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## **DISSERTATION FOR MPhil:**

Uganda and REDD+: Is it worth getting involved from a socio-economic perspective?

By

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**Declaration**

I know the meaning of plagiarism and declare that all of the work in the document, save for that which is properly acknowledged, is my own.

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### Abstract

Anthropogenic (human caused) climate change is a major global issue because of the effects of climate change, which include increased frequency of drought, floods, erratic and/or insufficient rainfall, waterborne diseases; as well as related consequences such as water shortages, forest fires and loss of biodiversity. It is therefore imperative that there be a global effort to mitigate climate change in order to limit these potentially disastrous effects. Deforestation and forest degradation, principally in the tropics, cause approximately 12 percent of anthropogenic greenhouse gas (GHG) emissions. Therefore, one method to mitigate climate change is to address reducing GHG emissions from deforestation and forest degradation. “Reducing Emissions from Deforestation and Forest Degradation, conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries,” also known as REDD+, is, at its core, a financial incentives based strategy that aims to compensate national governments, sub-national actors, private project developers and/or local communities, in return for demonstrable reductions in carbon emissions from deforestation and forest degradation and enhancements of terrestrial carbon stocks. REDD+ also focuses on building capacity for developing countries to reduce emissions from deforestation and forest degradation and invest in low-carbon paths to sustainable development. Uganda is one of the developing countries that has shown enthusiasm for REDD+ and has actively engaged in REDD+ readiness activities. However, REDD+ readiness activities are costly due to various institutional capacity requirements that may pose a significant challenge to Uganda. The question posed by the study is whether Uganda’s involvement in REDD+ is likely to result in net economic benefits for the country. The study aims to determine whether, in the absence of direct evidence of the success of the REDD+ mechanism in any country, Uganda’s economic benefits from REDD+ are still expected to exceed the costs of implementation. Social benefits are an additional incentive however, even a combination of both economic and social benefits may not be reason enough for a country to become a REDD+ country, especially if alternative land uses are more lucrative or costs are too high. The methodology used is largely qualitative and theoretical, except for the economic analysis which is quantitative. The outcome of the study is that while there is insufficient evidence to suggest that Uganda will not benefit overall from being involved with REDD+, the feasibility study of the potential REDD+ project in the

Murchison-Semkili landscape showed that, at least in that project area, the economic benefits were unlikely to cover both the implementation and opportunity costs in the long term. This does raise a legitimate concern that REDD+ might not result in net economic benefits for Uganda. Even though the economic benefits of Uganda's involvement in REDD+ are uncertain, the mechanism is still expected to result in social benefits, such as improved livelihoods in terms of service delivery; increased efficiency and accountability of government and governmental institutions; and increased public consultation and participation. There are, however, risks to Uganda's successful implementation of REDD+ such as unspecified donor funding, which may not be forthcoming, and the lack of clarity surrounding global compliance carbon markets. Uganda still has much to do in order to build the required institutional capacity for REDD+ to be successful, especially with regard to increasing the effectiveness of the institutions that manage the country's forests. Uganda also needs to reduce some of the drivers of deforestation in the country through programmes that target poverty alleviation and improve agricultural practices. In terms of REDD+ specifically, Uganda needs to complete the development of a National REDD+ Strategy, secure adequate funding for the mechanism, and accelerate the development of REDD+ pilot activities, which are currently in the planning phase. Further research is needed on determining the total value of Uganda's forests, taking into account economic, environmental and social considerations. Research is also needed on the impact successful REDD+ pilot activities have had in other comparable countries.

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## List of Acronyms

AR	Afforestation/Reforestation
AFOLU	Agriculture, Forestry and Land Use
CFM	Community/Collaborative Forest Management
COP	Conference of the Parties
CRM	Community Resource Management
CWA	Community Wildlife Areas
DNA	Designated National Authority
EU ETS	European Union's Emissions Trading Scheme
FAO	United Nations Food and Agriculture Organisation
FCPF	Forest Carbon Partnership Facility
FSSD	Forestry Sector Support Department
FSUP	Forest Sector Umbrella Program
GHG	Greenhouse gases
HFHD	High Forest cover High Deforestation
IIPFCC	International Indigenous Peoples Forum on Climate Change
IPCC	Intergovernmental Panel on Climate Change
JICA	Japan International Co-operation Agency
KESI	Katoomba Ecosystem Services Incubator
LFHD	Low Forest cover High Deforestation
LULUCF	Land use, Land Use Change and Forestry
MRV	Monitoring, Reporting and Verification
NAMAs	Nationally Appropriate Mitigation Actions
NAPAs	National Adaptation Programmes of Action
NFA	National Forestry Authority
PES	Payment for Environmental Services
REDD+	Reducing Emissions from Deforestation and Forest Degradation, conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries.
ROSE	REDD+ Opportunities Scoping Exercise
R-Pin	Readiness Plan Idea Note
R-PP	REDD+ Readiness Preparation Proposal
RWG	REDD-Plus Working Group
SBSTA	Subsidiary Body for Scientific and Technological Advice of the UNFCCC
THF	Tropical High Forest
UNDP	United Nations Development Programme
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UNEP-WCMC	United National Environment Programme - World Conservation Monitoring Centre
UNFCCC	United Nations Framework Convention on Climate Change
UN-REDD	United Nations Collaborative Programme on Reduced Emissions from Deforestation and Forest Degradation
UWA	Uganda Wildlife Authority

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## 1 Introduction

Article 1 of the United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as

“A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.” (UNFCCC, 1992).

The UNFCCC distinguishes between natural climate change and climate change caused by human activities because it is the climate change attributable to human activities that can be addressed. Anthropogenic (human caused) climate change is a major global issue because of the effects of climate change, which include increased frequency of drought, floods, erratic and/or insufficient rainfall, waterborne diseases; as well as related consequences such as water shortages, forest fires and loss of biodiversity (Easterling, et al., 2000; Kappelle, et al., 1999). It is therefore imperative that there be a global effort to mitigate climate change in order to limit these potentially disastrous effects. Climate change mitigation begins with addressing one of the main contributors to anthropogenic climate change, which is the increasing levels of greenhouse gas emissions, caused by human activity, in the atmosphere (Solomona, et al., 2009). The main aim of the United Nations Framework Convention on Climate Change is to help stabilize levels of greenhouse gas concentrations in the atmosphere at a low enough level to prevent “dangerous anthropogenic interference with the climate system” (Solomona, et al., 2009). This involves targeting the human activities largely responsible, directly or indirectly, for causing increased levels in greenhouse gas emissions for example, deforestation and forest degradation (Van der Werf, et al., 2009).

Deforestation and forest degradation, principally in the tropics, are estimated to cause approximately 12 percent of anthropogenic greenhouse gas emissions (Van der Werf, et al., 2009). Forests function as carbon sinks, currently removing nearly 3 billion tons of anthropogenic carbon every year through net growth, absorbing about 30 percent of all CO<sub>2</sub> emissions annually (Canadell & Raupach, 2008). Furthermore, 4 billion hectares of forest ecosystems (about 30 percent of the global land area) store large reservoirs of carbon, together holding more than double the amount of carbon in the atmosphere (Canadell & Raupach, 2008). However, deforestation has led to a large

amount of this carbon sink and reservoir being destroyed. Therefore, programmes that aim to reduce the emissions from deforestation and forest degradation are gradually being included in climate change strategies as a means of mitigating anthropogenic greenhouse gas emissions (Van der Werf, et al., 2009).

Reducing emissions from deforestation was initially excluded from the Kyoto Protocol due to political and technical obstacles, for example, concerns about leakage, permanence, additionality and baseline settings (De Cendra de Larragán, 2011). However, the idea resurfaced at the 11<sup>th</sup> Conference of the Parties (COP) of the UNFCCC in Montreal in 2005, when a group of countries, led by Papua New Guinea and Costa Rica, requested an item on “reducing emissions from deforestation in developing countries” (RED) (FAO, 2011). Between the COP11 and COP13 negotiations, the RED concept was expanded to include forest degradation since many countries faced more emissions from forest degradation than from deforestation (FAO, 2011). Therefore, the amended concept was “reducing emissions from deforestation and forest degradation in developing countries” (REDD). At COP13 in 2007, the UNFCCC adopted a decision that extended the scope of REDD. The decision was entitled “Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries” (FAO, 2011). Hence, REDD became known as REDD+ because it now included sustainable forest management as well as the conservation and enhancement of forest carbon stocks (FAO, 2011). REDD+ is, at its core, a financial incentives based strategy which aims to compensate national governments, sub-national actors, local communities and/or private project developers, in return for demonstrable reductions in carbon emissions from deforestation and forest degradation and enhancements of terrestrial carbon stocks (Agrawal, et al., 2011; Stickler, et al., 2009). REDD+ also focuses on building capacity for developing countries to reduce emissions from deforestation and forest degradation and invest in low-carbon paths to sustainable development (Brown, et al., 2011).

A number of developing countries have shown enthusiasm for implementing REDD+ mechanism, particularly because it appears to promise large economic returns

(Clements, 2010; Tacconi, 2009), and Uganda is one of those countries. The main question however, is whether developing countries will realise net economic benefits on the ground similar to the benefits promoted in REDD+ theory. Each country is different and therefore outcomes between countries will vary. Social benefits are an additional incentive however, even a combination of both economic and social benefits may not be reason enough for a country to become a REDD+ country, especially if alternative land uses are more lucrative or costs are too high. REDD+ is a new concept that has not been completely established, therefore, countries mainly have literature to guide them on what to expect from REDD+. Uganda will need to weigh up the socio-economic benefits of getting involved in REDD+ over the potential losses and foregone opportunities of alternative land practices in order to determine whether REDD+ is a worthwhile strategy to follow.

### **1.1 Problem statement**

Looking at the importance of forests in climate change mitigation, REDD+ has been advanced as a robust mechanism to reduce anthropogenic greenhouse gas emissions. REDD+ readiness and implementation, however, is a costly venture with benefits that are still largely uncertain and significant risks. Assessing the current potential costs and expected benefits of REDD+, would it be worthwhile for Uganda to get involved with REDD+? Are there expected net economic benefits from Uganda participating in REDD+?

### **1.2 Key Research Questions**

To answer the problem statement, the following research questions will be addressed:

- i) What is the link between forests and climate change?
- ii) What is REDD+ and how did it come about?
- iii) What is the state of Uganda's forests?
- iv) What are the drivers of deforestation and forest degradation in Uganda?
- v) What are the challenges and potential opportunities of REDD+ implementation?
- vi) What REDD+ Readiness Activities has Uganda undertaken to date?
- vii) Comparing Uganda's expected costs to implement REDD+, and the expected socio-economic benefits of REDD+ implementation, do the

expected benefits of REDD+ outweigh the costs of participating in the mechanism?

### **1.3 Methodology**

The methodology used in this thesis is both quantitative and qualitative. The qualitative aspect of the thesis is largely based on a comparison between the existing literature and expectations surrounding the REDD+ mechanism and the situation currently being observed in the world. The actual socio-economic analysis of REDD+ projects is quantitative although it is limited to subnational REDD+ projects examples. This is because there is currently no example of a purely national REDD+ project that has been successfully implemented. REDD+ readiness activities are still ongoing. The sources used for the qualitative research include the United Nations Framework Convention on Climate Change, as well as other world governing bodies such as the United Nations Food and Agricultural Organisation and the World Bank; Uganda Government resources; and journal articles by some of the leading authors on REDD+. The aim of the study is to ascertain whether the theory surrounding REDD+ should translate into realities on the ground in Uganda. Some of the data used in the study is quantified into graphs to paint a clearer picture about the situation at hand. Furthermore, a questionnaire, in lieu of a direct interview, was sent to ten individuals actively involved in forest conservation and climate change policy in Uganda through government (The Ministry of Water and Environment, the Department of Meteorology and The National Forestry Authority), non-governmental organisations such as Climate Change Concern, and other climate change experts in the public sector. Unfortunately only two of the selected interviewees responded adequately to the questionnaire for various reasons, namely unfamiliarity with some of the topics covered in the questions or simply unavailability to answer the questionnaire. However, Uganda's top delegate to the UNFCCC, Uganda's National Coordinator of Climate Change and National REDD+ Focal Point, Mr Xavier Mugumya, responded in detail, which added his invaluable expertise to the study. Another response to the questionnaire came from a the Coordinator of East and Southern Katoomba Group (a subsidiary of the International Katoomba Group) and one of the consultants for Uganda's REDD+ Readiness Preparation Proposal (R-PP), Ms Sara Namirembe. Both these interviewees were part of Uganda's R-PP development team. The questionnaire

was sent to these two specialists in order to corroborate the research found in the case study with regard to the costs and benefits of Uganda participating in the REDD+ mechanism. Both Xavier Mugumya and Sara Namirembe provided detailed responses to the questionnaire, which included their own perspectives on the potential of REDD+ in Uganda.

#### **1.4 Structure of dissertation**

The structure of this dissertation is as follows: Chapter 2 is the literature review, which introduces the relationship between forests and climate change, describes the various definitions of forests and briefly looks at global forest policy prior to REDD+. It also begins the discussion on the REDD+ mechanism; how it came about; the benefits/risks, and social/economic implications, of REDD+; as well as the difference between REDD+ and previous policies on forest conservation. Chapter 3 discusses the potential opportunities REDD+ can provide, as well as the key challenges a REDD+ country is likely to face. This chapter also discusses the various types of costs associated with REDD+ as well as the institutional capacity requirements that REDD+ needs to work in a country. Up to this point in the thesis, the discussion has been general however, in Chapter 4 the discussion shifts to focus specifically on Uganda. Chapter 4 begins with a brief background on Uganda before describing the state of the forests in Uganda, the forestry reform that has taken place over the years in the country (with a glance at global forest governance trends), and the drivers of deforestation in Uganda. The difference between conventional forest governance and REDD+ governance is also considered. Chapter 5 describes Uganda's commitments to REDD+ and the REDD+ readiness activities that have taken place in Uganda to date, including the submission of Uganda's REDD+ Readiness Preparation Proposal. Chapter 6 discusses the various global funding mechanisms for REDD+ readiness and outlines Uganda's financing plan for its REDD+ readiness activities over the period 2012-2014. Chapter 7 focuses on the economics of REDD+ and includes a discussion on the various potential markets for REDD+ credits. Chapter 7 also provides an economic analysis of Uganda's potential to generate net economic benefits from its involvement in the REDD+ mechanism. Examples and data from the Noel Kempff Mercado Project in Bolivia, the first REDD+ project to be verified by a third party using rigorous international standards, Uganda's Sawlog Production Grant Scheme,

and a feasibility study on a potential REDD+ project in Uganda, are used to conduct the economic analysis due to the fact that there are currently no REDD+ pilot activities taking place in Uganda. Chapter 8 concludes with an informed opinion on whether, under current circumstances (e.g. the newness of REDD+, lack of case studies and data, uncertainty surrounding some agreements), Uganda's participation in REDD+ is expected to be a worthwhile venture. Recommendations on what Uganda can do to improve on its REDD+ readiness activities are also put forward, as well as suggestions for future research that may be carried out.

## 2 Literature Review

### 2.1 *Forests and climate change*

Forests cover more than a quarter of the land area in the world however they are not uniformly distributed (Gorte & Sheikh, 2010). In many countries for example, Greenland and Egypt, forests account for less than 5 percent of the land while a few countries, such as Suriname and French Guinea, have forest cover of more than 90 percent of the land (Gorte & Sheikh, 2010). Furthermore, some countries have naturally low forest cover while others, for example United Kingdom and Algeria, have diminished forest cover due to deforestation that occurred possibly centuries ago (Gorte & Sheikh, 2010).

An example of how important forests are to climate change can be seen in the effect deforestation has on carbon emissions. Deforestation activities affect carbon fluxes in the soil, vegetation and atmosphere; with the effects varying depending on the type of activity (Gorte & Sheikh, 2010). Globally, soils store approximately 300 times the amount of carbon now released annually through the burning of fossil fuels (Schulze & Freibauer, 2005). Deforestation exposes soils to sunlight, which potentially increases the soil temperature. There is disagreement on whether this rise in soil temperature has an effect on the rate at which soil releases carbon dioxide into the atmosphere. Gorte & Sheikh (2010) argue that the increase in the soil temperature is directly related to the rate of soil carbon oxidation i.e. a rise in soil temperature increases the rate of soil carbon oxidation and consequently the rate of carbon dioxide released into the atmosphere (Gorte & Sheikh, 2010). Other authors, such as Giardina and Ryan (2000), have a different opinion on organic carbon contained in forest mineral soil (Cs) (Giardina & Ryan, 2000). Giardina and Ryan (2000) compiled Cs decomposition data from 82 sites on five continents and found that Cs decomposition rates were constant across a global-scale gradient in mean annual temperature (Giardina & Ryan, 2000). Therefore, they argue that their data suggests that Cs decomposition rates for forest soils are not controlled by temperature limitations to microbial activity, and that increased temperature alone will not stimulate the decomposition of forest-derived carbon in mineral soil (Giardina & Ryan, 2000). Despite much research, consensus has not been reached on the temperature sensitivity of soil carbon decomposition (Davidson & Janssens, 2006). This is due to the fact that

the diverse soil organic compounds exhibit a wide range of kinetic properties, which determine the intrinsic temperature sensitivity of their decomposition (Davidson & Janssens, 2006). Furthermore, several environmental constraints (drought, flooding, freezing, physical and chemical protection) obscure the intrinsic temperature sensitivity of substrate decomposition, causing lower observed 'apparent' temperature sensitivity, and these constraints may, themselves, also be sensitive to climate (Davidson & Janssens, 2006).

Another aspect through which forests affect climate change is forest fires. Studies (Gillett, 2004) have suggested a direct link between some forest fires and anthropogenic climate change (Flannigan, et al., 2006). This is because forest fires release large quantities of CO<sub>2</sub> into the atmosphere in short periods of time, and thus extensive burning can have a devastating effect on the global climate (Gorte & Sheikh, 2010). Some studies go on to suggest that climatic warming causes universal increases in fire frequency (Flannigan, et al., 2000). Increasing fire frequency in a forest can alter plant regrowth until the forests do not regenerate and the areas are converted to brush fields (Gorte & Sheikh, 2010).

Forests are important in the global response to climate change because they have the ability to play a significant role in the mitigation of climate change (Larson & Petkova, 2011). Mitigation refers to reducing the sources or enhancing the sinks of greenhouse gases (Larson & Petkova, 2011) and forests function as carbon sinks that store the greenhouse gases. If policies to reduce the rate of deforestation are not implemented, the clearing of tropical forests will likely release an additional 87 to 130 GtC (gigatonnes of carbon) into the atmosphere by 2100; equivalent to the carbon release of more than a decade of global fossil fuel combustion at current rates (Gullison, et al., 2007). However, if deforestation rates are reduced by 50 percent by 2050, and maintained at this level until 2100, the direct release of 50 GtC will be avoided this century (Gullison, et al., 2007). Reducing emissions from deforestation therefore has significant potential as a mitigation strategy because it can yield large benefits within a relatively short time (Larson & Petkova, 2011).

Before one can have a clear understanding of what the term 'deforestation' means in the global climate change context, it is important first to define the term 'forest.'

## **2.2 Definition of forest**

There are various definitions of the word 'forest' both nationally and internationally. The Food and Agriculture Organisation (FAO) of the United Nations has developed a basic definition of forest. The FAO's definition of forest is an area of >0.5 hectares with >10 percent tree canopy cover, with 'trees' defined as plants capable of growing >5m tall (Putz & Redford, 2010). This definition differs slightly from the definition adopted by the United Nations Framework Convention on Climate Change under the Kyoto Protocol. According to the Clean Development Mechanism (CDM), one of the three flexible mechanisms of the Kyoto Protocol, a "forest" is an area of more than 0.5–1.0 hectares with a minimum "tree" crown cover of 10–30 percent, with "tree" defined as a plant with the capability of growing to be more than 2–5 metres tall (Sasaki & Putz, 2009). Countries party to the Kyoto Protocol can choose from the specified ranges for a "forest" definition tailored to their needs. The FAO also distinguishes closed (>40 percent canopy cover) and open (10–40 percent canopy cover) natural forests from plantations, but this distinction is often overlooked and is not reflected in CDM guidelines (Putz & Redford, 2010). In addition, countries can also set their own definition of a 'forest'. However, the definition of forest under national laws varies even more among the different countries. For example, in the Philippines, 'forests' do not legally occur on slopes >18 percent (Putz & Redford, 2010). In Spain, Finland, Norway, and Sweden, an area is not forested if it produces <1m<sup>3</sup>/ha/yr of timber whereas in Ireland, the minimum production for forest is 4m<sup>3</sup>/ha/yr (Putz & Redford, 2010). It is therefore clear that there is no single and widely accepted definition of forest that all countries adhere to.

Forest degradation and deforestation are defined more simply by countries. Deforestation, generally, involves the loss of forest cover, usually as a result of forests cleared for other land uses such as farming or ranching (Gorte & Sheikh, 2010). While some countries limit this definition to the permanent conversion of forests to another land cover type, others add to this definition by including the conversion of natural forests to artificial forests such as plantations (Gorte & Sheikh, 2010). Forest degradation occurs when forests remain forests but lose their ability to provide ecosystem services or suffer major changes in species composition due to overexploitation, alien species invasion, pollution, fires, or other factors (Sasaki & Putz, 2009). In the UNFCCC, the agreed definition of deforestation is 'the direct

human-induced conversion of forested land to non-forested land', while a definition for forest degradation was not included due to lack of consensus (UNFCCC, 2006).

There is a risk when over simplifying definitions of forests, forest degradation and deforestation. The risk is that such definitions can obscure substantial losses in what most people would consider to be forests for example, following the rules of the Kyoto Protocol, up to 70–90 percent of the canopy of an initially closed-canopy forest could be destroyed without 'deforestation' taking place (Putz & Redford, 2010). Furthermore, even if the entire forest is completely destroyed in a fire, as long as plants (including tree seedlings, palms, and bamboos) capable of growing to >2 or 5m are present on >10–30 percent of the site will be allowed to regenerate, no deforestation would have occurred (Putz & Redford, 2010).

### **2.3 Global forest policy on deforestation prior to REDD+**

The issue of deforestation was first brought up in the negotiation process under the UNFCCC during the "Land use, land-use change and forestry" (LULUCF) negotiations when discussing eligible LULUCF activities under the Clean Development Mechanism (CDM) (UNFCCC, 2006). In these negotiations, it was decided that LULUCF activities under the CDM be limited to afforestation and reforestation only (UNFCCC, 2006). Deforestation, at this point, was excluded due to both political and technical obstacles such as concerns around certain methodological issues:

- Leakage – when reductions in one country are potentially being offset by increases elsewhere (Lubowski, 2008),
- non-permanence - emissions due to natural / anthropogenic disturbances at a later date (Dutschke & Angelsen, 2008),
- baseline settings - uncertainties of estimates used as reference levels (Dutschke & Angelsen, 2008), and
- additionality - ensuring benefits are supplemental to the business-as-usual (BAU) scenario (FAO, 2011).

Other concerns included the assumption that the issuance of carbon credits would flood the carbon market and drive prices down (Angelsen, 2008); concerns that the inclusion of deforestation in the first commitment period may reduce the domestic

efforts by Annex 1 countries to reduce their emissions (Engel & Palmer, 2008); and issues around forest governance for example, illegal logging control and land tenure/ownership of the land (Corbera & Schroeder, 2011).

However, the idea to include deforestation in the climate change negotiations resurfaced at the 11<sup>th</sup> Conference of the Parties of the UNFCCC in Montreal in 2005. It was at this conference that a group of countries called the Coalition of Rainforest Nations, led by Papua New Guinea and Costa Rica, proposed the establishment of a mechanism called Reducing Emission from Deforestation in Developing Countries (RED) through economic and financial incentives (Agrawal, et al., 2011).

#### **2.4 Conference of Parties (COP) decisions on REDD+ pre-Cancun Agreement**

Between the COP11 and COP13 negotiations, the RED concept was expanded to include forest degradation since many countries faced more emissions from forest degradation than from deforestation (FAO, 2011). Therefore, the amended concept was “reducing emissions from deforestation and forest degradation in developing countries (REDD) (FAO, 2011). At COP13 in 2007, the UNFCCC adopted a decision that extended the scope of REDD. The decision was entitled “Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries” (FAO, 2011). Hence, REDD became known as REDD+ because it now included sustainable forest management as well as the conservation and enhancement of forest carbon stocks (FAO, 2011). REDD+ was formally accepted in principle at COP13 in Bali.

The Bali Action Plan explicitly recognized REDD+'s role as one of the building blocks of a post Kyoto climate agreement (Agrawal, et al., 2011; UNFCCC, 2008). Some scholars were of the opinion that the plus sign after REDD also includes what are known as safeguards that aim to ensure multiple benefits and avoid negative spill-over effects from REDD+ activities (Agrawal, et al., 2011). However, it must be noted that these safeguards were only formally included in the concluding text at the COP16 Cancun Agreements in December 2010 (Agrawal, et al., 2011; UNFCCC, 2011).

## **2.5 COP16, 2010: Cancun Agreement**

The safeguards in the Cancun Agreement are related to:

- consistency with existing forest programmes and international agreements;
- forest governance;
- rights of indigenous peoples and members of local communities;
- participatory approaches;
- conservation of natural resources and biological diversity;
- permanence of mitigation actions; and
- leakage (FAO, 2011).

The Cancun agreement also places obligations on the developing country to establish several important elements: +, a national REDD+ strategy or action plan, a national forest monitoring system for monitoring and reporting on REDD+ and a national forest reference emission level and/or forest reference level (FAO, 2011; Nhamo, 2011).

The Cancun Agreement is important for the future of REDD+ for two main reasons: Firstly, the Cancun Agreement recognised that a ‘one size fits all’ approach to REDD+ is unlikely to be successful and legitimized the bilateral and multilateral processes already unfolding around REDD+, but outside the United Nations Framework Convention on Climate Change (Agrawal, et al., 2011). Clement (2010) however suggests that bilateral and multilateral funding mechanisms are ill-suited to providing the sustained performance-based payments that are the basis of REDD+ and that only compliance markets for REDD+ credits can offer the necessary scale of finance (Clement, 2010). Current progress towards establishing these compliance markets is slow. Voluntary transactions are another option however they are driven in part by speculation about future compliance markets which are yet to be established (Clement, 2010). Payments that come through funds for example, Norway’s agreement with Guyana, are also an alternative; however, other developed countries are yet to make these commitments (Clement, 2010). The current interest in REDD+ largely relies on the promise of sustained financial incentives, without which interest in REDD+ will wane; especially given the immediate financial benefits available from alternative land uses (Clement, 2010).

The second reason the Cancun agreement is important is that crucially essential issues, such as the possibility of a unified funding mechanism for REDD+ (market-based, fund-based or a mixture of the two) under an international treaty and determination of reference levels of carbon emissions at the national level, were postponed to future negotiations (Agrawal, et al., 2011). The outcome of discussions on the calculation of reference levels from which emission reductions will be calculated is vague as the question was delegated to the Subsidiary Body for Scientific and Technological Advice (SBSTA), and debate was postponed until 2011 (Agrawal, et al., 2011; Cuypers, et al., 2011).

## **2.6 Post Cancun Agreement**

The UNFCCC held its 2011 conference in Durban, South Africa including the seventeenth session of the Conference of the Parties (COP17) to the UN Framework Convention on Climate Change and the seventh meeting of the Conference of the Parties serving as the Meeting of Parties to the Kyoto Protocol (CMP7). UNFCCC Executive Secretary Christiana Figueres highlighted two main objectives of COP17; namely, that tasks from COP16 (e.g. launching the Adaptation Committee, operationalizing the Technology Mechanism in 2012, approving the Green Climate Fund (GCF)) must be completed and important unanswered political questions from Cancun, such as the issue of fast-start financing, should be addressed (Aguilar, et al., 2011).

Two notable outcomes of these meetings were:

i) *The establishment of a second commitment period under the Kyoto Protocol*

Parties who sign up to the Second Commitment Period are committing to reduce emissions by at least 25-40 percent below 1990 levels by 2020 (Morgan & Cameron, 2011). The second commitment period of the Kyoto Protocol begins January 1, 2013 and ends either on 31 December 2017 or on 31 December 2020. Both the end date and the emission targets for developed countries taking part will be fixed at the UN climate conference to be held at the end of 2012 in Qatar (COP18) (Aguilar, et al., 2011). Furthermore, parties to this second commitment period are expected to turn their economy-wide targets into quantified emission limitation or reduction objectives and submit them for review by May 1, 2012

(Aguilar, et al., 2011). On the 12 December 2011, Canada's Environment Minister, Peter Kent, announced that Canada was formally withdrawing from the Kyoto Protocol (Sterk, et al., 2011).

ii) *The operationalization of the Green Climate Fund*

The COP designated the GCF as an operating entity of the Financial Mechanism of the Convention that aims to support projects, programmes, policies and other activities in developing country parties (Aguilar, et al., 2011). The exact arrangements of the fund were left to be discussed at COP 18 (Aguilar, et al., 2011) however, it remains unclear how long-term finance to support developing countries will be raised and mobilized (Morgan & Cameron, 2011)

### **2.6.1 REDD+ at COP17, 2011**

At the Durban Conference, the main issues on the table concerning REDD+ were sources of financing for REDD+, the role of markets and non-markets and the potential use of offsets (Aguilar, et al., 2011; Sterk, et al., 2011). On the issue of REDD+ sources of financing, many solutions were put on the table for example, some parties suggested linking REDD+ phase one and two to public sources and phase three also to private sources, while others supported that appropriate market-based approaches be developed (Aguilar, et al., 2011). The outcome of the REDD+ negotiations was that parties agreed that results-based finance provided to developing parties that is new, additional and predictable may come from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources (Aguilar, et al., 2011; Sterk, et al., 2011). On the use of market mechanisms, they also agreed that experience gained from current and future REDD+ demonstration activities illustrated that appropriate market-based approaches could be developed by the COP to support results-based actions by developing countries (Aguilar, et al., 2011; Sterk, et al., 2011). Parties and observers were invited to submit their views on modalities, and procedures for financing results based actions by 5 March 2012 (Aguilar, et al., 2011; Sterk, et al., 2011). These views would then be considered by the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA) and feedback would be provided at COP18 in 2012 (Sterk, et al., 2011). Until a financing mechanism is agreed, all finance options are open, casting further

doubt on the emergence and consolidation of a single global carbon market (Agrawal, et al., 2011).

On the technical questions on how to set reference levels and regarding the implementation of the safeguards agreed in Cancun, it was decided that developing countries undertaking REDD+ activities are to provide a summary of information on how the safeguards are being addressed and implemented (Sterk, et al., 2011). This summary must be provided periodically and published in national communications or other communication channels agreed by COP; and the summary must be accessible to all relevant stakeholders and updated regularly (Sterk, et al., 2011). The decision however does not explicitly lay out a format for international reporting (Sterk, et al., 2011). Concerning reference levels, the decision recalls the previous COP decision that takes into account historic data when establishing reference levels (Sterk, et al., 2011). Countries were invited to submit information on establishing their reference levels, which should be based on the most recent IPCC guidelines (Sterk, et al., 2011). In the interim, reference levels can be based on subnational levels (Sterk, et al., 2011).

### **2.7 REDD+ vs previous forest conservation policies**

When compared to previous international forest conservation policies, REDD+ differs in various respects: Firstly, while the Kyoto Protocol did not give developing countries significant incentives to cut their carbon emissions, REDD+ involves a significant amount of financing. An example of the magnitude of the difference between levels of funding for forest conservation prior to REDD+, and levels of funding after the creation of REDD+, can be found when comparing annual donor aid for biodiversity conservation and biodiversity and development projects in 2008 (\$US 1.35 billion) to the financing needs for REDD+ for 2010–2015, which are estimated at EUR 15–25 billion (Clements, 2010). Secondly, REDD+ is built on performance-based incentives instead of previous project-based grants (Clements, 2010). Thirdly, these incentives provided by REDD+ are meant to be sustainable thus reducing uncertainty surrounding whether short-term project grants can lead to long-term conservation outcomes (Clements, 2010). Finally, REDD+ promises to operate at national and, as appropriate, sub-national levels, which is far more ambitious than previous programmes (Clements, 2010).

## **2.8 Benefits and risks of REDD+**

REDD+ is expected to provide some benefits to developing countries but the mechanism also carries some risks. The financial incentives promoted by REDD+ centre around 'payment for environmental services' (PES) schemes to reduce deforestation and forest degradation. These schemes involve a service buyer purchasing a well-defined environmental service from a provider, if the provider agrees to safeguard the service (Verbist, et al., 2011; Clement, 2010; Ogonowski et al., 2009; Wunder, 2005). These types of schemes have been used to protect and preserve a range of environmental services including water, land and forests (Corbera et al. 2009; Hall, 2008; Sierra and Russman, 2006). The PES schemes are expected to function on three levels; international, national and sub-national. At the international level, service buyers will make payments, that could be generated either by voluntary or compliance markets, to the service providers (governments or sub-national entities in developing countries) for reduced emissions from deforestation and degradation or other services such as tenure reforms, more effective management of protected forest areas and policies which reduce the demand for forest products and forest land (Verbist, et al., 2011). On a national level, national governments or the service buyers will pay sub-national governments or local land owners (the service providers) to reduce emissions, or take other measures likely to reduce emissions such as reduced impact logging (Verbist, et al., 2011). Payments from international to sub-national level are only possible where these transactions are approved by a national government agency, for example a Designated National Authority (DNA) (Verbist, et al., 2011).

