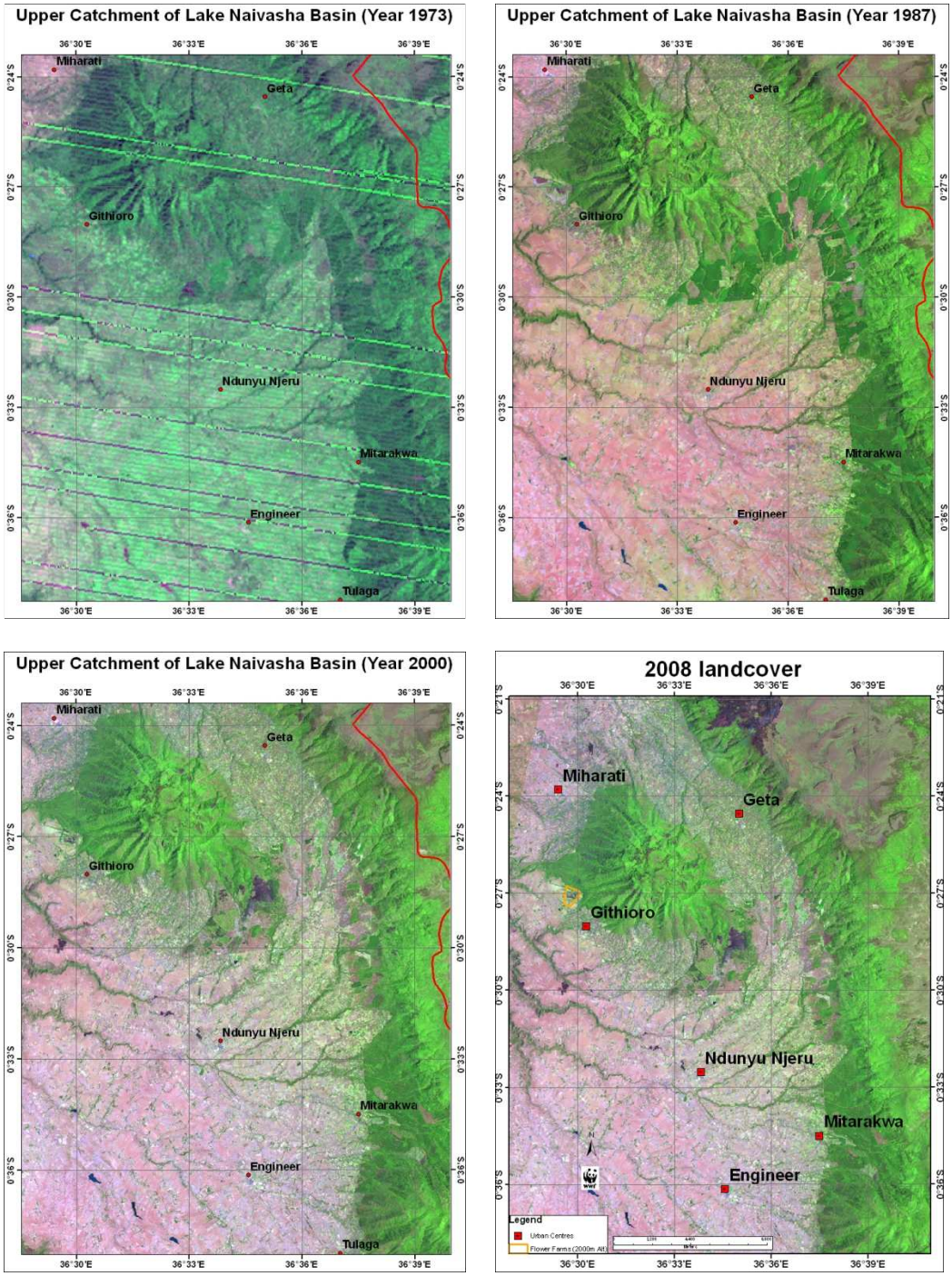


Figure 7, illustration of forest change in Kenya and the rest of the world



Figures 8, 9, 10 and 11, Deforestation on the Western slopes of the Aberdares, in the Eastern Part of Lake Naivasha`s water catchment. Lake Naivasha is not visible on the map and lies further in the south-West of the map.

The cumulative impacts of illegal logging and charcoal production have opened up most of the forest areas that cover the steep slopes along the Western Aberdares escarpment (UNEP, 2003). Large traces of forests have been destroyed and irregularly converted into settlements. Clearly, these maps don`t provide actual deforestation and forest degradation rates but can be used for the credibility of a baseline scenario in the PDD. Unfortunately, no maps on changing forest cover could be retrieved from the Mau Narok forest, located in the Western part of Lake Naivasha`s water catchment.

When a REDD project is being developed, maps and additional data are required to back up the deforestation rates mentioned in de baseline scenario in the PDD. During the internship in Kenya, the Department of Resource Surveys and Remote Sensing (DRSRS) has been visited to acquire more detailed mappings for the whole water catchment. It was found that satellite images for the water catchment of Lake Naivasha were only available in raw form and had to be modified to clearly show changes in forest cover. These adjustment would cost around $1800,-. Although these maps will probably consist of higher quality and back up the baseline scenario and the related deforestation and forest degradation rates, thus the “with- and without project scenarios”, they are not a necessity since other PDD have been validated with less quality mappings.

3.3.4 With and without project scenarios

The BioCarbon Fund (2008) provides two methods to make quantitative projections on future deforestation rates.

1: Linear Projection

The first method “Lineair Projection” uses information that is based on historical deforestation trends and applies linear extrapolation to project these trends in the future. These trends must be lowered if it is expected that deforestation rates become constrained in the future due to unfavorable developments for increasing deforestation, such as forests located on steep slopes or on land unsuitable for agricultural purposes.

2: Modelling Approach

The second method “Modelling Approach”, adjusts future deforestation rates to the functions of independent variables of drivers in deforestation. The method applies historical data on driver variables of deforestation that are expected to change during the project lifetime. This method can be adjusted throughout the crediting period.

The linear projection is preferred when the current conditions in the project area will not change significantly during the project lifetime. If this method cannot be justified due to expected changing conditions in the project area, the modeling approach is more suitable. Since there is no specific information on deforestation and forest degradation rates available for Lake Naivasha`s water catchment specifically, national data could be used for the development of both scenarios.

When developing the “with- and without project scenarios”, information of carbon pools is needed to determine to difference in emissions between the scenarios. Since national data on deforestation and degradation rates have been obtained but no data is available on current carbon pools in the Western slopes of the Aberdares and the Eastern slopes of Mau Narok, no estimation of the carbon potential for a REDD project could have been made. However, since deforestation and forest degradation in Lake Naivasha`s water catchment continues up till today, the fact that other carbon projects such as ARR are feasible from 5 hectare onwards, and that stakeholder consultations provided an rough estimation of 300ha for REDD sites, it can be concluded that there seems to be enough technical potential for a REDD project in Lake Naivasha.

3.3.5 Determination of leakage belt

According to the VCS standard, a PDD should include the establishment of baseline scenarios for three geographical areas: A Reference Region, A Project Area, and a leakage belt to address areas of leakage. According to the VCS Guidelines, the project area is the area delineated by the project’s boundaries within the reference region, where the project participants will implement activities to reduce deforestation and forest degradation. The leakage belt is the land surrounding the project area in which leakage is likely to occur. The reference region includes the project area and the leakage belt and is the analytic domain from which information about deforestation agents, drivers, and rates is obtained (VCS, 2008). After defining these three geographic areas, a REDD project is able to address leakage to a sufficient extend (Abbey et al, 2009).

Another tool to minimize leakage is the use of The Leakage Tree, provided in the Sourcebook for Land Use, Land Use Change and Forestry (LULUCF) published by the Biocarbon Fund. With this tool, a PDD can consider where potential sources of leakage might occur and design accordingly. Addressing leakage in Lake Naivasha`s water catchment will be dependable on the REDD standards that will be used since different REDD standards can require different tools for addressing leakage. However, for all REDD projects, potential sources of emissions due to leakage should be assessed, minimized, monitored and accounted for when estimating net emission reductions (VCS 2008; CCBA 2008).

3.4 Institutional assessment

This chapter describes the relevant laws, policies and stakeholders that will be involved in a REDD scheme. The chapter begins by introducing respectively the current forest policies, relevant forest governing institutions, and stakeholders in Lake Naivasha water catchment. This is followed by the response of the stakeholders on the questionnaire in which their opinions and key-findings will be presented. The section ends with examining how regulations and stakeholders could potentially affect a REDD project in Lake Naivasha.

