



Forest Carbon Projects in Africa: A Mapping Study

Background report for the 'Political Ecologies of Forest Carbon in Africa' Research Project

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Acronyms

AAUs	Assigned Amount Units
AFOLU	Agriculture, Forestry and Other Land Use Change
A/R	Afforestation and Reforestation
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
COP	Conference of the Parties to the UNFCCC
CERs	Certified Emission Reductions
CCB	Climate, Community and Biodiversity Standard
CDM	Clean Development Mechanism
CMP	Meeting of the Parties to the Kyoto Protocol
DOE	Designated Operational Entity
DANIDA	Danish International Development Agency
DNA	Designated National Authority
DRC	Democratic Republic of Congo
ERUs	Emission Reduction Units
ET	Emission Trading
EU ETS	European Union Emission Trading Scheme
FAO	United Nations Food and Agriculture Organization
FCPF	Forest Carbon Partnership Facility
GHG	Greenhouse Gas Emissions
IFM	Improved Forest Management
INGOs	International Non-Governmental Organizations
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
MRV	Monitoring, Reporting and Verification
NGOs	Non-Governmental Organizations
NJP	National Joint Programme
NORAD	Norwegian Agency for Development Cooperation
REDD	Reducing Emissions from Deforestation and Forest Degradation
REDD+	Reducing Emissions from Deforestation and Forest Degradation, and the role of Conservation, Sustainable Management of Forests and Enhancement of Forest Carbon Stocks in Developing Countries
REDD+ SES	REDD+ Social and Environmental Standards
REL	Reference Emission Levels
R-Package	Readiness Package
R-PIN	Readiness Idea Note
R-PP	Readiness Preparation Proposal
OTC	Voluntary over-the-counter market
PDD	Project Design Document
tCO ₂ e	Tons of carbon dioxide equivalent
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
USD	United States Dollars

VERs	Voluntary Emission Reductions
VCM	Voluntary Carbon Market
VCS	Verified Carbon Standard
VCUs	Voluntary Carbon Units
VVB	Validation/Verification Bodies

Abstract

This report provides a mapping of the status and characteristics of forest carbon projects in Africa in late 2012, focusing on Kenya, Zambia, Ghana, and Sierra Leone. It describes the three main types of forest carbon mechanisms in which African projects and programmes participate, CDM, VCM, and REDD+, comparing their technical and institutional characteristics. It then explores the geographical distribution of forest carbon projects, markets, and programmes at international and regional levels, comparing African participation with that of other regions. Finally, the report examines the status, discourses, ecologies, actors, and financial information concerning 37 forest carbon projects taking place in Zambia, Kenya, Ghana and Sierra Leone. In conclusion, some general patterns are highlighted which pose key questions for further research.

Introduction

Forest carbon projects of different kinds have been participating in the carbon market almost from its inception in 2001. However, the development of a new international mechanism to finance emission reductions and carbon sequestration in developing countries' forests – called REDD+ – has resulted in an explosion of forest carbon initiatives across the developing world, and increasingly in Africa since 2007. What views, ideas and assumptions dominate forest carbon in the African continent? What institutional arrangements and processes are being developed and how do they relate to existing ones? Who are the actors involved in forest carbon, and what are their backgrounds, roles and interests? What power relations are being established? And how are forest environments and local livelihoods affected by this emerging intervention model? These are some of the questions that the STEPS Centre's 'Political Ecologies of Forest Carbon in Africa' research project examines.

To explore these issues, the project has selected five countries – Ghana, Kenya, Sierra Leone, Zambia and Zimbabwe – as case studies for conducting local level field research. These case studies will approach forest carbon initiatives on the ground, but their findings need to be situated in a broader landscape. This paper contributes to this effort by providing information about larger scale processes in African forest carbon, including the major characteristics, trends and discourses. Three main questions are addressed. (1)What are the main types of forest carbon markets or mechanisms in which Africa participates and what are their characteristics? (2)What is Africa's position in these markets or mechanisms in relation to other world regions and which countries are the most active? (3)What are the specific characteristics and discourses of forest carbon projects currently taking place in Ghana, Zambia, Kenya and Sierra Leone?

Chapter I presents a framework for classifying and understanding forest carbon processes occurring in Africa. It identifies three major categories of forest carbon mechanisms operating in Africa – the Clean Development Mechanism (CDM), the Voluntary Carbon Market (VCM), and REDD+ (Reducing Emissions from Deforestation and Forest Degradation Plus) and examines them in terms of their objectives, institutional arrangements, financial architectures and flows, actors, and approaches to major technical issues. This chapter provides a useful introduction to the subject and sets a clear typology with which African forest carbon projects and programmes can be grouped and studied. Those readers who are familiar with the topic may prefer to omit this chapter or just read the summary provided at the end of it.

Chapter II identifies trends in forest carbon projects and markets at international level with a focus in Africa. This chapter surveys the geographical distribution of forest carbon projects of different kinds, carbon finance flows, and carbon offsets supply across the world and in Africa. It uses the classification set in the previous chapter and analyses the state of CDM, VCM, and REDD+ separately. The chapter summary highlights some of the major trends identified among mechanisms and on the position of Africa in them.

Finally, Chapter III studies forest carbon at the project level. It presents a database of forest carbon subnational projects taking place in Ghana, Zambia, Sierra Leone and Kenya. The database contains information regarding the location, size, progress status, actors involved, financial schemes, offsets produced, activities, and narratives of a total of 37 projects. The chapter identifies common patterns and major contrasts across projects and countries in each variable. The database itself is presented in Annex 6. It was developed through an exhaustive internet search which extracted data from projects at various stages of the process, from early planning to fully operational. This methodology has a series of shortcomings which will be clarified early in the chapter. Nonetheless, the database is an important contribution to the study of forest carbon in Africa, as efforts to record the state of forest carbon activities are incipient or absent in many African countries¹, this was certainly the case for Sierra Leone, Kenya, Ghana, and Zambia when this research took place (May to October 2012). It is acknowledged that national level forest carbon processes – i.e. national REDD+ readiness programmes – are taking place in the four countries studied, however their analysis is beyond the scope of this database and report. A general description of the international institutional structure, location and finance of national REDD+ processes in Africa is provided in Chapters I and II.

The world of forest carbon policy, practice and projects is fast-moving, and this report can offer only a snapshot of the situation at the time of this research in late 2012. Up-to-date information about processes and projects is not always publicly available, while limiting data collection to internet sources inevitably overlooks projects not reported in this medium. Nevertheless with these provisos, this report aims to provide an informative background and context for deeper, field-level research and analysis of forest carbon and its political ecologies in African settings.

¹Some important international efforts are taking place to bridge this gap, especially in regards to REDD+ projects.

CHAPTER I. Types of Forest Carbon Initiatives and Markets

The carbon market is founded on three basic premises: (1) greenhouse gas (GHG) emission reductions have the same impact on the Earth's atmosphere regardless of where they occur; (2) emission reductions are less expensive in some places than in others; (3) economical efficiency in emission reductions can be achieved by allowing public and private entities to acquire emission reduction credits or allowances from other entities to meet their, voluntary or mandatory, emission reduction targets at a lower cost. Additionally, the carbon market is also considered to be the primary tool for engaging the private sector in climate financing. It is also championed as a sustainable source of finance for low-carbon development and for forest conservation and sustainable management in particular.

There are two major types of market in which forest carbon emission reductions produced in Africa are traded: compliance markets linked to the Kyoto Protocol, such as the European Union Emission Trading Scheme (EU ETS) and the New Zealand Emission Trading Scheme (NZ ETS); and the voluntary carbon market, often referred to as the over-the-counter market or OTC. Under compliance markets carbon credits are traded to assist developed countries in meeting their emission reduction commitments under the Kyoto Protocol. Here certified emission reductions (CERs) originating in developing country forests are validated and issued under the Kyoto Protocol's Clean Development Mechanism (CDM). In the voluntary carbon market voluntary emission reductions (VERs) (also called voluntary emission units or VCUs)² can be acquired by public or private entities interested in voluntarily offsetting their emissions.

In addition to existing markets for forest carbon, the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) is developing a mechanism to incentivise emission reductions from forest in developing countries called 'Reducing Emissions from Deforestation and Forest Degradation, and the role of Conservation, Sustainable Management of Forests and Enhancement of Forest Carbon Stocks in Developing Countries' (REDD+). REDD+ is not operating yet, but early actions are already taking place. They include the development of national REDD+ programmes (mostly under the direction of the UN-REDD Programme and the World Bank) and of subnational REDD+ projects (many of which are selling credits in the voluntary market today). Considering the above, forest carbon projects operating in African countries may be classified in three categories: CDM, voluntary carbon projects, and REDD+. This section provides a description of each category by exploring a series of characteristics about them: objective; institutional framework; financial architecture; types of project activities included; project cycle and actors; and approaches to major technical issues. The descriptions of the three categories of forest carbon mechanisms begin with a summary of their primary objectives as defined by the institutions that created them or that play a leading role in them. The section on institutional framework and financial architecture provides information on the institutions that coordinate each scheme and on the manner in which finance flows are structured within each mechanism. Project cycle and actors refers to the stages through which forest carbon projects or programmes must progress and how different actors participate in this process. Finally, the section on major technical issues contains a very

² A unit of CERs, VERs, and VCUs represents an emission reduction of one ton of carbon dioxide equivalent (tCO₂e).

basic description about the measuring, monitoring, and validating of social impacts and carbon reductions, including approaches to *additionality*, *leakage*, and *permanence*³.

I.1 The Clean Development Mechanism

Objective: The CDM is one of the three market-based flexibility mechanisms created under the Kyoto Protocol to assist developed countries in meeting their emission targets at a lower cost⁴. CDM also aims to involve developing country parties in climate change mitigation while promoting their sustainable development (United Nations 1998, Article 12; UNFCCC undated e; UNFCCC undated g). The CDM channels finance from the private and public sectors in developed countries to innovative low carbon projects in developing nations, in particular CDM Afforestation and Reforestation (A/R) projects, to enhance forest carbon sinks and reservoirs in order to reduce carbon dioxide concentrations in the atmosphere. To further contribute to 'sustainable development' a share of the proceeds from every CDM project is deposited in an Adaptation Fund used to finance climate change adaptation in developing countries.

Institutional framework: The CDM became officially operational in 2005 when the Kyoto Protocol entered into force but it had been provisionally operational since 2001 (UNFCCC 2002). It is subject to the authority and guidance of the Conference of the Parties to the Kyoto Protocol (CMP). The operation of the mechanism is managed by the CDM Executive Board which is composed of ten representatives of governments from developing and developed countries which are party to the Kyoto Protocol, as well as a number of authorized observers. The CDM Executive Board reports to the CMP yearly and incorporates decisions taken by the CMP which are heavily negotiated among delegates from party countries (UNFCCC Secretariat 2011). The CDM Executive Board is supported by five advisory bodies which assist the Board in approving projects for registration, issuing CERs, and accrediting designated operational entities (DOEs). DOEs are third party reviewers which verify that projects comply with the rules of the CDM and submit requests for registration and CER issuance (UNFCCC Secretariat 2011). The Boards and its bodies are serviced by a Secretariat which verifies the completeness and accuracy of projects requesting registration and issues advice accordingly (UNFCCC Secretariat 2011).