There are not many working models in developing countries of PES schemes for forest conservation even though forests have the advantage that the 'environmental service' is clear. One obstacle for PES schemes for forest conservation is that monitoring, reporting and verification (MRV) of the environmental service delivery is complex and also costly (Verbist, et al., 2011). Another major obstacle for PES schemes involving numerous smallholders is high transaction costs (Verbist, et al., 2011). Transaction costs include all costs involved in brokerage, certification/verification (when a third party certifier/inspector gives a written assurance that the quality of forest management practiced conforms to specified standards), and insurance (Dangi & Acharya, 2009). It is for these reasons of rights of

tenure and transaction costs, that PES for avoided deforestation may be biased towards large landholders (e.g. the state, concession holders, private companies) rather than towards smallholders (Ghazoul, et al., 2009). More research about, and empowerment of, smallholder organisations is needed to assist them in lowering transaction costs and improving their negotiating power so that they can act as brokers of deals on behalf of their members (Verbist, et al., 2011).

## **2.9 Economic implications of REDD+**

REDD+ could have positive or negative net economic effects depending on the decisions taken in its design and implementation (Verbist, et al., 2011; Miles, 2010). Poverty alleviation is one of the benefits championed by supporters of REDD+ (Engel et al, 2008). REDD+ payments can contribute to poverty reduction in various ways. Firstly, REDD+ can enhance or protect forests so to become a long-term sustainable source of timber and non-timber products for forest dependent communities (Spiric, 2009). Secondly, the payments provide a source of income that can be saved, invested, or spent on other household needs or collective goods (Spiric, 2009). Thirdly, REDD+ implementation may bring about new livelihood opportunities for people through employment and forest management training (Spiric, 2009; Sunderlin et al., 2005). All these benefits rest on the premise that income and funds will be shared equally between the numerous stakeholders (government, the private sector, civil society, non-governmental organisations, forest dependent communities) however, REDD+ can potentially enhance unequal power relations among stakeholders (Spiric, 2009; Corbera et al., 2007). The REDD+ payments will have to cover all the various costs associated with REDD+ such as, opportunity costs foregone profits from replacing a forest production system by alternative land-use practices and implementation costs which comprise of upfront costs of ‘capacity building’; ongoing ‘administrative costs’ of monitoring, enforcement and other activities needed to run a REDD+ programme; and ‘transaction costs’ involved in successfully connecting buyers and sellers, including costs involved in brokerage, verification/certification and insurance (Lubowski, 2008). Transaction costs will increase if forests are small, fragmented, and located in areas with difficult topography or in areas in cases where negotiation skills are poor (Dangi & Acharya, 2009).

Economic implications also leak into the environmental implications, as the decrease in land area available for agriculture cannot simply be compensated through cash payment to landowners or by the creation of new jobs related to the avoided deforestation scheme (Spiric, 2009). If a local market for food is absent, the people will still favour subsistence agricultural production in order to feed themselves or use the money to import food from other areas (Spiric, 2009). This will create leakage from the project and ultimately have a negative impact on the environment (Spiric, 2009; Martinez-Alier, 2002).

### **2.10 Social implications of REDD+**

The social benefits that REDD+ is expected to provide include, but are not limited to, improved resilience of ecosystems allowing people to settle in one place for longer periods, livelihood improvements, and better governance (Dangi & Acharya, 2009). Sustainable forest management will also contribute to reducing the risk of natural disasters and the loss of life and physical property from forest fires (Dangi & Acharya, 2009). However, there are many social risks associated with REDD+ including, but not limited to, loss of control of forests to governments; risk of the elite capturing most of benefits to the detriment of poorer communities, risk of evictions/expropriations; unequal/abusive contracts; less land for agricultural production; increase in food and other commodity prices; corruption, lack of accountability and transparency as well as potential social conflicts due to rearrangement of power and wealth (Dangi & Acharya, 2009).

Larson argues that there is little reason to expect local communities to benefit from REDD+ unless a binding international agreement is put in place to protect local rights (Larson, 2011), an argument supported directly and indirectly by many others (Agrawal, et al., 2011). Existing international legal instruments, such as the Rio Declaration on Environment and Development, the United Nations Framework Convention on Climate Change, the Convention on the Conservation of Biological Diversity, the United Nations Declaration on the Rights of Indigenous Peoples, and the Convention Concerning Indigenous and Tribal Peoples in Independent Countries, can all be used to safeguard the rights of indigenous and local peoples (Agrawal, et al., 2011). Despite the rapidly expanding scholarship on the contribution indigenous

and local communities can make under REDD+, systematic evidence on outcomes resulting from the involvement of local communities and indigenous peoples in REDD+ projects continues to be rare (Agrawal, et al., 2011). Therefore, there is little empirical evidence on synergies and trade-offs between carbon sequestration and other potential co-benefits of forest protection and regeneration under different forms of tenure and management (Agrawal, et al., 2011). The manner in which the implementation of REDD+ initiatives influences and can be influenced by existing development policies, programs, and projects is only now beginning to get entrenched in the literature (Agrawal, et al., 2011; Ghazoul, et al., 2010). However, informed policy choices for designing and implementing REDD+ require knowledge in both these arenas (Agrawal, et al., 2011).

A study was undertaken in 2009 in Mozambique that investigated the socio-economic impact of a REDD+ scheme implemented in the Nhambita Community Carbon Project (Spiric, 2009). This Project started in 2003 and is located in the buffer zone of Gorongosa National Park (GNP), on the community land of the Comunidade do Regulo Chicale (CR), Sofala Province in central Mozambique (Spiric, 2009). An economic analysis found that the forest in question has a greater economic and social value than agricultural plots (Spiric, 2009). The REDD+ carbon payment both compensates for all the costs related to implementation and maintenance of the scheme, as well as the opportunity costs from foregone revenue from agricultural and forest harvesting, and provides an additional income to the families in the area (Spiric, 2009). This is an example of the positive economic benefits REDD+ provides; however, there is a caveat. The area in question is mainly used for subsistence agriculture; therefore, food is recognised as the appropriate currency for compensating the lost opportunities from subsistence agriculture, not money (Spiric, 2009). It is impossible to guarantee the sustainability and absence of negative environmental impacts when food must be sourced elsewhere, transported to the local market and made it available to the local community (Spiric, 2009). Costs of initiating and running the local market, as well as food quality control, are required elements in order to validate the fairness of the REDD+ scheme (Spiric, 2009).

The social benefits the Nhambita community gained include the annually permitted production of timber and sustainable harvest of non-timber forest products; the

strengthening of the community structure and organization and improving of the community management capacities; the strengthening of the community structure and organization and improving of the community management capacities, and the creation of forest management related jobs (Spiric, 2009).

The general conclusion from the study is that the REDD+ activities provided net economic benefits and have the potential to both improve rural livelihoods and the local community welfare (Spiric, 2009). The outcomes of this study are however by no means either exhaustive or definitive. This is just one study and different areas will have different outcomes. Furthermore, the local socioeconomic factors in the Nhambita community vary considerably over time and across the area therefore future research will need to be carried out to investigate in depth the final outcome of Nhambita project REDD+ scheme (Spiric, 2009).

### 3 REDD+: The opportunities and challenges

#### 3.1 Potential opportunities offered by REDD+

##### i) *Guaranteed income*

REDD+ potentially provides the advantage of guaranteed and stable financial inflows, subject to the details of the agreement, while an alternative income based on commodity production is subject to fluctuations driven by risk-taking and price variability (Ghazoul, et al., July 2010). On the other hand, an entrepreneurial approach to commodity production may also substantially reward risk-taking, an option not available under REDD+ agreements.

##### ii) *Sustainable forest management*

REDD+ promotes sustainable forest management, which may restrict the expansion of agricultural commodity production and processing, but the advantage is that the wood production industry will be maintained and its long-term future will be secure (Ghazoul, et al., July 2010). Conservation of the forest will not only be the conservation of the trees but also of biodiversity and ecosystem services (Brown, et al., 2011). A REDD+ program might also generate other benefits derived from sustainable forest management such as non-timber product commercialization and ecotourism, both of which have associated service industries that can be expanded to generate economic growth (Ghazoul, et al., July 2010). Income for rural communities may also be further enhanced through payment for environmental service (PES) schemes, whereby landowners receive payments conditional on their provision of desired environmental services such as maintaining natural forest cover, thus providing security for the population's livelihood (Ghazoul, et al., July 2010).

##### iii) *Security of tenure*

REDD+ is expected to result in forest governance reforms that resolve issues of forest access and tenure and lead to more equitable tenure regimes for all parties, including both local communities and for the state (Brown, et al., 2011). The implementation of REDD+ potentially clarifies land ownership as a necessary condition. Although this may be at the detriment of wider forest dependent populations who have been managing the land without legally owning it, under a business-as-usual commodity

production approach, tenure ownership is likely to remain uncertain (Ghazoul, et al., July 2010). REDD+ provides the certainty of tenure rights, which has long-term benefits of reducing the risk of displacement as well as allowing the communities to receive the financial benefits from carbon trading.

*iv) Health benefits*

Deforestation, among other factors, has been linked to global increases in morbidity and mortality from a number of emergent parasitic diseases (Patz, et al., 2000). When forests are cleared for farming, ranching or the raising of small animals, this creates a supportive habitat for parasites and their host vectors, which can also feed on livestock, to thrive, multiply and consequently infect humans at a larger rate (Patz, et al., 2000).

*v) Conflict resolution*

REDD+ has the potential to limit regional and cross-border costs and conflicts associated with deforestation such as conflicts associated with atmospheric pollution resulting from forest burning (Ghazoul, et al., July 2010; Nhamo, 2011). An example is Indonesia where annual burning of Indonesian forest has strained relationships with neighbouring countries. By limiting the extent and frequency of future forest fires, REDD+ could minimize associated cross-border conflicts (Ghazoul, et al., July 2010).

### **3.2 Key challenges surrounding REDD+**

Despite the numerous benefits that REDD+ can bring to a country, REDD+ also faces several technical, social, economic, ethical and governance challenges that need to be addressed in order for the mechanism to maximise its effectiveness.

*i) The need for sustained incentives*

The initial finance pledged for REDD+ is currently being disbursed through existing bilateral and multilateral mechanisms however, these mechanisms are also ill-suited to providing the sustained performance-based payments that are the basis of REDD+, which should either come from markets or funds (Clements, 2010). Compliance markets for REDD+ credits can offer the necessary scale of finance but current progress towards establishing such markets has been slow (Clements, 2010). Voluntary transactions are driven in part by speculation about future compliance

markets therefore without compliance markets this mechanism is ineffective (Clements, 2010). Without a sustainable source of funding for the financial incentives offered through REDD+, interest in REDD+ will wane, especially given the more immediate financial benefits available from alternative land uses. Expectations are currently high, and politicians and local communities in developing countries who have made commitments to REDD+ may become disillusioned if financial transfers are not forthcoming (Clements, 2010).

*ii) Commoditization of forest carbon*

REDD+ only focuses on the conservation of forest carbon, ignoring and possibly undermining the other benefits of forests. This reliance on a single economic justification for forest conservation makes forests vulnerable to perverse outcomes such as conversion to other more profitable land-uses, changes in carbon prices that crash the carbon market or international disputes (Clements, 2010). Once performance-based payments are being provided to countries or local peoples it may be politically difficult to stop them and as a consequence, the cessation of payments may further undermine conservation activities (Clements, 2010).

*iii) Weak forest management institutions in developing countries*

REDD+ has the potential to generate greater financial resources for forest protection, however poor governance can create a barrier between the receipt of international funding and the actual implementation of efforts for reducing deforestation (Betts, et al., 2008). Most of the world's forest are public property thus forest carbon is usually a state asset i.e. state institutions are both regulators and managers of forest carbon (Clements, 2010). These state institutions are often under resourced with poor governance records. The weak state institutions add to the uncertainty surrounding land tenure rights, especially for the rural poor. Furthermore, the political and economic processes that drive tropical deforestation and degradation frequently involve powerful external bodies and individuals that both state institutions and local people may be unwilling and/or unable to withstand (Clements, 2010). Other reasons for weak forest management include inadequate understanding of the benefits of adopting improved forest management practices; technical prescriptions that are perceived as being too complicated or not practical by the forest users (Brown, et al., 2011); perceptions of forest abundance by the private sector (timber industries and

local communities); lack of trained staff; and, inefficiency and waste in the forest and along the market chain (Nasi, et al., 2011). REDD+ therefore advocates forest reform in order to strengthen forest governance, including empowering local institutions, in order to deliver forest conservation (Clements, 2010).

*iv) Leakages*

A leakage occurs when the avoidance of deforestation in one area can displace it to another area such that the net benefit in emissions reductions is lower than planned under REDD+ (Ghazoul, et al., 2010; Betts, et al., 2008). Current estimates of leakages in forest carbon projects range from 10 percent to over 90 percent, however, Ebeling & Yasué suggest that the risk of leakage happening can be reduced by awarding REDD+ credits at the national level rather than at the project level (Ebeling & Yasué, 2008). It is hoped that the occurrence of leakage will be alleviated by national-level carbon and forest accounting, as advanced by the Copenhagen Accord (Betts, et al., 2008). This should solve the problem of leakage within national boundaries, however, the same cannot be said for cross-border leakage (Ghazoul, et al., July 2010). Other ways in which government can minimise leakage is to introduce sustainable charcoal production where there is, for example, mandatory district level registration of freelance charcoal producers who are trained in efficient production methods and are the legal sole producers of charcoal. Alternatively, there may be also the formation of charcoal producer associations comprised of producers who receive training on sustainable charcoal production. Government should provide this training free of charge so that communities can take advantage of it. Another way to incentivize forest conservation, and thus minimize leakage, is to grant property rights to communities bordering protected forests, as was done in the Noel Kempff Mercado Climate Action Project which will be discussed in a later chapter. In this situation, 360,565 hectares of indigenous ancestral territory (TCO) was legally designated for border communities, which officially granted them property rights (Marshall, et al., 2009). Once these communities had property rights, they were able to design the Bajo Paragua Native Communal Land Natural Resources Management Plan for the lands adjacent to the project and introduce sustainable forestry activities to lessen pressure to deforest within project boundaries (Marshall, et al., 2009).

v) *Issue of revenue sharing*

There are concerns about the absence of adequate mechanisms in place to ensure that financial benefits from REDD+ will be shared with the entire population and not just a select few e.g. in the Brazilian Amazon, large landowners account for 80 percent of all deforestation and would therefore reap the most benefits (Thompson, et al., 2011). Furthermore, just as benefits may accrue to a select few, the smallholder families who traditionally engage in slash-and-burn systems on relatively small plots will be hurt by the outcomes of REDD+ implementation as they are forced to cease this practice (Thompson, et al., 2011).

vi) *Permanence*

Permanence of forest conservation under REDD+ is a challenge, especially given the possibility of detrimental climate changes that may lead to the death of forests that have previously been saved from deforestation (Ebeling & Yasué, 2008). It may be difficult to ensure the permanence of carbon storage either during the REDD project period or after the REDD project period has ended (Ghazoul, et al., July 2010). Forests and carbon stocks may be lost or degraded through human activities and from natural events such as drought causing trees to die off, or natural fires burning large areas of forests (Ghazoul, et al., July 2010). Betts et al. (2008) argue that severe forest loss due to climate change is a possibility but not highly probable in the absence of further expansion of direct deforestation (Betts, et al., 2008).

vii) *Ethical dilemma*

Some opponents of REDD+ argue that REDD+ allows rich nations or corporations to 'absolve their sins' of carbon emissions through carbon offsetting with REDD+ credits (Ghazoul, et al., July 2010). As a result, they believe that while REDD+ promotes the reduction of emissions, the opposite effect may be occurring in that disincentives for genuine efforts to reduce emissions or develop cleaner technologies may be created (Ghazoul, et al., July 2010). This argument does raise a legitimate concern about REDD+. The major polluters in the world are mainly in developed countries or are so-called 'rich nations' who have built their economies on carbon-intensive industries. It is reasonable to presume that some of these big economies or big corporations would take advantage of the carbon offsets to simply pay for their emissions instead of actively seeking to reduce them. The idea of paying for ones

emissions while keeping one's emission levels at the same level or higher is at its core contrary to the main purpose of the REDD+ mechanism which is climate change mitigation. REDD+ is a universal climate change mitigation initiative and therefore all countries, organisations and corporations party to the REDD+ mechanism should not only support but implement its mission. In the absence of strong initiatives on the part of major polluters, mainly in developed nations, to reduce emissions and develop cleaner technologies, the net carbon benefits of REDD+ could potentially be lost and support for the mechanism could start to wane. The opponents' argument, however, does not appear to acknowledge the significant strides several developed countries and corporations have made in the development of 'green' economies and 'green' initiatives designed to make use of cleaner technologies, support conservation initiatives, decrease waste at landfills and develop sustainable sources of energy. The assumption in the opponents' argument is that developed countries or big companies want to use REDD+ simply as an excuse to continue polluting at the same levels. This assumption is misleading. Some developed countries and big companies have tried to reduce their emissions significantly for example, Toyota Motor Corporation (TMC), one of the world's largest automobile manufacturers. In the Interbrand Report, a report compiled by one of the world's leading brand consultancies which identifies global brands that have had the most success in marketing their sustainability efforts and establishing a green reputation, TMC was ranked number one both in the 2011 and 2012 rankings as a result of its hybrid Prius model and efforts to reduce waste sent to landfill (Shankleman, 2012). Automotive brands dominated the 2012 rankings with Honda, Volkswagen and BMW also appearing in the top ten (Shankleman, 2012). This suggests that the automotive industry is making a significant investment in developing and marketing fuel-efficient and alternative fuel vehicles in order to reduce the levels of emissions their products make (Shankleman, 2012). REDD+ provides a means for developing nations, who are not large polluters, to also contribute to global climate change mitigation through forest conservation and developed countries have an interest in supporting developing countries financially not only to offset their own emissions but also to fulfill their pledge to reduce global carbon emissions. Another perception is that REDD+ forces rural populations to change from their traditional farming methods of shifting cultivation (Brown, et al., 2011). This is because in the traditional system of shifting cultivation, forests are cut down and then burned to facilitate the clearing of an agricultural field and also to

release nutrients to the soil (Brown, et al., 2011). There is generally little knowledge among poor rural populations about alternative agricultural practices (Brown, et al., 2011). REDD+ policies are thus likely to require a strong network of support in order to be effective. Engagement with the various stakeholders (e.g. indigenous communities, industry, and regional and national governments) is required rather than a focus simply on ecosystems themselves (Betts, et al., 2008).

### **3.3 Trade off analysis**

A comprehensive trade off analysis of the implications and consequences of REDD+ is required prior to implementing the mechanism in order to advise the various stakeholders where, to what degree and in what context REDD+ could be appropriately adopted. The success of REDD+ in a country will depend on its ability to achieve appropriate compensation that encompasses the full range of economic, social and political implications of avoiding deforestation (Ghazoul, et al., July 2010).

#### **3.3.1 Indirect opportunity costs**

Indirect opportunity costs are the perverse incentives that encourage deforestation (Gregersen, et al., 2010). Some of the indirect opportunity costs associated with REDD+ can be illustrated by an example from the oil palm industry in Malaysia. The oil palm industry in Malaysia contributes about 5-6 percent of Malaysian GDP and provides direct employment for approximately 570 000 workers, with a further 830 000 workers employed in downstream activities (Ghazoul, et al., July 2010). The industry generates annual foreign exchange earnings amounting to around US\$ 10.1 billion, which provide revenue for national development and contribute to the improved provision of services such as piped water, electricity, communications, roads, schools and healthcare (Ghazoul, et al., July 2010). The term ‘opportunity cost’ is a dynamic concept that changes as market forces change, as technology improves, and as new technologies emerge (Gregersen, et al., 2010). For example, in the particular case of deforestation to open land for bioenergy crops, if the price of carbon increases, the price of bioenergy produced from bioenergy crops that are responsible for a significant amount of deforestation would also increase (Gregersen, et al., 2010). But when the opportunity cost of not producing the bioenergy crops increases, land prices will, in turn, also go up and this relationship would continue up to the point

where other renewable, non-land intensive energy alternatives would become competitive (Gregersen, et al., 2010).

### **3.3.2 Political and socioeconomic costs**

These include the potential social disruption of communities such as that caused by the displacement of cultivators who depend on forest clearing activities, and the dissociation of agricultural societies from the land (Ghazoul, et al., July 2010). Committing land to REDD+ may constrain the future livelihood options of these local communities, particularly in protected areas. From a social perspective, forest dependent communities with uncertain land tenure may be denied access to the lands they have managed and depended on for years, and this marginalization may reduce their involvement and access to benefits (Alexander, et al., 2011).

Providing alternative employment opportunities for these communities involves additional financial costs due to financing the new knowledge and skills needed to successfully engage in such new employment opportunities, as well as the social costs incurred by the people forced to adjust to new livelihood cultures (Ghazoul, et al., July 2010).

Table 1 illustrates examples of indirect and less tangible economic and political-social implications of REDD+ implementation compared to a business-as-usual option of commodity production:

**Table 1: Economic and political-social implications of REDD+ implementation compared to a business-as-usual option of commodity production.**

Type of cost/benefit	REDD	Commodity production
Economic	Stable income, guaranteed payments	Risk-associated variable income streams
	Less adaptable to supply and demand (carbon market fluctuation and emergence of new technologies that render REDD obsolete)	Adaptable to supply and demand
	Limited opportunities for downstream industries, although new opportunities created (e.g. ecotourism)	Many opportunities for downstream processing and service industries
	Limited potential for job creation	Modest to large potential for job creation
	Restricts development and infrastructure	Development and infrastructure investments enhanced
	Subject to inflation	Less sensitive to inflation
	Limited potential for growth of service industry	Large potential for service industry growth
	Limited potential for economic growth	Economic growth promoted
Economic/ Political-Social	Little potential to respond to technical innovations	Possibility to benefit from technological innovations in commodity production
	Ecosystem services options retained	Ecosystem services options lost
	Risk of ecosystem disservices (e.g. human-wildlife conflicts)	Low risk of ecosystem disservices on account of little remaining natural habitats
	Reduced tax income	Tax income continues to grow with development
	Risk of government investments being diverted elsewhere	Attracts government investment through economic development
	Dependent on external financing	Less dependent on external funding sources
Political and Social	Constrains future livelihood options	Does not limit future livelihood options
	Encourages migration to cities	Encourages rural population (and economic) stability
	Restricts urban-to-rural migration	Facilitates rural migration, alleviates population and land pressures in densely populated areas
	Dissociates agricultural societies from land	Maintains agricultural societies' connection to land
	Retains forest peoples' cultural values	Exposes forest peoples to alternative cultural values
	Tenure/ownership processes clarified (unclear implications)	Tenure/ownership processes maintained
	'Colonialist' concerns regarding restricted development pathways	Allows integration in the global market economy (accelerates development)
	Political-economic ties altered (unclear implications)	Political connections based on trade are retained and strengthened
	Transboundary issues related to deforestation are alleviated	Transboundary conflicts remain

Source: Ghazoul, et al., July 2010

### 3.3.3 Ecological Costs

The ecological benefits of implementing REDD+ include declines in the incidence of forest fire and increases in the speed of forest regeneration on degraded land (Stickler, et al., 2009). However, these benefits may be offset by potential ecological costs for example, in fire-adapted ecosystems, such as tropical woodlands and savannas, fire suppression and biomass accumulation could lead to the local disappearance of plant and animal species that depend upon periodic burning (Stickler, et al., 2009). Another potential ecological cost is the detrimental form of leakage that results when forest clearing for livestock and grazing land is displaced away from high biomass forests into lower biomass ecosystems; thus making the lower biomass systems inadvertent victims of REDD+ programmes (Stickler, et al., 2009). This would become evident if there is preferential conservation and protection of high biomass native ecosystems to the extent that deforestation is deflected towards low biomass native ecosystems, even

if they are of higher value for biodiversity conservation, soil conservation, or water regulation (Stickler, et al., 2009).

### **3.4 Institutional capacity requirements for REDD+ to work in a country**

Many developing countries that have significant forest resources are characterised by weak institutions, insecure land tenure and poor enforcement of forest laws, inconsistent and complicated laws, corruption, and lack of transparency (Kanninen, et al., 2010). It is for these reasons that any attempts to build a credible REDD+ scheme must incorporate long term efforts to create and reform institutions, strengthen the processes of governance, and build the capacity necessary to implement models to support sustainable forest management (Kanninen, et al., 2010).

The implementation of REDD+ within a country will require both capable international and local institutions in order to govern the economic, financial and regulative dimensions of the mechanism, such as the causes of deforestation and degradation, land tenure and rights, and integrity of decision making procedures (Kokko, 2010).

#### **3.4.1 Land tenure**

Land tenure regimes and property rights largely define the way land is used. One step towards avoiding deforestation is to remove the linkages between deforestation and access to secure land rights; in other words, private actors are said to be better motivated to invest in sustainable forest management practices if they are the legal owners of the land or if property rights are well defined and enforced (Kokko, 2010). Under a REDD+ scheme, forest conservation should provide financially the most beneficial mode of land use (Kokko, 2010). Once there are well defined and secure property rights in place, direct payment transfer systems such as ‘payment for environmental services’ can be used to motivate landowners or land users to change their practices towards the required objectives and be compensated for their efforts (Kokko, 2010). This is especially important for developing countries which are largely agrarian in nature or have considerable forest dependant populations. Poverty alleviation is a goal which may lie in direct competition with REDD+, especially when it comes to forests cleared for food or habitation, poor farming practices that

deplete forests resources, and illegal logging for either selling the wood directly, or for selling its products such as charcoal, for income. The financial benefits of forest conservation must be able to cover the opportunity costs of managing and conserving the forests that will be borne by the communities that are dependent on forest resources.

### **3.4.2 Decision making integrity**

One way of helping to reduce corruption and to increase the accountability of government agencies and companies toward the public sector is to provide individuals and authorities with transparent and timely information for decision making (Kokko, 2010). This is in-line with the one of the safeguards of REDD+ that calls for local participation in decision making. Communities that depend on forest resources have a significant stake in decisions related to forests, particularly the decisions changing forest management, therefore they should be well-informed about, and involved in, the decision making process. Local communities also have a crucial role to play in the implementation of forest policies (Kokko, 2010).

### **3.4.3 Capable institutions**

If REDD+ is implemented on a national level, governments need to be capable of designing and implementing the mechanism as well as enforcing it, in order to obtain effective, efficient and equitable outcomes (Kokko, 2010). Governance and governing capacity needs to be re-enforced at all levels of authority, national, regional and local, with adequate responsibilities and resources (Kokko, 2010). Strong institutions and good governance are crucial for the successful implementation of any national scheme or mechanism and REDD+ will require good conditions for the transfer of property rights and support to local forest governance as well as incentives are essential for successful outcomes (Kokko, 2010). Existing institutional structures may be used if the structures are effective and functional. Some examples of additional capacity that can be introduced are, in the case of PES payments to local communities, intermediary organisations that deal with the allocation of funding and ensure that the funds are channelled to the right stakeholders in a transparent and efficient manner (Kokko, 2010). Furthermore, in order to make these payments, there needs to be a

functioning monitoring system in place to ensure the performance of the “sellers” (Kokko, 2010).

#### **3.4.4 Adequate MRV capacity**

One of the agreements in the REDD+ negotiations is that a REDD+ mitigation mechanism must have a credible system for measuring, reporting, and verifying (MRV) changes in forest carbon stocks (Kanninen, et al., 2010). This system must be set up by each country, comply with the specified requirements, and be capable of measuring and estimating two main variables in order to calculate the carbon stocks and the changes in them, namely (i) the forest area and changes in it, and (ii) carbon stocks (carbon pools) per unit area of forest, or any land use and changes in them (Kanninen, et al., 2010). Creating adequate MRV capacity is a challenge for many developing countries (Kanninen, et al., 2010). A recent assessment of national forest monitoring capabilities in tropical countries indicates that out of the 99 countries assessed, less than 20 percent of them have completed a national greenhouse gas inventory and only three countries currently had capabilities that were considered to be very good for both forest area change monitoring and for forest inventories (estimation of carbon stocks) (Kanninen, et al., 2010). Only about half of the countries had good or very good capabilities in any one of these categories (Kanninen, et al., 2010). The major shortcomings identified in the current monitoring capacities of the countries with poor MRV capacity were:

- (a) lack of consistency of estimations,
- (b) lack of transparency of information sources,
- (c) poor comparability of results due to lack of common methodologies,
- (d) lack of completeness due to lack of suitable data, and
- (e) limited information on sources of error and uncertainty levels (Kanninen, et al., 2010).

As a result, two major international initiatives were created to assist developing countries in building capabilities in MRV as well as other relevant aspects of implementing REDD+ schemes. These two initiatives are known as the Forest Carbon Partnership Facility (FCPF) of the World Bank and the UN-REDD Programme (Kanninen, et al., 2010). UN-REDD focuses on assisting governments in designing

effective monitoring, reporting, and verification systems, while the FCPF is involved in helping with the development of successful economic incentives and tools to support REDD+ projects. The activities of these two groups has consistently overlapped and the groups have become increasingly coordinated over time, resulting in several joint documents that deal specifically with collaborative efforts and the increasing coordination of policy meetings between the two organizations (Thompson, et al., 2011).

### **3.4.5 Benefit sharing**

Protected forests in densely populated areas are susceptible to degradation such as collection of fuel wood, illegal logging, grazing and poaching. It is therefore imperative that the forests need to be managed effectively. The challenge is that central government cannot be everywhere simultaneously therefore the success of effective forest management depends on the ability and motivation of the broader society to meet the management costs. One effective management approach is community forest management (CFM) with equal sharing of income within local communities. CFM, particularly in low-income societies, which are attracted by the economic benefits of clearing forests, largely depends on the creation of sufficient compensation for lost income due to forest conservation (Kanninen, et al., 2010). In order for the transfer of payments to be successful, land rights and land ownership need to be secure so the money goes to the correct stakeholders and additionally the payments need to be backed up by solid institutions and policies (Kanninen, et al., 2010). Case studies on 'payment for environmental services' projects have shown that often large landowners benefit the most from PES schemes (Kanninen, et al., 2010). Equitable sharing of environmental services among the different socio-economic groups is essential in order to prevent counterproductive measures, such as illegal logging, by people who are not receiving the benefits in order to sustain themselves.

## 4 Uganda's forest resources and deforestation drivers

### 4.1 Background on Uganda

Uganda is a land-locked country in the eastern part of Africa that straddles the Equator and occupies 241,038 square kilometres, of which open water and swamps constitute 43,941 square kilometres (Government of Uganda, 2002). Most parts of the country lie at an average height of 1,200 metres above sea level and the vegetation mainly consists of savannah grassland, bushland and tropical high forests (see Figure 1) (Government of Uganda, 2002). Uganda experiences moderate climatic conditions throughout the year with two rainy seasons, in March and September, when most cultivation takes place; although these two seasons merge into one long rain season as you move away from the equator (Government of Uganda, 2002). The mean annual rainfall varies from 750 to 2000 mm, with rainfall being the most sensitive climate variable that affects social and economic activities in Uganda (Government of Uganda, 2002). Temperatures in the country vary depending on location. While the mean daily temperature is 28<sup>0</sup>C, temperatures below 0<sup>0</sup>C are experienced on the higher mountain ranges of Rwenzori and Elgon (Government of Uganda, 2002). Rwenzori is particularly vulnerable to global warming as it has a permanent ice cap (Government of Uganda, 2002). Furthermore, temperature trends in southern parts of Uganda show a sustained warming over the area with minimum temperature rising faster than maximum temperature (Government of Uganda, 2002). Figure 1 shows Uganda's location on the African continent.

**Figure 1 Map of Uganda**



Source: Worldatlas.com

Agriculture has long been the foundation of the Ugandan economy (Twesigye, 2008). The World Bank estimates the Ugandan population to be around 32.7 million (The World Bank Development Data Group, 2010), of which some 88 percent live in rural areas and are subsistence producers (Twesigye, 2008). These farmers depend on good soils and favourable climate, and have made little or no adaptation to modern farming methods (Twesigye, 2008). Over the last decade, unpredictable weather patterns and climate change have taken a toll on agricultural production, industry and manufacturing as well as Lake Victoria's water levels (Twesigye, 2008). Drought and floods, predominantly in the east and north of the country respectively, have raised concerns of hunger and vulnerability particularly in poor local households (Twesigye, 2008). The decreasing water levels in Lake Victoria have led to a power crisis as the lake feeds the Owen Falls Dam – the biggest hydropower station in Uganda (Twesigye, 2008). One of the reasons for Lake Victoria's declining water levels is the destruction of catchment forest and the drying up of streams and smaller rivers that feed the lake (Twesigye, 2008). Consequently, the income gap between the rich and the poor remains high despite both an average GDP growth of 5 percent and a general decline in poverty levels (Twesigye, 2008).

#### **4.2 State of Uganda's forests**

Forests in Uganda cover approximately 15.2 percent (2,988,000 hectares) of the total land area of the country (Wilkie, 2010). The Uganda National Forestry Authority (NFA) defines a 'forest' as a type of vegetation dominated by trees, most of which at maturity are more than 5 m tall, which has a minimum tree canopy cover of 30 percent and includes all alpine, tropical high- and medium-altitude forests, woodlands, wetland and riparian forests, plantations and trees, whether on public or private land (Obua, et al., 2010). Woodland is an area predominantly covered with woody plants, trees over 4 m tall, shrubs and grasses (Obua, et al., 2010). Therefore, it might not be considered to be forest under the definition of forest contained in the Kyoto Protocol and advanced by the Food and Agriculture Organisation of the United Nations. Uganda however includes woodlands in its definition of forest because many forests in Uganda have extensive woody species coverage (Obua, et al., 2010). Furthermore, tree cover in grasslands and woodlands may also increase because of dynamics in the faunal populations leading to formation of a forest (Obua, et al.,

2010). Approximately 19 percent of Uganda's forest cover is tropical forests, 81 percent woodlands and bushlands and 1 percent plantations (Nabanoga, et al., 2010).