3.4.1 Kenya forestry law

The first official forest policy in Kenya was published in 1957 and was updated in 1968. It was aimed on water catchment management and timber production characterized with strong governmental command and control policies and minimal stakeholder participation (KFS, 2007; Ludeki et al, 2006). With the worsening situation of Kenya's forest due to drivers of deforestation such as fuel wood demand, charcoal demand, poverty, and infrastructure developments, the government revised its forestry law and created 'The Forest Act 2005'. This law is considered as the most advanced legal framework in the country that provides a strong basis for forest governance in Kenya (Guilao, 2009). The most significant change introduced by the new Forests Act 2005 was the creation of a new institution, the Kenya Forest Service (KFS) which became responsible for the forestry sector. The KFS has a broad mandate which includes regulation of the forest sector, management of natural and plantation forests, protection of forests and forestry extension. Currently KFS manages most of the forests but under the new Forest Act it can devolve forest management functions to communities, private companies, individuals or other entities through concessions or other arrangements (KFS, 2010).

The new Forest Act 2005 introduces provision for empowerment of communities in forest management and more equitable sharing of benefits. This is in contrast with the historic strategy when communities had little or no role and access to subsistence forest resources, resulting in conflicts between communities and forest authorities (KFS, 2010). The new provisions are aimed at more equitable benefit sharing and improving livelihoods of forest dependent communities and thereby reducing the pressures on forests. One of the mechanisms for community empowerment and benefit sharing is through the establishment of Community Forest Associations (CFAs). KFS can allocate forests to CFAs and become mandated to manage the forest under a Participatory Forest Management Plan, agreed with KFS. (WWF, 2010) Benefit sharing arrangements are being discussed between KFS and communities and include access to firewood and other forest resources. KFS has in some few cases offloaded all carbon rights to communities who have invested in management and conservation of forests with climate change mitigation as an added benefit. Although KFS plans to speed up the establishments of CFAs throughout the country, few have been set up to date (KFS, 2010).

During the interviews, stakeholders were asked to identify potential conflicts between conservation policies and REDD projects. According to the stakeholders, current conservation policies and regulations will be complementary for REDD and conflicts are unlikely to occur. However, while national REDD policy is absent, REDD project proponents that aim to develop a PDD in a sub national scale should consider current laws and regulations on forest management in their project design:

- The Environmental Management and Co-ordination Act (EMCA), 1999. This act provides a framework for environmental and social development, harmonizes the various sector specific legislation impacting on environment and the management of natural resources.
- The Water Act, 2002. The Act provides for regulation of riverside forests, catchment forests, and protection of wells and springs in the forest and supports the user pays principle (for water benefits) and therefore opens opportunities for catchment forest management and conservation by forest communities.
- The Wildlife (Conservation and Management) Act, Cap 376, Wildlife resources occurring in forests are covered by the act and therefore it has implications for forest sector and REDD projects.
- The Agriculture Act, Cap 318. The Act‘s relevance for forests is that it regulates destruction of vegetation for agricultural expansion that is one of the main drivers of forest degradation and destruction, and therefore can complement the forests act.
- The Local Government Act, Cap 265. Substantial areas of forest are under the Local Councils in trust lands and the Act empowers County Councils to make by-laws to control cutting of timber, destruction of trees and shrubs and for Afforestation Reforestation and Re-vegetation activities and REDD+ activities.
- Trust Land Act. This act conceals regulations of land in special areas such as reserves and national parks (KFS, 2010).

3.4.2 Kenya REDD policy

Kenya is one of the 14 African countries that has pledged to participate in the World Bank`s Forest Carbon Partnership Facility (FCPF) REDD program to combat deforestation, forest degradation and climate change (Guilao, 2009). For a country to become eligible for REDD funding under the World Bank through the FCPF, it has to develop three documents namely: The R-PIN (Readiness Plan Idea Notes), The R-PP (Readiness Preparation Proposal) and The R-IP (Readiness Implementation Plan.

The R-PIN is a document by which a country demonstrates it has sufficient potential for a REDD scheme (deforestation and degradation issues which could be minimized by additional economic incentives) and provides an overview of land use patterns, drivers of deforestation, stakeholder consultation process and potential institutional arrangement for addressing REDD. If the R-PIN is approved by the FCPF, permission is granted for the design of an R-PP. In this document, a country must demonstrate its strategy to tackle the drivers of deforestation and forest degradation and provide official commitment and resources to set up institutions for REDD coordination nationwide. The last stage consist of developing the R-IP by which a country designs and implements national REDD coordination and is able to retrieve funding through the FCPF for realized REDD projects. If documents are approved, the FCPF could meet some of the implementation cost of the countries REDD readiness process.

Kenya provided its commitment to the FCPF REDD program in early 2008 and submitted its R-PIN in June which was accepted by the FCPF in July. In October the same year, Kenya participated in the FCPF Participants Committee meeting and signed the agreement to become a formally involved REDD participant country. By doing so, it received a grant request of 200.000 USD for the development of their R-PP (Guilao, 2009). Due to the characteristics of the voluntary carbon market, it is not a necessity for a country to join the FCPF REDD program to generate funds for the development and implementation of National REDD projects. Several Western development institutes such as the German ‘Federal Ministry for Economic Cooperation and Development’ and the ‘Canadian International Development Agency’ fulfill similar roles. However, the FCPF is the main international body for potential REDD funding and the provision of expertise and support for developing R-PINs, P-PP and R-IPs.

The Kenyan R-PP is currently being developed and is to be found in a draft version. During the interview with D.R. Maingi at the Kenyan National WWF office, it was found that the WWF has been involved in consultations with KFS in the development of Kenya`s R-PIN and R-PP. The WWF is also a member of the National REDD Steering Committee and the REDD Technical Working Group. It is expected that national REDD policy will be realized within 2 years and is presumably based on a national approach. This means that the government will develop REDD project guidelines and standards on governmental land and facilitate REDD for project proponents on private or community land.

The draft version of the R-PP already provides an overview of the structure in which the Kenyan government will organize National REDD policy. Next, a brief description of the Kenyan R-PP focal points is provided, as shown in figure 12**.**

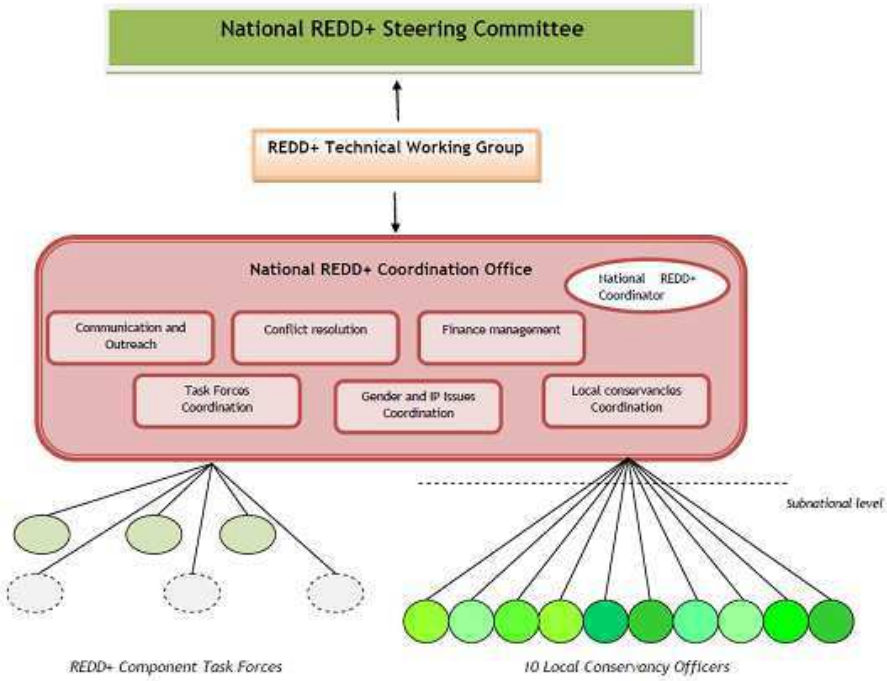


Figure 12, Proposed REDD+ Management Structure in Kenya (KFS, 2010)

The 'National REDD Steering Committee' will become operational upon approval of the R-PP and will be chaired by the Permanent Secretary in the Ministry of Forestry. The Kenyan Ministry of Forestry is well positioned to steer this Committee since it has mandate for overall forest development policies and ensures sustainable forest management, conservation, Afforestation Reforestation Re-vegetation programs (ARR) and water catchment protection. The Terms of Reference of the National REDD Steering Committee stipulates that it is responsible for policy guidance, inter-sectoral coordination, approval of plans and budgets, resource mobilization, delivery of REDD+ baseline emission levels, monitoring and evaluation, quality control and mechanisms for international collaboration on REDD+ (KFS, 2010). As a result of the R-PP formulation process, it is likely that a representative of the National Association of Community Forest Associations (NACOFA) will become included in the committee.