Financial architecture: CERs may be purchased by public or private entities to meet emission targets set by national or regional regulations enacted to meet emission commitments under the Kyoto Protocol. These regulations establish a cap on the total emissions allowed for particular sectors and assign tradable emission allowances to installations within the sector. Allowances and CERs are traded in regional or country trading schemes operated by governments. The European Union's Emissions Trading System (EU ETS) is the largest carbon market trading platform (CDM Executive Board 2011). Other important platforms are being set up in Australia, California, Japan, and New Zealand (UNFCCC Secretariat 2011) for a complete list see Australian Government (2012). The main countries investing in CDM projects are the UK, Switzerland, Japan and the Netherlands. Other important investor parties include Sweden, Germany, Spain,

³ Although definitions vary across mechanisms, generally *additionality* requires carbon projects to prove that the emissions' reductions claimed would not have occurred in the absence of the project; *leakage* refers to an increase in GHG emissions outside the project area as a result of project activities; and *permanence* implies an estimation of the extent to which forests can store the carbon captured (and claimed in credits) permanently as well as the measures taken to compensate for future loss of stocks.

⁴ The other two are Emission Trading (ET) and Joint Implementation (JI), which allow Annex I Parties to acquire emission reductions occurring in other Annex I Parties. The CDM is, therefore, the only mechanism in which African countries can participate under the compliance carbon market created by the Kyoto Protocol.

France, and Italy (CDM Executive Board 2011: 17). The private sector is the primary purchaser of CERs (CDM Executive Board 2011).

The CDM market depends heavily on international climate negotiations. The market has been responding negatively to the increased uncertainty about the future of the Kyoto Protocol and, particularly, about the level and timing of emission targets in the next commitment period (CDM Executive Board 2011). The EU ETS decision to stop trading CERs from projects registered on or after 1 January 2013, with the exception of CERs from least developed countries, is also contributing to a contraction of the compliance carbon market (UNFCCC Secretariat 2011). Such contraction is most clearly expressed in a declining investment in new CDM projects (CDM Executive Board 2011; Linacre, Kossow and Ambrosi 2011).

Activities: CDM projects involve a myriad of activities and technologies in various sectors besides forests. Renewable energy, waste handling and disposal, and manufacturing industries comprise the majority of projects, while afforestation and reforestation (A/R) projects comprise a very small proportion. Reforestation generates forests through planting and seeding in areas that have been deforested (UNFCCC undated f). Afforestation projects plants forests in areas that were never forests or that have not been forested for at least 50 years prior to project activities (UNFCCC undated f).

Project cycle and actors: The CDM projects progress through seven steps: (1) project design; (2) national approval; (3) validation; (4) registration; (5) monitoring; (6) verification; and (7) CER issuance. The project design, implementation and monitoring of emissions are the responsibility of the *project participants*, which may be public or private entities. In A/R projects, the project design involves the submission of a project design document (PDD) and a proposal of a baseline and monitoring methodology for approval by the Board. Alternatively, the project can use a methodology previously approved by the Board. Due to the technical complexity this involves, project participants often hire consultants and specialists to develop the PDD and methodologies. Next, the PDD must receive authorization by the host country's Designated National Authority (DNA), which verifies that the project contributes to sustainable development. Prior to registration, the project must also be validated by a designated operational entity (DOE) certified by the CDM Board. The DOE then submits the project to the CDM Board for registration, which formally recognises the project is capable of producing offsets. After registration, the project participants monitor the emissions and request the DOE to verify them. The DOE submits the verification report to the Board and, if approved, CERs will finally be issued. CERs may be generated for an approved crediting period of ten years (non-renewable) or seven years (renewable twice for a total of 21 years) (UNFCCC undated d; UNFCCC undated c).

Technical issues: The following provides a very general and simplified idea of how some of the most relevant technical issues associated with forest carbon projects are addressed by the CDM.

(a) *Social impacts:* Social impacts are covered by the sustainable development component of CDM which is defined and approved by the host country's DNA (usually a national government ministry). There is no universal standard on what 'sustainable development' is or how it should be measured or monitored in CDM projects. In fact, CDM has been criticized for being rather lax on this point (Olsen and Fenhan 2008; Subbarao and Lloyd 2011). Projects achieving an outstandingly positive social impact may voluntarily seek certification by the Gold Standard Foundation, originally funded by the World Wildlife Fund but now supported by numerous

NGOs (The Gold Standard undated). The Gold Standard is an effort to normalise, incentivise and value the social impacts of CDM projects.

(b) *Additionality*: The number of CERs issued depends on the quantity of carbon dioxide equivalent reduced below a baseline level of emissions. The baseline level represents the emission scenario in the absence of the project, and CDM projects must construct credible baseline level scenarios based on current land uses or historical land uses occurring since 1990 showing that the forestation due to project activities would not occur in any baseline scenarios (CDM Rulebook undated).

(c) *Permanence*: Emission reductions produced by forest carbon projects are not permanent. This means project proponents cannot guarantee that the carbon captured through project activities will never return to the atmosphere. To address this issue CDM A/R projects are issued with a special kind of CERs which may be valid for a given commitment period (tCERs) or for a certain crediting period (lCERs). Project proponents must ensure only that the carbon will remain in the trees over the period in which they are valid. When the period terminates buyers must replace their expired tCERs and lCERs with other tCERs or lCERs or with permanent carbon credits (CERs, ERUs, and AAUs⁵). For this reason, A/R credits usually have a lower price than credits produced by other types of projects in compliance markets.

(d) *Leakage*: Projects must use a methodology approved by the CDM to measure and mitigate leakage and subtract a number of credits from the emissions claimed accordingly.

I.2 The voluntary carbon market

Objective: The voluntary carbon market (VCM) trades carbon credits for purposes other than meeting legally binding targets. GHG emission reductions produced by carbon projects are bought by public or private entities interested in offsetting or compensating their GHG carbon emissions voluntarily. This mobilises much needed finance for several types of mitigation projects taking place in both developed and developing countries. In terms of forest carbon VCM projects, retailers and certifying agencies commonly argue that about 17 per cent of the world's GHG emissions originate from agriculture, forestry and other land use change activities (IPCC 2007b). Carbon project activities in the sector can reduce emissions as well as increase carbon sequestration, thus being promising opportunities to tackle climate change. Forest carbon is an opportunity to finance the sustainable use and conservation of forests around the world while delivering numerous social and environmental benefits, particularly in providing complementary income for forest dwellers and the conservation and enhancement of environmental services (VCS undated a; CCBA 2008; Plan Vivo undated).

Institutional framework: Although markedly influenced by decisions taken in the context of the UNFCCC, demand for carbon credits is not set nor is it dependent on commitments under the Kyoto Protocol. Demand is set by the interests of corporations and of the general public in offsetting their emissions voluntarily. In the voluntary carbon market, often referred as the over-the-counter market (OTC), credits are sold directly by projects or through carbon retailers (Ecosystem Marketplace 2008). In contrast to the compliance markets (such as the EU ETS and the NZ ETS), trading is not government-regulated. Furthermore, in contrast with the CDM, the

⁵ Emission Reduction Units (ERUs) are produced by projects under the Kyoto Protocol's Joint Implementation (JI) mechanism. Assigned Amount Units (AAUs) are emission allowances traded under the Kyoto Protocol's Emission Trading (ET) mechanism.

issuance of voluntary carbon credits is not regulated by governments or by any particular institution in which governments participate. Rather, carbon projects may voluntarily seek third-party certification of credits under particular standards, which are usually set by not-for-profit organisations, private foundations, or private companies.

In the voluntary forest carbon market, the most widely used of these standards is the Verified Carbon Standard (VCS), which certifies more than 50 per cent of forest carbon credits (Diaz, Hamilton and Johnson 2011). Other standards for forest carbon projects include: the Climate Action Reserve (CAR or The Reserve); the American Carbon Registry (ACR); Brasil Mata Viva (BMV); Forest Carbon Standard International (FCSI); VCS REDD; Plan Vivo; Climate Community and Biodiversity (CCB); and CarbonFix (Diaz, Hamilton and Johnson 2011). Although third-party verification by international carbon standards is not a requisite for the selling of credits in the OTC, there is a clear trend towards the use of such standards as buyers prefer certified offsets (Diaz, Hamilton and Johnson 2011).

These organisations develop methodologies for measuring, monitoring and verifying emission reductions. They authorize validating agencies, certify carbon credits, and maintain a registry of projects and of credits issued. The registry is often available online and has the purpose of avoiding double selling and double counting of credits. Credits issued by certifying agencies are called Verified Emission Reductions (VERs). While most standards focus on ensuring the integrity of emission reductions, some standards (such as CCB and Plan Vivo) are also concerned with measuring social and environmental benefits in addition to carbon reductions (called co-benefits). Still, a certain proportion of credits are issued by project developers under their own standards without third-party certification (Diaz, Hamilton and Johnson 2011).

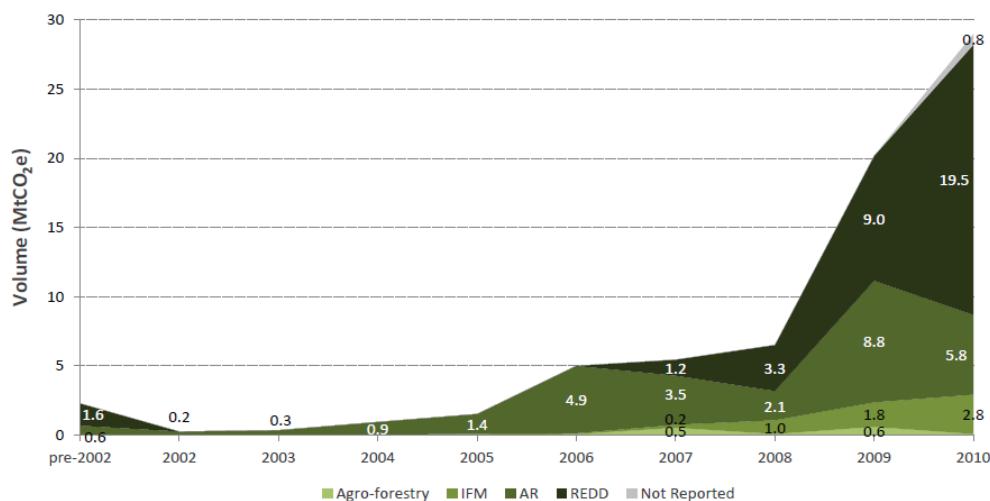
Financial architecture: Emission credits traded in the voluntary market are acquired by public or private entities, including individuals, wishing to reduce their carbon footprint as a signal of personal or corporate social responsibility. A significant number of credits are bought by companies expecting future mandatory emission reductions and by intermediaries who expect to gain profits from the resale of credits. In the forest carbon sector an important proportion of forest carbon credits (estimated around 46 per cent in a survey) are sold under contracts which may include either upfront payments or payments upon delivery (or a mix) for credits produced by the project (Diaz, Hamilton and Johnson 2011).