The 2008 NFA report indicates that in 2004, the overall contribution of forests to the Ugandan economy was about 6 percent of the GDP. Forests and woodlands also provide a number of environmental services and direct benefits to agriculture, water and fisheries sectors such as watershed and ground water protection, erosion control and carbon sequestration (Obua, et al., 2010). These benefits are estimated at about 1.45 percent of the GDP (Obua, et al., 2010). Forestry is therefore an important component of Uganda's current and future development plans, and it is thus categorized as a primary growth sector. The importance of forestry is however overshadowed by the fact that between 1990 and 2005, Uganda lost about 26 percent of its remaining forest cover (about 1.3 million hectares per year), (Nabanoga, et al., 2010) and deforestation continues today at an aggregate loss of 80,000 hectares of forest cover annually; of which 73,000 hectares is on private land and 7,000 hectares is in Protected Areas (Watasa, 2009). Over 73 percent of Uganda's labour force is employed in agriculture therefore it is very plausible that the loss of forests is mostly due to subsistence farming, cutting for fuel wood and colonisation by the burgeoning population (Nabanoga, et al., 2010). The consequences have been so dire that today very little of Uganda's forest cover is considered primary forest by the United Nations. In spite of this, more than 25 percent of the country is under some form of protection (Nabanoga, et al., 2010). The term that describes the process of changing the legal status of a portion of land (usually from protected status to commercial use) is known as 'degazettement' (Twesigye, 2008). Land use is often 'gazetted' by publishing a notice in the Government Gazette and it is 'degazetted' when this status is altered (Twesigye, 2008).

### **4.3 Forest governance and land tenure rights**

#### **4.3.1 Forestry sector reform in Uganda**

Until the late 19th century, forest rights in Uganda belonged to communities, clans, and Kingdoms (traditional rights); however, in 1894, Uganda became a British protectorate, and there began a series of interventions that shifted forest rights and responsibilities among several entities, often undermining traditional rights (Coleman,

et al., 2009). The country's first national forest policy was adopted in 1929, with significant amendments to the policy taking place in 1938 and 1948 (Coleman, et al., 2009). After independence in 1962, a two-tiered system of forest reserves was introduced consisting of central forest reserves and local forest reserves. The forest department for regional benefits managed central forest reserves, and large and commercially orientated areas, while local forest reserves, typically small and non-commercial areas, were managed by district government authorities for the benefit of local people (Coleman, et al., 2009). The adoption of a new republican constitution, in 1967, centralized virtually all government decision-making powers, abolished local forest reserves and centralized the management of all forest reserves under the Forest Department (Coleman, et al., 2009). The political turmoil that occurred in the 1980s led to a general decline in government administration, such that after the civil war that ended in 1986, work began on the country's first post-independence forestry policy review which was introduced in 1988 and led to drastic changes in forest governance in the country (Coleman, et al., 2009). In 1993, management of central forest reserves was decentralised to local governments under the Local Government Statute (Coleman, et al., 2009). Local governments now had the benefit of receiving income from logging but also had to bear the cost of permitting and administration. They covered their expenses by increasing the amount of logging to generate more revenue that led to the overexploitation of forests (Coleman, et al., 2009). Consequently, the management of central forest reserves was recentralized in 1995 through subsidiary legislation (Coleman, et al., 2009).

A new process of forest sector reform was initiated in 1999 and was known as the Forest Sector Umbrella Program (FSUP) (Jagger, 2008). The goals of FSUP were to create a positive, effective, and sustainable policy and institutional environment for the Ugandan forestry sector, as well as to increase economic and environmental benefits from forests and trees, particularly for the poor and vulnerable (Jagger, 2008). The results of FSUP were a new forest policy in 2001, which explicitly recognised the rights and needs of local communities and individuals; a national forest plan in 2002; and the National Forestry and Tree Planting Act in 2003 (Coleman, et al., 2009).

In 2003, the Forest Department was reorganised into a semi-autonomous National Forest Authority, which controls the central forest reserves where the majority of Uganda's high value timber and forest biodiversity is concentrated (around 15 percent of the forests) (Jagger, 2008; Coleman, et al., 2009). It is worth noting that prior to the forest reform, forests outside of protected areas and central forest reserves were ungazetted public land (Jagger, 2008). Since the promulgation of the 1998 Land Act and the 2003 National Forest and Tree Planting Act, forests outside of protected areas and central forest reserves are now considered privately owned (Jagger, 2008). The NFA is also engaged in planting fast-growing exotic trees and commercial harvesting in order to generate revenue and achieve fiscal independence (Coleman, et al., 2009). It is supposed to share 40 percent of its revenue with the local governments in exchange for help with monitoring however, little trickles down to the parish level (Coleman, et al., 2009).

The 2001 forest policy also created the District Forest Authority to manage the remaining forested lands. In practice, not all districts have an officer and those that do frequently are understaffed or lack resources to help the officer achieve stated goals (Coleman, et al., 2009).

#### **4.3.2 A brief history of recent global trends in forest governance**

The majority of the world's 4.033 billion hectares of forests (about 86 percent) is owned by central governments, with the rest either privately or communally owned (Agrawal, et al., 2008). Ownership implies that the owner has tenure rights to the forest; tenure rights being the ability to acquire, use, control and dispose of the land itself or the produce derived from it. Therefore, these rights are fundamental to determining how forests will be managed, protected, or neglected (Siry, et al., 2009). Effective governance of forests is crucial to improvements in forest cover, management and outcomes. Globally, we are seeing changes in forest governance trends, particularly a move away from the centrally administered, top-down regulatory policies that characterized much of the 19th and 20th centuries (Agrawal, et al., 2008). In the 21st century, there are three important forest governance trends that stand out: (i) decentralization of management, especially for commercially low-value forests that nonetheless are important to hundreds of millions of rural households in

developing countries; (ii) the substantial role of logging companies in forest concessions, especially for selective logging in tropical forests; and (iii) the growing importance of market-oriented certification efforts, mainly in temperate forests in the developed world (Agrawal, et al., 2008).

i) Decentralization of forestry policies began in the mid- to late 1980s and by the mid-1990s, had become a prominent feature of forest governance (Agrawal, et al., 2008). The concept of decentralization centres on the idea of a transfer of powers and resources from central government to subnational or local government (Toni, 2011). Proponents of decentralisation argue that it increases local participation and local democracy; improves efficiency and equity of service delivery; and strengthens local government (Toni, 2011). Local government is important for monitoring purposes, which are crucial in order to prevent carbon leakage (Toni, 2011). Furthermore, the involvement of local governments can considerably lower transaction costs associated with monitoring land use (Toni, 2011). This trend towards decentralisation was largely driven by a combination of material and technical support from bilateral, multilateral, and private donors who sought better forest governance from recipient countries (Agrawal, et al., 2008). These external pressures coincided with domestic demands for a greater recognition of local communities' needs for forest products and their role in managing local forests for various purposes (Agrawal, et al., 2008). There was also a desire by many governments to reduce the financial burden of forest governance in an economic context characterized by significant fiscal and budgetary pressures (Agrawal, et al., 2008). In support of decentralization reforms was an emerging body of scholarly work on local participation, resource institutions, governance, and accountability (Agrawal, et al., 2008).

The impact of decentralization reforms in the past two decades has been to promote local, more democratic participation in governance, as well as fostering new practices of forests use. Decentralization has at times provoked social tension around claims of indigenous peoples within forest areas (Agrawal, et al., 2008) however, local communities and organizations have come to govern close to an additional 200 million hectares of forests compared to the 1980s (Agrawal, et al., 2008).

ii) The private concession model in forest governance has existed since the imperial trades of the early 1700s, and has endured shifts in commodity values, political systems, as well as changing forest policy frameworks (Agrawal, et al., 2008). Under concessionary forest governance, central governments or forest departments provide logging companies with long-term resource extraction rights in commercially valuable forests in exchange for a stream of revenues (Agrawal, et al., 2008). Logging concessions arrangements are a dominant form of forest governance in tropical forests in Southeast Asia, parts of the Amazon, and especially in Central and West Africa, where at least 75 million hectares of forests are under concession to logging companies (Agrawal, et al., 2008). Governance through forest concessions is largely driven by two things: demand for logs and timber, often in distant markets, and governments' need for revenues (Agrawal, et al., 2008). There is limited enforcement of concession agreements in most countries in Southeast Asia and Africa and this is responsible for costly and unsustainable levels of illegal logging (Agrawal, et al., 2008). The World Bank estimates developing countries lose billions of dollars every year as a result of illegal logging (Agrawal, et al., 2008).

iii) Forest certification initiatives emerged in the early 1990s as market instruments in which an independent certification body provides an assurance to consumers that the forest product suppliers have conformed to some predetermined criteria of sustainable forest management (Agrawal, et al., 2008). Certification efforts were initially launched as a means of improving the sustainability of tropical forest management, however, they have been used far more broadly in temperate forests. Tropical forest made up less than 10 percent of the 80 million hectares of certified forests in 2000 (Agrawal, et al., 2008). Nonetheless, certification processes and performance standards are expanding into new regions and niches due to market and civil society response to public concern about deforestation, the organizational strength of international environmental nongovernmental organizations (NGOs), and continuing economic globalization (Agrawal, et al., 2008).

These shifts in forest governance trends are for the most part as a result of social, economic, and political drivers which are made more complex as the issue of climate change becomes more important (Agrawal, et al., 2008). For example, existing trends around conversion of forests to biofuel plantations are likely to affect both

biodiversity and the livelihoods of the poor adversely (Agrawal, et al., 2008). Climate change impacts are expected to strengthen governance trends, principally in the direction of concessions and certification; increase the involvement of market actors in forest governance; and create pressures toward greater formalization as governments seek to take advantage of emerging carbon funds (Agrawal, et al., 2008). The only hindrance may be the competing demands for food and forest products from a growing, and on the average wealthier, global population.

#### ***4.4 The Drivers of Deforestation and Degradation in Uganda***

Some of the primary drivers of these high rates of deforestation and forest degradation include but are not limited to:

##### **Population pressure and rural poverty**

Uganda has a very high population growth rate of 3.6 percent, and is currently ranked fourth among the countries with the highest population growth rates in the world (following Maldives 5.57 percent, UAE 3.83 percent and Liberia 3.66 percent) (Nabanoga, et al., 2010). Additionally, the GDP based on the purchasing power parity (PPP) of the country is one of the lowest in the world at US\$ 1,300 (Nabanoga, et al., 2010). Therefore, the majority of the population is dependent on direct consumption of environmental amenities, in particular forest products like food and shelter, for survival; thus accelerating deforestation (Nabanoga, et al., 2010).

##### **Agricultural expansion**

The expansion of agricultural production to feed the growing population and to support the Ugandan economy which is largely agrarian in its nature, coupled with poor and inefficient agricultural practices that provide low production per unit of forest cleared, is a major driver of deforestation and degradation (Nabanoga, et al., 2010). Virgin forestland is usually very fertile, however, its fertility decreases in a few years prompting further clearing of more forest (Nabanoga, et al., 2010). The result is that there is total loss of land and environment value over a short period of time (Nabanoga, et al., 2010).

### **Accelerated biomass energy demands**

Uganda has, to a large extent, underexploited non-bioenergy sources of energy, such as hydroelectric power (Nabanoga, et al., 2010). As a result, biomass (wood and waste) remains the main source of energy for the nation accounting for about 93 percent of total energy consumption in the country (Nabanoga, et al., 2010). This high demand for fuel wood and charcoal as sources of home energy therefore causes enormous deforestation (Nabanoga, et al., 2010), especially in the case of no reforestation activities.

### **Timber exploitation**

The construction industry in Uganda has grown rapidly since 1986, with timber having the highest demand among the raw materials (Nabanoga, et al., 2010). The annual demand for commercial timber is about 240,000m<sup>3</sup>; twice the annual allowable cut (Nabanoga, et al., 2010). Hence, the demand for timber is one of the major drivers of deforestation in the country (Nabanoga, et al., 2010).

### **Property rights and tenure of land and natural resources**

Uganda is a country with a hybrid regime of democracy, and a history of conflicts over politics, land and other natural resources, forestry included (Nabanoga, et al., 2010). Several conflicts have occurred particularly over the ownership of forestry resources due to the fact that it has been politically difficult for Uganda to formulate a national land use policy that could help in the control of land disputes and improve land tenure (Nabanoga, et al., 2010). The uncertainty caused by the undefined land tenure system reduces proper jurisdiction and law enforcement over the forest estates and hence accelerates forest degradation (Nabanoga, et al., 2010). Furthermore, the institutional structure to regulate environmental and forest management is weak because of inadequate funding for operations and development (Obua, et al., 2010).

Table 2 illustrates the different categories of property that exist in Uganda and how they contribute to deforestation and forest degradation in the country:

- Freehold system – ownership is in perpetuity and a certificate of title is issued.
- Mailo system – private ownership also held in perpetuity with a certificate of title

Leasehold system – private land held based on an agreement between the lessor and the lessee.

Customary – private land owned and disposed of in accordance with customary regulations.

**Table 2: Different categories of property regimes that exist in Uganda**

<b>Category</b>	<b>Implications for Deforestation and Forest Degradation</b>
<b>Freehold</b>	<ul style="list-style-type: none"> <li>• Has a significant role in deforestation and forest degradation trends since most privately owned forests, agricultural activities and other developments take place on freehold lands.</li> <li>• Enforcement of environmental policies and laws to regulate use of these lands is cumbersome and ineffective in most cases.</li> <li>• Decisions are made by the individual owner and it is easy to ensure security of tenure.</li> </ul>
<b>Mailo</b>	<ul style="list-style-type: none"> <li>• Has a significant role in deforestation and forest degradation trends, especially in the Central Region/Lake Victoria and Western Region where this form of land tenure is dominant.</li> <li>• Enforcement of environmental policies and laws to regulate use of these lands is cumbersome and ineffective in most cases.</li> <li>• Incentives for forestry resources development and management are weak/ poor due to strained relationships between land owners and tenants with regard to security of tenure.</li> <li>• Decisions are made by the individual owners and it is easy to ensure security of tenure</li> </ul>
<b>Leasehold</b>	<ul style="list-style-type: none"> <li>• This category of land tenure ownership in Uganda accounts for a very insignificant proportion of land outside urban areas.</li> <li>• Little incentive for leaseholders to invest in forest conservation.</li> <li>• Decisions are made by the individual leaseholder and it is easy to ensure security of tenure</li> </ul>
<b>Customary</b>	<ul style="list-style-type: none"> <li>• This is major form of land tenure ownership in Uganda.</li> <li>• Most agricultural activities take place on this type of land.</li> <li>• Use of forests and woodlands is virtually open-access, and there is no incentive for an individual to invest in sustainable practices.</li> <li>• Profits from woodlands are low and there are strong benefits from conversion to private tenure and agriculture.</li> <li>• It stands as the most influential form of land use in terms of deforestation and forest degradation.</li> <li>• Positive incentives and capacity support are needed to convert this tenure to either of the other 3 above.</li> </ul>

Source: Research Questionnaire - Xavier Mugumya

Xavier Mugumya, in his response to the questionnaire, argues that customary land should be converted to any of the other three tenure regimes because it is easier to establish security of tenure under those regimes. Security of tenure is a necessary prerequisite for the REDD+ mechanism to be successful.

## **Rural Poverty**

Rural poverty restricts the ability of local communities to invest in sustainable land use practices while the lack of alternative livelihood options has resulted in continued dependence on forest resources (Obua, et al., 2010).

## **Government policy on modernization of the economy**

This is one of the more important causes of deforestation and forest degradation in Uganda. Government policy advocating fast economic growth and rural transformation is largely centred on agriculture (Obua, et al., 2010). This has led to the Ugandan government making decisions to degazette some forest reserves in order to give the land to investors. The reasons promoted by government are that the land will be used to increase agricultural production however these plans have met public disapproval and resentment (Obua, et al., 2010). Forests such as Butamira Forest in Jinja district on the northern shores of Lake Victoria, as well as forest on Bugala Island in Lake Victoria, have already been degazetted and cut down for sugar cane growing and oil palm growing respectively despite scores of people voicing their opposition (Twesigye, 2008).

### **4.4.1 Conventional forest governance vs REDD+ governance**

#### Governance Prior to REDD+

Over the past 25 years, developing countries have shifted their forest governance approaches towards decentralized forest management that increases efficiency by allowing local actors increased rights and responsibilities and has helped protect forests in many regions. The transition has been so extensive it has been termed “the most significant ... most distinctive and [most] visible shift in national environmental policies since the late 1980s” (Phelps, et al., 2010). Decentralization is used in recognition of the fact that conservation is possible across diverse tenure regimes (Phelps, et al., 2010). Decentralization reforms have primarily targeted low-value forests while forests suitable for commercial exploitation or biodiversity conservation have mostly been reserved to remain under central government control (Phelps, et al., 2010). Although the outcomes of decentralisation may vary, effective decentralization reforms generally have increased local actors’ benefits and rights in forests, reduced costs of protection, and provided opportunities for biodiversity conservation (Phelps,

et al., 2010). A recent analysis of 80 forest commons across 10 countries indicates that rulemaking autonomy at the local level is associated with greater forest carbon storage and higher livelihood benefits (Phelps, et al., 2010).

The challenges of decentralization however, are that central governments, when presented with strong incentives, such as the revenue from trade in carbon offsets or political incentives to recentralize in order to protect national interest, have at times been coerced into reversing forest policy decentralization (Phelps, et al., 2010). Furthermore, in order for central government to be able to protect forests and enhance regrowth, it needs to be able to enforce the laws and regulations which is costly, is isolated to within-park boundaries, and can result in resentment among excluded users, which may undermine conservation goals (Phelps, et al., 2010).

#### REDD+ governance

Subnational governments in developing countries usually lack the capacity and incentives to effectively monitor and manage large areas of forest (Toni, 2011). REDD+ provides both incentives and the opportunities for capacity building, which may encourage more efficient monitoring of land use as well as strengthen government capacity at state and municipal levels (Toni, 2011).

Under REDD+, national governments are expected to play a central role in the success of the mechanism (Tomaselli & Hajjar, 2011). Recipient governments must devise strategies for national land-use and forest-sector planning, stakeholder negotiations, tenure clarification, carbon brokering, national-level carbon accounting, and provision of funds and services to local actors. A national approach is considered integral to the success of REDD+ projects because it is seen as necessary to carry out overall coordination, help avoid leakage; ensure permanence; provide reliable monitoring, reporting, and verification and ultimately to ensure a reduction in carbon emissions in an equitable, efficient and effective way (Tomaselli & Hajjar, 2011). This national level approach in effect converts national governments into the principal forest stakeholders and as such several governments are elaborating national strategies and engaging in REDD+ readiness activities in order to prepare for implementation of the mechanism (Tomaselli & Hajjar, 2011). Readiness activities planned or currently being undertaken in Asia, Africa and Latin America include, *inter alia*, reforming

land tenure systems; stakeholder participation in planning processes; governance development for example, revising policies, strengthening regulatory frameworks, and enhancing monitoring and enforcement; designing systems; enhancing institutional transparency; and promoting production forests through sustainable forest management, certification, and community forestry (Tomaselli & Hajjar, 2011).

The idea of promoting community involvement is listed as one of the safeguards agreed to in the REDD+ negotiations (Tomaselli & Hajjar, 2011). Communities, indigenous populations and other local stakeholders are expected to be part of national level consultations on creating a national REDD+ strategy and are also contemplated to be part of beneficiaries of REDD+ payments (Tomaselli & Hajjar, 2011). However, several issues with proposed REDD+ mechanisms have been pointed out as potentially constraining to local communities and indigenous populations. There have been allegations and criticisms that the principal role for national governments required by REDD+ may possibly lead to recentralization of forest governance, reversing a promising trend of decentralization in several countries and shifting authority from the local forest user back to the central government (Tomaselli & Hajjar, 2011). REDD+ implementation will place new demands on national forest managers such as requirements for detailed carbon-oriented forest management plans, reliable baseline data and subsequent quantitative MRV of emissions reductions at the national level, as well as resources for brokering deals between buyers and sellers (Tomaselli & Hajjar, 2011). Volatility in carbon prices can cause fluctuations and uncertainty in cash flow to communities (Tomaselli & Hajjar, 2011). International carbon markets can also lead to uneven power relations between local sellers and external buyers (Tomaselli & Hajjar, 2011). Another concern is the sustainability of long-term multilateral funding; an issue that still needs to be addressed and raises questions about permanence of carbon stocks (Tomaselli & Hajjar, 2011). Lastly, there are concerns that locking local communities into long-term contracts under REDD+ can threaten their property or user rights and decision-making power.

REDD+, unlike previous forest governance regimes, is a process involving multiple actors, interests and activities as well as several sources of formal and informal power and authority; namely, UN bodies, multilateral organisations, national governments, but also community and indigenous organisations (Corbera & Schroeder, 2011).

These groups all influence each other however their interests and visions for forest and climate governance strategy going into the future may or may not coincide (Corbera & Schroeder, 2011). In some cases, their interests and visions may lie in competition with, or in opposition to, each other resulting in disputes that will require strong and efficient arbitration and dispute resolution mechanisms in order to prevent serious conflict from taking place (Corbera & Schroeder, 2011).

#### **4.5 Carbon projects currently being implemented in Uganda**

##### **The International Small Group and Tree Planting Program (TIST)**

The mandate of TIST is to empower small groups of subsistence farmers to engage in activities such as tree planting and sustainable agriculture, which accomplish local sustainable development goals (REDD-net , 2009). The structure of TIST enables the communities to form small groups that work together to implement the activities (REDD-net , 2009). TIST also facilitates the sale of greenhouse gas credits as a means of providing long-term revenue for the small group participants. Under this system, farmers get paid 35 Ugandan shillings (USH), approximately US\$ 0.14, per tree every year, in two instalments of 17.5 USH, US\$ 0.07, each year (REDD-net , 2009). Additionally, TIST provides networking and capacity building opportunities for both the small groups and individual farmers (REDD-net , 2009).

##### **The Nile Basin Reforestation Project**

The Nile Basin Reforestation project began in 2006 and consists of five small-scale Clean Development Mechanism projects that are being implemented in the Rwoho Central Forest Reserve in South Western Uganda (Peskett, et al., 2011). Around 50 percent of the 9,100 hectares of forest reserve is available for reforestation with pine trees (*Pinus caribaea* 75 percent) and the indigenous trees *Maesopsis eminii* (20 percent) and *Prunus africana* (5 percent) (Peskett, et al., 2011). The total emissions reductions from all five sub-projects are expected to be approximately 260,000 tCO<sub>2</sub>e by 2017 (Peskett, et al., 2011). The overall project is being implemented by the Uganda's National Forestry Authority, in association with local community organizations, with carbon finance provided by the World Bank Biocarbon Fund (Peskett, et al., 2011). In this project, carbon credits are to be purchased by the World

Bank Bio-carbon Fund as a result of the carbon dioxide in the atmosphere that is absorbed by the growing trees (REDD-net, 2009). The money will be paid to the NFA and the communities. The NFA has an agreement with community groups to pay them for the carbon for trees grown on National Forest Reserve land that they manage through a collaborative Forest Management agreement, about 15 percent of the total carbon income, though this is dependent on the trees being suitably maintained (REDD-net, 2009). The issues that arise under this benefit sharing arrangement are that carbon benefits only go to a limited number of community members involved in the community association, so access depends on meeting criteria to join the association (REDD-net, 2009). There is little understanding about the scale of benefits among the community association, which could result in risks for them and the NFA as the project progresses (REDD-net, 2009). As of May 2011, community members had still not received any carbon money although payment is still expected to arrive soon. There is no clear indication of how much money will be available per carbon share.

Appendix 1 provides a comprehensive list of the relevant environmental laws/conventions of importance to Uganda signed after Stockholm, 1992.

## 5 REDD+ Readiness Activities in Uganda

### 5.1 *The status of REDD+ in Uganda*

The extent of forest cover and rates of deforestation have fitted Uganda to be labelled as a Low Forest cover High Deforestation rate (LFHD) country (Wertz-Kanounnikoff & Kongphan-apirak, 2009). Examples of other LFHD countries are Ecuador, El Salvador, Ethiopia, Ghana, Guatemala, Guinea, Liberia, Nepal, and Tanzania (Wertz-Kanounnikoff & Kongphan-apirak, 2009). High Forest cover and High deforestation (HFHD) countries include Bolivia, Brazil, Cambodia, Cameroon, Equatorial Guinea, Honduras, Indonesia, Lao PDR, Nicaragua, Paraguay, Papua New Guinea and Zambia (Wertz-Kanounnikoff & Kongphan-apirak, 2009). Low forest cover is described as forest cover <40 percent while high forest cover is >40 percent (Wertz-Kanounnikoff & Kongphan-apirak, 2009). Low deforestation rates are <0.5 percent while high deforestation rates are >0.5 percent (Wertz-Kanounnikoff & Kongphan-apirak, 2009). Although most readiness activities are concentrated in countries of high deforestation/high forest cover where additionality is highest, a similar proportion of activities can be found in other forest cover contexts where additionality is far lower (Wertz-Kanounnikoff & Kongphan-apirak, 2009). The principle of additionality requires that the implementation of a carbon project should reduce greenhouse gas emissions below the level of emissions that would have occurred in the absence of the project.

Although Uganda is currently still in the process of developing a National REDD+ Strategy, Uganda's REDD+ Readiness Preparation Proposal (R-PP) Secretariat and REDD-Plus Working Group (RWG) have developed an Awareness and Communications Strategy as well as an Outreach and Participation Plan (Government of Uganda, 2011). The Awareness and Communications Strategy describes how Uganda's REDD-Plus R-PP Secretariat and RWG mean to raise awareness and communicate about REDD+ and the R-PP in Uganda (Government of Uganda, 2011). The Awareness and Communications Strategy notes that REDD+ in Uganda will be a three-phased program: Phase One (2010-2013) is the Readiness phase, whereby the country undertakes readiness activities, such as preparing a REDD+ Readiness Strategy (Government of Uganda, 2011). These activities involve the development of national strategies or action plans, policies and measures and capacity-building

(Government of Uganda, 2011). Phase Two (2013-2015) is the implementation phase of these National REDD+ Readiness Strategies or Action Plans that could involve further capacity-building and demonstration activities (Government of Uganda, 2011). Phase Three of REDD+ shall involve results-based actions that shall be fully measured, reported and verified. This phase is also known as the Carbon Market phase where the country actually enters into the REDD+ Carbon market (Government of Uganda, 2011).

The Outreach and Participation Plan (March 2010) was developed to facilitate the multi-stakeholder consultation and participation process aimed at sensitizing various stakeholders on REDD+ and its concepts, soliciting their views and promoting understanding of REDD+, capturing their presumed expectations and anticipated roles and responsibilities in the REDD+ process (Government of Uganda, 2011).

The Awareness and Communications Strategy and the Outreach and Participation Plan were developed to assist Uganda in preparing a REDD+ Readiness Preparation Proposal (R-PP) for the country, which was submitted in May 2011 with support from the World Bank Forest Carbon Partnership Fund and the Norwegian Government (Government of Uganda, 2011). Prior to the R-PP, Uganda had also submitted her Readiness Project Identification Note (R-PIN) in July 30 2008 and the Katoomba Ecosystem Services Incubator (KESI) group had completed a REDD Opportunities Scoping Exercise (ROSE), which it published in September 2009. The objective of ROSE was to identify a portfolio of promising REDD+ projects that can assist communities to access PES (under the 'payments for environmental services' scheme) markets or funds (Nabanoga, Namaalwa, & Ssenyonjo, 2010). The Group also analysed policy, legal and institutional gaps and opportunities and generated recommendations. More details about the Katoomba project and Uganda's R-PP will follow in the next sections.

Finally, Uganda is also in the process of developing a Consultations and Outreach Plan (REDD-C&P) to further consultation and outreach with the stakeholders; particularly to address the diversity of stakeholders and their uniqueness in terms of relevant REDD+ issues and languages (Government of Uganda, 2011).

## **5.2 Katoomba Ecosystem Services Incubator (KESI) group**

The Katoomba Ecosystem Services Incubator was established by Forest Trends (an international non-profit organization that is comprised of leaders from conservation organizations; forest products firms; research groups; multilateral development banks; private investment funds and philanthropic foundations) to support community-based initiatives to access carbon and other ecosystem service markets (The Katoomba Group, 2009). The main focus of the Incubator is community and biodiversity-centred projects with potential for long term financial viability and poverty reduction benefits (The Katoomba Group, 2009). The Incubator provides support for project design and development phases by providing targeted technical, financial and business management assistance to enable projects to effectively engage private investors or buyers (The Katoomba Group, 2009). The vision behind the Incubator is to create portfolios of REDD+ demonstration activities such that project selection can be taken in a systematic rather than ad hoc manner, resulting in a strategically selected portfolio of projects that embody key opportunities (or constraints) (The Katoomba Group, 2009). First established, Latin America, with a portfolio of six projects, KESI has expanded to East and West Africa (The Katoomba Group, 2009). The technical and business support provided is expected to unlock REDD+ potential, build capacity and contribute to national policy formation and objectives (The Katoomba Group, 2009). Similar scoping exercises to the one conducted in Uganda were conducted in Tanzania and Ghana.

Uganda's natural forest vegetation falls under three broad types: Tropical High Forest (THF) well stocked, Tropical High Forest low stocked, and woodlands (The Katoomba Group, 2009). Bush lands, grasslands and wetlands, are excluded from Uganda's definition of forest cover (The Katoomba Group, 2009). Well stocked THF are secondary colonisers occurring at medium altitudes with good rainfall and short and mild dry seasons for example, the montane and lakeshore areas, while Low-stocked THF are the product of selective removal of trees for timber or charcoal, or a history of human occupancy such as agriculture, fire or grazing (The Katoomba Group, 2009). Characteristics of low-stocked THF are the canopy is broken and irregular with characteristic dominant trees (usually tall at maturity with straight trunks) and thick and complex undergrowth especially below canopy gaps (The Katoomba Group, 2009). In woodlands the woody species usually form a single layer

with a relatively short, closed/open canopy that is underlain by a more or less continuous grass layer (The Katoomba Group, 2009). The Katoomba Group's first task was to define the REDD project types in the study; namely, Collaborative Forest Management (CFM) under the National Forestry Authority, Community Resource Management (CRM) under Uganda Wildlife Authority (UWA), Community Wildlife Areas (CWA) and private forests, with a special category of customary forests. The study excluded community forests because they had not been established at the time the study was undertaken (The Katoomba Group, 2009).

The Group then ranked the viability of the various REDD+ project types, in terms of priority, using a list of criteria which was as follows:

- Opportunity cost associated with alternative (to REDD+) land use
- Clarity of land tenure
- Clarity of tree tenure (and therefore potentially associated carbon property rights)
- Size of forest blocks and/or aggregation potential
- Biomass or carbon levels of the ecosystem
- Likely local institutional or governance capacity
- Probable leakage risk for deforestation actors and drivers
- Replicability (in other words, the potential for scaling up to other similar areas)
- Level of community benefits (as a proxy for poverty reduction)
- Potential for bundling or combining carbon with other ecosystem services
- The deforestation threat level (often associated with population density)
- Likely level of government interest (e.g., could be higher for state managed areas)
- Applicability of existing carbon methodology
- Poverty status in area where forest is located
- Contribution to Uganda's carbon emissions reduction profile (The Katoomba Group, 2009).

The potential project types were scored against the criteria above, taking into account the existence of institutional arrangements/opportunities for bringing together many players to increase project size or scale, as well as the potential carbon additionality

based on prevailing deforestation threat levels, land use opportunity cost and clarity of carbon property rights (The Katoomba Group, 2009). The results of the study are explained below:

#### First priority

##### **Low-stocked Tropical High Forest under Collaborative Forest Management (CFM)**

The highest potential for REDD+ project development is in Low-stocked (or degraded) THF under CFM with the National Forestry Authority (NFA), where the main driver of deforestation and degradation is illegal timber harvesting (The Katoomba Group, 2009). This is because of its potential for achieving high emission reductions per hectare, and in view of the established institutional systems involving communities in direct forest management and the benefit sharing provisions; about 26 Collaborative Forest Groups have already signed management and benefit sharing agreements with the NFA, with about 68 more in the process of negotiation (The Katoomba Group, 2009). Possible sites identified include South Busoga, Sango Bay and Mabira Central Forest Reserves (CFRs) in the lake-shore region, and Budongo and Kasyoha-Kitomi CFRs in the Albertine Rift (The Katoomba Group, 2009).

#### Second priority

##### **Low-stocked Tropical High Forest on private land**

Low stocked THF under private ownership was ranked second in potential for REDD+ projects because of the high potential for additionality resulting from addressing the constant agricultural land pressure from surrounding communities (The Katoomba Group, 2009). Private forests in the northern, central and western regions are listed as possible sites (The Katoomba Group, 2009).

#### Third priority

##### **Low-stocked Tropical High Forest under Community Resource Management (CRM)**

Low stocked THF under CRM with the Uganda Wildlife Authority (UWA) was ranked third, as a potential for REDD+ projects primarily for the potential enhancement of carbon stocks as forests recover (The Katoomba Group, 2009). The UWA already has well established community involvement and revenue sharing

mechanisms however community discontent over some of these mechanisms may result in these arrangements needing to be revised in order for the REDD+ project to be successful (The Katoomba Group, 2009). This forest type scored lower than CFM due to concerns about revenue sharing arrangements as well as its focus on wildlife as opposed to tree management (The Katoomba Group, 2009). Once again, the main deforestation/degradation driver is illegal timber harvesting. Possible sites for REDD+ projects include Pakanyi sub-county near Murchison Falls National Park in Masindi District, and CRM sites around Mt.Elgon, Semliki and Queen Elizabeth National Parks (The Katoomba Group, 2009).