The 'REDD Technical Working Group' will conduct a key advisory role for the National REDD Steering Committee. It will also provide guidance to the National REDD Coordination Office, whose mandate for the coming years is the implementation of the R-PP. Members of the REDD Technical Working Group have expertise in forestry, wildlife management, timber production, land use, agriculture and finance and will be responsible for overseeing the R-PP implementation process in terms of monitoring, evaluation and general program evaluation (KFS, 2010).

The “National REDD Coordination Office” becomes constituted with the designation of an Interim National REDD+ Coordinator. The coordinator will be responsible for managing REDD specialists, administration and support staff. In addition, it will provide guidance to activities outlined in the R-PP such as coordination, communication, conflict resolution, finance management and carbon credit distribution (KFS, 2010). Finally, the ‘REDD+ Component Task Forces’ are small groups which will implement and manage National REDD Projects.

3.4.3 The role of communities in Kenyan REDD policy

At the moment, national REDD policy in Kenya has not come into force yet. According to Kenya`s R-PP, benefits sharing arrangement on carbon credits and forest resources between KFS and communities are currently being discussed and are not finalized. Although KFS has in some few cases offloaded all carbon right to communities that have invested in climate change mitigation, this issue is not covered in the new policy and the Forest Act 2005, and is therefore a potential source of future conflict (KFS, 2010).

From the perspective of CFAs in Naivasha, an ideal national government would support and facilitate a REDD mechanism and allow them to receive as much carbon credits as possible. Since most of the land in Lake Naivasha`s water catchment is owned by the government, rights to carbon assets are yet to be defined through negotiations between CFAs and KFS. Sub national based REDD agreements with KFS in Naivasha could allow REDD project coordinators and investors more control over their REDD project while national based REDD projects are likely to establish national standards for all projects in the country (Myers 2007; Abbey et al, 2009). According to Kenya`s R-PP, it is predicted that the country will design its REDD policy on a National approach. When it comes into force, there is a need for additional support and approvals from the Kenyan government in order to set up REDD projects and distribute carbon credits in Naivasha.

3.4.4 Forest relevant Stakeholders

The expansion of REDD projects in Kenya will be a joint effort of various stakeholders in the country. At this moment, while national REDD policy is still absent, different stakeholders are expected to share responsibilities and liabilities in REDD projects. KFS was identified as the national focal person for REDD projects. Other government institutions, international NGOs, civil societies and community-based or indigenous peoples organizations also contribute to the effectiveness of REDD project implementation. The following table provides an overview of the identified potential stakeholders, their current responsibilities, and their potential role in a REDD scheme, suggested by the stakeholders themselves. The stakeholder list has been composed with help of the WWF staff and its close partners. Most of the stakeholders were interviewed during the period between the 2nd of May and the 15th of June.

*Table 1, List of identified stakeholders, parties marked with an * could not been interviewed.*

Agency/Institution	Roles/Responsibilities	Potential Role REDD
National KFS - Kenya Forest Service (Incl. REDD working group), Nairobi	Kenya Forest Service is a State Corporation established in 2007 under the Forest Act 2005 to develop sustainable management of forest resources for Kenya`s social-economic development	Coordination upcoming national REDD policy in Naivasha, co-managing and facilitating REDD projects.
Sub national KFS, Forest Zonal Manager, Naivasha	The Forest Zonal Manager is the KFS representative in the water catchment of Lake Naivasha.	Enforcement (risks in insufficient capacity and forest information)
KWS – Kenya Wildlife Service, Naivasha	The lead agency in charge of protected areas on inventory and monitoring in protected areas, with a focus on habitat change and wildlife monitoring.	Enforcement (risks in insufficient capacity and forest information)
Ministry of Environment & Mineral Resources (National Environmental Management Authority NEMA)	Principle instrument of the Kenyan government for the implementation of environment related policies.	Is currently being restructured, could facilitate REDD coordination and enforcement
ICRAF (International Centre for Research in Agro Forestry)*	Undertakes forestry productivity studies in agro-forestry systems.	Able to facilitate technical assessment, forest information and carbon estimations
KEFRI (Kenya Forestry Research Institute)	Undertakes research in forestry and allied natural resources and plays a role in influencing polices on forest resource management.	Able to facilitate technical assessments and carbon pool estimations
Forest Action Network (FAN) NGO	Networking organization that works in collaboration with stakeholders in the natural resource sector on management of natural resources, especially trees and forests	Could contribute to a Project Design Document and developing an equitable benefit sharing system
Green Belt Movement (GBM)* NGO	Has played critical roles in bringing issues relating to forests to the attention of the public and holding the government accountable on these issues.	Experienced in ARR projects, could facilitate in carbon estimations, community involvement
World Wide Fund for Nature (WWF) NGO	Aims to stop the degradation of our planet's natural environment, and build a future in which humans live in harmony with nature by saving biodiversity, and Reduce humanity's impact on natural habitats.	Developing a Project Design Document, general REDD activity coordination, design and manage a benefit sharing system
Community Forest Assocciations (CFAs)	Communities organized in CFAs to become legal partners and derive benefits in forest management according to the Forest Act 2005	Forest restoration, three planting, monitoring and protection of REDD sites
Flamingo / Homegrown Ltd. Private sector	Horticulture representative, chairman Lake Naivasha Group & Water User Association.	Able to facilitate and support REDD, potential source of funding

Marula Valley Farm (Private Sector)	One of the biggest ranches near Lake Naivasha with agricultural and livestock activities	Prefers to implement carbon credit projects (REDD or ARR) on an individual basis
Lake Naivasha Riparian Association (LNRA) Private Sector	Founded in the 1929 by the landowners surrounding the lake, its purpose was to adjudicate the marginal land that is covered and uncovered by the changing level of the water – the riparian land.	Is currently bankrupt, could help coordinating and facilitate REDD in the Riparian Areas near the lake.
Lake Naivasha Grower Group (LNGG) Private Sector	Voluntary associations of growers striving to balance commercial and environmental sustainability.	Able to facilitate and support REDD, potential source of funding
United Nations Environment Program (UNEP)	**The UN-REDD Program** is the United Nations Collaborative initiative on Reducing Emissions from Deforestation and forest Degradation (REDD) in developing countries.	Education, best practices, consultancy
Department of Resource Surveys and Remote Sensing, Kenya (DRSRS)	Research institute which conducts aerial monitoring and evaluation of natural resources	Monitoring project area for leakage and permanence, maps for baseline scenario
Wildlife Works, REDD coordinators Kasigau REDD Project	Wildlife Works' mission is to harness the power of the global consumer to create innovative and sustainable solutions for wildlife conservation.	Is willing to consult, share information and provide workshops on REDD.

3.4.5 Interview results

The paragraph provides key-results found during the interviews with the stakeholders. During these meetings, the list of identified stakeholders was presented to determine whether some stakeholders were missing or overrepresented. The questionnaire, which can be found in attachment 1.3, covered the following topics of which the main results will be presented. A special paragraph has been devoted on the interview with the coordinators of the first REDD project in Kenya, the Kasigau Corridor REDD Project.

Introduction Final Thesis and REDD

Except from stakeholders such as the KFS and WWF staff in Nairobi, all stakeholders in Naivasha were unaware of the REDD mechanism and the voluntary carbon market. Before the interview could be conducted, a small presentation was given to explain the REDD mechanism after which the respondents could be interviewed. It has been found that that no REDD infrastructure of related workshops were present in Lake Naivasha`s water catchment. The Kenyan government has not diffused knowledge, capacity building or upcoming policy for REDD in rural areas.

Drivers of Deforestation and Forest Degradation in Lake Naivasha`s water catchment

During the interviews it became clear that deforestation and forest degradation is still an issue in Lake Naivasha`s water catchment. The respondents provided different drivers for this but the following were mentioned most often: land encroachment for agricultural purposes, illegal logging and resource extraction in the forest, bad governance (enforcement), population growth, competition for land and poverty. The respondents were then asked how these drivers should be addressed. The following answers were commonly mentioned: Improvements in legal frameworks such as land use policies, additional enforcement of the Forest Act 2005, provision of alternative livelihoods, capacity building and education. Last but not least, the respondents were asked to mention the challenges their organization faces in reducing deforestation and forest degradation. The main results were: inadequate capacity and funding, unwillingness of forest managers to adequately enforce the laws (corruption), and poverty related to substantial profits in illegal logging.