The investment necessary to develop and implement a forest carbon project for the voluntary carbon market often comes from a variety of sources. Such sources may include the private sector, multilateral and bilateral climate funds, official development assistance, international foundations, environmental funds (e.g. Global Environmental Facility), international non-governmental organisations (e.g. Conservation International, World Wildlife Fund), and the host country government. REDD+ projects are increasingly profiting from multiple finance opportunities generated by a strong interest from country Parties to the UNFCCC in developing capacities and lessons-learned about the operation of REDD+-type activities and projects in developing countries.

Activities: Forest carbon projects participating in the VCM cover a wider range of activities than CDM. Besides afforestation and reforestation (A/R), forest carbon projects include agro-

forestry, improved forest management (IFM)⁶, and Reducing Emissions from Deforestation and Forest Degradation (REDD). REDD is the fastest growing type of project and currently dominates the VCM (Diaz, Hamilton and Johnson 2011). The second most important activities for the market are A/R projects, followed by improved forest management. Agro-forestry projects comprise a minimal proportion of the market as can be seen in Figure 1.

Figure 1. Historical volumes by project activity type



Note: This graph shows volumes contracted by each project type in the primary market (buying directly from the project). Data labels are omitted in years where volume was <0.1 MtCO₂e. Source: Diaz, Hamilton and Johnson 2011.

Project cycle and actors: The project cycle varies according to the requirements of the different standards; some projects are internally verified and follow ad-hoc processes. For example, the VCS (the most widely used standard) requires project proponents to choose a methodology approved by VCS (and may even develop one if others are inappropriate) to develop a Project Description (PD). Then, an approved validation/verification body (VVB) must validate the PD following the methodology and complying with VCS requirements. The project then initiates activities, monitors and measures emission reductions or removals, and issues a report to be verified by the VVB. Once verification is approved, projects must request registration in the VCS registry operators and VCUs (Verified Carbon Units) will subsequently be issued (VCS undated b). VCS registry operators control the issuance of VCUs, track the deposit and withdrawal of credits from the registry and record VCU ownership. The VCS Association (registered in the USA) is a non-profit organisation responsible for managing, developing and overseeing VCS programme operations, ensuring the integrity of VCUs. Brokers, sellers and buyers are also important actors, as they facilitate the trade of credits (VCS 2012a). The Plan Vivo Standard follows a similar process, however, the contracted sale of credits is an step prior to certification. They also require project proponents to engage local communities in every step of the process and demonstrate their consent and active participation (Plan Vivo 2012). Under VCS, VCUs issued to forest carbon projects have a crediting period of 20 to 100 years (VCS undated c).

Technical issues: Approaches to technical issues related to voluntary forest carbon projects use varying standards. In general, voluntary carbon standards are more flexible than CDM regarding forest carbon methodologies.

⁶ 'IFM projects seek to actively improve forest management to maintain and/or increase carbon stocks in forest areas or remaining forests' (http://www.forest-trends.org/documents/files/doc_2555.pdf)

(a) Social impacts: The social and environmental *co-benefits* of projects also use varying standards, with CCB being the most widely used standard specific for the purpose of validating co-benefits. Plan Vivo also includes specific criteria related to community participation in the project design and implementation. Interest in measuring and valuing social co-benefits is growing in the voluntary market.

(b) Additionality is measured against a baseline scenario of GHG emissions that would occur without the project. The difference between the VCM and CDM is that VCM offers greater flexibility in choosing or developing methodologies to establish baselines and demonstrate additionality (see for example VCS undated c).

(c) Permanence: Usually standards provide project proponents with a methodology to estimate the risks of losing the carbon captured over a certain period of time. Using this analysis, a certain quantity of credits produced by the project will remain as a buffer stock to compensate for any loss of carbon stocks that may occur due to natural or human-induced events (VCS undated d).

(d) Leakage: Projects must also account for leakages, subtract them from emission reductions or removals, and develop actions to mitigate them according to approved methodologies (VCS undated d).

I.3 REDD+

Objective: Projects resulting in emission reductions from avoided deforestation, avoided forest degradation, conservation, sustainable management of forests and enhancement of forest carbon stocks are not eligible types of projects under CDM or under any of the Kyoto Protocol's flexibility mechanisms. However, such activities are necessary to reduce emissions from land use, land use change, and forestry and to prevent climate change from reaching levels dangerous to human survival (the ultimate objective of the UNFCCC). Hence, REDD+ has been proposed under the UNFCCC as a new mechanism to be included in any future agreement which would place an economic incentive for developing countries to conserve and enhance forest carbon sinks (UNFCCC 2008; RECOFT 2011; Angelsen 2008; UN-REDD Programme undated; FCPF undated). Besides unlocking the mitigation potential of developing country forests, REDD+ has a high potential to generate social and environmental benefits additional to GHG emission reductions.

Initially REDD+ seemed a win-win deal for developed and developing country parties. REDD+ was thought to be a low-cost option to deliver large emission reductions globally, helping developed countries meet their targets while channeling large amounts of money towards conservation and sustainable use of forests in developing countries. However, as the negotiations progressed, REDD+ has become increasingly complicated, technically and politically, and more expensive to realize. Nevertheless, REDD+ is still one of the fastest moving agenda items in the international negotiations under the UNFCCC (Angelsen *et al.* 2012).

Institutional framework: REDD+ became an official agenda item in 2007 under the Bali Action Plan (COP 13) (UNFCCC 2008). Here, countries agreed to consider REDD+ as a mitigation policy in a future agreement. They also agreed that actions to prepare developing countries to participate in a future REDD+ mechanism needed to begin immediately. Developing countries were thus encouraged to explore REDD+ actions and developed countries were invited to

mobilise resources to support these efforts. In response to the Bali Action Plan numerous initiatives have been launched to develop national REDD+ programmes and subnational REDD+ projects.

Amongst the most important international initiatives supporting national REDD+ readiness are the UN-REDD Programme and the Forest Carbon Partnership Facility, both launched in 2008. The UN-REDD Programme is a partnership between the United Nations' Food and Agriculture Organization (FAO), the United Nations Development Programme (UNDP), and the United Nations Environment Programme (UNEP) (UN-REDD Programme 2010b). The Forest Carbon Partnership Facility (FCPF) is a global partnership of developed and developing countries which has the World Bank as trustee and main delivery agency (FCPF 2012a). The UN-REDD Programme and the FCPF provide technical and financial assistance and capacity building to around 52 developing countries around the globe.

Many other REDD+ initiatives are carried outside these two institutions. A mix of international finance institutions, development agencies, bilateral funds, conservation INGOs, research centres, national governments, and private foundations and companies are developing REDD+ projects. There is no central institution or authority validating all REDD+ activities as exists for the CDM. Furthermore, there is a certain disconnect in national and subnational REDD+ activities. Subnational projects are influenced most by funding, implementing institutions and voluntary standards, while national country programmes are influenced by progress in international negotiations and by the multiple institutions that participate in and support readiness activities.

Financial architecture: After much negotiation the COP, at its 17th session in Durban, decided that results-based finance for REDD+, 'may come from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources', such as market-based approaches and non-market approaches, and from current financial mechanisms under the Convention (UNFCCC 2012g: paragraphs 65-68). The decision reflects the current situation where finance is voluntarily provided by developed countries and by the private sector through multilateral or bilateral channels, as well as through the carbon market.

Investment via official development assistance and private investments in REDD+ activities are hard to track. There is information, however, about climate funds. Norway, Germany, Australia, the United States, the Netherlands, Japan and other European and Asian countries have pledged to put US\$4 billion in climate funds for REDD+ (Climate Funds Update 2012a). Norway is, by far, the largest REDD+ donor, responsible for about 66 per cent of the investment pledged by developed countries (Climate Funds Update 2012a). The following table provides more information about the size of financing through international climate funds. It can be seen that there is a large difference between those amounts pledged and those disbursed.

Table 1. Finance pledged, deposited, approved, and disbursed for REDD+ by multilateral and bilateral funds.

Fund	Pledged	Deposited	Approved	Disbursed
International Climate and Forest Initiative (Norway)	1607.82	1607.82	533.21	276.44
UN-REDD Programme	151.49	118.89	116.13	97.93
Amazon Fund	1032.44	102.79	168.94	45.94
Congo Basin Forest Fund (CBFF)	165.00	165.00	95.38	18.59

Forest Carbon Partnership Facility - Readiness Fund	239.40	212.59	31.04	11.47
Forest Investment Programme (FIP)	612.00	446.00	50.96	3.59
Forest Carbon Partnership Facility - Carbon Fund	218.30	138.10	0.57	0.20
Global Climate Change Alliance	-	-	24.70	0.00
International Climate Initiative (Germany)	-	-	91.47	0.00
Fast Start Finance (Japan)	-	-	82.64	0.00
International Climate Fund (UK)	-	-	12.93	0.00
Total	4026.45	398.74	1207.97	454.16

Notes: Blanks (-) indicate no data is available on the finance pledged or deposited specifically for REDD+ for these funds.
Quantities are in million USD. Source: Created by author with data from Climate Funds Update 2012b

Following the COP's invitation to initiate 'demonstrative actions' in Bali, an explosion of subnational REDD+ projects has occurred in the voluntary carbon market. REDD+ type projects benefit from official REDD+ finance, political support from host countries, and investment from entrepreneurs responding to a strong signal of future REDD+ market mechanism. In 2010, REDD+ projects provided 67 per cent of credits sold in the primary market (Diaz, Hamilton and Johnson 2011). From 2009 to 2010, the share of REDD credits in the carbon market rose by 500 per cent (Linacre, Kossow and Ambrosi 2011).

Activities: REDD+ projects comprise activities that reduce emissions from deforestation, reduce emissions from forest degradation, conserve forest carbon stocks, enhance forest carbon stocks, and foster a sustainable management of forests (UNFCCC 2011c: paragraph 70). National REDD+ readiness activities led by the UN-REDD Programme and the FCPC include the development of national REDD+ strategies or action plans; national forest reference emission levels (RELs); systems for monitoring, reporting and verifying forest-related emission reductions (MRV); and measures to support stakeholder engagement in national REDD+ planning and implementation processes.

Project cycle and actors⁷: The project cycle and actors involved in subnational REDD+ pilots entering the voluntary carbon market follow the general structure of this market as described in the previous section. National REDD+ programmes, on the other hand, have a markedly different structure as they must develop according to COP decisions.

Most countries are developing their national REDD+ Programmes with the assistance of the UN-REDD Programme and/or the FCPF. Under these, country governments must develop a plan to develop a national strategy (called NJP by the UN-REDD or R-PP by the FCPF) which outlines current forest policies, drivers of deforestation, institutional capacities, legal frameworks and REDD+ policy options. The preparation of the plan is usually led by the environment or forestry national ministry with the technical aid of country UN or World Bank offices, consultancies and universities with the participation and/or consultation of civil society and indigenous organizations. The plan must be approved nationally and then submitted to the FCPF or UN-REDD Programme Policy Board for approval. After the plan is approved country governments are allocated finance and further technical support to carry it out and develop the policy instruments and the institutional and technical capacities necessary to carry out a national REDD+ Programme. National governments also profit from other climate fund finance and aid finance to carry out subnational demonstrative REDD+ activities or for building capacities required in their national programmes.