#### Fourth Priority

##### **Woodlands under NFA, private ownership and UWA**

The last priority was given to the woodland project types, mainly because of their lower carbon stocking potential (The Katoomba Group, 2009). Even though all woodlands are threatened, mainly by charcoal production and over-grazing, those under the UWA are less vulnerable than those under the NFA and private management (The Katoomba Group, 2009). It must be noted that the opportunity costs of overcoming these two major threats are potentially high however, REDD+ can still be implemented under NFA or private management in Kibale, Hoima and Kyenjojo Districts and in the northern, north-western and eastern regions, as well as Community Wildlife Areas (CWAs) under the UWA around Lake Mburo National Park and Kaiso-Tonya, and CRM in Karuma, Toro-Semliki and Kabwoya wildlife reserves (The Katoomba Group, 2009).

The Katoomba Group estimates that in aggregate all these different areas comprise about 68 percent of Uganda's forest cover (using NFA 2005 Biomass data) and roughly 70 percent of stocks or emissions reductions potential (The Katoomba Group, 2009). Most of the potential lies in state-managed forests (either under the NFA or UWA) with some mechanism for community participation (The Katoomba Group, 2009). REDD+ can be implemented in forests on private land or potentially communal forests, where communities have more secure land tenure, however, there needs to be more interventions in order to address the challenges of rudimentary institutional structures and poor or non-existent deliberate forest management (The Katoomba Group, 2009).

### **5.3 Uganda's REDD+ Readiness Preparation Proposal (R-PP)**

#### **5.3.1 An overview of the Uganda's R-PP**

The purpose of a Readiness Preparation Proposal (R-PP), as set out in the FCPF's Program Document titled 'Review and Assessment of Readiness Preparation Proposals' (October 2009), also known as *Program Document FMT 2009-1, Rev. 3*, is to:

“Build and elaborate on the previous Readiness Plan Idea Note (R-PIN) or a country's relevant comparable work, to assist a country in laying out and organizing the steps needed to achieve 'Readiness' to undertake activities to reduce emissions from deforestation and forest degradation (REDD), in the specific country context. The R-PP provides a framework for a country to set a clear roadmap, budget, and schedule to achieve REDD Readiness. The FCPF does not expect that the activities identified in the R-PP and its Terms of Reference (ToR) would actually occur at the R-PP stage, although countries may decide to begin pilot activities for which they have capacity and stakeholder support. Instead, the R-PP consists of a summary of the current policy and governance context, what study and other preparatory activities would occur under each major R-PP component, how they would be undertaken in the R-PP execution phase, and then a ToR or work plan for each component. The activities would generally be performed in the next, R-PP execution phase, not as part of the R-PP formulation process” (FCPF TAP Review Synthesis, 2011).

Uganda's R-PP was developed from 2009-2010 and, having been reviewed, was finally submitted to the FCPF in May 2011 (Government of Uganda, 2011). The development of Uganda's R-PP was coordinated by the REDD-Plus Working Group (formed in March 2010) and supervised by the REDD-Plus Steering Committee (formed in June 2010), while the day to day undertaking, including the preparation of the R-PP document, was undertaken by the R-PP Secretariat housed in the National Forestry Authority (Government of Uganda, 2011). The formulation process included consultations and engagement with the various stakeholders including Government (Executive (Ministries and Government Agencies) and Legislative/Parliament), nongovernmental organisations/civil society organisations, the private sector, academia, cultural groups, special groups, forest dependent people, communities,

among others (Government of Uganda, 2011). The main steps of the formulation process were:

i) **Preparation and presentation of Uganda's REDD Project Identification Note (R-PIN)**

The R-Pin served as a formal request to the FCPF for Uganda's participation in the FCPF program. It was submitted to the World Bank/Forests Carbon Partnership Fund in June 2008 (Government of Uganda, 2011).

ii) **Mobilizing financial support**

The preparation of Uganda's R-PP was funded by the Forest Carbon Partnership Fund through the World Bank to the amount of US\$ 200,000, with additional financial support from the Norwegian Government amounting to US\$ 183,500 specifically to facilitate country-wide stakeholder consultations and participation (Government of Uganda, 2011). Other types of in-kind support such as information, time and resources was provided by several local, national and international organizations (Government of Uganda, 2011).

iii) **REDD – Plus Readiness Proposal preparation**

This process involved the following (Government of Uganda, 2011):

a) **Consultations with Stakeholders**

Countrywide consultations with stakeholders were conducted from April 2010 – February 2011.

b) **Studies**

Studies were carried out by Consultants contracted by the National Focal Point to provide information about the following:

- Land use, forest policies and governance issues
- Options for the REDD+ Strategies
- REDD-Plus Implementation Framework
- Likely Social and Environmental Impacts (SESA)
- Options for developing Reference Level
- Systems to Measure, Verify and Report (MRV) the effect of REDD+ Options on sustainable forest management in Uganda
- Implications of evictions on REDD+ implementation in Uganda

iv) **Administration and Documentation**

The National Forestry Authority established a 3-person R-PP Secretariat between May-April 2011 under the leadership of the National REDD-Plus Focal Point to prepare the document.

v) **Approval**

The Uganda REDD+ Readiness Preparation Proposal was duly approved by the Minister of Water and Environment and Minister of Finance, Planning and Economic Development in accordance with government procedures.

The main goal expressed in Uganda's R-PP is “**Uganda ready for REDD+ by 2014**” (Government of Uganda, 2011). The timeline for Uganda's readiness has therefore been set at just over 3 years from the date the R-PP was submitted to the FCPF.

The following priority actions for implementation during 2012-2014 are:

- a) Defining institutional arrangements for implementing Uganda's REDD+ Strategy.
- b) Developing policy, legal and operational procedures and guidelines for REDD+ implementation.
- c) Capacity building for REDD+ implementation.
- d) Defining strategies and actions for addressing deforestation and forest degradation and enhancing carbon stocks.
- e) Developing a national forest reference emissions level and forest reference level including future scenarios.
- f) Developing a national forest monitoring system to measure, report and verify Uganda's REDD+ options.
- g) Developing a framework for assessing key social and environment risks and potential impacts of a REDD+ strategy options and implementation framework (Government of Uganda, 2011).

If these actions are met, the following outputs are envisaged:

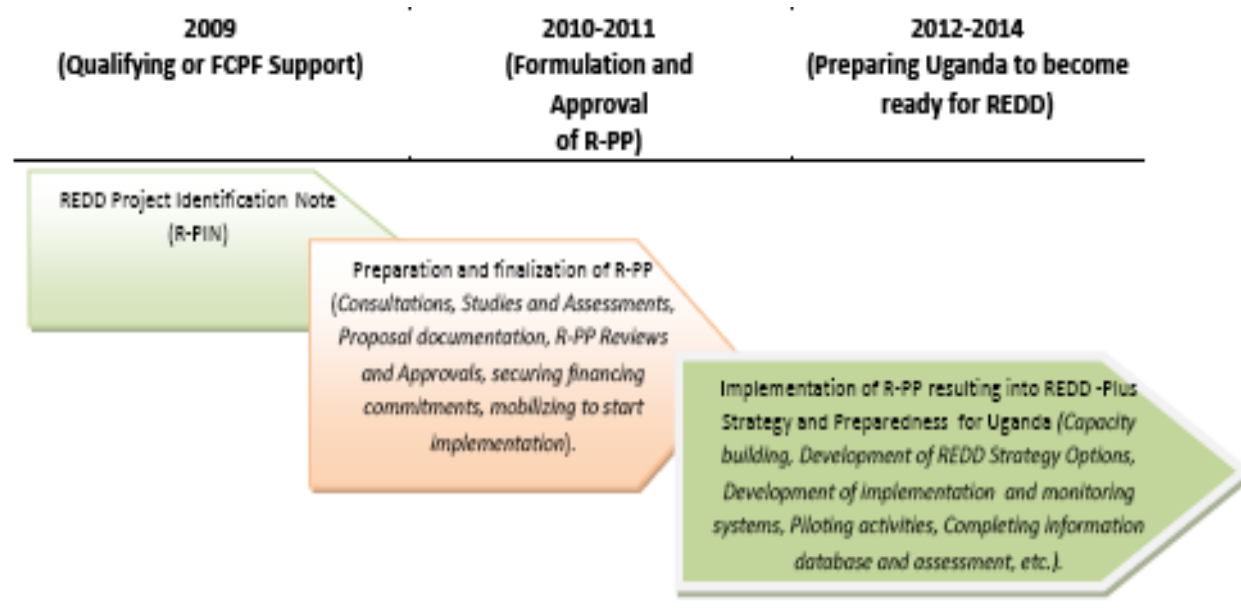
- a) Institutional arrangements and modalities for implementing Uganda's REDD+ Strategy.
- b) Policy, legal and operational procedures and guidelines for implementing Uganda's REDD+ Strategy.

- c) National capacity and preparedness for implementing REDD+ Strategy.
- d) Strategies and actions for addressing deforestation and forest degradation and, enhancing carbon stocks.
- e) National forest reference emissions level and future scenarios.
- f) A national monitoring system for Measuring, Reporting and Verifying effects of REDD+ Strategy options on GHG emissions and other multiple benefits.
- g) Framework for assessing key social and environment effects of REDD+ Strategy options.
- h) Information/database on deforestation and forest degradation, forest governance and, new funding mechanisms.
- i) Potential emissions reduction activities and sites (Government of Uganda, 2011).

These outputs will be the basis of a National REDD+ Strategy for Uganda, developed through a government led participatory process, which will outline Uganda's approach to REDD+ (Government of Uganda, 2011). The development of the Strategy will be a multi-institutional process: The National Policy Committee on Environment will be responsible for high level legitimacy of the National REDD+ Strategy for Uganda and will be assisted by a REDD-Plus Steering Committee which will supervise the R-PP implementation and draw on technical support from a National Technical Committee, taskforces and external expertise as appropriate. The Ministry of Water and Environment, through the National Focal Point (Forestry Sector Support Department), will undertake the day-to-day implementation and coordination tasks (Government of Uganda, 2011). Specific tasks will be assigned to other suitable institutions both within and outside government (Government of Uganda, 2011).

The R-PP is to be implemented in three years (2012-2014) as illustrated below:

**Figure 2 Uganda's timeline for REDD+ readiness activities**



The R-PP stipulates that Uganda requires US\$ 5,181,000 to finance its readiness activities; with funding expected to come from government sources (US\$ 199,000); the FCPF (US\$ 3,375,000) and development partners (US\$ 1,607,000) (Government of Uganda, 2011). Appendix 4 provides a summary budget for R-PP implementation. The REDD-Plus Steering Committee will continue to be responsible for the formulation of the R-PP until the R-PP is ready for implementation, presumably up to end of 2011, so that the negotiations for funding and implementation of the R-PP between Uganda and FCPF (and possibly other partners) continue to benefit from stakeholders ownership and participation through the Steering Committee (Government of Uganda, 2011).

The Ministry of Water and Environment is currently responsible for forestry resources management in Uganda and therefore shall be the lead ministry responsible for coordinating the implementation of the R-PP (Government of Uganda, 2011). The ministry's main functions will be to:

- i) Supervise, co-ordinate and report on the progress of preparing REDD+ Strategy for Uganda.
- ii) Ensure that R-PP budget is reflected in the lead and sectoral ministry's plans, budgets and accounts.

- iii) Facilitate the integration of REDD+ strategies and actions into plans and budgets of implementing agencies.
- iv) Provide a stable and enabling work environment for the implementation of the R-PP.
- v) Convene the REDD-Plus Steering Committee (RSC) and the National Technical Committee (Government of Uganda, 2011).

The day to day tasks of implementation will be carried out by the National REDD-Plus Focal Point; which shall be responsible for facilitating implementation linkages between the Ministry of Water and Environment and other implementing institutions and REDD-Plus Steering Committee and the National Technical Committee (Government of Uganda, 2011). The Ministry of Water and Environment has designated the Forestry Sector Support Department (FSSD) to serve as National REDD-Plus Focal Point, effective 2012, because of its mandate over forestry policy management in Uganda (Government of Uganda, 2011).

It is apparent that the Ministry of Water and Environment, with all its current responsibilities including coordinating R-PP implementation, will have to be a strong and capable institution.

Part of the research for this case study included an questionnaire (Appendix 2), in lieu of an interview, which was given to two members of Uganda's REDD+ Readiness Preparation Proposal development team (a full list of the team can be found in Appendix 3): Mr Xavier Mugumya, Uganda's National Coordinator of Climate Change and National REDD-Plus Focal Point and Ms Sara Namirembe, the Coordinator of East and Southern Africa Katoomba Group and currently a Research Analyst in environmental services with the World Agroforestry Centre (ICRAF). Potential institutional barriers to the effective implementation of the R-PP are included in both Sara Namirembe's and Xavier Mugumya's responses to the questionnaire. Sara Namirembe believes that a REDD+ unit is needed in order to 'bring together [coordinate] the NFA (which has the expertise and resources) with the Forestry Sector Support Department which has the institutional mandate to address issues in forests both in reserve and on private land.' Xavier Mugumya suggests a number of barriers to R-PP implementation that may pose real challenges including:

- Very high coordination costs at national level:
  - Separate ministries with well “protected territories”
  - Absence of compelling incentives to collaborate and integrate actions
  - Ideological differences between the disciplines including little awareness of the potential value of integration.
  
- Institutional factors
  - Technical capacity
  - Inadequate financial resources
  - Political goodwill
  - Governance factors

#### **5.4 *Uganda’s REDD+ Readiness Activities: A comparison with Cambodia***

A comparison between Uganda and another REDD+ country (Cambodia) has been carried out in order to illustrate how Uganda is faring in its REDD+ preparation activities; especially with regard to progress and whether the challenges Uganda is facing are similar across other REDD+ countries or are unique to Uganda.

##### **5.4.1 An overview of Cambodia’s forestry sector**

Cambodia is another developing country similar to Uganda in that it has high deforestation and thus has also embarked on REDD+ Readiness activities. Cambodia is classified as a High Forest cover High Deforestation country, with approximately 59 percent forest cover (2005 estimates), one of the highest proportions among countries in the region (Bradley, 2011). This proportion translates to about 10.7 million square hectares (ha) of forest, including large tracts of evergreen, semi-evergreen and deciduous forests concentrated in the southwest, east, and north of the country (Bradley, 2011). In Cambodia, forest is defined as follows:

- Tree cover: the area with the forest cover of 10 percent and above
- Minimum land areas: 0.5 ha and above
- Tree height: 5m and above (Bradley, 2011)

Uganda’s definition of forest demands that the trees at maturity be more than 5 m tall, while the tree canopy cover is 30 percent and above, so there are some slight

differences in the definitions of the two countries. The definition of forests is important not only to define what is and what is not a forest but also for the measurement of forest carbon stocks, crucial criteria for REDD+. Cambodia's 'REDD+ Roadmap' has already indicated that Cambodia's definition of forest will be reviewed and revised according to emerging international policies and standards (Bradley, 2011). Furthermore, the REDD+ Preparation Proposal that Cambodia submitted in January 2011 recommends the minimum crown cover be revised to 20 percent, since the existing 10 percent is difficult to detect using available remote-sensing imagery, while keeping the other thresholds the same (Bradley, 2011).

Cambodia has a predominantly rural population that relies on rain-fed rice farming systems for survival (Bradley, 2011). There are also scattered Community Forests (CFs) throughout the country that are vital to forest-dependent communities as a source of timber as well as non-timber products (Bradley, 2011). Forests are therefore important to Cambodia because they act as buffers/safety nets in times of food scarcity and provide other services to the population (Bradley, 2011). Effective management of Cambodia's forests is complicated by an institutional framework in which several government agencies are involved and share responsibilities (Bradley, 2011). Jurisdiction over Cambodia's forests primarily rests between the Ministry of Environment (MoE) and the Ministry of Agriculture Forestry and Fisheries (MAFF) (Bradley, 2011). Cambodia has extensive protected areas and these areas, covering 3.1 million ha of national parks, wildlife sanctuaries, protected landscapes, and multiple use areas, fall under the jurisdiction of the Ministry of Environment (Bradley, 2011). The Ministry of Agriculture Forestry and Fisheries has jurisdiction over the country's Permanent Forest Estate (about 70 percent of the country's forest area) as well as the flooded forests and mangrove forests outside the protected areas system (Bradley, 2011). The Forestry Administration (FA) and Fisheries Administration (FiA) fall under MAFF and are tasked with direct management of the forest resources (Bradley, 2011).

Cambodia in recent years has embarked on reform of the forestry sector and shifted towards adopting more sustainable forest management practices (Bradley, 2011). In 2002, Prime Minister Hun Sen issued a moratorium on logging throughout the country that led to the cancellation or suspension of all industrial logging concessions

(Bradley, 2011). Nonetheless, forests continue to be cleared and degraded for various reasons for example, agricultural expansion (both small and large scale), illegal logging, infrastructure development, wood fuel demand and mining exploration (Bradley, 2011). Existing forests are threatened as business investments prompt the conversion of forestland to agricultural plantations or economic land concessions (ELCs) (Bradley, 2011). Illegal logging occurs particularly in border areas and often with the involvement of the military or renegade soldiers. Mining and agricultural concessions have encroached into protected areas (Bradley, 2011). As a result of all these pressures, the net annual rate of deforestation has been estimated at 0.5 percent during the period 2002 – 2005/6, with some areas experiencing rates as high as two percent per year (Bradley, 2011).

In recent years, Cambodia has shown strong enthusiasm for developing a national REDD+ programme. The Forestry Administration, under the Ministry of Agriculture Forestry and Fisheries, has been at the forefront of this effort (Bradley, 2011). Estimates of how much REDD+ could generate in annual average net income for Cambodia have ranged widely and there are no universally accepted estimates (Bradley, 2011). The Forestry Administration's current annual operating budget is approximately US \$1.5 million, while annual revenues from its activities (such as auctioning of timber) to the national budget are estimated at US \$500,000 – \$600,000 (Bradley, 2011). REDD+ would represent a significant increase in capacity of the forestry sector in Cambodia to generate revenues. Turning back to Uganda's situation, the National Forestry Authority also faces major challenges around long-term financial sustainability even though it has sufficient support of development partners and the government of Uganda in the short term, for the first 3 – 4 years (National Forestry Authority, 2008). It is therefore important for the NFA to focus fundraising initiatives and new sources for revenue collection such as payment for environmental goods, carbon credit markets, plantation investment plans and the like, in order to ensure that it can carry out its mandate effectively.

#### **5.4.2 Cambodia's REDD+ Readiness Activities**

The development of Cambodia's national strategy for REDD+ has been primarily spearheaded and supported by development partners, including the United Nations

Development Programme (UNDP), the Food and Agriculture Organisation of the United Nations and the Japan International Co-operation Agency (JICA), and in the future will be funded by JICA, the UN-REDD Programme and the World Bank's Forest Carbon Partnership Facility (Bradley, 2011). Uganda is not a member of UN-REDD Programme. Cambodia, with the support of its development partners and nongovernmental organisations, has over the past three years made significant strides towards laying the groundwork for developing Cambodia's national REDD+ strategy. Cambodia has submitted its R-PP (2011) and is thus a member of the Forest Carbon Partnership Facility (Bradley, 2011). Cambodia has also been granted membership to the UN-REDD Programme (UN-REDD, 2011). In terms of funding for REDD+ Readiness, Cambodia has an advantage over Uganda in that Cambodia is a member of both FCPF and the UN-REDD Programme. Effective planning and implementation of REDD+ Readiness activities largely relies on having adequate financial resources to fund and support these activities. As part of UN-REDD, Cambodia will receive assistance in planning and designing an effective MRV system, one of the major requirements of REDD+ implementation. Uganda is not a member of UN-REDD and thus will not have this benefit.

#### Key challenges for REDD implementation in Cambodia

##### **a) Lack of Clear Legal Framework**

Much of the policy and legal framework in Cambodia is relatively new so lessons have to be learned in implementing the frameworks that will inevitably be used to amend or replace existing instruments (Bradley, 2011). In addition, there are areas in the framework which contain gaps that need to be addressed for example, it is not yet clear how REDD+ revenues will be channelled, who will have authority to sell credits in all jurisdictions, how a demonstration project can be nested in a national approach, and how liability for under-delivery will be addressed (Bradley, 2011). In Uganda, the government is of the opinion that, in general, the existing policies and legislation concerning forestry resources development and management provide an adequate basis for REDD+ (Government of Uganda, 2011). Government cites weak implementation of policy and enforcement of law and the mismanagement of institutional mandates as the main weaknesses in Uganda's legal framework (Government of Uganda, 2011). Laws related to forestry management have been established from as early as 1995.

**b) Demarcation of the Forest Estate**

The lack of clear demarcation of the forest estate is a major challenge because without knowledge of where the borders of the forest estate are, it is difficult to define the boundaries for sub-national REDD+ projects or to define a national REDD+ carbon accounting system (Bradley, 2011). There has been clear demarcation of forest boundaries in Uganda in order to curb agricultural encroachment however this has achieved mixed results as any forest patches outside the boundaries are quickly removed (Government of Uganda, 2011).

**c) Secure Forest Tenure and Rights to Carbon**

REDD+ is expected to help alleviate poverty and improve local livelihoods for Cambodia's population. Tenure rights do not necessarily guarantee the rights to forest carbon revenue, however, they do strengthen the chance for access to these (Bradley, 2011). Cambodia's system of land and forest titling currently faces huge challenges, and well-resourced interventions have achieved only limited success (Bradley, 2011). Tenure rights that currently exist are insecure due to weak governance, poor coordination among ministries, and rent seeking for example, the mining industry has been particularly egregious in its disregard for existing tenure by securing exploration licenses without local consultation, also often within protected areas (Bradley, 2011). Uganda is also plagued with policy and legal gaps relating to licensing of carbon trade and the clarification of carbon rights (Government of Uganda, 2011). This is a challenge because it reduces proper jurisdiction and law enforcement over the forests, increases the likelihood of conflict over ownership of forestry resources and leads to forest degradation.

**d) Forest Permanence**

There are concerns about Cambodia's long-term commitment to REDD+ and the permanence of forests due to pressure increasing on the government to convert the country's forests to agricultural production (Bradley, 2011). This is precipitated by the global increase in demand for foodstuffs as well as biofuels (Bradley, 2011). It is not yet clear whether REDD+ will offer sufficient incentive to maintain forest cover, particularly when forest carbon credits along with forest ecosystem services are valued in relation to land use alternatives (Bradley, 2011). Uganda faces a similar problem. The Ugandan Government has already

degazetted a number of previously protected forests for economic expansion and even more forests are at risk. The financial benefits of REDD+ have to meet the opportunity costs of foregoing agricultural or industrial expansion otherwise clearing of natural forests for land use with high financial returns cannot be prevented.

**e) REDD+ Financing**

There remains a critical gap between financing available for REDD+ start-up in Cambodia and budgeting for REDD+. Although Cambodia is a member of the FCPF and UN-REDD, it was not among the first 20 countries selected by the FCPF for support in the development of a national REDD+ strategy, nor was it among the first nine countries identified by UN-REDD for REDD+ support (Bradley, 2011). The risk is that while efforts are made towards REDD+ readiness, the investments required for implementation may not be forthcoming (Bradley, 2011). Uganda's financing from the World Bank is even more limited in that Uganda is only part of the FCPF and not UN-REDD.

**f) Capacity to Enforce Forest Laws and Control Drivers of Deforestation and Degradation**

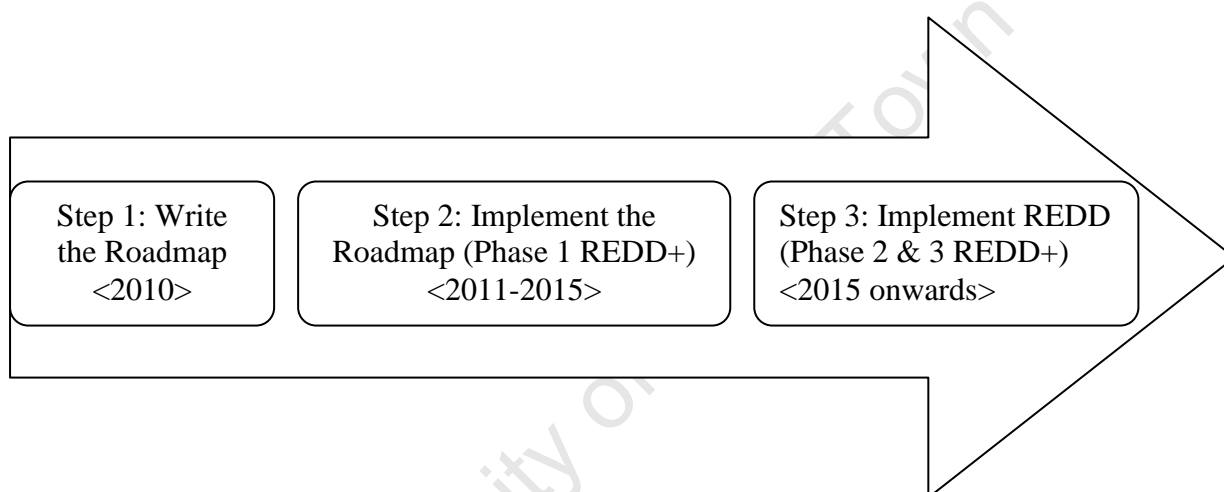
A major threat to Cambodia's forests is illegal logging. Cambodia is addressing this problem at a national level by investigating the feasibility of a Voluntary Partnership Agreement under Forest Law Enforcement Governance and Trade (FLEGT) (Bradley, 2011). FLEGT is an EU effort that seeks to develop and implement measures to address illegal logging and related trade (Bradley, 2011). It allows legally harvested timber to be exported to the EU by means of licenses issued in the signatory countries, while timber shipments without a permit would be denied entry (Bradley, 2011). The problem of illegal logging is more complicated when examined at the local level. Illegal timber harvesting continues, particularly in more remote areas, unabated and often with the involvement of the military and renegade soldiers.

Cambodia's National REDD+ Task Force

Since January 2010, several of Cambodia's development partners (UNDP and FAO, with technical support from the UN-REDD Programme and the United National

Environment Programme - World Conservation Monitoring Centre (UNEP-WCMC)) have been facilitating a National REDD+ Task Force to develop Cambodia's REDD+ Roadmap (Bradley, 2011). The National REDD+ Task Force is currently led jointly by the FA however there is an understanding that after an interim period, a more permanent National REDD+ management mechanism will be established (Bradley, 2011). The Task Force will complete its work in a three-step approach: Step 1 in 2010 that prioritises writing the Roadmap, Step 2 to implement the Roadmap, and Step 3 to implement REDD+ (Bradley, 2011).

*Steps in the national REDD Task Forces' work process:*



Cambodia's REDD+ Roadmap is synonymous with its R-PP. The timelines for implementation of the R-PP's in the two countries are relatively similar: They both submitted their R-PPs in 2011 and while Cambodia aims to be ready for REDD+ in four years (in 2015), Uganda has set aside three years for implementation of its R-PP and aims to be REDD+ ready by 2014.

#### Cambodia's National Forest Accounting and MRV Development

Under the emerging formal REDD+ framework, participating countries will be required to establish a system for monitoring, reporting and verifying emissions reductions therefore Cambodia is committed to continue the development of its national MRV system. The MRV systems are expected to include national greenhouse gas accounting, forest cover change assessments, a national forest inventory, carbon stock change assessments, establishment of a national carbon registry, development of

standard reporting procedures, and independent third party verification (Bradley, 2011). These efforts are funded by the Japanese Government which is pledging significant financial resources, of which more than US \$3 million will support a national forest inventory for the country (Bradley, 2011). The National REDD+ Taskforce has specified a number of priority actions for developing Cambodia's MRV system. The list encompasses the following objectives (Bradley, 2011):

- Establish an MRV/REL technical team under the National REDD+ Taskforce;
- Conduct a capacity building needs assessment;
- Provide targeted training;
- Establish an MRV Secretariat office;
- Establish national definitions for REDD+ including forest definition, forest classes, reference time period, and carbon pools;
- Develop a national sampling plan for forest carbon inventories;
- Reassess existing land use change assessments and conduct additional;
- Use results from field measurements to estimate emission factors for various land cover changes;
- Construct a national carbon stock lookup table;
- Develop the historical baseline;
- Develop the future reference scenario;
- Support sub national demonstration using a nested approach so that sub national Reference Emissions Levels (REL) contribute to the national REL. REL refers to the baseline scenario by which reductions in emissions from deforestation and degradation are measured. The precise modality for establishing the REL is still uncertain although it is likely to be based on historical data with adjustments for national circumstances, which are not yet fully defined.

Cambodia clearly defines the characteristics of its MRV system, what the system is going to entail and how it is going to be funded. Uganda on the other hand, has no such specifications because the Ugandan government is unable to finalize the design of the MRV system in the absence of definitive guidelines from the UNFCCC policy process (Government of Uganda, 2011). Therefore, the design of Uganda's MRV system is likely to be a gradual process. The difference in Cambodia's approach to MRV development and Uganda's approach may illustrate the advantage Cambodia

has gained from its participation in the UN-REDD Programme. If Uganda was part of UN-REDD and could benefit from that assistance, Uganda may be more dynamic in its approach to MRV development.

### Benefit Sharing

Currently no forest carbon revenues have yet been earned in Cambodia; however, there are a number of anticipated challenges to setting up an effective benefit sharing mechanism for the time when significant revenues do arrive (Bradley, 2011).

- i) There is a need to coordinate decision-making among many different line agencies, each with different interests and priorities.
- ii) The scale of potential revenues is as yet undefined, depending on a fluctuating market as well as Cambodia's ability to reduce deforestation.
- iii) There is limited experience and capacity with payment delivery mechanisms in the country, particularly those which can effectively deliver payments to the local level.
- iv) Laws and administrative practices with regards to transparent and accountable fiscal management are still under development. (Bradley, 2011).

Uganda currently does not have a benefit sharing mechanism planned for REDD+ but the R-PP does indicate that such a mechanism should be developed and gazetted based on an assessment of its potential to provide sufficient incentive to all stakeholders in an affordable and sustainable way within the existing resource limitations.

### Demonstration activities

Cambodia has embarked on a number of REDD+ pilot projects in order to gain experience in REDD+ implementation on the ground and to see if the REDD+ mechanism can be effective in providing sufficient incentives for forest protection (Bradley, 2011). The two most notable examples of these pilot projects are the Oddar Meanchey Community Forestry (CF) REDD+ project (initiated January 2008) and the Seima Protection Forest REDD+ project (initiated July 2008) in Mondulkiri province (Bradley, 2011). These are the first two projects to be implemented in Cambodia, and they have made significant progress towards selling forest carbon credits in the voluntary market (Bradley, 2011). Uganda currently has no pilot projects, however, there is at least one pilot project that is currently advanced in the planning phase.

One of the questions in the questionnaire asked the two ‘interviewees’ to select the most important incentive for Uganda to participate in REDD+ out of the following: **Opportunities for financial inflows; sustainable forest management; security of tenure; Improvement or maintenance of ecosystem services; improvement of national forest governance and strengthening of forest governance institutions.** Ms Sara Namirembe singled out the ‘improvement of national forest governance and strengthening of forest governance institutions’ as the most important incentive because ‘this is where most investment in understanding threats to forest resources has been made.’ Mr Mugumya provided a detailed response that analysed each incentive, in relation to Uganda, as a factor that Uganda would like to ‘optimise’ rather than take advantage of. His response is below:

PROPOSED BENEFITS	REASONS
Opportunities for financial inflows	<p>1 Uganda has low financial capacity to undertake, in reasonable time, the following REDD-plus actions:</p> <ul style="list-style-type: none"> <li>• (a) Reducing emissions from deforestation;</li> <li>• (b) Reducing emissions from forest degradation</li> <li>• (c) Conservation of forest carbon stocks;</li> <li>• (d) Sustainable management of forests;</li> <li>• (e) Enhancement of forest carbon stocks;</li> </ul> <p>2 Since REDD-plus is actually a “positive incentives scheme” for doing the above actions, it is reasonable that Uganda would love to optimise this incentive (benefit)</p> <p>3 Nearly 70% of deforestation and forest degradation in the Uganda are happening on privately and communally owned forests as compared to government trusteeship forests (Central Forest Reserves and Wildlife Conservation Areas). Furthermore over 73% of Uganda’s labour force is employed in agriculture. It is therefore very plausible that agriculture is a significant driver of deforestation. If REDD-plus incentives could help Ugandans to intensify agriculture (without resorting to expanding farm land), then deforestation could be reduced and even reversed with a hope of stopping it all together.</p>
Sustainable Forest Management	If forests are sustainably managed there would be no deforestation, or forest degradation that is not “sustainable”. If REDD-plus incentives can help Uganda manage her forests sustainably, then it is only reasonable that we optimize this as well.
Security of tenure	REDD-plus expects Uganda to, among other things, identify and address “Security of tenure” as it affects REDD-plus. In this context, we see “Security of tenure” as a driver or underlying cause of deforestation and forest degradation on the one hand; and on the other we see a successful consideration of “Security of tenure” as a positive incentive to reduce deforestation and degradation. While I don’t see “Security of tenure” as a benefit of REDD-plus, I agree that REDD-plus will take longer to succeed until “Security of tenure” issues are addressed.
Improvement of national forest governance and strengthening of forest governance institutions	REDD-plus expects Uganda to, among other things, to identify and address “governance” as it affects REDD-plus. In this context, we see “governance” as a driver or underlying cause of deforestation and forest degradation on the one hand; and on the other we see a successful consideration of “governance” as a positive incentive to reduce

	deforestation and degradation. While I don't see "governance" as a benefit of REDD-plus, I agree that REDD-plus will take longer to succeed until "governance" issues are addressed.
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University of Cape Town

## **6 Financing Uganda's REDD+ readiness preparation from 2012-2014**

### **6.1 Costs of REDD+ preparation: 2012-2014**

Uganda will carry out REDD+ readiness activities in the period 2012-2014, using an estimated budget of US\$ 5,181,000 (Government of Uganda, 2011). The preparation of the National REDD-Plus Strategy alone is expected to cost US\$ 2,643,000 (Government of Uganda, 2011). The design of a monitoring system for emissions and removal will cost US\$ 1,060,000 and all the money is currently expected to come from the FCPF fund (Government of Uganda, 2011). This monitoring system will measure emissions and removals in relation to trends in deforestation, forest degradation and enhancement of carbon stocks; will report on emissions and removals to the UNFCCC (from GHG) and stakeholders; and will establish baseline information for verifying emissions and removals in Uganda (Government of Uganda, 2011). The development of reference levels is expected to cost US\$ 665,000 as Uganda will probably have to collect new field data concerning carbon stocks (Government of Uganda, 2011). This is due to the fact that existing historic carbon stock data is insufficient.