Institutional capacity and REDD

Respondents were asked to provide their willingness and capability to engage in a REDD mechanism for Lake Naivasha. Most of the comments included that they were willing to engage in REDD but lacked the resources to invest in it. Many respondents mentioned that KFS should play a key-role in a REDD scheme but due to insufficient capacity, the WWF was seemed as a suitable lead agency. Next, the respondents were asked to identify challenges their organization might face in a REDD. Most of the concerns applied to equitable benefit sharing, monitoring & enforcement and to a lesser extend capacity building for REDD. According to the stakeholders, corruption in the government is a relevant issue and communities have regularly been affected by it.

Design and implementation of REDD in Lake Naivasha`s water catchment

For this chapter of the questionnaire, it became clear that there is currently a lack on the availability and quality of information on forest- and carbon resources in Lake Naivasha`s water catchment. All respondents mentioned that the land- and tenure rights near Lake Naivasha are well recognized and enforced, although there are exceptions in the upper catchments. Furthermore, the respondents were asked to recommend stakeholders for conducting several technical parts of a REDD methodological framework such as e.g. estimating carbon pools, developing a baseline scenario, dealing with leakage and managing an equitable finance distribution system. Considering the carbon pools estimations and the development of a baseline scenario, Universities, KEFRI, and KFS were mentioned most. Managing leakage was often attributed to CFAs, KWS and NGOs such as the WWF and FAN while DRSRS seemed appropriate to monitor leakage and permanence. During a meeting with John Kibaki, Chairman of the Central Highland Forest Conservation Committee, It was found that the provincial administration could play a vital role in capacity building and mobilizing communities. They could also become involved in an equitable finance distribution system together with CFAs, KFS and the WWF.

Considering a benefit distribution system, it was found that Payment for Environmental Services (PES) is a relevant and growing concept in Lake Naivasha`s water catchment. Through this mechanism, farmers in the upper catchments are being paid by water users in the lower catchment to use environmental friendly products such as non-toxic pesticides and fertilizers. This results in a higher water quality in the river and eventually in the lake which benefits flower farms further downstream. This mechanism has been active for several years and its financial distribution system could be very useful for an equitable benefit distribution scheme for REDD activities. It is therefore recommended for the WWF to further study the extend of which the PES distribution scheme could be applicable for a REDD mechanism.

The relation of local communities and the private sector with forestry

According to most of the stakeholders, local communities could be involved in tree planting, restoration and protection of degraded forests (REDD+), and managing REDD sites. They should also be educated in sustainable land management and could be provided with efficient cooking stoves through carbon credits. There were some doubts on the potential cooperation with the private sector in a REDD scheme, since they were accused of deforestation in the riparian land near the lake. The private sector in Naivasha generally consists of large landowners which could be harsh in negotiations on the distribution of carbon credits. However, the interview with Homegrown, LNGG and LNRA gave the impression that the private sector was willing to help facilitate a REDD scheme for Naivasha since they are concerned about the deforestation and forest degradation rates in the upper catchments. They already contribute to Payments for Environmental Services (PES) but could gain additional benefits through a reduction in deforestation and forest degradation in the upper catchments.

In the interview with Richard Fox, sustainable business director of Homegrown, the idea was created to possibly link the horticulture industry in climate neutrality by means of REDD or ARR projects to offset their emissions. In this way, they operate on a climate neutral basis which is beneficial for their marketing but also for increasing water levels and water quality. However, this idea was briefly discussed and although it might be an appealing concept to get the private sector involved, additional meetings and negotiations will be required to determine the commitment and resources that the private sector is willing to invest in a multi-institutional designed REDD scheme.

Several stakeholders raised concerns about managing forest dependent communities in a REDD scheme. Since REDD imposes sustainable and more restricted use of forest resources, there is a need for providing alternative livelihoods to forest dwellers and forest dependent communities. In addition, putting additional value on forested land could lead to a competition and an increase in the demand for agricultural land. This could impose a threat to managing leakage and permanence in REDD projects. Also, some concerns were raised in terms of transparency and job creation. REDD project developers should design and promote a transparent PDD that takes into account which communities are involved, why, and who are able work in the REDD scheme. Since there are many small landowners in the upper catchments, transaction costs for a REDD project with many stakeholders involved could become substantial.

Interview Kasigau Corridor REDD project coordinators

During the fifth week in Kenya, a fieldtrip to the Kasigau corridor was organized by the WWF to meet the REDD project coordinators of Wildlife Works to share information and experiences. Their REDD project focuses on forest degradation since there was an extensive unsustainable charcoal chain active in this region. Wildlife Works provided the local communities with a more sustainable livelihood without asking them to give up their forest resources: Eco-Charcoal Briguettes called MakaaZingira. Simple harvesting and kilning technologies were provided to make charcoal production more profitable and sustainable. MakaaZingira is made from the carbonized twigs of fast growing regenerative shrubs. This sustainable charcoal production conserves the biodiversity of the forest and reduces soil erosion and desertification. It has been certified through the Soil Association accredited Forest Stewardship Council (WLR, 2010).

Figure 12, Eco-Charcoal Briguettes called MakaaZingira

The Kagisau Corridor REDD project has been validated under the CCB standard and already receives carbon credits. It was found that Wildlife Works divided the revenue into three distinctive purposes. One third of the carbon credits is distributed directly to the communities who live in the project area and contribute to the protection and management of the REDD project area. Antoher third is being invested by Wildlife Works in accordance with the local communities in sustainable development projects such as an organic clothing factory, an organic greenhouse, sustainable farming, schools and eco-tourism (Lung, 2010). The last third of the revenue is attributed to Wildlife Works for transaction costs and coordinating, improving and expanding REDD activities in the corridor. Small parts of the revenue are re-allocated to KFS and KWS who are responsible for monitoring and enforcement.

An innovative concept discussed was a so called REDD credit insurance mechanism for local communities. When REDD projects (or ARR projects) are being established, the revenue in the first years of the project lifetime are generally smaller than the revenues after 5 or say 8 years, due to project improvements in terms of transaction costs, falling learning curves (and costs), and the carbon cycle. When degraded forest is being restored or additional trees are replanted (REDD+), it will take some time before those threes reach their maximum sequestration rate. When the threes become more healthy and mature, their sequestration rate increases and will eventually fall again since old trees won't grow much further and most of the carbon has already being stored during the threes lifetime. For REDD and ARR projects, this leads to an unequal distribution of carbon credits revenue during the project lifetime.

A financial viable organization such as Wildlife Works has been able to implement a mechanism to ensure that carbon credits are equally distributed in each year of the project lifetime. This can be done by simply calculate the average amount of carbon credits per year and add funds for local communities in the years before this average revenue is reached. When the project receives surpluses in carbon credits compared to the yearly average, the organization who lends the additional funds retrieves its money back. A key advantage to implement such an insurance mechanism is that local communities retrieve sufficient benefits right from the start of the project which makes them more motivated and secure to implement REDD activities. However, there is a substantial risk involved: if the REDD project fails to reach all carbon credits throughout the project lifetime, for example to due leakage or permanence issues, it would be very difficult to retrieve the money back. Therefore, trust between the REDD coordinating organization and the local communities has to be solid enough in order to take this risk.

3.5 Socio-Economic assessment

This chapter provides information on social and economic aspects related to the feasibility of REDD projects. In the first paragraph, a short introduction is given on the relation of communities and forestry. Secondly, economic considerations are described that provide an overview of the key-elements that determine the financial viability for REDD projects. Thirdly, the social and economic conditions of Lake Naivasha`s water catchment is described. Finally, these local conditions are reflected to economic key-elements in a socio-economic feasibility analysis to determine challenges and opportunities to organize a REDD project for Naivasha specifically.

The majority of rural communities in developing countries are highly dependable on forest resources and environmental services that forests provide. Strict forest policies or even incorrectly designed REDD projects might protect the forest from deforestation and degradation activities but may also destroy elements of community livelihoods. Therefore, it is necessary for REDD project proponents to consider the utilities that communities derive from the forest to ensure equity and social acceptance and reduce risks related to leakage and permanence. In order for REDD projects to become successful, it is important to address to identify whether local communities are in need of any compensation due to restricted forest use. REDD standards encourage projects that consider benefits beyond carbon sequestration and GHG mitigation including preservation of indigenous and cultural practices (Abbey et al, 2009).

3.5.1 Economic considerations on REDD

Before a REDD project focuses on the livelihoods on forest dependent communities and design the PDD accordingly, a cost benefit analysis has to be conducted to determine whether a REDD project will be economically feasible at all. After the determination of the carbon pools that could be saved (or restored) and hence sold as carbon credits, the costs for a REDD project needs to be estimated. Most published estimates of the costs of REDD are based on models using data on the three main cost components of forest carbon schemes: the opportunity costs of forest conservation, implementation and transaction costs, and project based costs (Olsen, 2009).