⁷ The detailed steps in the REDD+ project cycle are found in Appendix 1, as well as a summary of project cycles for CDM and an example for VCM.

International and national conservation NGOs and indigenous peoples organisations (to a lesser extent), participate in REDD+ national programmes by engaging in consultation processes and collaborating with national governments and international donors in generating REDD+ projects and knowledge. Public and private research institutes and private carbon consultants are also contributing to national programmes, particularly by developing MRVs and RELs.

Technical issues: At the international level REDD+ faces numerous technical challenges which are still being negotiated under the UNFCCC. The following paragraphs describe the state of REDD+ technical issues at the level of international negotiations. National REDD+ programmes should follow the resolutions of such negotiations. However, ongoing REDD+ projects selling in the voluntary carbon market actually follow methodologies set by voluntary standards or are developing their own methodologies (as discussed in the previous section). The following refers to approaches to technical issues in national programmes.

Social impacts: A number of social risks have been associated with REDD+ activities, including forced evictions, 'green' land grabs, state or elite capture of benefits, and imposed restrictions on livelihoods. To address this issue the UNFCCC, the UN-REDD Programme and the FCPF promote a set of safeguard policies among REDD+ countries which are supposed to mitigate social risks and ensure potential benefits. Modalities to monitor and report on the implementation of social safeguards are still being debated under the UNFCCC and most national programmes still lack such systems (UNFCCC 2012f, paragraph 6 and 15; UNFCCC 2011c).

Additionality: How to estimate emissions and removals from forest carbon sinks under REDD+ is still being negotiated (SBSTA 2012: 6). So far countries have agreed on a flexible approach to the development of national reference emission levels or forest reference levels (REL). Each country will establish their own methodologies for setting RELs, which must be consistent with IPCC guidance and guidelines. RELs should include historical data, methodological information, descriptions of relevant policies and plans, GHG emissions and sequestrations per each kind of REDD+ activity included, a justification of pools and gases excluded, and the definition of 'forest' used and why it was chosen (UNFCCC 2012h: paragraph 14, a-d). Reference levels should be updated periodically and Parties were invited to submit their proposed reference levels voluntarily for revision by the UNFCCC Subsidiary Body on Scientific and Technological Advice (SBSTA) (UNFCCC 2012h: paragraph 12-13).

Leakage: To manage leakage better, REDD+ was decided to operate nationally. National emission inventories from land use change and forestry would be used to monitor changes in carbon stocks and credits would be issued if emissions were reduced and stocks preserved. However, most countries lack accurate data on forest cover as well as technical, technological, financial, and administrative capacities to develop monitoring, reporting and verification (MRV) systems and measure forest carbon flows in such a large scale. Hence, countries are allowed to develop subnational systems as an interim measure and account for leakage at project level while they develop national systems. A national approach to REDD+ is also supposed to allow countries to address broader governance issues and drivers of deforestation and forest degradation. (Angelsen *et al.* 2008). Pursuing REDD+-readiness at the subnational and national levels simultaneously is known as 'the nested approach'. In the long term both levels should be harmonized and a single emission accounting system should be developed.

Permanence: Permanence is still unresolved under REDD+. The Cancun Agreements only state that countries should address and report risks of reversals (i.e. of losing the emission reductions or removals claimed, that is, of non-permanence). Permanence under REDD+ is different and more complex to quantify than permanence in A/R projects. At a national level REDD+, credits would represent a reduction in the rate of carbon emitted to the atmosphere by processes of deforestation and forest degradation and not an absolute gain in stocks as in A/R projects. How to adapt the concept of permanence in REDD+ and account for reversals considering changes in emission rates and not in net emission reductions is still unresolved (Skutsh and Trines 2010).

I.4 Summary

Table 2 summarizes the section by providing a comparison of the three forest carbon mechanisms studied – CDM, voluntary carbon market, and REDD+ – according to the list of characteristics reviewed – objective, institutional framework, financial architecture, activities involved, project cycle, actors, and technical issues. As presented in the table and previous descriptions there are several similarities, overlaps and differences between mechanisms which can make forest carbon difficult to follow through. This chapter was not an exhaustive nor detailed revision of the topic, its purpose was to provide some clarity about the structure of the forest carbon market in which African forest carbon initiatives develop.

Table 2. Comparison between CDM, Voluntary Carbon Market, and REDD+ according to different characteristics.

Characteristics	Clean Development Mechanism (CDM)	Voluntary Carbon Market (VCM)	REDD+ (Reducing Emissions from Deforestation and Forest Degradation Plus)
Main characteristics	CDM offers flexibility to developed countries to meet KP targets by allowing them to access low cost emission reductions while promoting sustainable development in developing countries through the finance of clean technologies and low-carbon projects. CDM directly engages the private sector in climate financing, promotes cost-efficiency in emission reductions globally, and delivers low-carbon development to developing countries.	The VCM contributes to climate change mitigation by engaging public and private entities and concerned individuals, without mandatory emission reductions, into financing clean technologies and low-carbon development projects in developed and developing countries. The VCM allows for a greater amount of forest carbon projects to reach the carbon market due to more flexible methodologies. The various VCM Standards guarantee the integrity of carbon credits sold.	REDD+ will place an economic incentive for developing countries to conserve and manage their forest sustainably by rewarding decreased rates of deforestation and forest degradation, as well as conservation, sustainable management of forests and enhancement of carbon stocks. These activities are necessary to mitigate climate change and are not currently addressed by the CDM, thus the necessity to include REDD+ in a future international climate agreement. REDD+ will deliver social and environmental co-benefits to forest dwellers in developing countries, such as poverty reduction, improved forest governance, biodiversity conservation and enhancement of ecosystem services.
Institutional framework	As a Kyoto Protocol mechanism, decisions are taken by country Parties through the CDM Board and CMPs. CERs issuance, demand and supply depends heavily on emission targets and negotiations. CERs are traded in national or regional emission trading schemes with a centralised government-regulated institutional structure (e.g. NZ ETS).	Project rules set by various VCM standards. Supply and demand is set by the market (although indirectly influenced by COP/CMP decisions). (Decentralized institutional structure). VERs are primarily traded directly by projects or through retailers over-the-counter (OTC).	Institutional framework is still in construction under the UNFCCC. National REDD+ readiness processes mostly follow UNFCCC, UN-REDD Programme and FCPF guidelines, but other institutions intervene. Subnational projects mostly follow VCM rules while profiting from official REDD+ finance and political support. (Broadly centralized for national processes; decentralized for subnational projects).
Financing architecture	A market was created by legally-binding emission reductions. It depends heavily on the future of the Kyoto Protocol and is contracting due to uncertainty related to a future commitment period.	A market was created by voluntary emission reductions for branding/social responsibility aims. It is expanding due to improved methodologies, higher credibility, increased public interest in offsets as a climate change solution, expectancy of future targets, and strong signals of a future REDD+ market.	Finance is still voluntary (credits do not contribute to countries' emission targets), includes multilateral and bilateral funds, ODA, and private investment. Subnational projects may sell in the VCM for additional finance. REDD+ projects are growing steadily under the VCM. Finance for national programmes is slow-moving.
Activities	Afforestation and reforestation (A/R) only	A/R, improved forest management, REDD+, and agroforestry	REDD+ activities (reducing emissions from deforestation and forest degradation, conservation, sustainable forest management and enhancement of carbon stocks). Activities to

			build capacities in developing countries to participate in a future REDD+ mechanism.
Project cycle	Set by the CDM according to rules and modalities agreed under the UNFCCC: (1) project design (PD); (2) national approval; (3) validation of PD; (4) registration; (5) monitoring; (6) verification of emissions; (7) CER issuance.	Set by multiple standards (internal or external): (1) choose a methodology; (2) project description (PD) document; (3) validation of PD; (4) monitoring; (5) validation of emission reduction; (6) registration and VER issuance.	National-level REDD+ readiness process is outlined by the UNFCCC and made operational by UN-REDD Programme and FCPF: (1) plan to develop a national strategy (NJP or R-PP); (2) national approval; (3) approval by FCPF or UN-REDD Policy Board; (4) grant agreement; (5) progress reports; (7) national strategy. Subnational REDD+ projects commonly aim for the VCM and follow similar processes.
Actors	Project developers, CDM Policy Board, buyers, brokers and retailers, CMP, DOEs, DNA, consultants, Annex I governments running emission trading schemes, local communities.	Project promoters, standard certifying agencies, validation/verification bodies (VVB), buyers, brokers and retailers, consultants, 'carbon cowboys', Annex I governments running emission trading schemes, local communities.	Multilateral funds, bilateral funds, official development agencies, international development banks, national development banks, UN agencies (UNEP, UNDP, FAO, UN-REDD), carbon consultancies, national government of participant countries, consultants.
Social impact	Sustainable development dividend defined and approved by designated national authority. Criteria is not defined by the CDM Board or UNFCCC but by the host government.	Criteria varies among VCM standards. Many standards focus on measuring carbon without much consideration to social impacts, while others verify community involvement and social and environmental co-benefits.	Social risks are mitigated and benefits ensured through the establishment of international social and environmental safeguards by the UNFCCC, UN-REDD Programme and FCPF. A system for monitoring and reporting the implementation of safeguards should be established at the country-level. Subnational projects working under the VCM do not necessarily follow these safeguards.
Additionality	Measured against a baseline scenario based on current land uses or historical uses since 1990, methodologies for defining baselines are set by the CDM.	Varies among approved methodologies. It may be historical or projected. Proponents may propose new methodologies for defining baselines.	Each country will develop their own methodology using IPCC guidelines to set their baseline (REL) and measure additionality.
Leakage	Risk of leakage must be calculated and emissions subtracted from removals claimed.	Risk of leakage must be calculated and emissions subtracted from removals claimed.	Leakage is controlled by measuring, reporting and verifying emissions at the national level.
Permanence	tCERs and ICERs are issued and are validated over a certain period of time (7-30 years) after which they must be replaced by permanent CERs, tCERs or ICERs.	VERs are issued over a certain period of time (20-100 years). A stock of untradeable credits is kept by the registry to compensate for non-permanence.	At the national level: still under negotiation, many challenges remain. At the subnational level: projects participating in the VCM follow rules set by voluntary standards.