The balance of the stipulated budget will be spent on organisation and consultations and preparing a monitoring and evaluation framework for the R-PP (Government of Uganda, 2011).

### **6.2 Financing REDD+ readiness in Uganda**

Before discussing who will pay for Uganda's REDD+ preparation activities, an overview of the various funding mechanisms in REDD+ is provided

#### **6.2.1 Global funding mechanisms for REDD+ readiness**

After Cop 13 Bali (December 2007), where countries agreed to include REDD+ in the context of a post-2012 agreement, several multilateral and bilateral funds were established that are currently playing a dominant role both in REDD+ financing, because much of the funding pledged at Copenhagen and again at Cancun for reductions in forest sector emissions is being channelled through these facilities, and in complementing some existing environmental funds whose programmatic scope includes REDD+ (Schnek, et al., 2011). Major funds include the UN-REDD

programme, the Forest Carbon Partnership Facility (FCPF), the Forest Investment Program, the BioCarbon Fund, the Congo Basin Forest Fund, the Amazonian Fund, as well as bilateral initiatives from the governments of Norway, Australia, Japan, and Germany (Schnek, et al., 2011). The scope of the funds, as well as their governing bodies, is briefly described below. Note all dollars stated are United States dollars.

**UN-REDD Programme, 2008: a partnership between United Nations Environment Programme, United Nations Development Programme and the Food and Agriculture Organization of the United Nations**

**The UN-REDD Programme** is the United Nations Collaborative initiative on Reducing Emissions from Deforestation and forest Degradation in developing countries and its aim is to assist developing countries prepare and implement national REDD+ strategies (UN-REDD Programme, 2012). UN-REDD currently has a fund balance to the amount of US\$ 98.6 million (as of January 2012), having spent approximate US\$ 92 million to date supporting country-driven REDD+ readiness activities and global efforts (UN-REDD Programme, 2012). It has project implementation in 14 countries (Bolivia, Cambodia, Democratic Republic of the Congo (DRC), Ecuador, Indonesia, Nigeria, Panama, Papua New Guinea, Paraguay, the Philippines, Solomon Island, Tanzania, Viet Nam and Zambia); while an additional 13 countries (Argentina, Bangladesh, Benin, Bhutan, Cameroon, Central African Republic, Chile, Columbia, Costa Rica, Ethiopia, Gabon, Ghana, Guatemala, Guyana, Honduras, Ivory Coast, Kenya, Mexico, Mongolia, Myanmar, Nepal, Pakistan, Peru, Republic of Congo, South Sudan, Sri Lanka, Sudan and Suriname) have observer status (UN-REDD Programme, 2012). To date UN-REDD has approved US\$ 59.3 million for National Programmes in the 14 partner countries (UN-REDD Programme, 2012). Norway is currently UN-REDD's largest donor having contributed US\$ 105.8 million to date (UN-REDD Programme, 2012).

**The Forest Carbon Partnership Facility (FCPF), 2008: World Bank**

This Facility supports REDD+ capacity building in 37 developing countries and tests REDD+ implementation strategy through pilot projects (Schnek, et al., 2011). Sixteen financial contributors (Agence Française de Développement, Australia, British Petroleum, Canada, CDC Climat, Denmark, the European Union, Finland, Germany, Italy, Japan, The Nature Conservancy, the Netherlands, Norway, Spain, Switzerland,

the United Kingdom and the United States) have pledged about US\$ 447 million to the FCPF; with US\$ 232 million going to the Readiness Fund and US\$ 215 million to the Carbon Fund (Forest Carbon Partnership Facility, 2011).

#### **The Forest Investment Program, 2008: World Bank**

The Forest Investment Program (FIP) is a program of the Strategic Climate Fund – one of the two funds within the Climate Investment Funds, which is a collaborative effort between the Multilateral Development Banks to help developing countries pilot low-emissions and climate-resilient development (Westholm, 2010; Climate Investment Funds, 2012). Its administration is placed at the World Bank. This Program finances REDD+ capacity building investments and promotes sustainable forest management, in particular, investments in institutional capacity, forest governance and information; investments in forest mitigation efforts and; investments outside the forest sector necessary to reduce pressure on forests (Schnek, et al., 2011). The Program has US\$ 512 million pledged to date and eight countries have been selected to become pilots: Brazil, Burkina Faso, DRC, Ghana, Indonesia, Mexico, Laos, Peru (Schnek, et al., 2011).

#### **The Congo Basin Forest Fund, 2008: Independent Secretariat based at the African Development Bank**

The fund has initial funding of US\$ 160 million from the United Kingdom and Norway that is intended to support the development of private initiatives and projects targeting forest conservation and poverty reduction in the region (Schnek, et al., 2011).

#### **Amazonian Fund, 2008: Brazil**

The governing body of this fund is Brazil. This fund has a mandate to prevent, monitor and combat Amazonian deforestation, as well as promote sustainable use of Amazonian forests. The Amazonian Fund is a large one with \$ US 1,027 million pledged to date; US\$ 1 billion pledged by the Norwegian government for the period 2009-2015, US\$ 28 million from Germany, and a target of US\$ 21 billion by 2021 (Schnek, et al., 2011). Funds are accepted from various donors and managed by the Brazilian Development Bank (Schnek, et al., 2011).

### **Forests and Climate Initiative, 2007: Norway**

In addition to its support to multilateral funds that finance and support REDD+, Norway is supporting REDD+ through bilateral initiatives, including contributions to Brazil's Amazonian Fund and preparing Tanzania for REDD+ through a US\$ 87 million contribution over 5 years (Schnek, et al., 2011). The stated objectives include conservation of natural forests, taking early action to achieve cost-effective and verifiable reductions in GHG emissions, and working to include REDD+ in a new international climate regime (Schnek, et al., 2011).

### **Global Climate Change Alliance, 2007: European Union**

The aim of the Global Climate Change Alliance (GCCA) is to deepen dialogue, cooperation and enhance support on climate change between the European and poor developing countries, the most vulnerable to climate change, in particular Least Developed Countries (LDCs) and Small Island Developing States (SIDS) (The Global Climate Change Alliance, 2012). Eighteen countries have received the GCCA support to build projects on cross-cutting climate change issues and these are: Bangladesh, Belize, Cambodia, Ethiopia, Guyana, Jamaica, Maldives, Mali, Mozambique, Mauritius, Nepal, the Pacific Region, Rwanda, Senegal, Seychelles, Solomon Islands, Tanzania and Vanuatu. REDD+ is one of the priority areas for which the GCCA offers assistance (The Global Climate Change Alliance, 2012).

### **International Forest Carbon Initiative, 2007: Australia**

Australia has already pledged US\$ 217 million including contributions to the Forest Carbon Partnership Facility and the Forest Investment Program, and financing for bilateral programs in the Asia-Pacific region, namely in Indonesia and Papua New Guinea (Schnek, et al., 2011).

### **The Hatoyama Initiative, 2008 (replaces the previous "Cool Earth Partnership Fund"): Japan**

Japan has allocated US\$ 160 million for REDD+ through 2012 out of US\$ 15 billion public/private fund (Schnek, et al., 2011). Japan's objective is to assist developing countries to conduct national inventories of forest resources, and develop forest

management plans to promote sustainable use and management of forests (Schnek, et al., 2011).

### **International Climate Initiative, 2008: Germany**

Germany has already disbursed US\$ 85 million for REDD+ projects to date out of US\$ 550 million pledged to a general fund (Schnek, et al., 2011). The financing is for international projects addressing climate change, including REDD+, and that leverage private sector funds (Schnek, et al., 2011).

The funds use various financial mechanisms to transfer the benefits including grants, preferential rate debt, pre-payment of credits to be generated or guaranteed funds to reduce the risk profile of projects (Schnek, et al., 2011). Most of the funded activities to date are for planning and capacity building, however some the funds are designed to finance the purchase of verified emissions reductions, and thus may be relevant sources of demand for developers of forest carbon credits (Schnek, et al., 2011).

Although REDD+ was formally recognised as a mechanism for reducing emissions from deforestation and forest degradation at COP 16 in Cancun, the question of how to finance REDD+, either through a market mechanism, a non-market (i.e., fund-based) approach, or both, was left on the table for subsequent negotiations (Schnek, et al., 2011). The Durban conference in 2011 also postponed the negotiation on modalities to 2012 (Aguilar, et al., 2011; Sterk, et al., 2011).

### **6.2.2 Uganda's financing plan for its REDD+ readiness activities**

Although funding for REDD+ appears to be extensive, Uganda is exempt from taking advantage of a number of these funds mainly due to its location for example, the Congo Basin and Amazonian Funds are for those particular regions while the International Forest Carbon Initiative is specific to the Asia-Pacific region. Uganda has currently not applied for funding under UN-REDD and is also not one of the countries selected to participate in the Forest Investment Program or the programme run by the Global Climate Change Alliance. Xavier Mugumya confirms that Uganda plans to submit an application to UN-REDD at the appropriate time as the UN-REDD application is not as direct as for example, the FCPF. This leaves Uganda with relatively few options for funding and unless these options increase Uganda may lack

the necessary funds to effectively complete its readiness activities. When the funding mechanism for REDD+ is finalised, we may see more developed countries offering more funding opportunities which Uganda can have access to; however, it is unclear when this will all happen. Norway is the only country that has expressed a commitment to support the REDD+ process in Uganda and yet there is a deficit that needs to be funded in order for Uganda to fully participate in REDD+ (Source: Research Questionnaire - Xavier Mugumya). Uganda is carrying out REDD+ readiness on the premise that there will be “positive incentives” including “adequate and predictable [financial, technological and capacity] support...” to undertake REDD+ activities. Uganda therefore needs to be shrewd in its expectations of financing and plan accordingly when preparing for REDD+ implementation. Ghana is another LFHD country that submitted its R-PP to the FCPF in January 2010. In its R-PP, Ghana’s budget requested US\$ 5.6 million from the FCPF however, the World Bank, in its report commenting on Ghana’s R-PP, indicated that the amount largely exceeds the amount available for Ghana under the FCPF, later specified to be US\$ 3.4 million only potentially available from the FCPF (The World Bank, 2010). The World Bank team went further to suggest that alternative financing sources for other activities should be identified to meet the funding gap (The World Bank, 2010). Ghana’s example is an illustration of the limitations of the FCPF funds. Uganda expects US\$ 3,375,000 from the FCPF which is slightly under what the World Bank’s stipulated budget for Ghana.

A potential beneficiary of the REDD+ funding is the National Forestry Authority as the custodian of Uganda’s central forest reserves. If the NFA receives funding, Xavier Mugumya identifies a number of likely priorities as the following:

QUESTION	ANSWER
(i) Would the National Forestry Authority receive funding through the REDD+ mechanism, what would be its priorities	<ul style="list-style-type: none"> <li>• Yes, NFA qualifies as an implementing institution and may receive funding to undertake actions of the R-PP. NFA’s priorities for REDD-plus are almost identical with its mandate. Look at it these few examples:               <ul style="list-style-type: none"> <li>○ NFA is expected to sustainably manage central forest reserves; and sustainable management of forests is a REDD-plus activity;</li> <li>○ NFA is expected to set aside areas for conservation: this too is REDD-plus activity;</li> <li>○ NFA is expected to reduce deforestation and forest degradation in its areas of jurisdiction; again these are REDD-plus actions</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• Nonetheless, the following will most likely lie within the immediate NFA's area of competence <ul style="list-style-type: none"> <li>○ Establishment of reference emission levels and or emission levels;</li> <li>○ Establishment of national forest monitoring system for the monitoring and reporting of the REDD-plus activities</li> <li>○ Measuring, reporting and verifying (MRV)</li> <li>○ Identification of, and addressing of drivers of REDD-plus</li> </ul> </li> </ul>
(ii) What are the priorities regarding capacity building?	<p>From the outset, let it be clear that REDD-plus is a new way of looking at forestry management and NFA like any other agencies dealing with the sector will have to be oriented in REDD-plus philosophy and application. Therefore the capacity building requirements proposed in the R-PP will also be applicable to the NFA. This include but are not limited to:</p> <ul style="list-style-type: none"> <li>• Capacity building in the linkage between UNFCCC guidance (read IPCC) and: <ul style="list-style-type: none"> <li>○ Establishment of reference emission levels and or emission levels;</li> <li>○ Establishment of national forest monitoring system for the monitoring and reporting of the REDD-plus activities</li> <li>○ Measuring, reporting and verifying (MRV)</li> </ul> </li> <li>• Capacity building in the: <ul style="list-style-type: none"> <li>○ Identification of, and addressing of drivers of REDD-plus</li> <li>○ Institutional orientation of NFA to be more responsive to requirements for meeting safeguards</li> <li>○ Capacity for REDD-plus compliant governance</li> </ul> </li> <li>• Capacity in preparation and establishment of REDD-plus projects on the ground</li> <li>• Institutional capacity strengthening</li> </ul>

## 7 The economics of REDD+

There are two important questions when considering the economics of REDD+; namely,

- i) What is the cost of eliminating emissions by reducing deforestation?
- ii) How long will investment need to continue to ensure that the climate benefits are permanent? (Viana, et al., 2009)

One problem faced when answering these two questions is that attempts to estimate how much REDD+ might cost have mainly focused on the opportunity costs of carbon conservation, rather than on money actually spent in communities to protect forests, and have been limited by the coarse scale of available data and the lack of information on some important benefits of forest conversion (Fisher, et al., 2011). A second problem is that simply paying people not to clear forests will mean that rising demand for food and fuel goes unmet locally; leading to leakage where deforestation is simply displaced elsewhere (Fisher, et al., 2011). Furthermore, implementing policies, such as introducing fertilizers and improved seed to increase crop yields, subsidizing alternative cooking fuels, or developing plantations for charcoal fuel, that instead address these demands in other ways, should also be included in the costs of REDD+, and may increase these costs dramatically (Fisher, et al., 2011). However, these policies are essential if REDD+ as a performance-dependent payment mechanism is not to be short-lived (Fisher, et al., 2011).

In this analysis of the economics of REDD+ in Uganda, three examples of REDD+, or REDD+-type projects, will be discussed. First, the Noel Kempff Mercado Climate Action Project in Bolivia, one of the world's first large-scale largest REDD+ projects; second, the Sawlog Production Grant Scheme in Uganda, a scheme that encourages private sector investment in timber plantations; and lastly, a feasibility study of a potential REDD+ project in the Murchison-Semkili landscape in Uganda. Before these projects are discussed, a brief description of the three different types of REDD+ projects, as well as the potential markets for REDD+, will be provided.

## **7.1 The national, subnational and nested approaches to REDD+**

There are three different types of approaches to REDD+ namely, the national approach, the subnational approach, and the nested approach. The approach followed by a country is important as each approach carries its own implications for the effectiveness, efficiency and equity of the REDD+ mechanism (Angelsen, et al., 2008).

### **7.1.1 The national approach**

Most countries subscribe to the national approach and promote it in their submissions to the UNFCCC (Pedroni, et al., 2010). In the national approach, governments establish a national system for MRV, and will be rewarded for emission reductions relative to an established reference level (Angelsen, et al., 2008). The rewards may be the allocation of tradable carbon credits, financial transfers from a global fund or other mechanisms (Angelsen, et al., 2008). Governments would be responsible for managing these rewards to enhance their policies and measures, or for distributing them among communities and individuals representing successful REDD+ initiatives (Pedroni, et al., 2010). Under the pure national approach, no direct credits would be issued internationally for activities that reduce emissions at the subnational (project) level (Angelsen, et al., 2008).

### **7.1.2 The subnational approach**

Some countries support the subnational approach which may be based on the concept of the Clean Development Mechanism while building on its national and international infrastructure (Pedroni, et al., 2010). Under a subnational approach, REDD+ activities would be implemented by individuals, communities, NGOs, private companies or national or local governments in a defined geographical area or at a project scale (Angelsen, et al., 2008). The subnational projects could encompass areas as large as entire biomes (e.g. the Legal Amazon in Brazil), individual states or provinces, or smaller units of lands under specific projects, such as indigenous territories, protected areas, forest concessions, and private lands (Pedroni, et al., 2010). The incentives would flow directly to successful projects and programs (e.g. through the issuance of carbon credits), and the role of the government would be limited to issuing letters of acceptance of such activities on the grounds of their sustainable development benefits (Pedroni, et al., 2010). An example of a subnational project is the Noel Kempff

Mercado Climate Action Project in Bolivia which is discussed under section 1.2. The CDM allows developed (Annex 1) countries to offset their own greenhouse gas emissions by supporting projects in developing countries that reduce emissions (Angelsen, et al., 2008). Under the forestry sector, only afforestation and reforestation (A/R) projects are currently eligible. The subnational approach can also include the avoided deforestation projects operating in the voluntary carbon market (Angelsen, et al., 2008). Most of the transactions in this market involve private buyers (80%) (Angelsen, et al., 2008). In 2007, transactions in the voluntary carbon market concerning forestry-related projects reached US\$ 330 million (18 percent of the market) compared with less than 5 percent of the CDM primary market in the same year (Angelsen, et al., 2008).

### **7.1.3 The nested approach**

In this approach, countries would be able to start REDD+ activities at a subnational level, and later scale up to a national approach as they increase their capacities and improve their governance (Angelsen, et al., 2008). The concept of 'nesting' subnational mitigation activities in broader national frameworks was first introduced to the UNFCCC, in 2006, by the Tropical Agricultural Research and Higher Education Center (CATIE) and the German Emissions Trading Association (BVEK) (groups of observers); in 2007, by Latin American countries; and was later presented in depth by Pedroni et al. in 2009. The idea of the nested approach centres around the fact that there are some developing country governments which need more time to develop their national capacities and capabilities for REDD+ and that public funding alone may not be sufficient to induce mitigation activities at the scale required (Pedroni, et al., 2010). There is therefore a need to find effective ways to incentivize private actors to invest in mitigation activities (Pedroni, et al. 2010). Mobilizing private-sector investment is essential to reach the levels of finance required to cover the costs of REDD+, which may be higher than the US\$ 5-15 billion per year estimated by Nicolas Stern (2006) and Johan Eliasch (2008) (Pedroni, et al., 2010). Transition to a national approach would be mandatory, either within an agreed time frame or when an agreed percentage of forest area is covered by REDD+ projects, however, it would still be possible to credit individual project activities within the

national approach (Angelsen, et al., 2008). The nested approach therefore has two unique features.

- i) Gives the participating country the ability to scale up over time from a subnational to a national approach.
- ii) Allows the country to account and receive international credits at both subnational and national levels simultaneously (Angelsen, et al., 2008).

In the nested approach, procedures for MRV and reference levels must be harmonised between subnational and national levels and all issued and committed subnational credits would need to be deducted from national credits at the end of each accounting period to prevent over-issuance or double counting (Swickard & Carnahan, 2010).

#### **7.1.4 A comparison of the three different approaches**

Angelsen *et al.*, 2008, made a comparison of the three approaches in terms of carbon effectiveness, efficiency and equity.

##### Carbon effectiveness

The geographical scope of the national and nested approaches is potentially much larger than the scope of the subnational approach and this helps tackle the problem of domestic leakage in the accounting which leads to greater carbon effectiveness (Angelsen, et al., 2008). One caveat to this argument is that most developing countries are unable to participate in REDD+ under the national approach due to inadequate MRV infrastructure and high budget costs, particularly considering the many other pressing needs that such countries normally face (Pedroni, et al., 2010). This raises the problem of international leakage (Angelsen, et al., 2008). A solution may be the nested approach which is more flexible and should permit more countries to participate sooner (Angelsen, et al., 2008). By not requiring the immediate existence of nationwide MRV capacities and high governance levels, the nested approach would allow a greater number of countries to participate in REDD+ from the beginning, thus achieving early and larger reductions in emissions and diminishing the risk of international leakage (Pedroni, et al., 2010). The national approach does have the added advantage that it brings about land reform and improvements in tenure and governance, the effects of which would be difficult to trace to particular geographical

areas and generally would not fall within the scope of a subnational approach (Angelsen, et al., 2008). Therefore, national approaches are more likely to result in deeper and longer term emission cuts because they encourage broader and more strategic policies (Angelsen, et al., 2008). However, private investors may prefer to invest in forests in private areas instead of buying emission reductions produced nationally given their lack of control over host country risks (Angelsen, et al., 2008).

### Efficiency

The cost efficiency of the different scale approaches to REDD+ is likely to be affected by three main factors : i) costs of MRV; ii) costs of implementing policies; and iii) the efficiency of opportunity cost payments.

- i) Developing a national infrastructure for MRV has significant economies of scale, for example, a pure national approach would not necessarily require disaggregating data to regional or district levels, thus reducing the number of sample plots required for monitoring (Angelsen, et al., 2008). The national approach is therefore likely to be the most efficient in terms of cost per unit of carbon dioxide emission reduction or area covered (Angelsen, et al., 2008). The nested approach, on the other hand, has higher costs as it requires both national coverage and subnational monitoring and accounting (Angelsen, et al., 2008).
- ii) The national approach also has an advantage over the other two approaches with regard to the cost of REDD+ policy implementation (Angelsen, et al., 2008). This is because implementing a system to credit subnational units incurs costs in registering the project with centralised institutions; validation and verification; and administering contracts (Angelsen, et al., 2008). National approaches can also include broad schemes and reforms that may generate savings such as removal of subsidies that stimulate deforestation and degradation (Angelsen, et al., 2008). However, although the national system may have the potential to generate greater emissions reductions at lower costs, it can also fall victim to other inefficiencies through bureaucracy and corruption while a subnational approach, which has higher overall transaction costs per unit of emission reduction, may be run more efficiently given its smaller size and the likelihood of it being managed by private entities that are

experienced in carbon market mechanisms and that prioritise cost efficiency (Angelsen, et al., 2008).

- iii) The opportunity costs of forest conservation vary significantly among those who hold rights to use forest (Angelsen, et al., 2008). Börner and Wunder (2008), in their study in Brazil, showed that when rights holders are compensated according to their specific opportunity costs, instead of a uniform compensation, overall costs would be substantially lower by as much as 45-75 percent. Introducing differentiated payments might be more realistic in a subnational approach and may be possible as part of a nested system however, are not practical in a national system due to the high transaction costs (Angelsen, et al., 2008). Furthermore, there are equity considerations, given that some of the poorest rights holders also have the lowest opportunity costs (Angelsen, et al., 2008).

### Equity

A REDD+ mechanism that only allows the national approach could exclude most of the low-income countries due to their inadequate infrastructure for MRV and poor governance, thus skewing the international flow of money towards a few middle income countries such as Brazil (Angelsen, et al., 2008). The subnational approach might not fare better for example, in 2007, some 73 percent of all CDM credits sold were 'made in China' (Hamilton, et al., 2008). This highlights the fact that readiness activities in the poorest countries need to focus on increasing national capacity and institutions and improving governance and accountability (Angelsen, et al., 2008). Internally, rural communities might be sidelined, due to corruption and state capture of the financial inflows, in a centralised national REDD+ system which would result in inequitable sharing of benefits and the 'nationalisation' of carbon rights (Angelsen, et al., 2008). Subnational and nested approaches may be more flexible in responding to the needs of specific contexts however, a national approach may also be better aligned with national development strategies, possibly bringing long-term development benefits for poor rural communities (Angelsen, et al., 2008).

Angelsen, et al., 2008, argue that of the three approaches, considering all their advantages, disadvantages and tradeoffs in terms of carbon effectiveness, cost efficiency and equity, the nested approach to REDD+ appears to give the best returns

because it would allow a country to be part of REDD+ with a project or national approach, ensuring broader international participation and thereby larger overall emission reductions in the short term (Angelsen, et al., 2008). The limitations of subnational approaches, particularly domestic leakage, are taken into account through the imposed time limit for adoption of a national approach thus giving the countries time to establish the infrastructure, institutions and governance needed for national-level crediting (Angelsen, et al., 2008). For a country like Uganda, which has limited capacity when it comes to developing adequate MRV, and also as a largely agrarian population that is poor, the nested approach may be the best option so that Uganda can participate in REDD+ sooner than if a purely national approach was followed. Currently, Uganda plans to implement REDD+ on a national level.

Uganda is currently in its REDD+ readiness phase therefore an economic analysis of implementing REDD+ in Uganda requires a look at other current examples of REDD+ projects as a guideline to the analysis. There is currently no example of a REDD+ project implemented following the purely national approach, mainly for the reasons previously stated, however, there is a project that is subnational in nature but with large governmental involvement. This is the Noel Mercado Kempff Climate Action Project located in Santa Cruz, Bolivia.

### **7.1.5 Potential markets for REDD+ credits**

Demand for REDD+ credits has thus far been limited to voluntary markets and public sector bi- and multi-lateral funding mechanisms (Schnek, et al., 2011). The existing potential markets for REDD+ include the following:

#### **European Union markets**

The European Union made a decision in 2005 to exclude all forest carbon offsets from the European Union's Emissions Trading Scheme (EU ETS), by far the world's largest carbon marketplace (Schnek, et al., 2011). This was due to a number of reasons; namely, the European Union had concerns over how to set baselines, accurately monitor, report and verify emission reductions, control for leakage, adjust for potential non-permanence as well as fears that low-cost forest credits would flood the market, undermine carbon prices, and thereby reduce incentives to cut industrial

emissions (Schnek, et al., 2011). The opening of the EU ETS to REDD+ credits was considered for the upcoming third trading phase (2013-2020) however the European Parliament voted on December 2008 to extend the ban on all forest carbon credits until at least 2020 (Schnek, et al., 2011). The EU member states concurrently agreed to allocate 50 percent of revenue from allowance auctions to a package of international climate priorities, including REDD+ (Schnek, et al., 2011). The European Parliament's decision does allow for REDD+ credits to be reintroduced into the EU ETS pending approval of a future international climate agreement (Schnek, et al., 2011).

### **U.S. national and regional markets**

The greatest potential demand for international forest carbon, in the near term, lies in a national-level U.S. carbon market (Schnek, et al., 2011). This is due to the fact that proposed U.S. legislation suggests creating a market roughly three times the volume of the current EU ETS (Schnek, et al., 2011). An example is the House-passed American Clean Energy and Security Act of 2009 (ACES), also known as the Waxman-Markey bill, which seeks to reduce U.S. emissions by 17 percent below 2005 levels by 2020 through a cap and trade scheme, and allows for extensive use of international offsets including REDD+ (Schnek, et al., 2011). The legislation however does not specify eligible project-based REDD protocols and does not address how leakage should be accounted for or how liability for reversals will be handled (Schnek, et al., 2011). ACES also specifies that major emitters such as Brazil would be excluded from project-based REDD+ and that substantial regulatory requirements must be satisfied before international REDD+ credits can be used, including agreements on national baselines; on the technical capacity to monitor, report, and verify forest carbon fluxes; and the establishment of institutional capacity to reduce deforestation through effective governance of the forest estate (Schnek, et al., 2011). In May of 2010, two U.S. Senators, Senator Kerry and Senator Lieberman introduced a Senate counterpart bill to the House climate bill known as the American Power Act, however the bill failed to attract enough support to defeat a threatened filibuster, and it was never brought up for a vote (Schnek, et al., 2011). Consequently, several U.S. states and regional state consortiums have put in place, or are developing, market-based climate policies in the absence of federal climate legislation. Some of the policies include the following:

### **Regional Greenhouse Gas Initiative (RGGI)**

RGGI is currently the largest market in the U.S., encompassing emissions from the electric power sector in ten Northeastern states and with a 2009 volume of 805 MtCO<sub>2</sub>e (value: US\$ 2,179 million) (Schnek, et al., 2011). The average price in 2009 was US\$2.71 per tCO<sub>2</sub>e (Schnek, et al., 2011). Although RGGI permits the limited use of international CDM credits, it currently does not allow avoided deforestation/REDD+ for compliance (Schnek, et al., 2011). RGGI is the only U.S. compliance carbon market that is currently active.

### **California's Global Warming Solutions Act (AB 32)**

This is a state economy-wide cap-and-trade system set to start in 2012, with an estimated size of 365 MtCO<sub>2</sub>e in 2020, which will form part of a wider regional trading program, the Western Climate Initiative, involving five other U.S. states and four Canadian provinces (Schnek, et al., 2011). California's trading program will accept a limited number of international REDD+ credits, up to 8 percent of regulated entities emissions, for a maximum total of 74.3 million tons of CO<sub>2</sub> reductions through REDD+ by 2020 (Schnek, et al., 2011). California has already signed agreements to establish offset projects with several states and provinces in Brazil, Indonesia, Mexico, and Nigeria and other agreements may follow (Schnek, et al., 2011).

### **Voluntary markets for REDD+**

Voluntary over-the counter (OTC) markets, which consist largely of bilateral trades executed outside of exchanges, are currently the only place where credits for avoided deforestation are yet traded (Schnek, et al., 2011). The volume of REDD+ credits transacted increased dramatically in 2009 to 2.8 MtCO<sub>2</sub>, at an average price of US\$7.35 per tCO<sub>2</sub>e; a jump of 289 percent from the year before and a little less than the volume from all previous years combined (3.1 MtCO<sub>2</sub>) (Schnek, et al., 2011). Voluntary OTC markets comprise only a fraction of REDD+'s potential contribution to world carbon markets, however, the growth rate bodes well for the trading of REDD+ credits in the future (Schnek, et al., 2011).

### **Pricing of REDD+ credits**

EcoSecurities, one of the world's leading organisations that sources and develops emission reduction credits from GHG emission reduction projects, undertook a survey of buyers purchasing forest offsets in 2009. The results show a willingness among a large percentage of buyers to pay significant price premiums for projects that also provide co-benefits (Schnek, et al., 2011). The survey asked buyers what premiums they would attach to a forest carbon project also verified to the Climate, Community & Biodiversity Standard (CCB) standard:

- 67 percent stated they would pay a premium of at least US\$1 for an offset certified under the CCB standard, with 34 percent willing to pay between \$2-4 premiums per offset.
- 83 percent of carbon wholesalers and retailers surveyed stated they would pay a premium of at least US\$1 per ton, but few would pay premiums greater than \$5 per ton.

The average price for REDD+ credits in 2009 was \$2.9/tCO<sub>2</sub>e although there was a wide range of variation; some credits traded for less than \$1/tCO<sub>2</sub>e while others were as high as \$13/tCO<sub>2</sub>e (Schnek, et al., 2011).

### **7.2 Example of an international sub-national forestry project: Noel Kempff Mercado Project**

The Noel Kempff Mercado Climate Action Project (NKCAP), located in the northeastern section of the Department of Santa Cruz, Bolivia, was, in 2005, the first forest emissions reduction project to be verified by a third party using rigorous standards based upon those described in the Kyoto Protocol's Clean Development Mechanism (Marshall, et al., 2009). This standard was used because the project was designed before recent forest carbon standards were in existence, so its carbon credits were verified against a standard created specifically for the project based on the relevant CDM guidelines for afforestation/reforestation projects (as defined October 2005), adapting them for REDD+ as necessary (Marshall, et al., 2009).

#### **7.2.1 Background to the NKCAP**

The NKCAP was started in 1997 when an American organisation, The Nature Conservancy (TNC), and a Bolivian organisation called Fundación Amigos de la

Naturaleza (FAN) created the project to reduce climate change by protecting 642,183 hectares of tropical forest that were threatened by degradation from timber harvesting and deforestation from agricultural expansion (Forest Carbon Portal, 2012). Other aims of the project are to conserve biodiversity and bring sustainable development benefits to local communities. The project lifetime is 30 years (Marshall, et al., 2009). Initially, the Bolivian government partnered with three energy companies (American Electric Power, PacifiCorp, BP - now BP Amoco) to terminate logging rights in the area and incorporate the land into a national park (Marshall, et al., 2009). The partners also enforced a deforestation ban in protected areas within the park by reducing slash-and-burn agriculture, and initiated alternative income programs for the surrounding communities (Forest Carbon Portal, 2012). The NKCAP is expected to prevent the release of up to 5.8 million tons of carbon dioxide into the atmosphere over the project's duration of 30 years (Marshall, et al., 2009).

Between the years 1997-2005, more than 1 million tons of CO<sub>2</sub>e were verified by an independent third-party, Société Générale de Surveillance (SGS) (Forest Carbon Portal, 2012). The market for these credits is the Voluntary Over-the-Counter Market (OTC) (Forest Carbon Portal, 2012), which refers to all voluntary sales and purchases of carbon credits (mostly project-based emissions reductions credits) that do not operate in a formal exchange (Ecosystem Marketplace, 2012). The credits in this market are generally referred to as Verified/Voluntary Emissions Reductions (VERs), or simply as carbon offsets (Ecosystem Marketplace, 2012). The rights to verified carbon benefits generated by the project's activities have been retained by the project investors and the Bolivian government, the shares negotiated in advance (discussed under section 1.22 on funding) (Forest Carbon Portal, 2012). Therefore, no active "selling" of carbon credits is occurring (Forest Carbon Portal, 2012). Table 3 provides a list of the partners and contributors to the NKCAP along with their designated roles.