When a REDD project proponent estimates the costs of REDD, a question could be raised: “cost to whom?” Pagiola and Bosquet (2009) define three categories in the “costs of REDD” and distinguish between (A) cost to the country, (B) costs to individual actors, and (C) budgetary costs to the government. This study will outline the costs to individual actors since the perspective of a REDD scheme in Naivasha is based on a REDD project proponent currently operating in a sub national approach. According to Pagiola and Bosquet (2009), it is important to carefully estimate the cost to different parties since costs and benefits to one group could be another group’s benefits. In addition, identifying the distribution of costs provides comprehension in incentives to deforest or degrade forest and hence, provides important guidance for PDDs.

3.5.2 Opportunities costs

The largest costs component of any REDD scheme is likely the compensation of governments or communities for their opportunity costs of conserving the forest. Opportunity costs of forest conservation can be defined as the net income per year (or net present value) that is sacrificed as a result of not logging (unsustainably) or land conversion to for example agriculture. Opportunity costs are thus the profits that could be made by continuing business as usual. Several factors affect opportunity costs for a REDD scheme: the type and location of forests considered, primary commodity prices, suitability of forest land for alternative uses and inputs & technology.

The location of a forest and the value of the type of wood of which it consist have implications to incentives for (illegal) logging. The first trees that are likely to become deforested are those situated close to roads or settlements. Once this land is cleared, trees further from the village will be cut and this process continues until labor, transportation and reducing profits lead to a diminishment in (illegal) logging and deforestation activities. Implementing REDD projects in highly threatened areas is desirable and profitable in terms of carbon credits, but the costs of these projects are high: forest at risk of conversion could be threatened by poor defined property rights, proximity to roads and suitable for high valuable cash cropping (Olsen, 2009).

Primary commodity prices are determinants of opportunity costs since they are a component of returns to alternative land uses. Future commodity prices will undoubtedly affect the costs of REDD as investors face amongst others a risk in investments since decisions are based on conditions today but uncertain conditions in the future. However, REDD projects may be subjected to less price vitality when governments are more likely to take action in stabilizing carbon markets (Olsen, 2009).

When forested land is converted, there are significant profits from timber in the first year of conversion. Also, most of the initially deforested and accessible land is likely to be suitable for agricultural or livestock grazing activities. Forests situated on mountain slopes, on poor soil or in unfavorable (local) climate conditions are less attractive for alternative land uses. The availability and quality of e.g. agricultural products and technology could also contribute to whether forested land becomes degraded or deforested. For example, if cheap and efficient fertilizers are easy to obtain, more land clearance could occur due to enhanced profits in agricultural activities. This also counts for technology: if farmers have access to technologies which intensify the growth of their crop or supply sufficient water and nutrients throughout the year, this increases their profits and hence the feasibility to clear land for agriculture.

3.5.3 Implementation and transaction costs

The second major cost component of a REDD project are implementation and transaction costs due to e.g. negotiation, implementation, verifications, certification, management, monitoring and enforcement. Implementation costs are the costs related to implementing a REDD project to reduce deforestation and forest degradation and improve carbon enhancement (REDD+). Examples are protecting a forest from illegal logging, relocating timber harvesting to sustainable practices or implementing plantations and agricultural intensification (Pagiola and Bosquet, 2009). Implementation costs can be reduced by economies of scale (several projects under one coordinating institute) and economies of scope (tasks attributed to existing conservation institutes).

Transaction costs are additional costs due to transactions with internal parties such as local stakeholder consultations and with external parties such as buyers, sellers, market regulators (carbon brokers) and verification agents to ensure that a particular amount of emission reduction has been achieved (Pagiola and Bosquet, 2009). Transaction costs differ from implementation because they are not contributing to the reduction of deforestation and forest degradation but are necessary to ensure transparence, credibility and efficient management of REDD projects. Implementation and transaction costs could be expressed in terms of cost per ton of CO_2 or per hectare and added to the estimated opportunity costs. Implementation and transaction costs of REDD projects will vary according to local drivers of deforestation, the capacity of institutions to implement and enforce forest management and the type of REDD mechanism (sub national, national or nested approach).

3.5.4 Project Based Costs

Another important economic consideration is costs related to an individual REDD project. Individual REDD projects impose different challenges in terms of implementation and transaction costs. The implementation costs to develop a PDD for a REDD project can vary depending on the experience, knowledge, capacity, and wages obtained by project proponents and staff. The financial infrastructure in a REDD project influences the transaction costs: transaction costs for a large number of small transaction due to a large amount of stakeholders involved are likely to be high (Börner and Wunder, 2008).

3.5.5 Social and Economic conditions of Lake Naivasha`s water catchment

Due to time constraints, this study has been unable to set up an household survey but the input derived from interviews with stakeholders is used to retrieve the socio-economic situation in Lake Naivasha`s water catchment. This paragraph provides the social and economic conditions in terms of drivers of deforestation, politics, land ownership and land tenure, and willingness to accept a restricted forest use respectively.

3.5.6 Drivers of deforestation

The identified key-drivers of deforestation and forest degradation in Lake Naivasha`s water catchment are land encroachment for agriculture and illegal logging. Both drivers are related to population growth and poverty in the region. Land encroachment occurs in relatively small amounts of land encroached by a large number of individuals. According to the several stakeholders, if a farmer owns 1 hectare of land and its offspring reaches adulthood, it will divide its land equally to for example its three children. When those children have offspring, they will divide this land again equally to their three children. Eventually, the land inherited becomes too small to generate sufficient income so communities start to clear more land to produce additional crops to make enough profit to survive. Some of the poor in Lake Naivasha don`t own land at all and if they are unable to find a job, they become dependent on (illegal) abstraction of forest resources. The high population growth inevitably leads to additional pressure on forests and natural resources. Most of the forested land near Lake Naivasha has been cleared either for profits from wood or for the expansion of agricultural activities. Hence, the forests still left are situated away from the lake in the Aberdares to the East and Mau Narok West to the lake. According to the stakeholder interviews, substantial profits are still being made with illegal logging.

3.5.7 Politics, land ownership and land tenure

Most of the respondents mentioned that corruption and politics play a big role in Naivasha. During elections and critical political situations, land is sometimes granted to communities without the provision of official ownership or land tenure right. On a national scale, communities and tribes were allocated from their land (for example those located in national parks) and were relocated in different provinces. The type and amount of land attributed to these communities differ according to their political views and power. According to several stakeholders, communities displaced in this way are living on land of which they don`t always have formal ownership or land tenure rights. However, in contrast with the land in the upper catchments, land ownership and land tenure rights near the lake are generally well recognized and enforced, partially due to the vested horticulture industry.

3.5.8 Willingness to accept a restricted forest use

Time constraints made it impossible to set up a household survey to determine to which extend communities are willing to accept a restricted forest use. However, when communities are consulted in this way, they have a choice in continuing on business as usual or adapt alternative livelihoods and become compensated for doing so. This compensation can be determined by studying how much financial net benefits can be derived from a REDD project, and how much money can be granted for compensating a restricted forest use. This data is yet to be developed but according to the stakeholders, the average income of half of the communities in Lake Naivasha`s water catchment is less than $1,5 USD per person a day and expectations on REDD were high.

3.5.9 Socio-economic feasibility analysis REDD in Lake Naivasha

Regarding opportunity costs, most of the easily obtainable timber has already been harvested. Most of the forests left are located in less accessible areas such as the mountain slopes of the Aberdares and Mau Narok. Agricultural activities on these lands are harsh due to steep slopes, poor soil quality and a lack of good transportation infrastructure. However, deforestation and forest degradation still occurs in these areas due an increasing demand in agricultural products and substantial profits in illegal logging. However, since most of the population is making less than $1,5 USD per person a day, a REDD project is probably able to provide alternative livelihoods or compensation to forest dependent communities and forest dwellers.

A household survey could be useful to determine the willingness to accept a restricted forest use and the amount of compensation that is required. Politics, land ownership and land tenure might impose more stubborn challenges when communities and forest dwellers are needed to be re-allocated out of forested lands. An alternative could be their direct involvement in a REDD project to create jobs in REDD related activities. Further research including household surveys could provide more insight in managing the potential re-allocation of communities and forest dwellers.

The implementation costs of a REDD scheme in Naivasha could be relatively low compared with REDD projects elsewhere in the country due to the large number of NGOs, conservation institutes and to an existing carbon credit project (ARR) in the Aberdares. Tasks and responsibilities could be divided amongst stakeholders of whom some are already part of existing organizations, e.g. monitoring could be done by communities (CFAs) and enforcement by KFS and KWS. However, developing a REDD PDD, validating the PDD and the project in practice, and selling the project in the carbon market could become a major cost component. Also, it reasonable to expect that REDD projects aimed at both carbon sequestration and delivering biodiversity and community co-benefits will be more costly to produce, since project design, monitoring and verification could be more complex (Börner and Wunder, 2008).