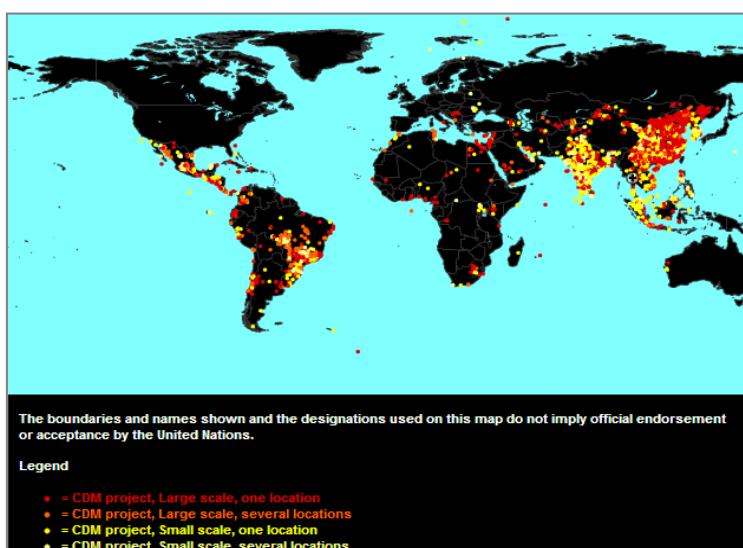
CHAPTER II. Africa in the Forest Carbon Markets

This chapter provides information about the state of CDM, REDD+, and VCM in Africa compared to other world regions (Latin America, Oceania, North America, Europe, and Asia and the Pacific) in terms of volume of credits sold and bought, number of operational projects, and origin and destination of forest carbon finance. The sections on CDM and VCM first describe the position of Africa in the carbon market in general (that is, including all carbon project types) before turning to the forest carbon market in particular. The location of operational carbon projects is graphically presented on world maps to visualize distribution patterns. The section on REDD+ focuses on national-level processes, as subnational processes are mostly absorbed by the VCM. The distribution of countries engaged in national REDD+ processes is also mapped. REDD+ dedicated funds are recognised as well as their involvement in African countries. Besides comparing world regions, each section identifies countries leading the supply of carbon credits in different regions, which shows where in the world, as well as in Africa, carbon projects are taking root. The information presented was gathered from different internet sources during the second half of 2012, including carbon registries, institutional websites independent databases and international carbon market analyses. The reader is advised to take note of the dates in citations as the state of carbon markets change year to year depending on the financial market and the climate change international policy environment.

II.1 Africa in the Clean Development Mechanism

Africa is among the most underrepresented regions in the CDM. The compliance carbon market favors projects that can deliver high emissions at the lowest cost with the lowest perceived risk (Linacre, Kossow and Ambrosi 2011). Such favorable business conditions are best found in middle income countries such as China, India, Brazil, South Korea and Mexico, the largest supplier of CDM credits (CDM Secretariat 2011). As of May 2012 less than 2 per cent of CDM projects were located in Africa, i.e. 85 out of a total of 4074 registered projects (UNFCCC 2012b). These patterns can be observed more clearly in Figure 2 extracted from the CDM Registry which maps the locations of registered CDM projects around the globe.

Figure 2: Distribution of CDM projects around the world as of October 2012



Source: UNFCCC 2012c.

The CDM is the largest provider of carbon credits in the world (CDM Executive Board 2011: 7). As of May 2012 4074 projects were registered under CDM and the annual average CERs was around 586 million tons (UNFCCC 2012a). However, credits from A/R projects comprise a meager proportion. Afforestation and reforestation projects (A/R projects) comprise about 0.77 per cent of registered CDM projects (UNFCCC 2012a). In May 2012 there were only 39 A/R registered projects at different stages of the project cycle. Out of all these projects, 12 were situated in Africa (31 per cent), 14 in Latin America (36 per cent), 11 in Asia (28 per cent), and 2 in Eastern Europe (5 per cent). Details about the issuance of CERs from CDM A/R activities in Africa and other regions are presented in the following table and a complete list of African CDM projects can be found in Appendix 2.

Table 3: CDM A/R projects by world region.

Region	Projects	CERs (tCO ₂ e/year)	Percentage of CERs* (%)
Latin America	14	639,522	47
Asia	11	355,195	26
Eastern Europe	2	202,206	15
Africa	12	162,238	12
TOTAL	39	1,359,161	100

Source: Created with data from UNFCCC 2012b.

** Calculated from estimated emission reductions from A/R projects registered and requesting registration.*

Although the number of African A/R projects is close to that found in Asia and Latin America, the scale is considerably smaller. As shown in Table 3, Africa is the region with the smallest quantity of issued CERs from A/R projects in the world, even below Eastern Europe which hosts only two A/R projects. The expected emission reductions from African projects represents about 12 per cent of the total expected CERs from A/R projects under the CDM. In contrast, Latin America supplies 47 per cent of CERs from A/R projects, Asia accounts for 26 per cent, while Eastern Europe delivers the remaining 15 per cent.

In Africa, CDM A/R Projects can be found in five countries: Uganda, Kenya, Senegal, Ethiopia and the Democratic Republic Congo (DRC) (see Appendix 2). In terms of number of projects Uganda leads the list with six projects, followed by Kenya with three. While Senegal, Ethiopia and DRC each host one project. DRC and Uganda are the largest producers of CERs in Africa. On the other hand it is notable that these projects became operational only recently. Most of them were registered last year (2011), and only two were registered in 2009. Investment for these projects originated in Canada, Luxembourg, Italy, France, Japan, Spain (UNFCCC 2012d). Outside Africa the largest suppliers of CERs from CDM A/R projects are India, Brazil, Republic of Moldova, and China (UNFCCC 2012d).

II.2 Africa in the voluntary carbon market

Amongst developing countries the distribution of carbon projects supplying the voluntary carbon market (VCM) has followed a similar geographical pattern. Figure 3 (below) shows the distribution of carbon projects (of all types) certified by the Verified Carbon Standard (VCS), the widest used standard in the VCM. According to their registry, VCS projects in developing countries are concentrated in China, India, Brazil, Turkey and Thailand. In terms of forest carbon the major players in the developing world are Peru, Brazil and Indonesia, all of which are middle income countries (Díaz, Hamilton and Johnson 2011). According to interviews conducted by Ecosystem Marketplace, 'confidence in rule of law and

ease of doing business are key criteria for setting projects, particularly if private sector funders are sought and expect returns'. (Díaz, Hamilton and Johnson 2011). This statement is supported by other analyses (Linacre, Kossow and Ambrosi 2011) and is consistent with the pattern observed in Figure 3.

Figure 3: Distribution of carbon projects (of all types) registered under the Verified Carbon Standard (October 2012)

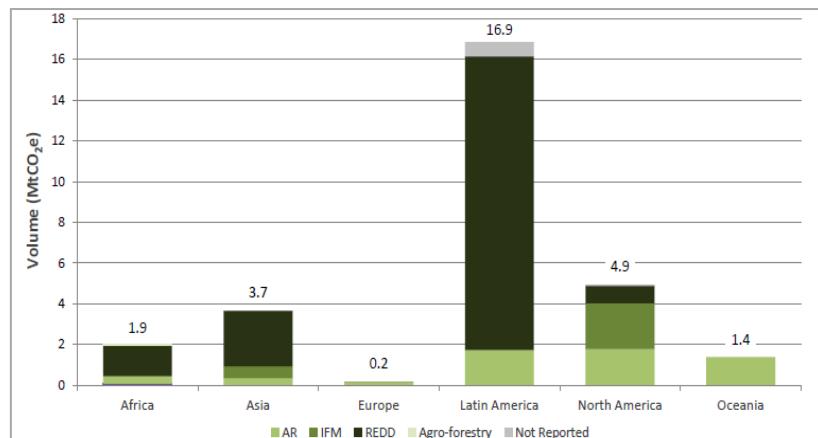


Source: VCS 2012b

The complexity and requirements of CDM methodologies are very difficult and onerous to comply with. Therefore, most forest carbon projects have turned to more manageable and flexible methodologies for carbon accounting and trading under the voluntary market. As a result, most forest-sourced carbon offsets are traded through the voluntary markets (94.5 per cent) and only a marginal number of credits (5.4 per cent) are traded through the compliance market linked to the Kyoto Protocol's Clean Development Mechanism (CDM) (Díaz, Hamilton and Johnson 2011). While forest carbon comprises a very small share of CDM projects, forest carbon projects are thriving in the voluntary carbon market, particularly REDD-type projects. In 2010 an estimated 47 per cent of the credits sold in the voluntary carbon market were produced by forest carbon projects, 29 per cent solely by REDD-type initiatives (Peters-Stanley *et al.* 2011). Furthermore, while the development of new projects under the CDM is in decline, there is a surge of project creation in the voluntary carbon market and the market is experiencing steady growth, with almost 300 forest projects expected to be operational in the period of 2011-2015 (Peters-Stanley *et al.* 2011). This is in contrast to the total of 39 A/R projects found in the CDM registry.

Currently, Latin America is the largest supplier of carbon credits in the world, mainly through REDD projects. REDD projects dominate the supply in the developing world, while A/R and IMF are more prominent in North America, Europe and Oceania (see Figure 4). Latin America yielded 58 per cent of the total global primary market volume, 85 per cent of which came from REDD projects (Díaz, Hamilton and Johnson 2011). North America supplied 17 per cent of the volume (A/R and IMF projects), and Asia followed closely with 15 per cent (also mostly from REDD). Africa was, again, well below these, offering 8 per cent of the total volume (primarily from REDD), just above Oceania (5 per cent) and Europe (1 per cent) (both relying mostly on A/R) (Díaz, Hamilton and Johnson 2011). In Africa, the biggest suppliers of credits are Kenya and the DRC. However, they fall well behind suppliers in other parts of the world such as Peru, Brazil, the United States, and Indonesia (Díaz, Hamilton and Johnson 2011).

Figure 4: Forest carbon credits (voluntary and compliance markets) by region and project type (2010)



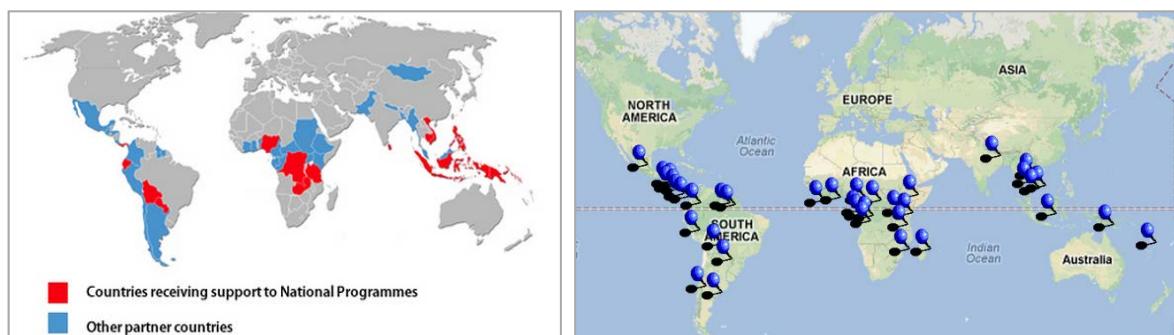
Source: Díaz, Hamilton and Johnson 2011

Turning to the demand side. In 2010 the largest market for forest carbon credits was situated in Europe where 35 per cent of credits were bought. North America acquired 17 per cent of the total volume of credits, followed by Latin America, Asia and Oceania (in that order). Africa was the smallest market, with fewer than 0.5 per cent of credits being bought by Africa-based clients (Díaz, Hamilton and Johnson 2011).

II.3 Africa and REDD+

At the national level, the UN-REDD Programme and the FCPF hosted by the World Bank are leading the process of REDD+ readiness, while other funds are supporting these efforts and promoting subnational projects. National REDD+ readiness processes are taking place in 52 forested developing countries around the world. These countries can be identified in Figure 5. The map on the left displays countries engaged in national REDD+ readiness under the UN-REDD Programme, the map on the right identifies countries supported by the FCPF. In Africa, there are 18 countries engaged in readiness at the national level under the UN-REDD Programme and/or the FCPF: Liberia, Ivory Coast, Ghana, Benin, Nigeria, Cameroon, Central African Republic, Gabon, Congo, DRC, Sudan, Ethiopia, Kenya, Uganda, Tanzania, Zambia, Mozambique and Madagascar. Many of these countries are participating in both programmes as shown in Figure 7⁸.