**Table 3 Partners and contributors to NKCAP**

<b>Project Development</b>	The Nature Conservancy (TNC), Fundación Amigos de la Naturaleza (FAN)
<b>Project Management</b>	Fundación Amigos de la Naturaleza (FAN)
<b>Project Investors</b>	American Electric Power Company (AEP), BP, PacifiCorp Country Partner Government of Bolivia
<b>Carbon Measurement</b>	Winrock International Institute for Agricultural Development, Fundación Amigos de la Naturaleza (FAN)
<b>Validation and Verification</b>	Société Générale de Surveillance (SGS)

Source: Marshall, et al., 2009

### 7.2.2 Funding for the NKCAP

Funding for the NKCAP was provided upfront by three energy companies: American Electric Power Company (USA), BP Amoco (UK), and PacifiCorp (USA) who contributed US\$8.25 million (Marshall, et al., 2009). In return for the funding, the companies were guaranteed 51 percent of future certified offsets created over the 30-year project lifetime (Marshall, et al., 2009). The investors assumed the risk that the estimated quantity of verified carbon benefits might not be fully realized (Marshall, et al., 2009). TNC donors contributed US\$2.6 million bringing the total funding to US\$10.85 million (Marshall, et al., 2009). From this total, US\$500,000 went to the Bolivian government to fund implementation such as concession cancellation, park expansion and park management and protection (Marshall, et al., 2009). Table 4 provides a breakdown of the initial investor contributions as a percentage of the total initial funding.

**Table 4 Breakdown of initial investor contributions from 1997-2006. Total: US\$10.85 million**

<b>Name of organization/investor</b>	<b>Contribution as a percentage</b>
The Nature Conservancy	24%
American Electric Power	53%
Pacificorp	16%
BP-Amoco	7%

The Bolivian government received the remaining 49 percent of carbon benefits after it pledged support for the project plan, closed the timber concessions, and expanded the park (Marshall, et al., 2009). The government agreed that the 49 percent of the carbon benefits would be used to fund community development, park management and other activities in the following manner: 31 percent for the protection of the park, 10 percent for the national system of protected areas, and 59 percent for other purposes, including biodiversity protection activities both inside and outside the project area, improving the livelihoods of the indigenous communities adjacent to the park, and supporting other greenhouse gas mitigation strategies throughout Bolivia (Marshall, et al., 2009). Specific allocations of this 59 percent were not negotiated upfront and communities in the vicinity of Noel Kempff Mercado National Park are currently involved in negotiations with the Bolivian government about their share (Marshall, et al., 2009). The Bolivian government currently retains its share of the verified emission reductions (VERs) (Forest Carbon Portal, 2012).

The funds from the 3 project investors, as well as returns on the initial investment, were then distributed by TNC to project partner Fundación Amigos de la Naturaleza (FAN). Short-term project implementation costs include the purchase and retiring of logging concessions, community development (10 years), initial carbon accounting, ecotourism and biotrade, park management and protection (Marshall, et al., 2009). An endowment fund was also created to finance long-term monitoring and verification, and protection of the park (Marshall, et al., 2009). Begun initially with US\$1.5 million the fund has grown to nearly US\$ 3 million (as of 2006) due to philanthropic contributions and returns on investments (Marshall, et al., 2009). The fund has been managed by The Nature Conservancy since 1999, and finances park activities in accordance with a long-term financial plan. FAN is the executor of activities financed by the fund and submits yearly reports on the activities supported by endowment income (Marshall, et al., 2009). It is anticipated that the endowment will have funds remaining after the project concludes in 2026 which will be used for long-term benefit of the park (Marshall, et al., 2009).

### 7.2.3 Project costs and expenditure

Project start-up costs were estimated to be US\$ 9.5 million at the beginning of the project (1997 estimate) (United States Initiative on Joint Implementation, 2006). These costs are expected to rise significantly over the 30 year life of the project and are to be covered by long-term funding mechanisms (United States Initiative on Joint Implementation, 2006). A description of the initial start-up costs is laid out in Table 5.

**Table 5 Initial start-up costs for the NKCAP**

<b>Indemnification</b>	This represents that value of the remaining harvestable timber on the concessions that were terminated, as well as the value of infrastructure (e.g., bridges, roads, sawmills, etc.) developed and paid for by the former concessionaires.
<b>Short term management and protection</b>	Budget estimates for 5 years of park management and infrastructure improvements
<b>Endowment Fund</b>	The capital amount to establish a park endowment was determined to ensure an estimated minimum of US\$75,000 per year to support the park in perpetuity. Initial income of US \$ 1.5 million
<b>Ecotourism Development:</b>	To finance needed infrastructure to ensure adequate facilities that could generate revenues for the park.
<b>FAN R&amp;D and Natural Resources Enterprise:</b>	US\$1.2 million in investments was split evenly between research and development and capitalization of a new Bolivian company, Canopy Botanical. The R&D effort supports basic research on the park and Bolivian biodiversity, and searches for potentially commercial products to be marketed by the company. The new company, Canopy Botanicals, was capitalized with US\$600,000 and is able to seek additional capital if necessary.
<b>Leakage Prevention with Communities and Ex-Concessionaires:</b>	10% of the project budget is dedicated to mitigating potential GHG leakages, and was budgeted to support a community program for 5 years.

<b>GHG Monitoring:</b>	Nearly 20% of the total start-up budget was dedicated to GHG monitoring, based on the commitment to prove that carbon benefits from this type of forest project are measurable, credible, and verifiable.
<b>JI Institutional Development:</b>	Funds were given to the Government of Bolivia to ensure they had the capacity to manage such projects, and to support other general efforts to protect biodiversity in Bolivia
<b>TNC Project Administrative Costs:</b>	Costs of direct project administration for 3-5 years only. Administrative costs of the Project Manager organization (FAN) are embedded in the components managed directly by FAN.

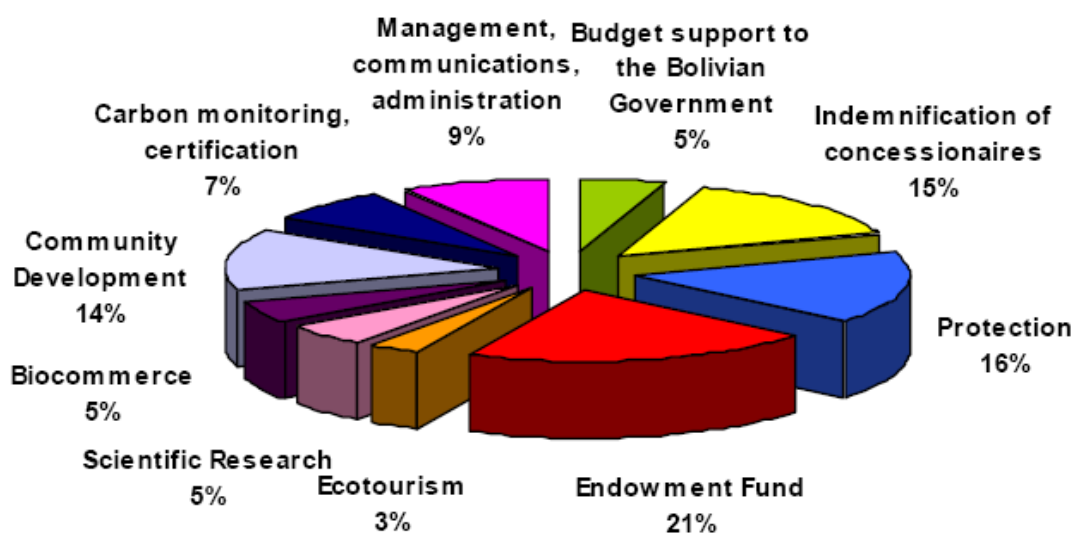
Source: United States Initiative on Joint Implementation, 2006

Project development costs exceeded US\$ 320,000 in the first 1.5 years and in 1998, project startup costs were revised and raised to a total of US\$9.6 million (United States Initiative on Joint Implementation, 2006). The TNC and FAN committed to raise US\$2.6 million of this amount (27%) while the industry partners would provide over US\$7 million (73%) (United States Initiative on Joint Implementation, 2006). Total project costs for the whole 30 years are still being projected but they are expected to reach up to US\$15 million, with funding coming from the endowment, Canopy Botanicals, and ecotourism revenues (United States Initiative on Joint Implementation, 2006).

While investor contributions to NKCAP were not structured on a per-ton basis, the cost of implementing NKCAP has been estimated at \$18 per tCO<sub>2</sub>e in 2009 dollars (Marshall, et al., 2009). This estimate was based on an analysis of project financials, and several key assumptions including: that 20% of the carbon benefits would be retained in a permanence buffer that offsets from the project would be generated and sold at routine intervals, and that investors would seek a reasonable rate of return on the project (Marshall, et al., 2009). A nominal discount rate of 15%, based on various benchmarks, was assumed to be a reasonable discount rate on the project (Marshall, et al., 2009). Results are particularly sensitive to the discount rate used for example, a 15% discount rate yields an estimate of \$18/tCO<sub>2</sub>e while applying a 13% or 17%

discount rate results in estimates of \$15 and \$22 per ton of CO<sub>2</sub>e, respectively (Marshall, et al., 2009). Even though only a 5% permanence buffer was retained when the NKCAP underwent its first verification, the conservative assumption was made that 20% of carbon offsets would need to be reserved to comply with current standards, such as the Voluntary Carbon Standard (Marshall, et al., 2009). Likewise, although the carbon benefits verified in 2005 have not been sold, the assumption was made, based upon typical practice in the market, that offsets would be verified and sold periodically (i.e., usually every five years) (Marshall, et al., 2009). For example, offsets generated from 1997-2000 were assumed to be verified and sold in 2001. A sale in 2006 of 2001-2005 offsets was assumed, and so on for five year periods, with a final sale in 2027 of offsets from 2021-2026. Figure 3 illustrates the project spending on the various categories of costs from the period 1997-2006.

**Figure 3 Project spending from 1997-2006 totalled US\$ 11.55 million. Please note, expenditure is greater than initial funding due to returns on the initial investment over time.**



Source: Marshall, et al., 2009

#### **7.2.4 Net carbon benefits**

The carbon benefits achieved from 1997-2005 by the NKCAP were verified by Société Générale de Surveillance (SGS) in 2005 (Marshall, et al., 2009). SGS used rigorous standards based upon those described in the Kyoto Protocol's Clean Development Mechanism. This verification demonstrates that REDD+ activities are capable of generating scientifically measurable, real, and verifiable carbon benefits (Forest Carbon Portal, 2012).

Two distinct project components generate carbon benefits within the NKCAP:

*a) Reducing Emissions from Deforestation:*

The economic development program and extended protection scheme are helping to reduce deforestation in the area. As a result of the project, 763 hectares were saved over the 1997-2005 verification period, corresponding to 371,650 tCO<sub>2</sub>e (Marshall, et al., 2009).

*b) Reducing Emissions from Degradation*

The cessation of logging in the former concessions that were incorporated into the project area avoids future timber extraction and collateral damage from logging. 468,474 square meters of timber slated for harvest were protected over the period 1997-2005, corresponding to avoided emissions of 791,443 tCO<sub>2</sub>e (Marshall, et al., 2009).

The project's net carbon benefits are illustrated in Table 6. Overall, the project generated a total net carbon benefit of 1,034,107 tCO<sub>2</sub>e over the 1997-2005 verification period as a result of both activities. The total estimated net carbon benefits from the NKCAP are expected to reach 5,838,813 tCO<sub>2</sub>e over the life of the project (1997-2026) (Marshall, et al., 2009). This estimate has been recalculated several times since the project began, resulting in considerable reductions from initial estimates and increases in accuracy (Marshall, et al., 2009). The adjustments are mainly due to changes in baselines and also reflect the pioneering nature of the project, which broke ground on methodologies for estimating baselines (Marshall, et al., 2009). The initial approximation of project lifetime benefits was 53,190,151 tCO<sub>2</sub>e, calculated in 1996, and it has decreased to the current estimate of 5,838,813 tCO<sub>2</sub>e calculated in 2005 (Marshall, et al., 2009). This decrease is primarily because of a shift in reliance on interviews, secondary data sources, and reference documents from other parts of the world; site-specific studies, local field measurements and advanced statistical models, which are more robust and accurate (Marshall, et al., 2009). Only at the end of the 30 year project will it be possible to know the total lifetime carbon benefits of NK-CAP (Marshall, et al., 2009). Verified carbon benefits already observed remain unchanged.

Table 6 Verified carbon benefits generated by NKCAP

	A	B	C	D = A+B-C	E	F = D-E
Year	Emissions Avoided from Deforestation (tCO <sub>2</sub> )	Emissions Avoided from Degradation (tCO <sub>2</sub> )	Leakage Deduction (tCO <sub>2</sub> )	Total Carbon Offsets (tCO <sub>2</sub> )	Emissions from Project Activities* (tCO <sub>2</sub> )	Net Carbon Offsets (tCO <sub>2</sub> )
1997	56,401	48,180	7,264	97,317	169	97,148
1998	40,304	59,374	9,141	90,539	211	90,328
1999	39,783	69,931	10,960	98,753	282	98,472
2000	43,417	79,889	12,731	110,578	204	110,373
2001	41,158	89,298	14,454	116,003	167	115,836
2002	40,238	98,190	16,130	122,298	132	122,166
2003	33,972	107,081	17,589	123,462	109	123,353
2004	31,684	115,632	18,971	128,347	102	128,244
2005	44,693	123,867	20,277	148,282	96	148,186
<b>Total</b>	<b>371,650</b>	<b>791,443</b>	<b>127,516</b>	<b>1,035,578</b>	<b>1472</b>	<b>1,034,107</b>

\* from transportation fuel use, etc.

Source: Marshall, et al., 2009

If these net carbon offsets were to be sold in the voluntary OTC market, using a 2007 volume-weighted average price of carbon in these markets of \$6.10 per ton of CO<sub>2</sub>e (Ecosystem Marketplace, 2012), these net carbon benefits (in 2007 figures) would be worth around US\$ 6,308,053, around 66% of start-up costs and it is only the first verification period. It can therefore be assumed that there will be a net profit for the investors at the end of the project as the net carbon offsets are expected to rise into the foreseeable future.

## 7.2.5 Additionality, leakage and permanence

### Additionality

The project developers assume that without the project, 296,099 hectares of accessible commercial forestlands within the Park expansion area would be harvested in 29,610 hectare blocks each year over the next 10 years (Marshall, et al., 2009). To deal with the problem of additionality, the project provides carbon financing to stop logging in the park and deforestation around communities. Without this funding, these activities would have continued, leading to the loss of more forest cover and release of carbon dioxide (United States Initiative on Joint Implementation, 2006). A previous feasibility study, conducted prior to project implementation, showed that the Government of Bolivia did not have the necessary funds or political will to close the forest concessions and expand the park (Marshall, et al., 2009). Therefore, funds

provided by the project enabled changes to the status quo, by financing the buyout of timber concessions, the expansion of the park, and the community development activities aimed at reducing forest conversion (Marshall, et al., 2009).

### Leakage

The NKCAP has tried to prevent leakage by introducing community development programs, including educational campaigns, workshops in sustainable agriculture, assistance in securing legal status and land tenure, and the development of a management plan for ancestral lands (Marshall, et al., 2009). One of the more successful aspects of these programs was the legal designation of 360,565 hectares of indigenous ancestral territory (TCO) for border communities, which officially granted them property rights (Marshall, et al., 2009). These communities helped to design the Bajo Paragua Native Communal Land Natural Resources Management Plan for the lands adjacent to the project and sustainable forestry activities undertaken in the TCO are lessening pressure to deforest within project boundaries (Marshall, et al., 2009). An agreement with former timber concessionaires, whose sawmills had been closed and harvesting equipment purchased/retired by the project developers (as part of the overall concession buyout), requires them to report on the compensatory funds they received to cease operations and to cooperate on sustainable forestry practices on their logging concessions outside the project area (United States Initiative on Joint Implementation, 2006). In the period from 1997 to 2005, project partners calculated a loss of 171,618 tons of CO<sub>2</sub> from leakage and this loss was factored into the calculation of the net carbon benefits from the project (United States Initiative on Joint Implementation, 2006).

### Permanence

It must be noted that although all carbon benefits associated with the first validation and verification review were closed out to SGS's satisfaction, future verifications may be in jeopardy because key milestones in the community development action program have not been reached namely, the program called for the Bolivian government to:

- i) establish the necessary legal instruments to commercialize the Bolivian's government's share of the carbon credits
- ii) to commercialize the carbon credits, and

- iii) to assign carbon credit revenue according to the earmarks set out in the NK-CAP Comprehensive Agreement (which include community development (Marshall, et al., 2009).

The Bolivian government, due to turnover of government officials and other obstacles, has yet to complete these milestones thus illustrating the need for strong local government capacity to establish the necessary legal, financial, and institutional means to manage carbon revenue and benefit sharing (Marshall, et al., 2009). The permanent endowment has already been established to fund protection activities throughout the 30 year life of the project and beyond (Marshall, et al., 2009). Furthermore, the Bolivian government has been given 49% percent of the verified emissions reductions from the project to ensure its financial stake in the project's success and continuity (Marshall, et al., 2009). Robust community development aspects of the project are also meant to result in long-term conservation by the communities adjacent to the park who will refrain from clearing within park boundaries for subsistence agriculture (Marshall, et al., 2009).

#### **7.2.6 Current progress of the NKCAP**

The NKCAP is evidence of how a well-designed REDD+ project can result in real, scientifically measurable, and verifiable emissions reductions with important benefits for biodiversity and local communities. The project has produced the following results:

- Avoided 1,034,107 tons of verified CO<sub>2</sub>e emissions, which would have been caused by logging and deforestation between 1997 and 2005;
- Estimated to avoid a total of 5,838,813 tCO<sub>2</sub>e emissions over the 30 year project lifespan;
- Preserves a rich and biologically diverse forest ecosystem, chosen as a UNESCO World Heritage Site for its outstanding biodiversity value;
- Facilitated indigenous communities achieving legal status as “Communities of Native Peoples” and in obtaining official land title;
- Provides alternative, environmentally sustainable economic opportunities for the local population via community forestry and ecotourism;

- Raised \$8.25 million in carbon financing, with additional financing possible upon sale of the Government of Bolivia's 49% share of the project's carbon offsets;
- Established an endowment which is used to fund project activities and preserve the park for future generations (Marshall, et al., 2009).

### **7.2.7 Criticism of the NKCAP**

The NKCAP has met some criticism. In 2009, Greenpeace International produced a report called "Carbon Scam: Noel Kempff Climate Action Project and the Push for Sub-national Forest Offsets" (Greenpeace International, 2009), which accuses the project of being a carbon scam and questions the claims made by the project developers about leakage, additionality, permanence and the ability of the project developers to measure accurately the amount of carbon stored in the forest (Greenpeace International, 2009). The report also calls into question the claim that NKCAP has provided sustainable benefits and alternative livelihoods to the local communities (Greenpeace International, 2009). Greenpeace is of the opinion there may even be an overall increase in global greenhouse gas emissions because major emitters such as AEP are allowed "to continue to build polluting coal-fired power stations while purchasing offsets that cannot be depended upon to provide real emission reductions" (Greenpeace International, 2009). They believe that requiring national-level emissions reductions through REDD+ is the absolute minimal prerequisite for the generation of real, measurable, reportable, and verifiable emission reductions (Greenpeace International, 2009). The NKCAP replied to the Greenpeace report in its own publication, called "Noel Kempff Mercado Climate Action Project: Position of Fundación Amigos de la Naturaleza (FAN –Bolivia) on Greenpeace's Report" (Fundación Amigos de la Naturaleza , 2009), in which it alleges that Greenpeace

"Greenpeace uses questionable reporting methods and relies on information that is irrelevant, disorganized, out of context, or simply false in order to discredit the Noel Kempff Mercado Climate Action Project and its achievements" (Fundación Amigos de la Naturaleza , 2009).

The NKCAP illustrates the fact the REDD+ projects can provide net economic benefits both to project investors and to the country as a whole. However, each country is different and the positive effects of REDD+ might not be felt across the board. In order to assess the potential for net economic benefits in Uganda, a Uganda example of a REDD+-type project will be examined and its results may give an indication of the expected economic results of a REDD+ project in Uganda. The project that will be examined is the Sawlog Production Grant Scheme.

### **7.3 The Sawlog Production Grant Scheme (SPGS)**

#### **7.3.1 Background to the SPGS**

The Sawlog Production Grant Scheme (SPGS) is a form of a PES scheme that is funded by the European Union (EU) and the Government of Norway, and is designed to assist in the creation of a national saw-timber plantation resource through encouraging investment by the private sector (LTS International, 2012). SPGS is supervised by a Steering Committee comprised of representatives of the both the Ugandan government and developmental partners (Sawlog Production Grant Scheme, 2012). Since 2004, the SPGS has provided financial incentives for growers as well as supported people with professional, technical support to establish a commercially viable plantation resource (LTS International, 2012). The scheme has created enormous interest from the private sector, with investors (the vast majority being Ugandans) seeing forestry as a legitimate and profitable land use option (Jacovelli, 2010). Over 20,000 hectares of timber plantations were already established by over 250 individuals and companies by the end of 2010 (Sawlog Production Grant Scheme, 2012).

The core business of the SPGS is to provide tree establishment and maintenance grants for growing timber and large transmission pole crops (Sawlog Production Grant Scheme, 2012). This service is limited to the private sector and there are strict requirements for support such as a minimum of 25 hectares, specific seedlings, specific seed and seedling sources and basic weeding standards (Sawlog Production Grant Scheme, 2012). Payments are made only after field inspections to ensure standards have been met (Sawlog Production Grant Scheme, 2012). SPGS also runs practical training courses; funds applied research projects that support growers' needs;

runs a private nursery certification scheme; and has been instrumental in the formation of the Uganda Timber Growers' Association (UTGA), an independent, private sector lobby and support group to help secure the future beyond the donor-funded period (currently to 2013) (Sawlog Production Grant Scheme, 2012). The main tree species planted in Uganda's commercial tree plantations are *Pinus caribaea* var. *hondurensis* (PCH) used to produce high sawlogs; *Eucalyptus grandis* commonly planted for fuelwood and poles and also an important source of income for small farmers; and *Maesopsis eminii* (Musizi), a general purpose hardwood timber, as well as hybrid eucalyptus clones (Sawlog Production Grant Scheme, 2012).

Although the main objective of the SPGS is to create a national saw-timber plantation resource, the SPGS can also represent an effort to alter the economics of deforestation and forest degradation by providing forest dwelling communities with the opportunity to benefit from carbon finance. The planting of trees, even for commercial use, not only acts as a legitimate and profitable land use option that provides additional income that can be used to improve livelihoods, but also helps to conserve the country's forests by preventing community members from encroaching into forested areas to grow crops, and encouraging them not to cut down mature forest trees for firewood or charcoal. The practical training courses that are provided under the scheme can also help them improve their farming methods. Therefore, an analysis of the SPGS can provide valuable information when considering the mechanics of REDD+ implementation.

### **7.3.2 Requirements for becoming a SPGS client**

SPGS signs contracts with all its clients before any planting takes place. Prior to signing a contract the project requires a Forest Management Plan, which must have achievable targets over the 2-3 year contract period (Jacovelli, 2010). All SPGS clients start with their own money and resources, which quickly sorts the more serious growers from the rest, while SPGS pays following a site inspection (Jacovelli, 2010). The full SPGS grant is paid in three installments over the contract period (2-3 years), thus encouraging growers to maintain what they have planted (Jacovelli, 2010). When a grower does not achieve his/her planting target, the contract is quickly revised to a mutually acceptable level and the hectares are offered to somebody else (Jacovelli,

2010). This gives the scheme a competitive element which encourages productivity as well as ensures that new investors are brought on board at regular intervals (Jacovelli, 2010).

### 7.3.3 SPGS and community support

SPGS's main support is to commercial growers with at least 25 hectares however, SPGS also supports small-scale tree planting on farms by the majority rural poor. This latter support is called the Community Tree Planting Initiative (Sawlog Production Grant Scheme, 2012). Started in October 2005, the aim of this initiative is to save the remaining natural forests by enabling the poor rural communities to have an alternative source of timber/poles of their own for personal use and /or sell to raise income (Sawlog Production Grant Scheme, 2012). Through this initiative, SPGS provides technical advice, practical training and, in some cases quality tree seedlings to plant, to small holder rural farmers interested in tree planting (Sawlog Production Grant Scheme, 2012). The conditions are that farmers should be in a community of 20 or more members with a minimum individual area of  $\frac{1}{2}$  an acre and maximum of 10 acres (Sawlog Production Grant Scheme, 2012). The farmers are expected to plant and maintain trees on their own with no cash from SPGS (Sawlog Production Grant Scheme, 2012). Table 7 provides a summary of SPGS community support from 2005 to 2010.

**Table 7 Summary of SPGS Community Support from 2005 to 2010**

ITEM (2005-2010)	TOTAL
No. of districts	36
No. of communities	103
No. of members	3,120
No. of seedlings supplied	1,721,053
Area (ha) planted (at 80% survival)	1,239

Source: Sawlog Production Grant Scheme, 2012

The Community Tree Planting Initiative targets communities surrounding SPGS clients (large scale tree growers) because it is easier to access the communities while SPGS staff inspects clients (Sawlog Production Grant Scheme, 2012). It also makes it

easier to link clients with communities so they work together as part of sustainability (Sawlog Production Grant Scheme, 2012). There are also annual awards for the best planters which help in improving planting standards.

The Community Tree Planting Initiative does however face some challenges such as limited budget to meet the ever increasing seedlings demands and land tenure systems where some tenants are not allowed to plant trees since they do not permanently own land (Sawlog Production Grant Scheme, 2012). Furthermore, organizational capacity of some community associations is still weak in complementing SPGS efforts in mobilizing and coordinating community tree planting work (Sawlog Production Grant Scheme, 2012). Despite these challenges, the Community Tree Planting Initiative had been successful in creating a huge demand for more support from communities across the country, with new applications for up to 6 million seedlings (Odeke, 2011).

#### **7.3.4 Plantation establishment costs**

Estimates show that on average in Uganda it will cost around 1.5 million Ugandan shillings per hectare (US\$ 730) to establish a plantation (Sawlog Production Grant Scheme, 2012). This cost covers all expected costs up to canopy closure, which is around 3 years with *Pinus caribaea* and 1-2 years with *Eucalyptus grandis* (Sawlog Production Grant Scheme, 2012). Canopy closure is when the trees canopies in adjacent rows touch and shade out the ground vegetation. Costs vary significantly on different sites and also depending on the supervision and level of skills of the labour (Sawlog Production Grant Scheme, 2012). There are other factors that can influence establishment costs such as the scale of the planting, the level of mechanisation, and the timing and frequency of key operations (especially weeding) (Sawlog Production Grant Scheme, 2012). Planters who have been with SPGS for more than a year do manage to reduce their unit costs significantly as they learn from their mistakes (Sawlog Production Grant Scheme, 2012). As an example, a first time planter with the minimum 25 hectares is expected to have US\$ 18,250 in establishment costs. The SPGS, as an incentive to invest in timber plantations in Uganda, covers half of the estimated establishment costs therefore the planter will pay on average US\$ 9,125.

### **7.3.5 Expected returns from the plantations**

A recent independent study carried out for the SPGS (by LTS International Ltd.) calculated real rates of return (RoR) of 9 to 15% for the timber plantations (Sawlog Production Grant Scheme, 2012). Including inflation estimated at 5 to 6%, these RoR approximate to 15 to 18% financial RoR, which is very favourable compared to plantation investment in numerous other countries (Sawlog Production Grant Scheme, 2012). The rate of return is dependent on the costs of establishment, the productivity of the plantations, the conversion rate at sawmills and the import price of sawn timber (Sawlog Production Grant Scheme, 2012). Therefore the planter with at least 25 hectares is expected to spend US\$ 18,250 and is expected to gain around US\$ 19,893 (9% return); a profit of US\$ 10,768. The timing of this return varies depending on the potential of the site (i.e. which species are suited to grow there) and also the objective(s) of the grower for example, the type of trees grown, sawlogs or poles (Sawlog Production Grant Scheme, 2012) Assuming that the plantation have been properly managed using the intensive silvicultural techniques recommended by the SPGS, pine sawlogs expect rotations of around 20 years while *Eucalyptus grandis* expects rotations of 8-15 years (Sawlog Production Grant Scheme, 2012). For pine trees, the second and third (final) thinning will yield some sawlogs whereas for eucalyptus grandis, all thinnings will yield utilisable products (Sawlog Production Grant Scheme, 2012). For both types of trees however, the major income only comes at final felling of the large sawlogs (Sawlog Production Grant Scheme, 2012). The SPGS is currently coordinating efforts to persuade the Government of Uganda to exempt plantation forestry from income tax and to allow the costs of replanting to be set against the proceeds from the harvest of the first crop (Sawlog Production Grant Scheme, 2012).

### **7.3.6 An example of the profitability of timber plantations in Uganda**

The SPGS is an example that illustrates the profitability of timber plantations in Uganda. Profitability is important for REDD+ investors because they need to ensure that the tree plantations are able to provide enough wood and income to sustain forest dwelling communities and prevent them from cutting down forests. A study was undertaken on the profitability of producing eucalypt plantations in Uganda. The eucalpt tree is presumed to be the most profitable growing of wood in Uganda due to

its significantly shorter rotation period than other types of tree and higher demand in the wood market for the products from even early thinnings (Bergsaker, 2011). The study is based on a description of each of the production lines, all expected silviculture means, costs and income, expected output and when it appears, and the size of demand or expected demand for the harvested trees at each age (Bergsaker, 2011). It is important that the planter knows what he/she intends to produce the plantation for at an early stage because after the first thinning, the production schemes are somewhat different. For example, one only needs two thinnings and no pruning for production of transmission poles, whereas saw-log production needs three thinnings and pruning after each thinning (Bergsaker, 2011). Transmission poles also demand pretty straight stems therefore if the planter does not expect that, saw logs should be the main product (Bergsaker, 2011).

**Table 8 Program used for the production of sawlogs based on *Eucalyptus grandis***

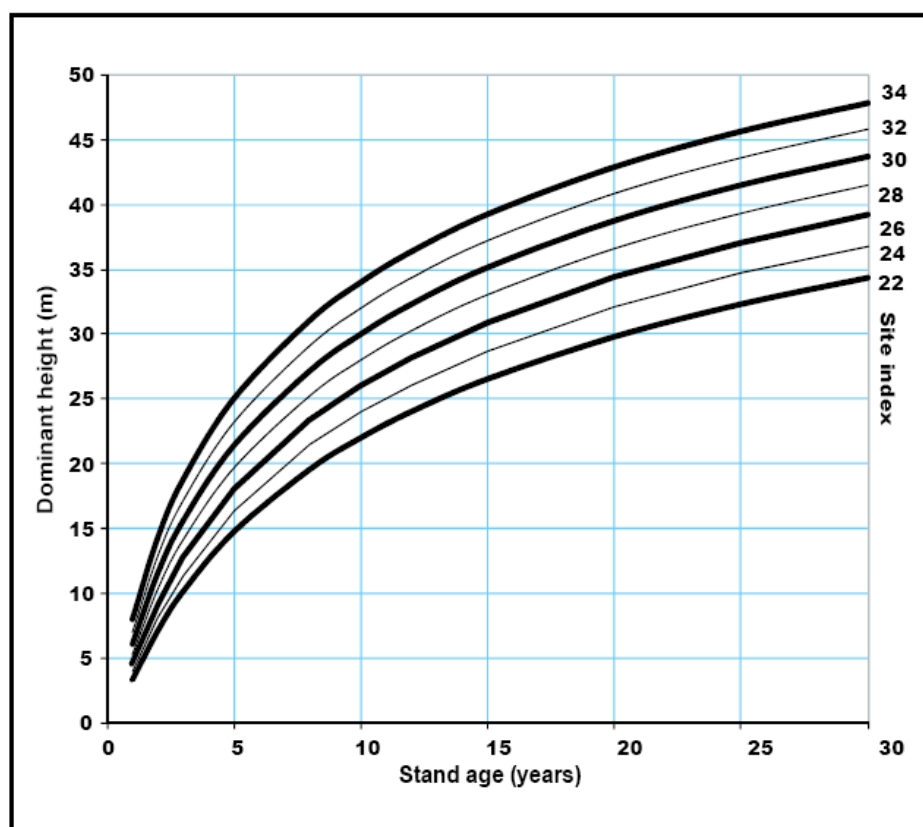
Site index	First thinning		Second thinning		Third thinning		Final felling	
	Age	Trees taken out	Age	Trees taken out	Age	Trees taken out	Age	Trees taken out
34	2	300	5	270	7	200	10	350
30	2	250	5	270	8	200	12	320
26	3	200	6	200	9	200	14	288

Source: Bergsaker, 2011

Table 8 illustrates the program used for the production of sawlogs from eucalypt trees. A high number of seedlings are planted out because ordinary seedlings are relatively cheap, and since the first thinning is profitable, it is good to have more trees to choose from when doing the marking for the first thinning to improve the final quality (Bergsaker, 2011). The site index is important and is a classification of the growth conditions in terms of capacity for wood production. It is linked to the tree heights as there is a close correlation between the volume production and the tree heights and

tree heights are the simplest to measure (the site index classification is described as the expected heights of the dominant trees at age of 10 years) (Bergsaker, 2011). Height curves are generated for the entire rotation, in order to measure the tree height at any age, preferably older than 5 years, and by knowing the age the site index can be read out from the curves in figure 4 below.

**Figure 4 Site index curves for *Eucalyptus grandis* in Uganda**



Source: Bergsaker, 2011

Production of eucalypts should be limited to areas where you have at least 1200 mm of annual rainfall and site quality of 30 or better (Bergsaker, 2011).