Nevertheless, current trends in the voluntary market suggest that there is a willingness to pay for these additional costs through price premiums for high quality REDD projects (Olsen, 2009). A REDD+ mechanism which encompasses forest conservation, sustainable development, and the enhancement of carbon pools through replanting native forest species in degraded ecosystems could have additional co-benefits on biodiversity, erosion, water quality and water levels in the lake. In contrast to ARR projects, that could result in mono-plantations and the potential use of invasive alien species which could have adverse impacts on biodiversity (Karousakis, 2007).

From an efficiency point of view, a REDD scheme with a small number of REDD sites consisting of huge parts of land is clearly preferred to a large number of REDD sites consisting of small pieces of land. However, not favoring the latter would exclude poor small landowners and favor wealthy large landowners and corporations, potentially undermining public support for the REDD project. (Ogonowski et al, 2009). An attractive alternative which could lower the transaction costs would be to set a minimum REDD project size but allow actors to 'bundle' their efforts, where individual land owners could organize themselves in a single entity while benefits are distributed throughout the community(Karousakis, K. 2007; Ogonowski et al, 2009). Another alternative could be allocating benefits to an indigenous group as a whole, or to a territory occupied by small landowners (Ogonowski et al, 2009).

4 Lessons Learned

4.1 Conclusions

This section will first provide conclusions on previous chapters of this study. Next, the research questions are recapitulated and answers are provided to an achievable extend.

Currently, the compliance carbon market under the Kyoto Protocol does not certify emission reductions from Reduced Emissions from Deforestation and forest Degradation (REDD), in contrast with the recently evolved voluntary carbon market, which operates outside of international agreements. In general, REDD can be perceived as a rewarding mechanism for countries that have been unable to further reduce deforestation and forest degradation. Countries that do managed to cut their deforestation and forest degradation rates are not able to benefit from REDD, since they won't match the "additionality" criteria. Through REDD, further diminishment of forests in developing countries can be reduced and it is expected that REDD becomes included in a Post-Kyoto regime.

The technical assessment provided the technical potential of carbon credits that could be derived through a REDD scheme (at least 300 hectares of unprotected forest). Community Forest Associations such as GETA and Kingangop have limited potential to become involved in a REDD scheme since they won't match the additionality criteria for REDD projects, in contrast with forest depended communities in Mau Narok. However, they are able to generate carbon credit through other forms of carbon credit such as Afforestation, Reforestation and Re-vegetation projects under the Clean Development Mechanism, which could be realized in a joint effort with a REDD+ project.

The institutional assessment provided an overview of current relevant regulations for REDD projects in Kenya and on upcoming national REDD policy. The latter is expected within 2 years and until then, REDD projects initiated in Kenya will be conducted in a sub-national approach. Although the government is able to provide guidance and support for REDD project proponents, it might also impose additional regulations and hence reduce the flexibility of REDD project proponents.

The socio-economic assessment provided an overview of the social economic conditions in Naivasha, characterized by increasing population, land encroachment for agriculture, and a high dependency on natural resources. It also showed that a REDD+ scheme (combined with other carbon credit projects) is most welcome in Naivasha. However, it is expected that forest dependent communities can be negatively affected by forest use restrictions imposed by a REDD scheme. It is therefore required to compensate these communities, either with alternative livelihoods, carbon credits or direct involvement in REDD activities. To secure interest from REDD investors, reduce risks in project failure, benefit local communities, and ensure a premium price for carbon credits, a REDD project should also focus on creating co-benefits for biodiversity and local communities.

Research question A:

What are the conditions (e.g. prerequisites) in accessing the global Carbon Credit Market in forest management for the Lake Naivasha region, what are the challenges and how can these be addressed?

There are three universal and several project dependable criteria to access the voluntary carbon market and achieve REDD(+) credits. First, forests endangered by deforestation and forest degradation have to match the "Additionality" criteria. REDD activities have to be additional to the status quo where no forest conservation policies are implemented. Second, REDD project proponents have to address the potential re-allocation of deforestation and forest degradation activities or "Leakage", in order to gain surpluses in carbon sequestration. Third, REDD project proponents have to ensure that natural and anthropogenic risks are reduced to a minimum to address the criteria of "Permanence". Next to these universal criteria, REDD project proponents are recommended to use REDD standards to address best practices and proven criteria in forest management.

The main challenges are the lack of capacity and resources of relevant stakeholders, corruption in governmental agencies, and concerns in equitable benefit distribution. These challenges can be addressed in respectively designing the WWF as the lead agency in partnership with the KFS for REDD (and potential ARR) projects, developing a transparent Project Design Document, and integrate the REDD benefit distribution system into the existing financial infrastructure of the Payments for Environmental Services (PES) scheme.

Research question B:

Who are the key-stakeholders (e.g. community representatives, local government), what are their motives, and to which extend are they committed and capable to perform the activities needed for Reducing Emissions from Deforestation and forest Degradation?

The key-stakeholders in a REDD(+) scheme for Naivasha are KFS, NEMA, CFAs and forest dependent communities that yet have to develop CFAs, GBM, FAN, Homegrown, LNGG and the LNRA. The governmental agencies such as KFS and NEMA are willing but insufficiently able to play a coordinating and enforcing role for REDD due to a lack in capacity. Although all community representatives are willing and capable to engage in REDD(+), CFAs that developed PFMPs are limited to become involved in a REDD scheme, in contrast with forest depended communities that yet have to develop PFMPs. However, CFAs are able to generate carbon credits through ARR projects. GBM and FAN are potential partners with capacity for co-developing a Project Design Document. Homegrown and LNGG and are capable and willing to support and facilitate a REDD scheme. Further negotiations will determine whether they are interested in becoming potential investors or buyers of the project. .

Research question C:

What kind of effective and equitable scheme for monitoring, enforcement and financing can be designed?

An effective and equitable scheme for monitoring, enforcement and financing for a REDD project at Lake Naivasha is best organised by the WWF as lead agency in close partnership with KFS and forest depended communities. In this way, the WWF is able to design a transparent Project Design Document for equitable benefit sharing, which can become partially integrated in the financial infrastructure of the “Payment for Environmental Services” system. Although KFS is the most suitable stakeholder to enforce REDD policies, they currently lack capacity which could impose a risk to the project. However, forest depended communities have high expectations on REDD and their participation and cooperation can contribute significantly in protecting the project areas.

4.2 Recommendations

This section will provide recommendations for the WWF to develop and determine the exact potential of a REDD scheme in Naivasha. It also provides the steps needed to develop a Project Design Document and its validation.

1. *Continue with REDD and ARR for Lake Naivasha*

Lake Naivasha is a strong case for a REDD project and according to stakeholder consultations, there is enough technical potential for a REDD(+) scheme. REDD receives increasing international support and is likely to become a major climate change mitigation strategy to be implemented in developing countries all over the world. REDD and its standards are continuously being improved and will play an increasing vital role in forest conservation and sustainable development.

The Kenyan government is developing national REDD strategies which are likely based on a national approach. This could lead to governmental regulation for REDD projects and it is recommendable to develop a REDD project in Naivasha in advance of national REDD policy. In this way, REDD project proponents are likely to have more flexibility in designing their projects infrastructure and the distribution of REDD credits.

Next to REDD, it is recommended to further study the possibilities for additional ARR projects in Lake Naivasha's water catchment (possibly combined in a REDD+ scheme). In this way, CFAs that developed conservation policy through PFMPs can be provided with an alternative to generate carbon credits through other forms than REDD.

2. *Define the objectives of a REDD project in Naivasha and choose REDD standard(s) accordingly*

The choice of the REDD standard will be dependable on the objectives of the WWF REDD scheme in Lake Naivasha. Regarding the REDD standards, the VCS standard focuses more on the perspective of carbon accounting and technical issues while the CCBS is more demanding in project design and co-benefits for biodiversity and communities. Plan Vivo aims to combine best practices of both standards with a special focus on poverty alleviation. Since the VCS standard is currently in development and therefore not applicable, the CCB standard and Plan Vivo are the remaining alternatives at the moment.

Wildlife Works designed their REDD project according to the CCB standard and it is recommended to the WWF to use the same standard and establish a partnership with Wildlife Works. In this way, both parties could share knowledge and experiences and reduce implementation costs. In addition, transaction costs of project verification could

decline since a CCB verification agent could validate both the Kasigau REDD project and the Lake Naivasha REDD project during one visit in Kenya. While not necessary, combining several standards will contribute to the robustness of the carbon credits and will attract more buyers at a higher price.