Figure 5: Countries preparing national REDD+ programmes under the UN-REDD Programme (left) and the FCPF (right)



Sources: UN-REDD Programme 2012; FCPF 2012b.

⁸ See Cheik et al. 2012 for a recent review on the challenges and prospects of REDD+ implementation in Africa

Financial support for REDD+ activities from bilateral and multilateral funds is not evenly distributed among regions. About 44.7 per cent of funding is directed to Latin America and the Caribbean. Africa runs second place, sharing 17.6 per cent of approved finance, followed closely by Asia and the Pacific (17.1 per cent). Finally, less than 1 per cent is going to Europe and Central Asia (Climate Funds Update 2012a) (Table 4)

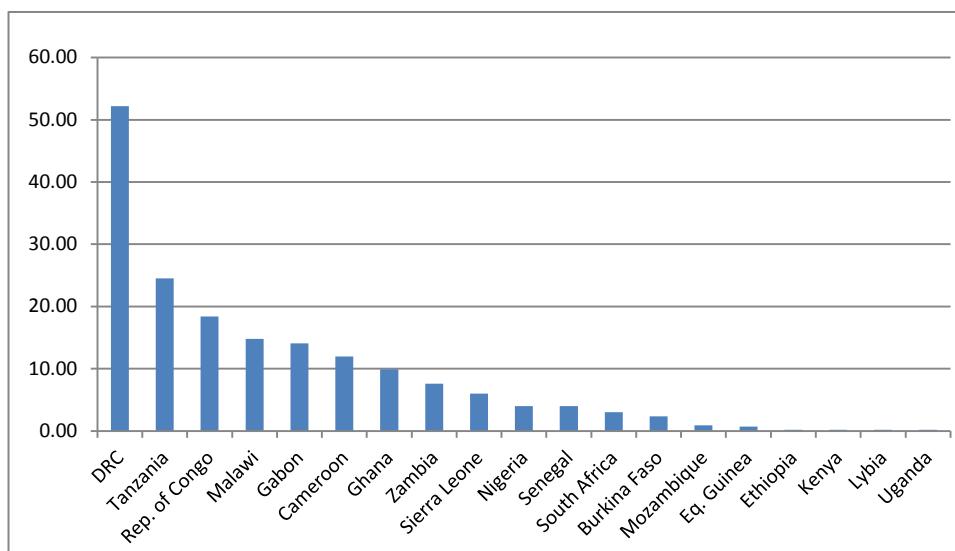
Table 4: Distribution of approved finance from bilateral and multilateral climate funds for REDD+ (October 2012)

Region	Approved finance (\$ USD million)	Percentage of approved finance (%)
Latin America and the Caribbean	598.45	44.7
Africa	235.79	17.6
Asia and the Pacific	229.37	17.1
Europe and Central Asia	0.70	0.7
Global activities	16.70	16.7
Unknown	41.71	3.1
Total	1122.72	100

Source: *Climate Funds Update 2012a*.

At country level, Guyana, Brazil, Indonesia and Mexico, followed by the DRC and Tanzania, receive the highest amounts of approved finance from climate funds. In Africa, finance by country ranges from US\$0.2 million (Ethiopia, Kenya, Libya, Uganda) to US\$52.2 million (DRC). The distribution of approved REDD+ finance among African countries can be observed in Figure 6. Here it can be observed that REDD+ is not following the same pattern as CDM and VCM projects. Large amounts of finance are distributed among low and middle income countries without a clear distinction among them.

Figure 6: REDD+ approved finance in Africa from multilateral and bilateral climate funds by country (numbers in USD millions) (July 2012)

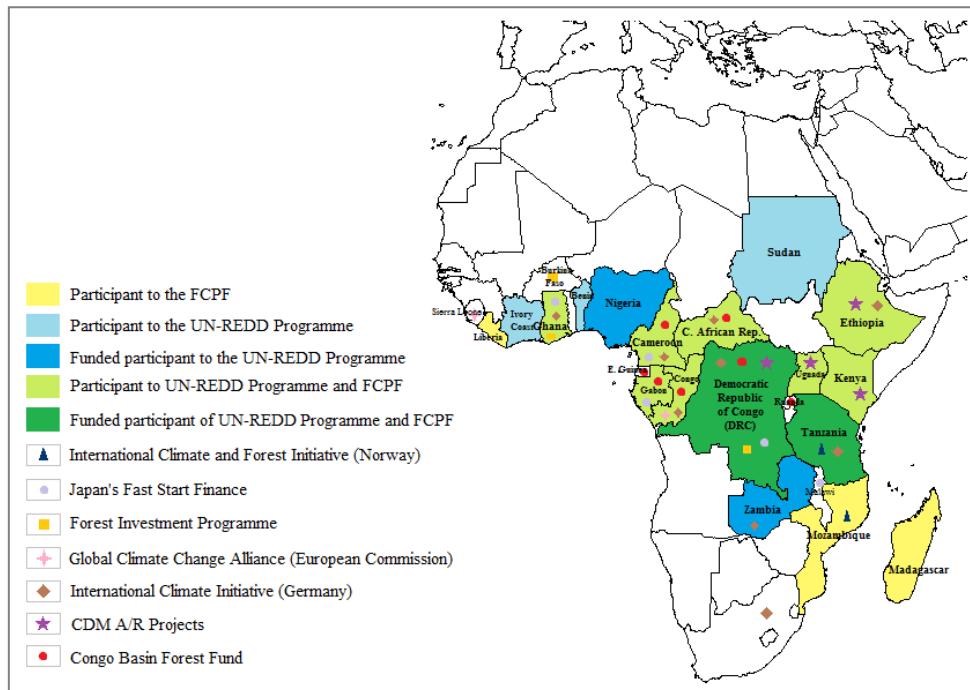


Source: Created by author with data from *Climate Funds Update 2012c*

Finance in Africa originates from a multiplicity of climate funds. Multilateral funds include the FCPF Readiness Fund, the UN-REDD Programme, the Forest Investment Fund, the Global Climate Change Alliance and the Congo Basin Forest Fund. Bilateral finance is led by Norway, Japan and Germany

through the International Climate and Forest Initiative, Fast Start Finance, and the International Climate Initiative. The map in Figure 8 shows where each fund is investing (or pledging to invest). The map also identifies countries participating in the UN-REDD Programme, the FCPF, or both. It also shows which countries are receiving finance from the UN-REDD Programme for their national projects and which are only receiving targeted finance and technical support. Countries hosting A/R CDM projects are also identified.

Figure 7: Distribution of REDD+ finance by fund and country, presence of CDM projects, and country participation in the UN-REDD Programme and the FCPF in Africa (July 2012)



Source: Created by author with data from Climate Funds Update 2012c. Note: The number and location of signs does not indicate the actual number and location of carbon projects

According to this map, the Congo Basin is the focus for REDD+ finance and institutional support. DRC, the Republic of Congo and Cameroon have access to a greater variety of funds than other countries. Ghana is another country where several funds are investing. Tanzania, Malawi and Gabon, although accessing less funds, are receiving important amounts of finance as observed in Table 2.

II.4 Summary

This chapter has described major trends in the forest carbon arena in terms of where projects, emission credits and concentrations of investments are located globally. In particular, it explored Africa's position in the voluntary and compliance carbon markets and in REDD+ development and investment when compared to other world regions. Some major trends can be identified:

- First, it has been shown that the currently operating carbon market mechanisms generally disfavour least developed countries. The case is not so clear for REDD+, which is largely driven by fund pledges rather than market-oriented investments. Under the voluntary and compliance markets, Latin America is the largest supplier of forest carbon credits in the world, followed by Asia.

Africa lags behind them in terms of the number of credits that it delivers to both the compliance and the voluntary market.

- Forest carbon projects and credits seem to be concentrated in a few countries, including Brazil, India, China Peru, Brazil and Indonesia. On the other hand, while the largest REDD+ funding still concentrates in middle income economies (Brazil, Indonesia and Mexico), the DRC and Tanzania are not too far behind. In Africa, Kenya, Uganda, DRC, Tanzania, and the Republic of Congo are the most active countries in the carbon markets and in terms of REDD+ funding.
- In the voluntary market REDD+ projects are growing rapidly across all regions, becoming the dominant type of forest carbon project. National REDD+ readiness activities are taking place in all regions, comprising 52 countries involved in either the UN-REDD Programme, the Forest Carbon Partnership Facility or in both. In Africa, this number reaches 18 countries, stretching from Sierra Leone to Ethiopia and from Sudan to Mozambique.
- Finally, Norway is the largest investor in REDD+ worldwide and Europe is the largest buyer of forest-originated CERs and VERs.

Chapter III. CDM, VCM, and subnational REDD+ projects in Sierra Leone, Ghana, Kenya and Zambia

This chapter presents the results of a thorough internet-based literature review on subnational forest carbon projects taking place in Sierra Leone, Ghana, Kenya and Zambia. The purpose of the resulting database is to be able to study who participates, promotes and supports these projects, and how they are financed and justified. The review is based on project documents (particularly design documents) produced by project developers, donors, and/or consultants and thus represents their views on these matters.

The information was taken from three different types of sources, each offering varying degrees of integrity. First, information was taken from project design documents as presented to different carbon registries (CDM, Plan Vivo, Verified Carbon Standard, The Gold Standard, Carbon Fix Standard, APX Registries, and Markit Environmental Registry)⁹. Data from registries has been reviewed for technical consistency prior to registration and has been, or is in the process of being, field-verified by authorized third party entities. This can be considered as the most trustworthy data. Second, information was taken from project descriptions, reports, and feasibility studies found on developers', donors' or consultants' official websites. This was information from less advanced projects that have not applied to any official carbon registry, as well as projects issuing credits without certification. In these cases technical issues have not been verified by third parties but narratives are accurately represented. Third, some data was taken from two forest carbon project inventories: the REDD Desk and the Forest Carbon Portal¹⁰. These are inventories from small number of projects for which data from supporters' websites are incomplete or lacking. They gather information from the internet as well by direct contact with organisations and are trustworthy, but they should be viewed as secondary sources.

The project database itself is found in Appendix 6. Four sets of variables were explored for each project: general information, actors, finance, and ecologies¹¹. The first section, general information, gives the name of the project and the sources used. It also provides information on where and at what stage of the process the project is. The second section, actors, classifies the actors involved in each project under the following headings: project developer, funding agencies, local communities, other organisations. The section on finance shows how projects are financed, how much invested, and how many carbon credits are or are expected to be issued. The last section, ecologies, gives information on a project's impact on the forest ecosystem. This includes project size, type of ecosystem, activities involved, and narratives justifying the project. These narratives show how project developers or other supporters define the causes of deforestation and forest degradation, its consequences for the climate, people and biodiversity, and the solutions offered via project activities, which are often claimed to deliver social

⁹ Appendix 4 provides a list of internet addresses for carbon registries, project databases and standard certifications which register, certify or gather information about forest carbon projects in Africa and elsewhere.