### 7.3.6.1 Costs

The costs and income during the rotation period are estimated from experience from *Eucalyptus grandis* growers in Uganda, supported with figures from abroad. The assumption is that the plantation is being grown for the production of transmission poles. A cost scheme is generated based on a demand for 14 % real rate of return which, when adjusted for an inflation rate of 5 – 7 %, corresponds with rate of return

from a bank account or investment in the stock market at 19 – 21 % (Bergsaker, 2011). This rate is considerably high (Bergsaker, 2011). There is a risk aspect in eucalypt plantation that should also be taken into account however this aspect can be significantly reduced by competence and relevant measures (Bergsaker, 2011). No taxes or SPGS grants are included in the calculation. SPGS grants will contribute to improve profitability, but the taxes will reduce the profitability to the same extent, and the final profitability after SPGS grant and taxes will approximately be the same as before if we include these two factors (Bergsaker, 2011). Table 9 illustrates the cost scheme used for growing *Eucalyptus grandis* in order to produce transmission poles

**Table 9 Cost scheme for growing eucalyptus grandis for producing transmission poles**

Operation	Year	Net income or cost (-)
Preparation for planting	1	-310
Annual land lease	1 - 9	-22
Planting, beating up	1	-500
Termite fighting	1	-200
Weeding	1	-480
Weeding	2	-240
Overheads and general management costs	1 - 9	-300
Thinning (1)	2	200
Thinning (2)	5	320
Final felling	9	33,810

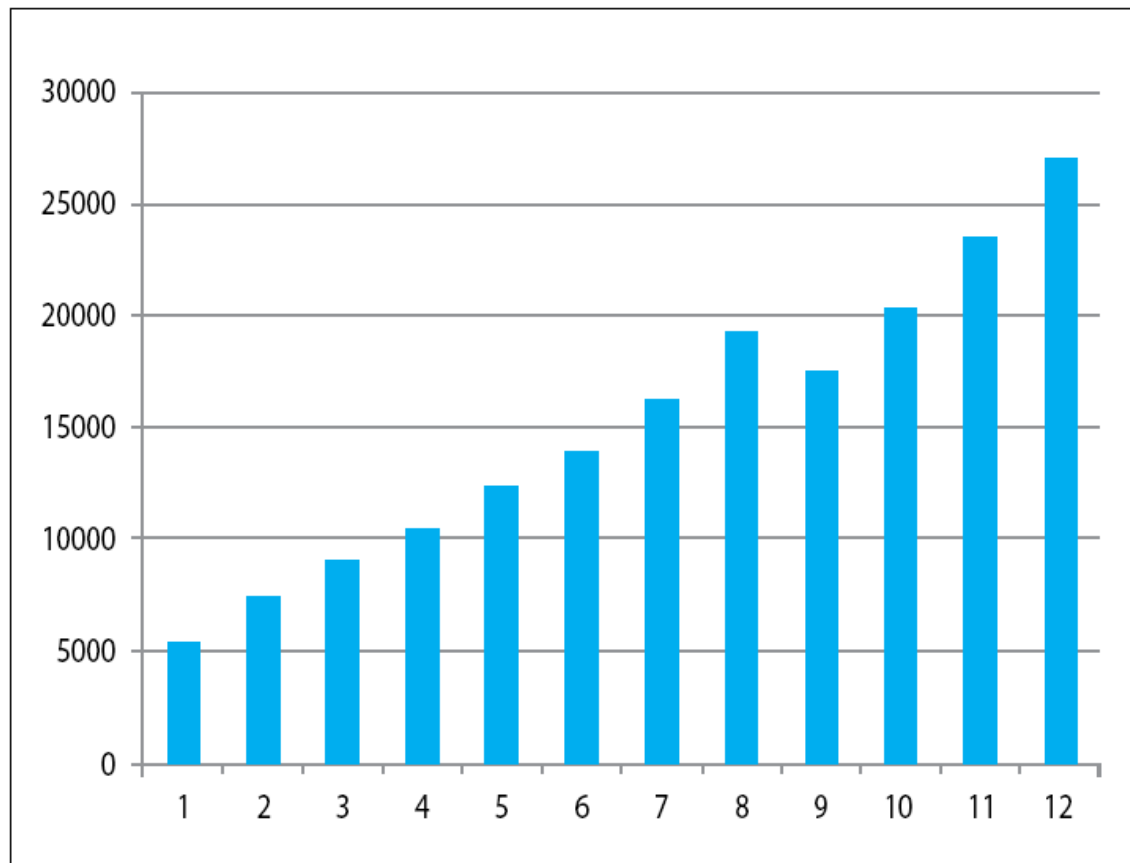
Source: Bergsaker, 2011

### 7.3.6.2 Income

Values were calculated for a plantation standing at a medium site class (30) for each year in the rotation period and based on a demand for 14% per annum real rate of return (Bergsaker, 2011). The results are presented in figure 5. The values are per

hectare given in 1000 UGX (Ugandan shillings) on the y-axis and are calculated only for the standing stock and not of the ground. Duration in years is on the x-axis.

**Figure 5 Default values per ha of *Eucalyptus grandis* plantations**



Source: Bergsaker, 2011

It must be noted that in this example, the study shows results of calculations based on norms and standards for costs and income. If the conditions of a plantation in any aspect are better or worse than the norm, this should be reflected, and changes done (Bergsaker, 2011).

### 7.3.7 Criticism of plantations

Commercial tree planting has taken off throughout Uganda however it has met some criticism which has also escalated over the years. Some of the accusations are leveled at the global plantation forestry industry as a whole, namely, the use of exotics rather than indigenous species; planting large blocks of monocultures; claims of excessive water and nutrient use; loss of biodiversity; the displacement of poor people from the land and so on (Jacovelli, 2010). The water use debate manifests in Uganda

particularly because of the idea that eucalyptus plantations grow best in swampy land (Jacovelli, 2010).

The SPGS illustrates the fact that there is a booming market for commercial plantation growing in Uganda and there is assistance provided for new farmers to encourage investment in this industry. The plantations can also be used both as a source of income and a source of fuel thus helping to curb the deforestation of trees for fuelwood. The SPGS has also resulted in better farming methods due to the training provided and improved seed that has been distributed, and it is likely that there has been a positive improvement in the livelihood of some of the population involved in the programme, who have benefited from the additional income. One disadvantage of using the SPGS in an economic analysis of REDD+ in Uganda is that the SPGS does not involve a MRV system to monitor changes in the levels of carbon dioxide as a result of the programme and there is the possibility that the success of the timber industry may lead to more deforestation in other areas by people who do not engage in the plantation industry. Furthermore, the main activity in this scheme is to cut down the trees that have been planted for sale in the timber markets therefore it is questionable whether the project is in line with REDD+'s objective.

Lastly, a feasibility study was carried out in the Murchison-Semkili landscape in Uganda and part of the study was an economic analysis to assess the potential for net financial benefits. The results of the economic analysis could give a strong indication of the direction the benefits will take in a national REDD+ scenario. In other words, projected overall positive net economic benefits from the Murchison-Semkili REDD+ project will give a strong indication of the likelihood of net economic benefits being possible in national level REDD+ implementation. If the projected net economic benefits are negative, this will point towards national REDD+ implementation also not reaping positive net economic benefits. Overall, the Murchison-Semkili project can also indicate the possibility of REDD+ even working in Uganda.

#### ***7.4 A hypothetical economic analysis of a sub-national REDD+ project in Uganda: The Murchison-Semkili landscape***

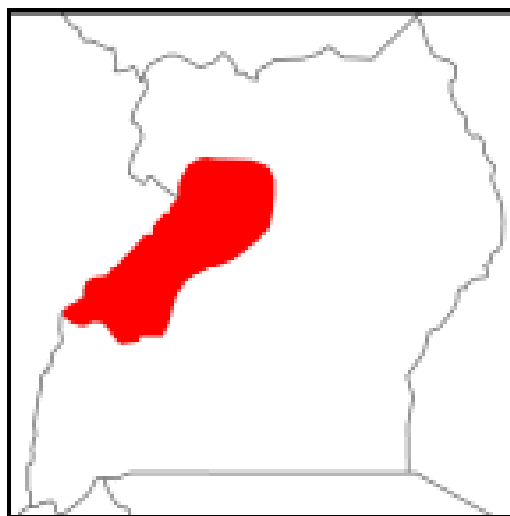
A feasibility study for REDD+ was carried out in the Murchison-Semkili landscape and the results of the study were documented in a report in May 2011. The data from

these results will be used to create a hypothetical example of a sub-national REDD+ project in Uganda.

#### 7.4.1 Background to the Murchison-Semkili feasibility study

The Murchison-Semkili landscape is situated in Western Uganda and is currently experiencing deforestation of its natural forests at a rate of approximately 8,000 ha per year (Leal, et al., 2011). Figure 6 illustrates the location of the Murchison-Semkili area on the map of Uganda.

**Figure 6 Map of Uganda showing the Murchison-Semkili Landscape**



Source: Leal, et al., 2011

The Murchison-Semkili landscape contains three relatively large central forest reserves (Budongo, Bugoma and Kagombe) interconnected by patches of “fully stocked” and degraded “tropical high forest” including many smaller central forest reserves surrounded by farm/grassland, and papyrus swamps (Leal, et al., 2011). In total, the forests in the landscape outside the forest reserves cover some 122,867 hectares ranging in size from 4 hectares to 3,400 hectares. The climate in the area is moderately hot with temperatures ranging between 19°C and 27°C and a mean annual rainfall around 1,500 mm, distributed over two seasons (March/May and September/December). Topography is gentle with elevations around 1,100 m (Leal, et al., 2011).

A socio-economic survey of 345 households in the project area was carried out to identify and quantify the economic driving forces of deforestation. Subsistence

farming and small to medium-scale commercial farming were found to be the primary proximate drivers of deforestation in the area (Leal, et al., 2011). Most of the households surveyed combine subsistence farming with planting cash crops, mainly tobacco and upland rice accounting for 15% of the households each, followed by groundnuts (9%), cassava (8%) and sweet potatoes (8%) (Leal, et al., 2011). The main proximate driver for forest degradation is unsustainable and increasingly indiscriminate harvesting of timber and a high demand for timber in southern Sudan (Leal, et al., 2011). This is because the recovery of the forest depends on the availability of future canopy tree in the understory (Leal, et al., 2011). Charcoal production is not a major driver for degradation in the project area. Additionally, other factors such as low productivity of the fields, high population density and growth (the population rate is growing faster than the national rate of 3.2%), the large demand for timber, and immigrants from neighbouring countries and southern Uganda moving into the area looking for land, also play an important role in causing the deforestation (Leal, et al., 2011). Poverty levels in the area are high with the average household size being approximately seven persons; receiving between US\$ 500 and US\$ 3,500 per year from crop production based on forest conversion for a few years (Leal, et al., 2011). The land tenure regime is mainly customary, passed on through inheritance and with no formal titles. There is no unclaimed forest in the region and all of the forest is accessible by the communities (Leal, et al., 2011). Agriculture is extensive using hand tools and fire, the fuel wood is gathered from local forests (Leal, et al., 2011). Table 10 illustrates the impact that the main cash crops have on the forests

**Table 10 The ten most important cash crops (actual and relative) and their impact on the forest**

<b>Produce</b>	<b>Households</b>	<b>Percentage</b>	<b>Forest cleared</b>
Upland rice	45	15%	Yes
Tobacco	45	15%	Yes
Groundnuts	28	9%	Yes
Cassava	23	8%	No
Sweet potato	23	8%	No
Maize	20	7%	Yes
Bananas	18	6%	No
Beans	18	6%	No
Timber	11	4%	Yes
Sugarcane	10	3%	Yes

Source: Leal, et al., 2011

A combined initiative by UNDP and GEF created a project called 'Conservation of Biodiversity in the Albertine Rift Forests of Uganda' (CBARFP) which is being implemented by WWF and aims to develop a financing system for the conservation of the northern Albertine Rift forest (Murchison-Semkili landscape) (Leal, et al., 2011). The Wildlife Conservation Society (WCS) was subcontracted under this project to assess the feasibility of REDD+ funding to conserve the remaining forests in part of the landscape (south of Bugoma Forest Reserve and west towards Itwara Forest Reserve) while the Chimpanzee Sanctuary and Wildlife Conservation Trust (CSWCT), together with Jane Goodall Institute (JGI) and WCS, combined their resources to ensure that the whole of the landscape (including all forest east of Bugoma up to Budongo Forest Reserve) was reviewed in the same feasibility assessment (Leal, et al., 2011). Consequently, a feasibility study was carried out to evaluate the potential for REDD+ funding to conserve the remaining natural forest in the Murchison-Semkili landscape. The idea behind the introduction of REDD+ in the area is to provide alternative livelihood options for the rural population through revenue from carbon credits and at the same time to strengthen the capacity of the national conservation agencies (Leal, et al., 2011). The project area comprises both private and community forest reserves in the districts of Masindi, Buliisa, Hoima, Kibaale, and Kyenjojo, approximately 122,876 ha (Leal, et al., 2011). The reason why forest reserves were included in this sub-national project is because of the potential risk of leakage (Leal, et al., 2011). Some of the revenue from the project will go to the National Forestry Authority which will ensure that the funds go towards financing law enforcement for the protection of these reserves because if leakage occurs then these emissions would have to be discounted from those avoided by the project and hence the revenues would be discounted (Leal, et al., 2011).

#### **7.4.2 Financial feasibility study of the Murchison-Semkili REDD+ project**

The financial feasibility of the project is determined by comparing its carbon finance potential (net carbon revenues) with its implementation and opportunity costs incurred over the project lifetime. Project feasibility in terms of its carbon finance potential is determined by projecting the net carbon credit generation potential, calculating the potential carbon revenues and subtracting the carbon-cycle related transaction costs (Leal, et al., 2011).

i) *Projecting the net carbon credit generation potential*

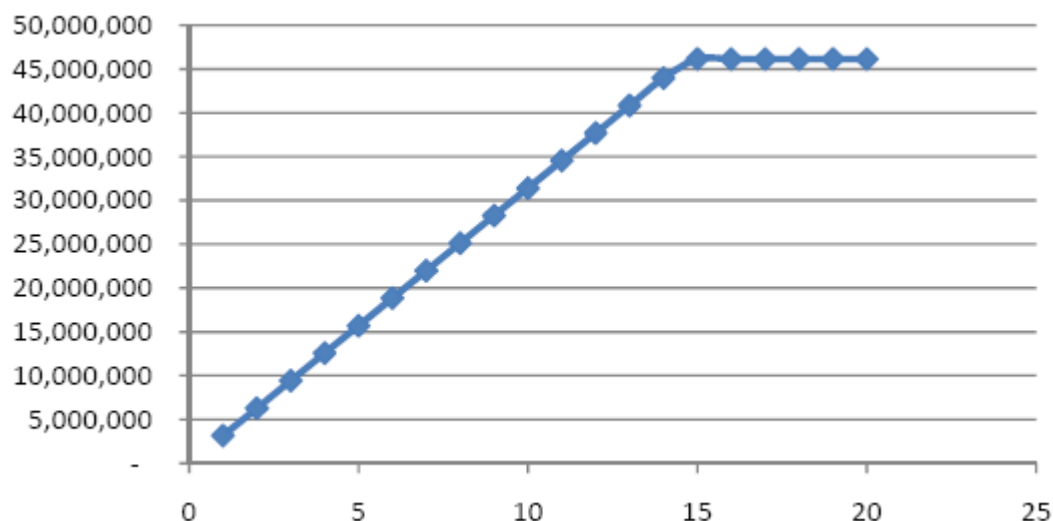
Carbon accounting of the project was undertaken in order to project the net carbon credit potential. Only carbon in above ground biomass and below ground biomass were accounted for, as these pools are well correlated and direct measurements accurately estimate above ground biomass (Leal, et al., 2011). The carbon calculations followed the Biocarbon Fund methodology of mosaic deforestation while carbon densities were calculated using the method of nested sampling (Leal, et al., 2011). The location and number of the plots for a representative sampling of the landscape was determined using the software program DISTANCE 6.2 (Leal, et al., 2011). The results of the carbon accounting were as follows:

- Carbon density for THF fully stocked ranged from 350 tCO<sub>2</sub>e/ha to 838 tCO<sub>2</sub>e/ha, for THF
- Carbon density for THF depleted ranged from 81t/CO<sub>2</sub>e/ha to 235 tCO<sub>2</sub>e/ha,
- Carbon density for converted farmland from 30 ±5 tCO<sub>2</sub>e/ha from both annual crop biomass and remnant tree biomass.
- Conversion of THF fully stocked to farmland creates an emission 410 tCO<sub>2</sub>e/ha while from THF depleted to farmland 135 tCO<sub>2</sub>e/ha.
- The landscape carbon density was set at 375 tCO<sub>2</sub>e/ha after weighting the averages for THF fully stocked and THF depleted by their surface area in the landscape (Leal, et al., 2011).

From the carbon calculations, the baseline scenario was produced:

- Emission factor on average for landscape: 375 tCO<sub>2</sub>e/ha
- Project area at landscape level: 122,876 ha
- Deforestation rate: 5.1 %/year (8367 ha/year) (Leal, et al., 2011).

This data allowed the project developers to make a projection of avoided emissions (tCO<sub>2</sub>e) from deforestation over a project lifetime of 20 years (Leal, et al., 2011) and these projections are illustrated in Figure 7.

**Figure 7 Avoided emissions (tCO<sub>2</sub>e) over the project lifetime of 20 years**

Source: Leal, et al., 2011

To calculate the net carbon benefits the baseline emissions are adjusted for nonperformance (discount of 25% in the first year, 90% in the second year and 95% in the third year and for the rest of the project lifetime) and leakages (estimated to be 30%) for shifted activities and displaced logging) (Leal, et al., 2011). The net carbon benefits for each year are illustrated in Table 11.

**Table 11 Net carbon benefits from deforestation, including discounts for non-performance and leakage**

Year	deforestation (tCO <sub>2</sub> e)	non-performance	leakage (30%)
1	3,140,073	2,355,055	1,648,538
2	6,280,145	5,652,131	3,956,492
3	9,420,218	8,949,207	6,264,445
4	12,560,291	11,932,276	8,352,593
5	15,700,364	14,915,345	10,440,742
6	18,840,436	17,898,415	12,528,890
7	21,980,509	20,881,484	14,617,039
8	25,120,582	23,864,553	16,705,187
9	28,260,655	26,847,622	18,793,335
10	31,400,727	29,830,691	20,881,484
11	34,540,800	32,813,760	22,969,632
12	37,680,873	35,796,829	25,057,780
13	40,820,946	38,779,898	27,145,929
14	43,961,018	41,762,967	29,234,077
15	46,115,630	43,809,849	30,666,894
16	46,115,630	43,809,849	30,666,894

17	46,115,630	43,809,849	30,666,894
18	46,115,630	43,809,849	30,666,894
19	46,115,630	43,809,849	30,666,894
20	46,115,630	43,809,849	30,666,894

Source: Leal, et al., 2011

Net carbon benefits are projected to be 15,000,000 tCO<sub>2</sub>e on average per year for the first 14 years and 31,000,000 tCO<sub>2</sub>e on average per year afterwards (Leal, et al., 2011).

*ii) Calculating the carbon revenue*

Deforestation in the Murchison Semliki landscape is high and therefore ideally the REDD+ project should start to generate revenue as soon as possible (Leal, et al., 2011). There are different ways and combinations in which this can be done for example, a low risk transaction would require early and frequent verification events to sell guaranteed offsets, however, each verification costs between US\$ 20,000 and US\$ 40,000 which has to be deducted from the revenue (Leal, et al., 2011). Another option is a medium risk transaction which would require a forward sale delivering a number of future offsets within a certain period for example, 50 percent of the project planned offsets in 5 years (Leal, et al., 2011). Lastly, a high risk transaction of forward crediting for ex-ante offsets, which is more difficult to sell to commercial buyers, but in situations rural development and conserving biodiversity are the primary focus of the donor, the donor may be willing to take the risk (Leal, et al., 2011).

For this particular project, the project developers suggested a quick delivery of offsets which could be pursued by a combination of a forward sale of a portion of the project carbon credits, a later delivery of guaranteed offsets after verification, but ideally a donor would like to invest in the project by providing a forward credit of ex-ante offsets (Leal, et al., 2011). The price at which the carbon credits are sold depends on the delivery terms with higher prices for guaranteed carbon credits, for example, after the verification event (Leal, et al., 2011).

The net carbon revenues were calculated for a forward sale at a price of US\$ 2 per tCO<sub>2</sub>e and the revenues are presented in table 12. The maximum length of the

forward sale is set at three years, after which validation and verification will happen and the carbon price increases from US\$ 2 - 5 per tCO<sub>2</sub>e. The cumulative total for the three years is US\$ 23,738,950 for avoided deforestation (Leal, et al., 2011).

**Table 12 Total net carbon benefits from forward sale, with three years until validation**

Year	Net carbon benefits avoided deforestation (tCO <sub>2</sub> e)	Revenue (2USD/tCO <sub>2</sub> e)
1	1,648,538	3,297,076
2	3,956,492	7,912,984
3	6,264,445	12,528,890

Source: Leal, et al., 2011

Net revenues from avoided deforestation are projected to reach US\$ 8.2 million (US\$5/tCO<sub>2</sub>e) in the first year from avoided deforestation; the maximum revenue from deforestation is reached in 15 years and is estimated at US\$153.5 million the cumulative total is US\$ 154.4 million (Leal, et al., 2011). At a price of US\$10/tCO<sub>2</sub>e, net carbon revenues are projected to reach US\$ 16.4 million in the first year from avoided deforestation; the maximum revenue from deforestation is reached in 15 years and is estimated at US\$306.6 million while the cumulative total is US\$308.8M million (Leal, et al., 2011). It was found that registration and certification fees only marginally reduce the net carbon revenue (Leal, et al., 2011). Similarly, revenue of regeneration also becomes marginal over the project life time (Leal, et al., 2011).

*iii) Subtracting carbon-cycle related transaction costs*

**a) Transaction Costs**

The main transaction costs for the project are:

- drafting a Project Design Document (PDD), including the monitoring plan,
- assessing environmental, social and biodiversity benefits (for CCBA standards),
- periodic monitoring of non-performance, leakage and regeneration,
- holding stakeholder consultations,
- validation of the PDD by an external auditor,
- initial and periodic verification by an external auditor,
- registry fees (commercial registry), and certification fees (VCS),

Additional, costs associated with the transaction costs are:

- local sales and income tax, (property tax and VAT)

- legal advisory fees,
- costs of project marketing (Leal, et al., 2011).

Table 13 shows the estimated transaction costs for the project.

**Table 13 Estimated transaction costs**

Costs		Amount (USD)	Description
PDD		150,000	Completion of a PDD following CCBA standards and ultimately VCS
Validation		40,000	Third party validation of the project
Monitoring	Carbon	20,000	Assessing environmental, social and biodiversity benefits (for CCBA standards)
	Social	20,000	
	Biodiversity	20,000	
Verification		20,000	Periodic third party verification of the project performance (every 5 years)
Fees	Registration (USD/tCO <sub>2</sub> e)	77,200	APX, TZI, CdD: 0.05 USD/tCO <sub>2</sub> e for annual average of the project lifetime.
	Certification (USD/tCO <sub>2</sub> e)	154,400	Certification fees (VCS): 0.10 USD/tCO <sub>2</sub> e for annual average of the project lifetime
Taxes	Central		VAT
	Local	6%	Sales tax and income tax
Carbon price	Commodity	2/tCO <sub>2</sub> e	Forward sale
	Average	5/tCO <sub>2</sub> e	After validation
	Premium	10/tCO <sub>2</sub> e	Buyer dependent
Land title registration		85,333,600	Land title and registration currently costs 800 USD per transfer and the estimated population is 106,677
Implementation	Direct payments (USD/yr)	1,366	Payments to offset income from cash crops for 81% of the households
	Increased productivity	220,000	Training to instruct farmer in productivity techniques
Legal advice		20,000	Legal advisory fees
Marketing		6,000	Costs of project marketing

Source: Leal, et al., 2011

The transaction costs comprising project development, monitoring, validation and verification, are estimated at US\$ 220,000 (Leal, et al., 2011).

#### b) **Implementation costs**

Implementation costs include direct payments (dealt with in opportunity costs), improving field productivity and improving community benefits and alternatively land title and registration (Leal, et al., 2011). There are currently no NGOs working with farmers to improve field productivity and add value to produce. Calling in such expertise and organizing trainings could be done directly with the farmers or in collaboration with the National Agricultural Advisory Services (NAADS) (Leal, et al., 2011). It would cost at least US\$220,000 to implement this activity (Leal, et al.,

2011). To transfer land title from customary to freehold or equivalent will cost approximately US\$85,333,600 in total which exceeds what the carbon revenue can afford (Leal, et al., 2011).

c) **Opportunity costs**

The annual income from cash crops and timber for each household surveyed was calculated and is illustrated in table 14.

**Table 14 Annual incomes from cash crops and timber classes**

Annual income class (USD/household)	Number of households	Relative
0≤-<500	66	19%
500≤-<1000	59	17%
1,000≤-<1500	44	13%
1,500≤-<2000	30	9%
2,000≤-<2,500	29	9%
2,500≤-<3,000	29	9%
3,000≤-<3,500	20	6%
3,500≤-<4,000	8	2%
4,000≤-<4,500	7	2%
4,500≤-<5,000	6	2%
5,000≤-<5,500	7	2%
5,500≤-<6,000	7	2%
6,000≤-<6,500	3	1%
6,500≤-<7,000	14	4%
10,000≤-<20,000	6	2%
20,000≤-<30,000	3	1%
30,000≤	2	1%

Source: Leal, et al., 2011

The study has shown that the income from timber, cash crops and forest non-timber products varies greatly from the rural poor, with an annual income of only US\$22, to the rural rich with up to US\$ 41,000 (Leal, et al., 2011). 60% of the households surveyed received less than US\$1500 per annum, 32% less than US\$3500 and 90% less than US\$5500 (Leal, et al., 2011). This is where direct payments come in to compensate farmer and forest owners for the lost income from timber, cash crops and forest non-timber product. These payments however are strongly determined by the carbon density of the forests and the surface area of their land (Leal, et al., 2011). The

study calculated break-even points for the opportunity costs at an annual income of \$1400/yr, \$3600/yr, \$5000/yr and \$10,000 per year and the results show that the break even points are reached with more difficulty for high annual incomes and low forest densities (Leal, et al., 2011). Table 15 shows the break even points for direct payments to offset opportunity costs for annual income per household in the equivalent of tCO<sub>2</sub>e.

**Table 15 The break even points for direct payments to offset opportunity costs for annual income per household in the equivalent of tCO<sub>2</sub>e.**

		forest per household (ha)									
1400 280	USD/yr tCO <sub>2</sub> e/yr	1	2	3	4	5	6	7	8	9	10
		carbon density (tCO <sub>2</sub> e)	100	-180	-80	20	220	120	320	420	520
	150	-130	20	170	320	320	470	770	920	1070	1220
	200	-80	120	320	520	520	720	1120	1320	1520	1720
	250	-30	220	470	720	720	970	1470	1720	1970	2220
	300	20	320	620	920	920	1220	1820	2120	2420	2720
	350	70	420	770	1120	1120	1470	2170	2520	2870	3220
	400	120	520	920	1320	1320	1720	2520	2920	3320	3720
	450	170	620	1070	1520	1520	1970	2870	3320	3770	4220
	500	220	720	1220	1720	1720	2220	3220	3720	4220	4720

		forest per household (ha)									
3500 700	USD/yr tCO <sub>2</sub> e/yr	1	2	3	4	5	6	7	8	9	10
		carbon density (tCO <sub>2</sub> e)	100	-600	-500	-400	-300	-200	-100	0	100
	150	-550	-400	-250	-100	50	200	350	500	650	800
	200	-500	-300	-100	100	300	500	700	900	1100	1300
	250	-450	-200	50	300	550	800	1050	1300	1550	1800
	300	-400	-100	200	500	800	1100	1400	1700	2000	2300
	350	-350	0	350	700	1050	1400	1750	2100	2450	2800
	400	-300	100	500	900	1300	1700	2100	2500	2900	3300
	450	-250	200	650	1100	1550	2000	2450	2900	3350	3800
	500	-200	300	800	1300	1800	2300	2800	3300	3800	4300

		forest per household (ha)									
5000 1000	USD/yr tCO <sub>2</sub> e/yr	1	2	3	4	5	6	7	8	9	10
		carbon density (tCO <sub>2</sub> e)	100	-900	-800	-700	-600	-500	-400	-300	-200
	150	-850	-700	-550	-400	-250	-100	50	200	350	500
	200	-800	-600	-400	-200	0	200	400	600	800	1000
	250	-750	-500	-250	0	250	500	750	1000	1250	1500
	300	-700	-400	-100	200	500	800	1100	1400	1700	2000
	350	-650	-300	50	400	750	1100	1450	1800	2150	2500
	400	-600	-200	200	600	1000	1400	1800	2200	2600	3000
	450	-550	-100	350	800	1250	1700	2150	2600	3050	3500
	500	-500	0	500	1000	1500	2000	2500	3000	3500	4000

		forest per household (ha)									
10000 2000	USD/yr tCO <sub>2</sub> e/yr	1	2	3	4	5	6	7	8	9	10
		carbon density (tCO <sub>2</sub> e)	100	-1900	-1800	-1700	-1600	-1500	-1400	-1300	-1200
	150	-1850	-1700	-1550	-1400	-1250	-1100	-950	-800	-650	-500
	200	-1800	-1600	-1400	-1200	-1000	-800	-600	-400	-200	0
	250	-1750	-1500	-1250	-1000	-750	-500	-250	0	250	500
	300	-1700	-1400	-1100	-800	-500	-200	100	400	700	1000
	350	-1650	-1300	-950	-600	-250	100	450	800	1150	1500
	400	-1600	-1200	-800	-400	0	400	800	1200	1600	2000
	450	-1550	-1100	-650	-200	250	700	1150	1600	2050	2500
	500	-1500	-1000	-500	0	500	1000	1500	2000	2500	3000

For example, the break-even point for an annual income of US\$ 1400 was reached by a farmer with 3 hectares of forest with a carbon density of 100 tCO<sub>2</sub>e/ha but for an annual income of US\$10,000 the break-even was not reached before a farmer has 10 hectares of a forest with a carbon density of 200 tCO<sub>2</sub>e/ha (Leal, et al., 2011). The study showed that only 52% of the households still have forest on their land, and the average farmer has 3.7 hectares of forest (Leal, et al., 2011). Consequently, the farmer with an annual income from the forest of \$1400 need a carbon density of 100tCO<sub>2</sub>e/ha, \$3500 a carbon density of 200tCO<sub>2</sub>e/ha, \$5000 a carbon density of 250tCO<sub>2</sub>e/ha and \$10,000 a carbon density of 500tCO<sub>2</sub>e/ha (Leal, et al., 2011). More feasible breakeven points for the project can be reached when these short-term profits are spread over the fallow period needed for soils to recover however this income is in general not sustainable because in a business as usual scenario all forests will be cleared in 14 years, after which in a few years all the old fields will lose their fertility and stop producing altogether (Leal, et al., 2011).

#### **7.4.3 Summary of overall economic feasibility**

The socio-economic context of this REDD+ project and the low carbon density of its forests are not ideal for a true compliance buyer and compensation payments based on opportunity costs alone (Leal, et al., 2011). When the majority of the households receive between US\$500 and \$3,500 per year from crop production, carbon density lies at only 375 tCO<sub>2</sub>e/ha and on average there are only 3 hectares per household. As a result, the average household with 3 hectares, and earning \$3,500 per annum, will need to have a carbon density of at least 250 tCO<sub>2</sub>e/ha to break even. The direct payments as compensation to the farmers will cover the annual opportunity costs in the first years, however, this income is, in general, not sustainable because, in the business as usual scenario, all forests will be cleared in 14 years, after which in a few years all the old fields will lose their fertility and stop producing altogether (Leal, et al., 2011). The study also found that the net carbon revenues are modest and not enough to implement all of the project activities including improving social services and field productivity, securing land tenure and rehabilitating/replanting forests (Leal, et al., 2011). Farmers may, however, be willing to accept a lower but stable income in return for the regular payments and security of tenure. Alternatively, a lower cost of land title can be sought such as negotiating a lower transfer cost of land title or

registration at Private Forest Owners Associations (PFOA) level with agreement of the Ministry of Local Government (Leal, et al., 2011). The financing of these activities could either come from the carbon revenue, or donors. Other donors could also be approached to fund some of these activities (Leal, et al., 2011).

Kosoy et al., 2007; Sommerville et al., 2010; Van Hecken & Bastiaensen, 2010, have argued that payments in PES schemes often do not cover opportunity costs (Fisher, 2012). This is a huge disincentive for the community to be part of the REDD+ project unless some other form of payment can be introduced to make the system more profitable. It was suggested by the project developers that even though the circumstances under which the project has to perform are challenging, the alternative of not implementing the project will create an irreversible tipping point in 15 to 20 years (Leal, et al., 2011). The REDD+ activities therefore have to focus on bringing rural development and increasing crop yields to slow down the turnover of the existing forests and to improve the likelihood of the project being successful because currently, the only way for the households' to obtain cash for their daily needs is planting cash crops and/or logging trees for timber or charcoal while alternative solutions for power and clean water, like solar panels, biogas installations, or rainwater collectors are too expensive (Leal, et al., 2011). The situation can be improved if extra donor funding is acquired to reduce some of the costs and recover some of the expenses (Leal, et al., 2011). Another option will be to forgo developing the "plus" component within this REDD+ project it and instead scale up the existing planting scheme under Plan Vivo, that is, combine carbon credits from REDD+, and the introduction of a profitable cash crop like shade coffee or cocoa under Plan Vivo (Leal, et al., 2011).