3. *Define the finite project boundaries of a REDD project*

The first step to determine the exact potential of carbon credits through a REDD mechanism is to define the project boundaries, in terms of spatial boundaries, temporal boundaries and carbon pools throughout the water catchment. It is recommendable to include areas which are highly endangered by deforestation and forest degradation since the difference in emissions in the "with and without project scenarios" in these areas is likely to be high.

4. *Estimate potential revenues of REDD through an extensive technical assessment and support for REDD*

A technical assessment, preferably conducted with the expertise of GBM, is needed to estimate the carbon pools in the project boundaries. Next, the amount of carbon has to be subjected to credible deforestation and forest degradation rates to determine the baseline- and the "with and without" project scenarios. This will provide an overview of the amount of emissions that can be saved through REDD intervention and can be sold as carbon credits.

In addition to the revenues that could be obtained through carbon credits, it is recommendable to further determine the potential support from the tourism and horticulture industry for a REDD scheme. Next to increasing benefits such as improved water quality and water levels in the lake, already partially derived from the current Payments for Environmental Services (PES) mechanism, the tourism and horticulture industry could have an interest in offsetting their emissions and operate on a climate neutral basis to enhance their marketing power.

5. *Determine the costs of REDD for a detailed cost-benefit analysis*

The next step is to determine the costs associated with a REDD project, in terms of developing a Project Design Document, project implementation costs, transaction costs for project verification and compensating communities or providing them with alternative livelihoods through REDD credits. A household survey is recommended in order to determine the compensation needed for forest dependent communities. The sum of these costs can then be compared to the potential revenue of REDD carbon credits to provide a detailed cost-benefit analysis for the economic feasibility of a REDD scheme.

6. *Develop a Project Design Document (PDD) according to the chosen standard(s)*

When it is certain that a REDD project in Naivasha is economically feasible, the next step is to develop a PDD according to a REDD standard. In this PDD, the following aspects amongst others have to be provided: a general description of the project area with environmental and social conditions, a baseline scenario with deforestation and forest degradation rates including the amount of carbon that can be sequestered compared in the "with and without project scenarios", a demonstration that the REDD project matches the additonality, leakage and permanence criteria, strategies to reduce emissions from deforestation and forest degradation and enhance co-benefits for biodiversity and communities, and finally strategies to distribute and invest revenues from REDD carbon credits.

7. *Use PES infrastructure for equitable benefit sharing of REDD, modified and managed by KFS and WWF*

An extensive financial distribution system for PES is already present in Lake Naivasha`s water catchment. These distribution channels could potentially be used for distributing REDD carbon credits as well. However, it is most likely that a REDD project will need additional channels for carbon credit funding and these are yet to be developed. It is recommendable that the WWF establishes itself as the lead agency for REDD(+), who, together with KFS, controls the entire financial distribution system of the REDD(+) scheme in Lake Naivasha`s water catchment. The WWF seems a very suitable candidate for this task since it has an excellent reputation amongst the stakeholders and the forest dependent communities.

8. *Sell the REDD project in the Carbon Market*

When the REDD project is completed and validated, carbon credits can be derived through investors in the project. Potential investors (or partial buyers) could be the horticulture- and tourism industry since they could operate in a climate neutral basis and derive additional environmental benefits. An alternative could be selling the project to Banks, companies or governments. It is recommended to further study the possibilities to sell the REDD project in the carbon market and identify potential investors in advance of completing the REDD project.

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Appendixes

.1 Abbreviations

ARR	Afforestation, Reforestation and Re-vegetation
CCBS	Climate, Community and Biodiversity standard
CDM	Clean Development Mechanism
CFA(s)	Community Forest Association(s)
CER	Certified Emission Reduction
CO_2	Carbon Dioxide
COP	Conference of the Parties
CCX	Chicago Climate Exchange
DRSRS	Department of Resource Surveys and Remote Sensing
ETS	Emission Trading Scheme
FCPF	Forest Carbon Partnership Facility of the World Bank
GBM	Green Belt Movement
GHG	Greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
KEFRI	Kenya Forestry Research Institute
KFS	Kenya Forest Service
LNGG	Lake Naivasha Grower Group
LNRA	Lake Naivasha Riparian Association
LULUCF	Land Use, Land-use Change and Forestry
NGO	Non Governmental Organisation
PDD	Project Design Document
PES	Payments For Environmental Services
PFMP	Participatory Forest Management Plan

RAMSAR	The oldest multilateral agreement on nature conservancy of the United Nations, named after the Iranian City “Ramsar” where in 1971 a conference was held. This convention came into force in 1975 and in 2005 it protected around 1400 water catchments throughout the world with great importance for birds and wildlife.
REDD	Reducing Emissions from Deforestation and forest Degradation
REDD+	Similar to REDD but complemented with carbon enhancement and co-benefits to biodiversity and communities
R-PIN	Readiness Plan Idea Notes
R-PP	Readiness Preparation Proposal
R-IP	Readiness Implementation Plan
UNFCCC	United Nations Framework Convention on Climate Change
UN-REDD	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
VCS	Voluntary Carbon Standards
VER	Voluntary Emission Reduction
WWF	World Wide Fund for Nature

.1.1 Glossary of Terms

Additionality
Measurable, long-term greenhouse gas (GHG) emission reductions and/or removal enhancements that would not have occurred in the absence of a REDD project.

Afforestation
As defined in the Marrakech Accords, direct human-induced conversion of land that has not been forested for a period of at least 50 years to forested land through planting, seeding, and/or the human induced promotion of natural seed sources.

Annex I Countries
The industrialized countries listed in Annex I to the UNFCCC that were committed to return their greenhouse-gas emissions to 1990 levels by the year.

Annex 2 Countries
Developing countries in the third world. They are not necessarily committed to the Kyoto protocol or the UNFCCC.

Bali Action Plan
In December 2007, in Bali, the 13th Conference of the Parties to the UNFCCC adopted the Bali Action Plan describing a two-year process to finalize an agreed outcome in 2009 in Denmark (UNFCCC Decision 1/CP.13). In the Bali Action Plan, the Parties confirmed commitments in addressing the global climate change by promoting policy and incentives on issues related to REDD.

Baseline scenario
As used in this report, baseline scenarios contain reference levels of deforestation and forest degradation against which climate benefits are measured and financial incentives rewarded.

Business as Usual (BAU) baseline
A BAU baseline represents a projection of what would happen without REDD intervention and serves as a benchmark to measure the impact of REDD.

Cap and trade
An emission trading system where a national or international body establishes an overall cap on emissions, issues emission units or rights, and allows transfer and trading in such rights.

Carbon market
A market that creates and trades emission units.

Carbon pool
A reservoir with the capacity to accumulate or release CO_2. The Marrakech Accords provide that all changes in the following carbon pools shall be accounted for: aboveground biomass, belowground biomass, dead wood, litter, and soil organic carbon. Carbon pools may be ignored if verifiable information provides that the pool is not considered as a source.

Carbon sequestration
The removal of carbon from the atmosphere and long-term storage in sinks, such as marine or terrestrial ecosystems.

Carbon stock
The mass of carbon contained in a carbon pool.

Certified Emission Reduction (CER)
A unit of GHG reductions issued under the clean development mechanism. One CER equals one metric ton of CO_2 equivalent, calculated using methodology recommended by the Intergovernmental Panel on Climate Change (IPCC) that is approved by the COP.

Clean Development Mechanism (CDM)
A mechanism established in Article 12 of the Kyoto Protocol which is designed to assist non-Annex I Parties in achieving sustainable development and contributes to the objectives of the UNFCCC. It assists Annex I Parties in achieving compliance with their quantified emission limitation and reduction commitments.

Climate mitigation
A human intervention to reduce sources or enhance sinks of greenhouse gases.

Deforestation
As defined in the Marrakech Accords, the direct human-induced conversion of forested land to non-forested land.

Degradation
Changes within the forest that negatively affect the structure or function of the forest and lower the capacity of the forest to supply products and/or services. With respect to REDD, degradation refers specifically to a reduction in carbon density.

Forest Carbon Partnership Facility (FCPF)
The FCPF is a World Bank program created to assist developing countries in their efforts to reduce emissions from deforestation and land degradation. Its main objective is capacity building for REDD activities in developing countries.

Indigenous peoples
There are no agreed international definitions of indigenous peoples. According to the United Nations, the most useful approach is to identify, rather than define indigenous peoples. This is based on the fundamental criteria of self-identification as underlined in a number of human rights documents.

IPCC Good Practice Guidance for Land Use, Landuse Change, and Forestry (LULUCF)]
A methodological report from the IPCC that provides methods, good practices, and guidance for estimating, measuring, monitoring, and reporting on carbon stock changes and greenhouse gas emissions from LULUCF activities under Article 3, 6 and 12 of the Kyoto Protocol. The IPCC definition of good practice is a set of procedures intended to secure that greenhouse gas inventories are neither over- nor underestimated, and that uncertainties are reduced as far as possible.