¹⁰ The REDD Desk is a program of the Global Canopy Programme and the Forum on Readiness for REDD led by the Brazilian-based Amazon Environmental Research Institute (IPAM) (The REDD Desk 2012). The Forest Carbon Portal is an initiative of Forest Trends, a non-profit organization focused on promoting market-based approaches to conservation (Forest Carbon Portal 2012).

¹¹ A definition of the variables corresponding to each set are described more thoroughly in the table on Appendix 5.

and environmental benefits as well as carbon sequestration. Finally, given that most of the projects that were found had not yet reached the stage of selling credits (many seemed to be caught somewhere within the process) a variable on progress challenges defined by project promoters was added at the end of the table.

III.1 General information

Location: A total of 37 forest carbon projects at different stages of the project cycle were found in the four studied countries. More than half of them (20 projects) are located in Kenya. Seven projects were found in Ghana and an equal number were found in Sierra Leone. Only three projects were found in Zambia.

Project status and certifications: Out of the 37 projects found, only 14 –all located in Kenya– are selling credits either in the compliance market (3 A/R CDM) or the voluntary market (11 projects). The distribution of projects by country and status is found in Table 5 below. On the other hand, nine of the voluntary carbon projects are certified by both the Verified Carbon Standard (VCS) and the Climate, Community and Biodiversity (CCB) Standard, one is certified by the CCB Standard only, and another is selling offsets without any standard certification.

A total of 10 projects are implementing activities but have not been issued any CERs or VERs yet. Four of these are located in Kenya, four in Ghana, and two in Sierra Leone. These projects are aiming for certification under VCS only (two), CCB Standard and VCS (one), and Plan Vivo Standard (two). None are applying for CDM registration. Five of them do not provide information about the type of certification they are seeking.

The rest of the projects (13) currently appear to be in the planning stage (when their status was last updated on the web pages visited). According to the information found, some of these projects were in the planning stage in 2008, 2009, 2010, 2011 or 2012. Those started in earlier years sometimes claim to be experiencing technical difficulties (related to carbon monitoring and accounting), financial problems and/or legal challenges (mostly land and carbon tenure issues). The most recent projects appear to be at the beginning of the process, developing feasibility studies and signing agreements with local actors and/or government ministries. For most of them, however, no information about their current status or about why they have not begun activities or claimed credits was found¹². Some projects at planning stage intent to be approved by VCS and CCB (4) or by CDM (2); however, more than half of them (7) did not state whether their aiming for the voluntary or CDM market.

Most projects are selling, or plan to sell, in the voluntary carbon market (20). A small portion (five) are, or plan to be, registered under the CDM. And several (13) are not registered under any VCM standard or under the CDM and do not provide information about who will verify and certify the carbon credits they are or will be producing. There are 14 operational projects, 10 projects under implementation, and 13 projects in the planning stage.

¹² Various VCM registries and in the CDM Registry were consulted to verify these projects are not operational.

Table 5: Projects by country and status

Country/Status	Planning	Implementation	Operational	Total
Kenya	2	4	14	20
Ghana	3	4	0	7
Sierra Leone	5	2	0	7
Zambia	3	0	0	3
Total	13	10	14	37

III.2 Actors

Project developers: Project developers, or proponents, are the organisation(s) responsible for carrying out and monitoring the projects. They can be classified in four main categories: non-profit organisations, private companies, government agencies and research institutes.

a) Non-profit organisations: Most of the forest carbon projects are developed by conservation or aid-focused non-profit organisations (mainly international NGOs based in the United Kingdom, the United States of America, Germany or in multiple countries). There are a few national NGOs and some local organisations involved as well. In Kenya non-profit developer organisations include: Greenbelt Movement (United Kingdom); African Wildlife Foundation (United Kingdom); Earthwatch International (United States); A Rocha International (United Kingdom); Tree Flights (United Kingdom); Care International (multinational); and Kenya Escarpment Environmental Conservation Network (ESCONET) (Kenya). In Ghana projects are led by the Nature Conservation Research Centre (Ghana); International Union for Conservation of Nature (IUCN) (multinational); Rainforest Alliance (United States); and A Rocha International (United Kingdom). In Sierra Leone developers include the Royal Society for the Protection of Birds (United Kingdom); Conservation Society of Sierra Leone (Sierra Leone); Welthungerhilfe (Germany); and the National Forum for Environmental Action in Sierra Leone (ENFORAC) (Sierra Leone). In Zambia plans for carbon projects have been developed by the UNDP and World Bank's Program on Forests (PROFOR).

b) Private companies: Private companies are the second most active project developers in the forest carbon sector in the area of study. Some of these companies specialise in carbon services, such as project development, management, offset brokerage, and consultancy. Similar companies providing services related to rural development and environmental conservation are also promoting projects, although less frequently. There are also a few companies of a different profile interested in carbon enterprises, such as mining and timber companies. Most of these carbon entrepreneurs are based in developed countries (the United States and the United Kingdom), and a few are based nationally. In Kenya private project developers include Clean Air Action Corporation (United States); Wildlife Works Inc. (United States); Eco2librium (United States); and Carbon Footprint Ltd. (United Kingdom). Vision 2050 Ltd. (Ghana) and Environmental and Rural Development (ERD) Ltd. (Ghana) are active in Ghana. Ecotimber (United States), Emission Securities LLC (Sierra Leone), and Sierra Gold Corporation (Canada) are working in Sierra Leone. Finally, Oversy (United Kingdom) was the only company the author found to develop forest carbon projects in Zambia.

c) Government agencies: National governments – particularly the forestry, environment and natural resource ministries – are rarely involved as project proponents, but when they do, they invariably engage as partners to other organisations. In the studied countries the government agencies involved in project development included the Kenya Forest Service; the Kenya Ministry of Environment and

Natural Resources; Sierra Leone Forestry Division of the Ministry of Agriculture, Forestry, and Food Security; and the Zambia Wildlife Authority.

d) Research Institutes: Finally, one case was found of a research institute partnering with other organisations in the development of a project, the Kenya Marine and Fisheries Research Institute. As shown below research institutes rarely participate as project developers. If they are involved, they usually provide knowledge or technical services at some stages of the project.

Funding agencies: Forest carbon projects require initial funding for planning and implementation before they can obtain proceeds from the sale of offsets. Most projects are not fully funded by proponents, they are financed by climate funds, environmental funds, official development cooperation, private foundations, international NGOs, and sometimes by private investors. Some of the projects found do not provide information on their sources of funding.

In Kenya funding agencies include BioCarbon Fund (World Bank); the Government of Canada; USAID; the Clinton Climate Foundation (CAAC); Hyundai Carbon Fund; African Wildlife Foundation; Royal Netherlands Embassy; Waterloo Foundation (United Kingdom); A Rocha International; and CARE International. Private sector investors and donors are less common, they include some United Kingdom-based air charter companies, travel agencies, an insurance company, and carbon companies.

In Ghana forest carbon projects have been financed by DANIDA; the Rockefeller Foundation; NORAD; the Gordon and Betty Moore Foundation; and A Rocha International. Only one project was declared to receive financial support from a private company, Environmental Development Consultants Ltd (EDC), a UK-based environmental consultancy firm. Many of the Ghanaian projects did not provide information on their financial sources.

In Sierra Leone, forest carbon donors include the European Commission; Welthungerhilfe; and the Critical Ecosystem Partnership Fund (CEPF) (a joint initiative of l'Agence Francaise de Developement, Conservation International, the GEF, Government of Japan, John D. and Catherine T. MaxArthur Foundation, and the World Bank). Sierra Gold Corporation is funding the development of a project while actively seeking donors/investors. Finally, one of the Zambian projects is financed by the International Climate Initiative (Germany), and the other by the World Bank PROFOR.

Other organisations involved: Besides project proponents and funding agencies, there are other organisations that are involved in the development of forest carbon initiatives at particular phases. Consultancy companies, research institutes, and NGOs working in the area often provide knowledge services and technical support to perform feasibility analyses, to elaborate project design documents, to establish emission monitoring and carbon accounting systems, or to organise local community participants. Government agencies approve and support projects, sometimes collaborating with promoters in generating and sharing information. Offset brokers trade carbon credits, they advertise projects, verify the authenticity of credits, and provide advising and management services to investors and buyers. Buyers, especially those acquiring credits through contracts with project developers, provide developers and other investors with some certainty on the sale and value of their credits and may influence project design.

Consultancy companies are often based in Europe or the United States. Examples are Eco Carbon SAS; Institute of Environmental Innovation; Environmental Accounting Services; CalCarbon Ltd; TREES

Forest Carbon Consulting; Envirotrade; and UNIQUE Forestry and Land Use. Nonprofit organisations and universities also provide knowledge and technical support, such as Environmental Education Programme (KEEP); Masinde Muliro University of Science and Technology (MMU); Ilhoro Community Forest Association (CFA); Edinburg University; World Agroforestry Centre (ICRAF); The Katoomba Group; Forest Trends; IDESAM (Brazil); Oxford University; University of Sierra Leone; and Winrock International.

National government agencies include Ministry of Environment and Natural Resources; Kenya Forest Service (KFS); local county governments; the National Museum of Kenya (NMK); Sierra Leone Forestry Division of Ministry of Agriculture; Forestry & Food Security (MAFF); Sierra Leone Environment Division of the Ministry of Land, Country Planning & Environment (MLCPE); and the Sierra Leone Environmental Protection Agency. Buyers include Japan Iron and Steel Federation and the Japan Petroleum Exploration Co. Ltd.

Local communities: This section gathers information on the local communities affected by the forest carbon projects as defined by project promoters' narratives. Overall, which communities or community members are affected and how is often loosely defined. Some documents make reference to direct beneficiaries, (farmers from a specific community), while others refer to indirect beneficiaries, the human settlements in and around the project area (e.g. thousands of peoples utilising the watershed where the project is found). Communities are often referred to as beneficiaries of the project but they are rarely included as project proponents or partners.. When they are specified as partners, local people are represented by community associations and often yield decision-making powers to the promoters in exchange for a share of revenues. In other cases, particularly Plan Vivo projects developers must obtain community support, engage local communities in decision making, and demonstrate social benefits for the local people to be certified. Local people impacted by forest carbon projects are mostly rural farmers, agricultural workers, pastoralists, cattle herders and charcoal burners.

III.3 Finance

Funding scheme: As stated, most projects require some funding to be launched. Usually funding comes from several public and/or private sources (such as those described above). Once projects become operational and credits are issued, revenue may be used to sustain the project financially. However, this may not be sufficient to pay the costs of the project, in which case it becomes an additional source of income and the project continues to be dependent on external finance. This is often the case for conservation projects, which are expensive to run and look to the carbon market for additional finance. On the other hand, some projects are business ventures and investors expect them to be profitable and economically sustainable once credits are issued. This is the ambition of private investors and carbon entrepreneurs. Some projects receive support from contracted buyers for start-up while others have 'pay upon delivery' contracts. There is one interesting project which works as a nonprofit organisation. In this, individuals donate money to the project, this money is used to plant trees in Kenya and, in return, donors receive uncertified voluntary carbon credits to offset their emissions.