### **7.5 Results of economic analysis of REDD+ in Uganda**

Looking at the three examples, it can be concluded that REDD+ is capable of generating net economic benefits for project investors and the REDD+ country as a whole, at least on the subnational (project) level. However, it will involve a large amount of funds to meet the opportunity costs of avoiding deforestation and to support the rural populations who depend on forests for their basic needs so they do not transfer the deforestation elsewhere. PES schemes and community development

can assist in this regard and a positive example can be found in Uganda in the SPGS. The SPGS shows that improvements in forest conservation can be made as long as the people are given income or other tools to sustain themselves. Rural populations have shown a willingness to take advantage of training to learn better farming methods and this can be capitalized upon and expanded to reach more rural populations. It is however a slower process than REDD+ as the plantations are being grown so they can be cut down for the products. The SPGS can be extended to plantations for solely reforestation purposes only if funding can be sourced to provide income to the growers. It appears that involvement from the private sector/ or additional investors will be necessary for REDD+ to result in net economic benefits in Uganda. The Murchison-Semkili feasibility is evidence that unless the additional funding is found to subsidise costs, the economic benefits from REDD+ in Uganda will not be enough to cover all the costs. In other words, Uganda will not experience net economic benefits from REDD+ implementation. A form of PES scheme, modeled along the SPGS, and involving other cash crops may help to provide the additional income required however, it also may come into conflict with the objectives of REDD+ since forests may need to be cleared for the cash crops. Forgoing developing the “plus” component within the REDD+ projects, as advanced by Leal, et al., (2011) will probably result in short-lived benefits as the rural communities do not learn the benefits of forest conservation and later resort to third old practices if the incentives are reduced or taken away all together. Uganda also needs to reconsider a purely national approach to REDD+ in favour of a nested approach given its economic and social circumstances and the fact that the evidence in favour of net economic benefits (e.g. the NKCAP) is subnational in nature. There is no evidence of a successful purely national REDD+ project. A nested approach would allow the private sector to get involved in REDD+ increase the funding for the REDD+ projects on the ground.

### **7.6 Benefits of REDD+**

Sara Namirembe believes that although sugar is more lucrative than forests Uganda has to take a pragmatic long-term view of “seeing forests (and other natural ecosystems) as infrastructure on which other investments depend.” She makes the analogy of asking a person who lives along a busy main road in an affluent suburb to choose between maintaining the road, and converting the road in to a rental house.

“Even without REDD+, keeping forests intact is something the country must consider for its own sake. With REDD+, the country is required to take extra effort in reducing emissions for the benefit of the global society. It should negotiate to be paid/compensated for the effort based on a business case factoring in opportunity cost, but also on the ecosystem value at the local level.”

Xavier Mugumya’s response is more comprehensive:

QUESTION	ANSWER
<p>Can Uganda be committed to REDD+ and the permanence of forests in the long term given the increasing pressure on the government to convert the country’s forests to agricultural production e.g. sugar plantation in Mabira forest</p>	<ul style="list-style-type: none"> <li>• In the context of the provision of <b>adequate and predictable</b> support, Uganda is willing to aim to slow, halt and reverse forest cover and carbon loss.</li> <li>• During the National REDD-plus Strategy Formulation (2012-14), Uganda will have a full picture of the true cost of undertaking REDD-plus. Uganda will also agree on the course of action. That course of action will include, I am sure, a series of targets on how <b>to address</b> the “increasing pressure on the government to convert the country’s forests”;</li> <li>• Uganda is already committed to many aspects of “permanence of forests in the long term”. Please look at the protected area network in the country (more than 700 central forest reserves; more than 20 wildlife protected areas; a law on the protection of wetlands; and others);             <ul style="list-style-type: none"> <li>○ Uganda has an agricultural investment program that compliments REDD-plus (unintentionally);</li> </ul> </li> <li>• According to the National Development Plan (NDP: 2010/11-2014/15) the following are eligible activities and their targets (very ambitious ambitions that are REDD-plus related):             <ul style="list-style-type: none"> <li>• Re-forestation and afforestation of 1,266,000 Ha in central forest reserves (protected areas);</li> <li>• Re-forestation and afforestation of 730,000 ha in National Parks and Game Reserve (Protected Areas)</li> <li>• Commercial tree-planting on private land (target undefined but more that what protected areas can offer)</li> <li>• Restoration of degraded natural forests in forest reserves (protected areas) and private forests.                 <ul style="list-style-type: none"> <li>○ Promote Eco-tourism (conservation) (target not given but area available is considerable especially in protected areas and non-protected areas that join protected ones)</li> </ul> </li> </ul> </li> <li>• In short, Uganda’s “commitment to REDD+ and the permanence of forests in the long term” far outweighs the short term threats. <b>BUT</b> In the absence of the provision of <b>adequate and predictable</b> support, Uganda’s ability to slow, halt and reverse forest cover and carbon loss will be greatly undermined.</li> <li>• Uganda 70% of forested areas is not under the protected area network but rather under the different land ownership regimes legal in the country, the level of “positive incentives” will make a lot of difference. Individual land owners have lots of rights on the use of their land, a key difference Uganda has with other countries.</li> </ul>

How competitive will the biofuel industry be against REDD+, in other words, which is likely to be more lucrative to investors?

- Uganda does not have a biofuel industry to speak of. At least as of writing this note. But that said, REDD-plus is not incompatible with other land uses in principle provided conversions are not done from forest to non-forest.
- Financially speaking, REDD-plus requires “positive incentives” to achieve its objectives.

## **7.7 Other factors that ought to be taken into consideration**

### **7.7.1 Indigenous people/forest dependent people**

One of the main arguments from indigenous people has been that they have largely been excluded from participating in the UNFCCC process (Reed, 2011). Feeling shunned by representatives of their own national governments, they organized their own International Indigenous Peoples Forum on Climate Change (IIPFCC) in 2000 and continued to express their sentiments at the negotiations of REDD+ in Bali, where they felt they were generally excluded from the creation of an initiative that will have immediate and significant consequences for millions of people who depend on forests for their livelihood (Reed, 2011). The indigenous people have criticized REDD+ on two fronts. Firstly, that it is a false solution to climate change and secondly, that REDD+ may jeopardize their rights to their territories, sovereignty, and self determination (Reed, 2011). Such concerns have been seconded by various academics and rights-based organizations world-wide who criticize the quick proliferation of REDD+ projects which still ignore the rights, tenure, and engagement of indigenous communities and may even encourage displacement, conflict, corruption, impoverishment, and cultural degradation (Reed, 2011). Additionally, a considerable portion of indigenous peoples’ customary lands lack demarcation and titling therefore indigenous people fear their lands may be replaced by tree plantations or monocultures that increase carbon stocks at the expense of their ecosystem’s integrity, biodiversity, and socio-cultural value. These concerns and fears are not unsubstantiated. Instances of displacement and coercion of forest dependent communities have already been documented in Uganda, while in Indonesia, civil society observers have expressed their concern that the state may soon move to expropriate community forests and impose involuntary resource use restrictions on local populations as part of Indonesia’s REDD+ readiness program (Reed, 2011). Indigenous people/forest dependent communities with insufficient or incorrect information about their rights could fall victim to unfavourable agreements with

organizations seeking involvement in REDD+, perhaps further jeopardizing rights to their territories (Reed, 2011). Although the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) has been recognised, along with other safeguards, in the REDD+ agreement reached in Cancun, there is still scepticism among opponents of REDD+ who still consider the REDD+ mechanism as a potential threat, especially if a market system to fund such projects is considered in the future (Reed, 2011). Particular indigenous communities' stances on REDD+ are thus highly dependent on whom and what type of information get to them first and it seems highly unlikely that any one institution can provide complete, timely, and unbiased information on the topic of REDD+ to indigenous communities (Reed, 2011). However, at the very least, there must be recognition that these efforts should be improved upon (Reed, 2011).

The concept of 'indigenous people' is not relevant in Uganda's context largely because of the absence of foreign settler communities on indigenous peoples' land however Uganda can still create safeguards for the poor, marginalized and vulnerable communities that directly depend on forest resources for their livelihood (Government of Uganda, 2011). "Forest dependent people" in Uganda comprise the Batwa/Pygmies in the Kabale, Kisoro and Kanungu districts and the Benet in the Mt Elgon area in the east (Government of Uganda, 2011). Uganda has already carried out extensive consultations with both communities that are detailed in the R-PP (Government of Uganda, 2011). In relation to Uganda's REDD+ Strategy and preparedness, consultation with the Benet people occupying Mt Elgon led to the following government objectives:

- i) Resolve outstanding issues of resettlement of landless Benet occupying Mt Elgon National Park.
- ii) Provide for access and use of forest resources within Mt Elgon National Park.
- iii) Promote collaboration and harmonious co-existence between Benet and Mt Elgon National Park.
- iv) Design and implement tangible programmes that deliver benefits from REDD+ Strategy.
- v) Empower Benet to actively engage in REDD+ implementation, including fostering community-based structures for mobilizing their actions.

- vi) Promote alternatives that would address the main causes for deforestation, such as establishing own woodlots or adoption of energy saving stoves would be encouraged by each household (Government of Uganda, 2011).

Consultation with the Batwa/Pygmies of South Western (Kabale, Kisoro and Kanungu Districts) and Western Uganda (Bundibugyo) resulted in the following outputs:

**i) Develop arrangements to channel benefits directly to Batwa**

Batwa proposed a mechanism through which REDD+ benefits could be transferred to the community level because they think that the benefits from national level go through a process that is too bureaucratic and does not effectively respond to their unique needs. They specifically called for the setting up of a special fund targeted at the Batwa themselves that would increase the benefits directly within their communities.

**ii) Strengthen collaborative resource access and forest management arrangements**

Batwa proposed that REDD+ revenues be invested in strengthening community forest management user groups through skills development for the adult Batwa for example, for production of high quality craft products and bee keeping so they can benefit more from REDD+.

**iii) Design REDD+ scheme to strengthen governance**

Batwa suggested the need to support reforms in the forest governance sector so that the institutions responsible for protecting the forests are able to effectively protect their tenure and land. They also proposed that they become directly represented on CFM user groups' governance structures and other community leadership structures.

**iv) Promote synergies between different government departments**

Batwa were of the view that REDD+ could be used to improve access to service delivery (lack of medical care, agricultural advisory services and education) by

promoting synergy between different government departments and ensuring they too have improved access to service delivery.

v) **Ensure that Batwa's carbon rights are established in both national and local governments' regulations**

Batwa want clarity on rights over the proceeds from the carbon credits taking into account their status as indigenous forest dwellers. Rights need to be clearly defined and stakeholders need to be sensitized about the issues surrounding the carbon credits.

Issues and recommendations from both consultations have been incorporated in the R-PP, specifically the components on access and tenure to land and forest resources, equitable benefit sharing and conflict resolution/management, and will form part of Uganda's National REDD+ Strategy (Government of Uganda, 2011).

### **7.7.2 Land rights and carbon rights**

People who have insecure tenure and unclear carbon rights cannot take full advantage of REDD+ payments because they do not have exclusive rights to stop others from using the forest resources in ways that are inconsistent with the contractual obligations (Mwayafu, 2010). A carbon right is a form of land interest that confers upon the holder a right to the intangible benefit of carbon sequestration or appropriation on a piece of forested land (Mwayafu, 2010). Carbon sequestration refers to the absorption from the atmosphere of carbon dioxide by vegetation and soils as well as the storage of carbon in vegetation and soils (Mwayafu, 2010). Carbon credits are a tradable good on which basis contracts between the service provider and the buyers, concerning the property interest, can be transacted creating binding obligations on both parties (Mwayafu, 2010). Carbon rights must be recognised, nationally or internationally in the relevant legal instruments, in order for the right to be enforced (Mwayafu, 2010). Land tenure must be secure so that carbon rights are clearly defined however most African tenure systems are characterised by existence of multiple ownership rights where several users may have access to different resources on the same piece of land (Mwayafu, 2010). An example is the long-held position that has been accorded to bona fide occupants which creates multiple of rights over the same piece of land (Mwayafu, 2010). Carbon rights are not necessarily

the same as land rights/ownership. A few countries such as Australia recognise carbon rights in their own legislation because carbon rights are seen as property interests that exist separately from the ownership of the underlying land to which they are attached and that is what makes them tradable (Mwayafu, 2010).

Uganda's R-PP identifies clarification of carbon rights as one of the likely weaknesses or constraint that has potential to negatively affect R-PP implementation (Government of Uganda, 2011). Policies on this issue need to be reviewed to make explicit provisions on carbon rights. Policy review should be made as early as possible to make explicit provisions on carbon rights so that Uganda can lawfully generate and commercialize carbon credits and ensure that carbon revenues will be distributed among stakeholders (Government of Uganda, 2011). Linked to the issue of carbon rights is the issue of licensing that refers to explicit formal acknowledgement by government of carbon rights to landholders and their unrestricted right to enter into commercial transactions at the project level (Government of Uganda, 2011). In Uganda, carbon rights under REDD+ are likely to be closely linked to land ownership (the trees are considered to be 'natural fruits') (Government of Uganda, 2011). Irregularities in the licensing process, such as a bidding that is poorly implemented or lacks competition, have been identified and that is a policy gap that needs to be plugged (Government of Uganda, 2011). Sara Namirembe lists private forest ownership and registration of community forests as issues that must be addressed, especially since no community or private forest has been registered to date. Procedures for communities to register forests and to participate in management of forest reserves need to be made simpler.

### **7.7.3 Poverty alleviation**

Uganda, like many other developing countries, has poverty which is one of the major challenges facing policy makers in the country (Biringi & Hassan, 2010). Poverty (measured in head count below the poverty line) in Uganda declined in the recent years, however, the high population growth and poor performance of agriculture have greatly slowed down poverty reduction in absolute terms (Ssewanyana, 2010). The fact that agriculture remains the key economic activity in Uganda and the main source of livelihood for the vast majority of the population, especially in the rural areas,

indicates the importance of this sector's performance for food security and poverty reduction (Biringi & Hassan, 2010). Recent studies show that the major cause of low incomes in the rural areas of Uganda has been stagnating agricultural production caused mainly by land degradation (Biringi & Hassan, 2010). REDD+ is therefore very important to stabilising and improving Uganda's poverty levels through decreasing land degradation, assisting communities with better farming practices and tools to sustainably manage the land, providing community development in terms service of delivery, as well as providing direct income to the local inhabitants. Sustainable forest management is the key to providing a balance between forest conservation and agricultural production.

The premise that REDD+ will assist in supporting livelihoods in Uganda is discussed by both Xavier Mugumya and Sara Namirembe. Xavier Mugumya is of the opinion that in principle REDD+ is pro-poor and by implication supports livelihoods provided the "positive incentives" are "adequate and predictable" to undertake REDD+ activities. Livelihoods are addressed in relation to addressing the drivers of deforestation and forest degradation. Once the financial incentives are genuine and clear, other barriers can be overcome. However, in practice, looking at the financial flows for REDD+ to date, financial incentives are neither adequate nor predictable. Sara Namirembe, on the other hand, does not envision the REDD+ mechanism supporting livelihoods unless a separate livelihood support program is designed that will strengthen community participation in reducing emissions and provide rewards to the community using livelihood support systems. "There will be a lot of local consultations and if done well, these will empower communities to participate in decision making. (Source: Research Questionnaire - Sara Namirembe).

#### **7.7.4 Summary of Uganda's national circumstance** (Source: Research Questionnaire - Xavier Mugumya)

##### *Uganda's climate change mitigation potential:*

- Reducing deforestation by as much as 90,000 hectares annually;
- Reducing forest degradation by as much as 5,700,000 hectares;
- Conservation of 800,000 hectares of forest carbon stocks;

- Enhancement of forest carbon stocks by up to 4,000,000 hectares, which is the 2005 estimate of potential afforestation and reforestation projects under CDM, and up to a further 8,800,000 hectares which is the estimate of the potential agroforestry integration in small scale farm land

Uganda benefits from the climatic influence of the inter-tropical convergence zone, as well as the Indian Ocean effect. However, the fact that Uganda is elevation above sea level and the effect of lakes (Victoria, Albert, Kyoga, George, Edward, and many more) allows for an above average rainfall that would be conducive to faster forest restoration including afforestation and reforestation.

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## 8 Conclusions and recommendations

### 8.1 *Conclusions from the research*

As stated in the first chapter, the study aimed at doing a socio-economic analysis of the REDD+ mechanism in Uganda in order to determine whether it will be worthwhile for Uganda to get involved in REDD+. The outcome of the study is that while there is insufficient evidence to suggest that Uganda will not benefit overall from being involved with REDD+, the feasibility study of the potential REDD+ project in the Murchison-Semkili landscape showed that, at least in that project area, the likelihood of net economic benefits was leaning towards the negative. This does raise a legitimate concern that REDD+ might not result in net economic benefits for Uganda. The Sawlog Production Scheme, while indicating net financial benefits for the participants, is not totally in line with REDD+ objectives because the trees are being grown to be cut down at a later stage. The objectives of the SPGS can change to include carbon markets and allow for tree planting with the goal of carbon sequestration. REDD+ is still a relatively new mechanism, with only a few countries carrying out pilot activities, so there are few examples of successes or failures for comparisons to be made; carbon compliance markets are not set and neither are REDD+ credit prices; and the funding for REDD+ that is available is mainly for readiness activities and not for potentially buying credits, and as a result the dynamics of the trading system are unclear. Even though the economic benefits of Uganda's involvement in REDD+ are uncertain, the mechanism is still expected to improve livelihoods in terms of service delivery; increased efficiency and accountability of government and governmental institutions; and increased public consultation and participation. The caveats that may hamper Uganda's progress in becoming a REDD+ country are the risks associated with unspecified donor funding, which may not be forthcoming; the lack of clarity surrounding compliance carbon markets and the European Union's unwillingness to allow REDD+ credits in the European Union's Emissions Trading Scheme; the complex nature of PES schemes that may hinder their implementation; the dangers posed by huge investment deals that are difficult to refuse and the prospect of carbon markets being unable to maintain attractive prices for REDD+ credits. Nonetheless, Xavier Mugumya, Uganda's National Focal Point on REDD+ to the UNFCCC, expects net financial inflows for Uganda from REDD+ and believes more countries will want to invest in REDD+ projects in Uganda if

Uganda markets itself better as a potential site for projects. Although Mr Mugumya is one of the few experts on REDD+ in Uganda, it can be argued that his positive outlook on REDD+ may be anecdotal given that he is Uganda's National Focal Point on REDD+. Furthermore, the feasibility study carried out in specific area, the Murchison-Semkili landscape, takes the opposite view, and shows that, at least in one eligible project area, REDD+ may not result in net financial inflows. As more countries complete their readiness activities and begin to implement REDD+ projects, and future REDD+ meetings finalise the remaining negotiations in the mechanism, the true benefits of REDD+ will become clearer and a more precise value-judgment will be possible.

## **8.2 Recommendations**

Uganda needs to ensure that the institutions responsible for managing its forests, namely the National Forestry Authority in charge of the central forests reserves and the District Forest Authority which manages the remaining forestry lands, do their jobs efficiently and effectively. For example, the District Forestry Authority is understaffed and lacks resources such that not all districts have an officer to manage them. These types of problems need to be addressed by the Ugandan government in order to conserve and preserve Uganda's forests from being destroyed or degraded. Agriculture is the main economic activity in Uganda and the source of livelihood for most of Uganda's population therefore, Uganda should focus on developing more efficient agricultural practices that are affordable for its largely rural population or if necessary subsidised by government. This would ensure that there is more agricultural production per unit of forest cleared and would ultimately reduce the amount of land needed to be cleared for farming.

Another reason why Uganda's forests are being cleared is for energy. Uganda has one of the lowest electrification rates in sub-Saharan Africa, with only about 6 percent of the total population having access to electricity, (Energy Programme Uganda, 2012). In the rural areas this percentage drops to 2 percent, with northern and northeastern Uganda registering the lowest electrification rates (Energy Programme Uganda, 2012). Biomass is therefore the main source of energy for the nation and one way for the Ugandan government to decrease the country's reliance on biomass as a source of energy is to develop and/or improve existing alternative forms of energy for example,

expand its hydroelectric power potential to a greater extent. However, the large centralized hydropower plants on River Nile are, by themselves, not enough to electrify all parts of the country. This is because grid extension is expensive and not cost effective when done in remote areas that are sparsely populated. Furthermore, the electricity tariffs in Uganda are the highest in East Africa, and are second highest in the world thus excluding many of the poor from accessing the electricity even when it is available (Ariwa & Katono, 2011). Pico and micro hydropower schemes are being introduced in various villages in Uganda to try and address these challenges (Energy Programme Uganda, 2012). Pico and micro hydropower schemes are cheaper to build and easier to maintain (Energy Programme Uganda, 2012). These projects are organised in a way that community members contribute to the scheme both in cash (connection fees) and in kind (labour, building materials) (Energy Programme Uganda, 2012). Community members are also empowered to manage the schemes through training on the technical and management aspects of micro hydropower schemes. The involvement of the community in these schemes ensures community ownership and sustainability. The schemes differ only in the amounts of electricity each is able to generate (Energy Programme Uganda, 2012).

Other renewable sources of energy being introduced to increase rural electrification are solar-PV based plants for powering decentralized mini-grids, as well as household/institutional/SME solar-PV systems (Energy Programme Uganda, 2012).

There is the possibility that some members of the local rural communities will still want to continue to cut down trees for firewood because it is free rather than pay for electricity, however, government can address this issue by introducing legislation that only allows registered charcoal producers to cut down trees to supply the community with charcoal at a price. This would discourage waste and can be carried out in conjunction with the training on more efficient methods for charcoal use. It would also introduce a system of monitoring how many trees are cut down in any given period and this will help with the REDD+ accounting.

Poverty alleviation, especially in the rural areas, should continue to be a priority for the Ugandan government because most of the land cleared in Uganda is for subsistence farming, for charcoal/firewood (sources of energy) and for medicinal purposes. Biomass is a major source of energy in Uganda and will remain so for the

foreseeable future. There is therefore a need to promote and provide more efficient biomass technologies, or introduce incentives to conserve forests, in order to ensure the continued protection of the forests and thus avoid leakage. Government can do this by introducing sustainable charcoal production and by granting property rights to communities bordering protected forests, as was done in the Noel Kempff Mercado Climate Action Project. A similar strategy can be followed in some of the rural areas in Uganda however, the communities will have to be assured of secure tenure and training in efficient farming and charcoal producing methods will need to be provided. The funding for these activities can come from either government or other donors.

Uganda also has some improvements to make concerning REDD+. The National REDD+ Strategy needs to be completed timeously so that Uganda will be able to plan its REDD+ activities and their budgets accordingly. Uganda would also be able to market itself better to donors as a REDD+ country by illustrating its intentions and potential in a well-prepared official document. It is hoped that there will be a REDD+ carbon market in place by the time Uganda is ready to set up its REDD+ projects.

Funding for Uganda's REDD+ readiness activities and REDD+ in the long term is, and will continue to be, an issue unless Uganda manages to secure donors or find other sources of revenue collection. A priority for the Ugandan government currently is to find development partners to provide funding for some sections of the R-PP budget which as yet do not have funding. This could hamper Uganda's REDD+ readiness preparations if the budget is not settled on time. On the issue of long term financial sustainability, Uganda needs to focus on fundraising initiatives and new sources of revenue collection, such as payment for environmental goods, carbon credit markets and plantation investment plans, so that the National Forestry Authority and other related institutions can carry out their work effectively. Uganda already has plans to apply to join the UN-REDD Programme and these plans should be accelerated because there is much to gain from the financial and technical support offered by UN-REDD, especially in developing an adequate MRV system which is essential for REDD+ to work. Uganda can also look into seeking funding from the European Union under the Global Climate Change Alliance Programme.

A problem highlighted by Mr Xavier Mugumya is the lack of coordination and integration between different ministries/institutions working towards the same goal of preparing Uganda for the REDD+ mechanism. While the NFA is responsible for the central forest reserves where most deforestation takes place, the day to day tasks of implementing Uganda's R-PP are carried out by the Forestry Sector Support Department which is the National REDD+ Focal Point. As stated by Ms Sara Namirembe (a consultant for Uganda's R-PP) there needs to be a REDD+ unit created to coordinate the actions of these two institutions in order to maximise their effectiveness.

Lastly, Uganda should focus on setting up REDD+ pilot projects, like Cambodia has, in order to gain some experience in REDD+ implementation; although before Uganda can do this, the MRV system will have to be designed and set in place. Cambodia has the support of UN-REDD and the Japanese government to develop its MRV system and Uganda it is imperative that Uganda also finds development partners to assist in developing Uganda's MRV system. The MRV system is expected to include, among other things, national greenhouse gas accounting, therefore a new greenhouse gases inventory needs to be carried out that is up-to-date and relatively accurate. The most recent GHG inventory Uganda has contains data gathered in 1994. An up-to-date GHG inventory will help Uganda with the setting of reference levels. On a sub-national level; there is at least one sub-national REDD+ project planned for the Albertine Rift, and project developers are currently about to complete the project design document form for project activities (CCBA-PDD). The project in the Murchison-Semliki Landscape is the most advanced to date and a Project Design Document has been drafted since the feasibility analysis was completed. We are working with the local farmers and our partners in this landscape to agree on the best mechanisms for disbursement of any REDD+ funds to farmers that would minimize costs of implementation but at the same time ensure that carbon stocks are monitored and are conserved. It is estimated that about 31 million tonnes of CO<sub>2</sub> could be sequestered if deforestation could be halted yielding about US\$153 million over the lifetime of the project. Funding that could be generated from selling carbon credits would raise about 70 percent of the costs to offset what farmers could make by converting these forests to agriculture in the short term but are likely to provide options over a longer period as the fertility of the soil declines within 4-5 years once

the forest is cleared. We are contacting the private sector to look at options of improving agricultural yield outside the forests and to encourage shade tree production of coffee and cocoa that could widen the corridor and potentially add a premium to the price of the crop.

### **8.3 Suggestions for further research**

There are opportunities for future research in the area of REDD+ in Uganda. One opportunity is to find out the value of Uganda's forests considering all economic, social and environmental factors; and, in particular, the effect revenues from ecotourism can have on reducing the opportunity costs of forest conservation. This is particularly difficult given the fact that most of the forests' value is ecological in nature however, it is necessary to know the true value of the forests because of the lucrative deals offered by industry wishing to clear the forests for infrastructure development and/or commercial farming. The Ugandan government has to balance its policy of economic growth and rural transformation with the conservation of highly valuable forests and knowing the real value of the forests could stop some of these forests being destroyed unnecessarily.

Another opportunity for future research, which was highlighted by Ms Sara Namirembe, is research on ways to make registration of forests in Uganda simpler so that there is better security of tenure. This is because carbon rights are likely to be closely linked to community/private forest ownership. Registration of forests is an issue that must be addressed; especially since no community or private forest has been registered to date. Research may also be done on policy incentives and capacity support required to convert customary lands into one of the other property regimes (freehold, mail or leasehold) in order to ensure security of tenure in those lands. Without security of tenure REDD+ will take much longer to succeed.

REDD+ will need to deliver on its promise of supporting livelihoods, especially since agriculture is the source of livelihood for the majority of Uganda's population. However, due to the unpredictability and inadequacy of financial inflows, the financial benefits of REDD+ might not be able to sustain the poorer rural people who will resort back to their unsustainable farming practices to get the food, shelter and

other resources they require from elsewhere, thus causing leakage. Ms Sara Namirembe has suggested a separate livelihood support program designed to strengthen community participation in reducing emissions and provide rewards to the community using livelihood support systems. This would be more direct than the REDD+ mechanism alone and more effective in ensuring that peoples' livelihoods are actually changed for the better. The design of such a mechanism is another opportunity for research because it will require staffing, funding, consultations and the planning of implementation and support systems.

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## 10 Appendices

### Appendix 1

#### **List of the relevant environmental laws/Conventions of Importance to Uganda signed after Stockholm, 1992.**

- ❖ Convention concerning the Protection of the World Cultural and Natural Heritage (1972)
- ❖ Convention on the International Trade in Endangered Species of Wild Fauna and Flora – CITES (1973)
- ❖ Convention on the Conservation of Migratory Species of Wild Animals (1979)
- ❖ Vienna Convention for the Protection of the Ozone Layer (1985)
- ❖ Montreal Protocol on Substances that Deplete the Ozone Layer (1987)
- ❖ Convention concerning Safety in the Use of Asbestos (1986)
- ❖ Basal Convention on the Trans-boundary Movements of Hazardous Wastes and their Disposal
- ❖ Convention on Biological Diversity – CBD (1992)
- ❖ United Nations Frame Work Convention on Climate Change – UNFCCC (1992)
- ❖ United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and or Desertification, Particularly in Africa – CCD (1994)
- ❖ The Kyoto Protocol to the Climate Change Convention

Source: Uganda's R-PP (Government of Uganda, 2011)

## Appendix 2

### QUESTIONNAIRE FOR REDD+ CASE STUDY ON UGANDA

Name :

Title :

Job position :

I would appreciate if you could answer the following **10 questions** for my thesis titled: **Uganda and REDD+: Is it worth getting involved from a socio-economic perspective?**

*Please type in your answers under each question and return the questionnaire to my email which is pros\_lutalo@yahoo.com.*

1. Five expected benefits from participating in REDD+: **Opportunities for financial inflows; sustainable forest management; security of tenure; Improvement or maintenance of ecosystem services; improvement of national forest governance and strengthening of forest governance institutions.** Which of these 5, if any, do you think Uganda will take advantage of and briefly state why?

[Answer]

2. What is the progress of Uganda's R-PP implementation? What has been the role of the Ministry of Water in the development of Uganda's R-PP? What do you regard as some of the potential institutional barriers to the effective implementation of R-PP?

[Answer]

How can the REDD+ process best support the National Forestry Authority? Specifically, (i) would the National Forestry Authority receive funding through the REDD+ mechanism, what would be its priorities (ii) what are the priorities regarding capacity building? [Answer]

3. In the budget for REDD+ readiness, as stated in the R-PP, funding is expected to come from unnamed 'development partners'. Who could be the potential partners? If the partners are known, have they pledged the stipulated amounts needed or is there a potential deficit that needs to be funded?

[Answer]

4. Why is Uganda not part of the **UN-REDD Programme**? Has this not limited Uganda's funding opportunities?

[Answer]

5. In the context of Uganda, how do you see REDD+ mechanism achieving one of its main outcomes: supporting livelihoods?

[Answer]

6. Looking at the tradeoffs between forest conservation and investment and industrialisation, can Uganda be committed to REDD+ and the permanence of forests in the long term given the increasing pressure on the government to convert the country's forests to agricultural production e.g. sugar plantation in Mabira forest. How competitive will the biofuel industry be against REDD+, in other words, which is likely to be more lucrative to investors?

[Answer]

7. To what extent will the current land tenure provisions at national and provincial level provide confidence to, or attract, REDD+ project developers when they seek to pilot REDD+ activities in Uganda? [Answer]
8. Which payment delivery mechanisms Uganda plans to use to distribute income from REDD+?

[Answer]

9. Facing the reality of having to compete with other countries, including neighbouring countries, for financial and other enabling resources; what do you consider to be the uniqueness and competitive advantages of Uganda's REDD+ proposal? Looking at the expenses involved in implementing REDD+ in Uganda, as well as the fact that Uganda is classified as a country with high deforestation but low forest cover, do we expect a net financial inflow from participating in REDD+? Do you think countries will want to invest in REDD+ projects in Uganda given that we have low forest cover compared to say Congo or Brazil?

[Answer]

END OF QUESTIONS

### Appendix 3

#### R-PP Development Team

R-PP Secretariat	
Alex B. Muhweezi	Technical Coordinator, REDD Readiness Preparation Proposal
Sheila Kiconco	Programme Officer, REDD Readiness Preparation Proposal
Xavier Mugumya	National Coordinator Climate Change/REDD Focal Point (NFA)
Consultants	
Sara Namirembe (PhD)	Katoomba Group
Robert Charles Aguma	ASRDEM Ltd
Timm Tennigkeit (PhD)	UNIQUE East Africa Ltd
Sean White	Forestry Consultant
Facilitators (Expanded Consultations)	
International Union for Conservation of Nature and Natural Resources (IUCN) Environmental Alert Care Uganda Water Governance Institute Environmental Conservation Trust of Uganda (ECOTRUST) Tree Talk Action Coalition for Development and Environment (ACODE) National Association of Professional Environmentalists (NAPE) BUCODO Uganda Media Trust	

Source: Uganda's R-PP (Government of Uganda, 2011)

## Appendix 4

### Over-all budget for R-PP implementation

The estimate costs for the R-PP implementation is US\$ 5,181,000 falling under respective components

SUMMARY BUDGET (US\$ "000")				
COMPONENT	2012	2013	2014	TOTAL
<b>Component #1: Organize and Consult</b>				
1A: National Readiness Management Arrangements	\$62	65	68	195
1C: Conflicts and Grievances Management system	\$30	7	7	44
1: Developing RACS	\$139	0	0	139
1C: Consultations and Participation	\$274	\$134	\$113	\$538
<b>Component #2: Prepare the REDD Strategy</b>				
2A: Assessment of Land Use, Forest Policy & Governance	225	265	115	605
2B: REDD Strategy Options	413	375	530	1318
2C: REDD Implementation Framework	50	145	220	415
2D: Social and Environmental Impacts (ESMF)	\$130	155	20	305
<b>Component 3: Develop Reference level</b>				
Develop Reference level	\$105	440	120	665
<b>Component 4: Design Monitoring System</b>				
4A: Emissions and Removal	\$160	230	140	530
4B: Multiple benefits, Other Impacts and Governance	160	230	140	530
<b>Component 5: Schedule and Budget</b>				
	0	0	0	0
<b>Component 6: Monitoring and Evaluation Framework</b>				
M&E Framework	50	21	26	97
<b>TOTAL</b>	<b>\$1,798</b>	<b>\$2,067</b>	<b>\$1,499</b>	<b>\$5,181</b>

Contributions				
GoU	\$42	\$84	\$73	\$199
FCPF	\$1,135	\$1,356	\$984	\$3,375
Partner 1	\$250	\$250	\$270	\$750
Partner 2	\$22	\$20	\$65	\$107
Partner 3	\$200	\$450	\$100	\$750
<b>Total</b>	<b>\$1,649</b>	<b>\$2,160</b>	<b>\$1,492</b>	<b>\$5,181</b>

Source: Uganda's R-PP (Government of Uganda, 2011)