Kyoto Protocol
The Kyoto Protocol sets binding targets for the reduction of greenhouse gas emissions by industrialized countries. The first commitment period of the Kyoto Protocol ends in 2012.

Leakage
A re-allocation of GHG emissions. This can occur when interventions to reduce emissions in one area cause an increase in emissions in another area.

Permanence
The requirement of long-term emission reduction. This can partially be adressed by reducing anthropogenic and natural risks to the project.

Readiness
REDD country actions such as policy design, consultation and consensus building, testing and evaluating National REDD strategies in advance of national REDD implementation.

Reforestation and Re-vegetation
As defined in the Marrakech Accords, the direct human-induced conversion of non-forested land to forested land through planting, seeding, and/or the human-induced promotion of natural seed sources, on forested land that has been converted to non-forested land.

UN REDD
A Collaborative Program on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries, the UN-REDD Program brings together United Nations Environment Program (UNEP), the United Nations Development Program (UNDP), and the Food and Agriculture Organization (FAO), in the development of a multi-donor trust fund and provides donors an opportunity to invest in carbon sequestration and REDD activities.

Verification
An independent third-party assessment on actual emission reductions of a mitigation activity.

.1.2 List of Stakeholders

Agency	Responsibilities	Contact Details
National KFS - Kenya Forest Service (Incl. *REDD working group)* (Nairobi)	Kenya Forest Service is a State Corporation established in 2007 under the Forest Act 2005 to develop sustainable management of forest resources for Kenya`s social-economic development	Alfred N. Gichu 0202014663/0722787403 alfredgichu@yahoo.com
Sub national KFS, Forest Zonal Manager (Naivasha)	The Forest Zonal Manager is the KFS representative in the water catchment of Lake Naivasha.	Benjamin Kinyili Assistant Director 07 2339 3737 bmkinyili@yahoo.com
KWS – Kenya Wildlife Service	The lead agency in charge of protected areas on inventory and monitoring in protected areas, with a focus on habitat change and wildlife monitoring.	Ambros Mujage nakuruwildlife@yahoo.com
Ministry of Environment & Mineral Resources (National Environmental Management Authority NEMA)	Principle instrument of the Kenyan government for the implementation of environment related policies.	Nancy Muui 07 2228 0750
ICRAF (International Centre for Research in Agro Forestry)*	Undertakes forestry productivity studies in agro-forestry systems.	Thomas Yatich 07 1161 3218 t.yatisch@cgiar.org
KEFRI (Kenya Forestry Research Institute)	Undertakes research in forestry and allied natural resources and plays a role in influencing polices on forest resource management.	Vincent Oeba 07 2047 5053 voeba@yahoo.uk
Forest Action Network (FAN) NGO	Networking organization that works in collaboration with stakeholders in the natural resource sector on management of natural resources, especially trees and forests	Dr. Dominic Walubengo 07 2136 8513 waluwande@gmail.com
Green Belt Movement (GBM)* NGO	Has played critical roles in bringing issues relating to forests to the attention of the public and holding the government accountable on these issues.	Frederick Njau +254 211 842 fnjau@greenbeltmovement.org
World Wide Fund for Nature (WWF)	Aims to stop the degradation of our planet's natural	D.R. Maingi 07 2378 6184

NGO	environment, and build a future in which humans live in harmony with nature by saving biodiversity, and Reduce humanity's impact on natural habitats.	Dmaingi@wwesarp
Community Forest Assocciations (CFAs)	Communities organized in CFAs to become legal partners and derive benefits in forest management according to the Forest Act 2005	CFA Chairman Jonathan Muya
Flamingo / Homegrown Ltd. Private sector	Horticulture representative, chairman Lake Naivasha Group & Water User Association.	Richard Fox Sustianable Business Coordinator +254 020 3873800 Richard.fox@f-h.biz
Marula Valley Farm (Private Sector)	One of the biggest ranches near Lake Naivasha with agricultural and livestock activities	Fransesco Natta, CEO Marula 07 2330 4930 marula@africaonline.co.ke
Lake Naivasha Riparian Association (LNRA) Private Sector	Founded in the 1929 by the landowners surrounding the lake, its purpose was to adjudicate the marginal land that is covered and uncovered by the changing level of the water – the riparian land.	Anderson Koyo CEO LNRA 07 3375 0518 andkoyo@yahoo.com
Lake Naivasha Grower Group (LNGG) Private Sector	Voluntary associations of growers striving to balance commercial and environmental sustainability.	Joseph Kariuki CEO LNGG 07 2227 2721 lngg@africaonline.co.ke
United Nations Environment Program (UNEP)	**The UN-REDD Program** is the United Nations Collaborative initiative on Reducing Emissions from Deforestation and forest Degradation (REDD) in developing countries.	Ravi Prabhu, PhD Sr. Programme Officer, Forests and Climate Change Division of Environmental Policy Implementation +254 20 762 5723
Department of Resource Surveys and Remote Sensing, Kenya (DRSRS)	Research institute which conducts aerial monitoring and evaluation of natural resources	Roimen 07 2258 2179
Wildlife Works, REDD coordinators Kasigau REDD Project	Wildlife Works' mission is to harness the power of the global consumer to create innovative and sustainable solutions for wildlife conservation.	Rob Dodson, Mike Korchinsky President Wildlife Works Rob@wildlifeworks.com / mikeroad@wildlifeworks.com

.1.3 Research Interview Questionnaire

Challenges and opportunities for REDD in Lake Naivasha Watershed, Kenya

Date and location of interview:	
Name and function respondent:	

1 Introduction Final Thesis and REDD

1A, To which extend are you familiar with the concept of REDD and climate change?
If **not**, provide basic information and proceed to question **2**. If **so**, note to what extent.

1B, Is your organization already linked to a REDD infrastructure or REDD related projects/meetings?
If **not**, provide basic information and proceed to question **2**. If **so**, note to what extent and with who.

1C, Is you organization already linked to a national REDD framework or governmental institution?
If **not**, provide basic information and proceed to question **2**. If **so**, note to what extent the framework is diffused to different institutional levels?

2 Drivers of Deforestation and forest Degradation,

2A, According to your experiences, what are the main causes of deforestation and forest degradation (if possible, in the Lake Naivasha Watershed and where does it occur specifically)?

2B, In your opinion, how do you think these causes should be addressed?

2C, How is your organization involved in the reduction of deforestation and forest degradation?

2D What challenges does your organization and your close partners face in reducing deforestation and forest degradation?

3 Institutional capacity and REDD

3A Could you please give your opinion about the extent of which your organization is willing and capable to engage in a REDD mechanism? Note to what extent.

3B, What types of institutional change would be required in your organization to engage in a REDD mechanism? If so, note what changes would be needed and who would be responsible for them?

3C, Present the list of stakeholders, How would you design a REDD infrastructure, regarding the know roles and responsibilities of all the stakeholders, including your own? (Are any stakeholders missing or overrepresented in the stakeholders list in the respondents opinion?)

3D, Could you identify the challenges and opportunities that your organization might face in a REDD scheme, in terms of:

- Commitment and capability?
- Capacity building?
- Institutional challenges?
- Monitoring and Enforcement?
- Equitable benefits sharing and finances?
- Community involvement?

3E, Do you foresee any conflicts between existing conservation policy's when organizing a REDD scheme/policy?

4 Design and implementation of REDD in Lake Naivasha watershed [1]

4A, What is your opinion on the availability and quality of information about forest and carbon resources in the Lake Naivasha watershed?

4B, To which extend are the land- and tenure rights in the Lake Naivasha watershed recognized and enforced by the government?

4C, Which stakeholder(s) would be most suitable to manage the REDD methodological framework in practice in Lake Naivasha Watershed in terms of:

- Estimating carbon pools?
- Developing the project baseline scenario (historic data and mapping)?
- Dealing with carbon leakage?
- Emission estimations (Other than GHG, incl. Transport)?
- Monitoring and enforcement?
- Equitable benefitting and financing?

4D, Could you suggest any suitable sections/areas that might be appropriate for a REDD scheme?

5 The relationship of (local) communities and the private sector with forestry

5A, How would the forest-dependent communities and the private sector be involved in a REDD scheme?

5B, In your opinion, what are the needs and concerns of forest-dependent communities and the private sector in the Lake Naivasha watershed, regard to REDD?

5C, What strategies could address these concerns and lay the foundation for effective measures to sustain the region's forests for its people and the climate?

[1] If there is no information available about the Lake Naivasha watershed specifically, then please provide information about comparable watersheds that you know of.