Financial costs: Only a few projects provide information on the project costs or the size of investments and of proceeds. According to the limited information available, projects are receiving start-up investments of about half a million to US\$3.7 million. Some projects are financed by donations from various sources, including public funds and carbon revenues. One of the projects is financed from small donations by individuals starting at £10 per tree and £200 per acre of conserved land.

Emission reductions: Emission reductions have been verified in only the 14 operational projects. The rest (23 projects) provide estimates of expected carbon credits. Emission reductions start at 7,427 tCO₂e per year to 1.6 million tCO₂e per year, and authorized crediting periods start at 20 years up to 60 years. The largest operational project is located in Kenya and is a VCM project. The Kasigau Corridor REDD Project, the Community Ranches, is producing 1.6 million tCO₂e per year. In Zambia, a study to develop a REDD+ scheme for the Miombo ecoregion expected reductions for Zambia of 26 million tCO₂e per annum.

III.4 Ecologies

Type of ecosystem: In general, most forest carbon projects are taking place in forested areas experiencing some degree of degradation. This includes rainforests, cloud forests, semi-deciduous forests and dry woodlands. A few take place in better conserved areas (particularly protected areas) which are, arguably, threatened with degradation. Others occur in savannahs, grasslands, bush lands, and mangroves. Projects sometimes affect active, marginal or abandoned croplands often portrayed as formerly forested areas.

Area covered: Operational CDM projects range from around 200 to 1650 hectares in size. Forest carbon projects selling in the VCM range from 40 hectares to 132,600 hectares. However, some planned projects supersede these numbers. The largest planned projects are taking place in Zambia. One of them plans to involve 7 million hectares, and a study on REDD+ possibilities in the Miombo ecoregion explores the inclusion of about 300 million hectares into a Zambian REDD+ initiative.

Project description: This section identifies how the project is described by the project developer and/or associated actors. It notes how project proponents describe: (a) the problem they attempt to tackle; (b) the consequences of such problems; (c) the solutions proposed by the project and (d) the positioning of actors involved in the project, including local communities. It should be noted that these descriptions reflect the views of project proponents and the justifications for carbon funding put forward by them. It might be expected that field research and explorations of the perspectives of other actors will reveal different, or contested views.

Predominant driver of deforestation and forest degradation: Most projects offer an explanation of the causes of forest degradation and loss, again reflecting the views of project proponents. However, there are some projects that do not offer an explanation, particularly CDM projects (which are not required to address the drivers of deforestation) and afforestation/reforestation projects carried by private entrepreneurs. Most VCM and REDD projects do consider the main drivers of forest degradation and deforestation within the project boundaries. Across countries the project proposals are very similar, stating that subsistence activities of local people are the primary causes of forest loss.

More specifically, the great majority of project documents refer to a mix the following when identifying the drivers of deforestation and degradation: (a) population growth leading to settlement expansion and increased demands on forest products; (b) fuelwood collection and charcoal burning (particularly for urban markets); (c) logging operations for the local or regional markets (mostly small-scale and illegal operations); (d) the conversion of forest to cropland (particularly for maize and through slash and burn practices); and (e) cattle grazing (overgrazing). Also, to a lesser extent, harvesting of forest bark for medicinal purposes (Kenya), production of woodcarvings and other crafts that supply tourism markets (Kenya), and palm wine tapping (Ghana) are all identified as degradation-causing activities.

Sometimes environmental phenomena are mentioned, such as prolonged drought, water scarcity, habitat fragmentation, fire outbreaks, soil erosion and climate change, but these are often blamed on agriculture, population, logging, and fuel production. Other human activities, such as mining and road construction are mentioned, marginally, by only three of the projects.

Governance and economic issues are sometimes mentioned. These include: poorly planned development and land speculation; 'decades of low economic growth'; unemployment and lack of 'alternative livelihoods'; land and tree tenure policy; disabling forestry policy; low government capacity for forest management; general marginalization of the forestry sector; lack of legal protection for forest areas; absence of economic incentives for conservation; and political insecurity.

Project activities: The majority of projects focus on reforestation, improved natural resource management (forestry, agriculture and livestock), and conservation activities. Only a very few include afforestation activities. There are overlaps between REDD+ and other types of projects in terms of the actual activities that are carried out. More than 30 per cent of the projects found claim to be REDD+ projects. However projects labeled as REDD+ frame and justify their activities using REDD+ terminology, including the prevention of deforestation and degradation, conservation, sustainable forest management and enhancement of carbon sinks (see Table 6).

Table 6. Types of activities included in the forest carbon projects found in Kenya, Ghana, Sierra Leone and Zambia.

Activity*	Project count**	Percentage (%)***
Reforestation	18	49
REDD+	13	35
Conservation	12	32
Improved resource management	12	32
Alternative economic activities	12	32
Afforestation	8	22
Financing of community projects and services	8	22
Efficient charcoal/fuelwood production and use	3	8
Other	5	14
Total of projects	37	100

Notes: *Categories are not mutually exclusive. **Number of projects performing each type of activity. ***Percentage of projects performing each activity over a total of 37 projects.

Reforestation activities include the development of tree nurseries and the planting of trees in degraded forests, deforested areas and agricultural areas. It also includes the development of woodlots (small-scale tree plantations). Afforestation activities involve the planting of trees in areas that were not forested in the past, which may include agricultural areas or woodlots in former grasslands. Conservation activities include the establishment of new protected areas (either public or private) and enhancement of biodiversity monitoring and policing activities in existing protected areas. What is labeled here as improved natural resource management refers to the implementation of agroforestry systems, sustainable agricultural methods, conservation farming, zero grazing, sustainable harvesting of non-timber forest products, sustainable forestry, improved rangelands, crop diversification, fertilizer programmes, woodfire prevention, soil restoration, water harvesting, and mangrove restoration.

Many projects include the generation of alternative sources of income in their activities, such as bee-keeping, honey collecting, introduction of new cash crops, ecotourism, vegetable gardening, bakeries, tree nurseries, and activities directed to enhance income from livestock. Enhanced efficiency in charcoal production and use were present in a few projects, as well as increased financing of community projects and services (mainly health and children education). Other activities present in some projects, exceptionally, are: access to better market opportunities for producer organisations, production of green charcoal and biochar, and analysis of forest policies.

Co-benefits claimed: Projects usually claim to provide other social and environmental benefits besides sequestering carbon and reducing emissions from forests and land use change. In term of social co-benefits, more than half the projects state they provide income opportunities for local people either through employment, alternative economic activities, increased agricultural yields, or revenues from carbon credits. Poverty alleviation is often referred to, particularly in REDD+ type projects. Food security and improved nutrition from crop diversification, increased yields and planting of food-producing trees is also commonly claimed. Some projects finance education and health services in local communities with carbon revenues. Training community participants in such activities as tree nursery work, conservation agriculture, and bee-keeping is also referred to as a social co-benefit. In terms of environmental co-benefits, biodiversity and habitat conservation and enhancement of ecosystem services in general are the two most often cited benefits. Amongst the ecosystem services, water provision or harvesting and reduction of soil erosion are the most common. A complete list of social and environmental co-benefits is presented in Table 7.

Table 7: Social and environmental co-benefits claimed by forest carbon projects in Kenya, Ghana, Sierra Leone and Zambia

Co-benefits	Project count*	Percentage (%)**
Social co-benefits		
Income opportunities	20	54
Food security and improved nutrition	7	19
Finance for education and health services	6	16
Provide education and capacity-building	5	14
Increased supply of non-timber products	4	11
Water security	4	11
Enhanced resilience/adaptation to climate variability and change	3	8
Increased of agricultural yields	2	5
Conservation of touristic attractions, ecotourism and recreation	2	5
Sustainable supply of fuelwood	2	5
Strengthening community relations	1	3
Combat illegal charcoal burning	1	3
Improved forest governance	1	3
Environmental co-benefits		
Biodiversity and habitat conservation	13	35
Improved ecosystem services (in general)	5	14
Water harvesting	4	11
Soil/coastal erosion reduction	4	11
Beautification of the environment/landscape conservation	2	5

Wildfire prevention	2	5
Improved air quality	1	3
Enhanced agricultural production	1	3
Soil fertilization	1	3
Flood protection	1	3
Climate stabilization	1	3
No co-benefits claimed	5	14
Total number of projects	37	100

Notes: *Number of projects claiming each co-benefit. **Percentage of projects claiming each co-benefit over a total of 37 projects.

Challenges: Issues that hinder development of a project's progress in the pipeline as defined by project proponents include: the sustainability of the carbon market; lack of finance; lack of capacity building and awareness of targeted beneficiaries; organisational, cultural and social barriers; land and tree tenure security; technical issues (such as additionality and permanence); and adequate policy incentives for community-based forest conservation. Most projects, however, do not specify what issues are preventing them from reaching the operational stage.

III.5 Summary

This chapter presented a first analysis of a database containing information on 37 forest carbon projects at varying stages of progress occurring in four African countries, Ghana, Kenya, Sierra Leone and Zambia. It identified general patterns across projects and countries in terms of four sets of variables, general information, actors, finance, and ecologies, which provided information about where and at what stage projects are; who the organisations and local communities involved in projects are; how projects are financed and how many credits they expect to sell; and how the project views and attempts to change the forest socio-ecological system. Such information was retrieved from supporters and promoters of projects and represents their views. Below are outlined the main findings and descriptions of some trends in sub-national level forest carbon activity in these countries.

First, it was found that most of the projects (20 out of 37) and all operational projects (14 in total) included in the database are located in Kenya. Kenya is, thus, the most active and successful of the four countries studied, in terms of forest carbon. As of late 2012 (when this database was produced), there appeared to be no forest carbon projects in Ghana, Zambia or Sierra Leone selling certified carbon credits in the VCM or compliance markets. All projects found in these countries (17) were somewhere in the pipeline, i.e. they were either in the design or implementation stage. Furthermore, the current status of many of them is uncertain, the information about them in the internet being out-of-date. The reason behind such apparent lack of progress was sometimes explained by reference to various financial, organisational, cultural or social challenges faced by the project. On the other hand, among both operational and pipeline projects, CDM comprised, as expected, the minority of projects, as most are selling or preparing to sell in the voluntary market. The VCS and the CCB Standards are the widest used standards among projects, followed by the Plan Vivo Standard.

In terms of actors, project developers included non-profit organisations, private companies, government agencies and research institutes. Nonprofit organisations, either conservation or aid-oriented organisations, comprised the majority of developers, followed by private companies. Overall, the vast majority of project developers are foreign to the country in which a project is based. They are based either in Europe or in North America. Projects receive public and private funds from a number of sources (from climate funds to development cooperation to private investment) which are also mostly based in European or North American countries. This is also the case of consultancies and other actors

that contribute in the project development and trade of credits. In general, local and national organisations, national government entities, as well as the local communities involved, appear to play a secondary role to the project developers and funding agencies in the projects studied. Often the role played by impacted local communities (and who these communities are) is very loosely defined in project narratives and other documents.

With regard to finance, the database shows that projects generally receive some start-up funding and that many continue to rely on funding additional to revenues from the selling of credits. Such is not the case for projects launched by carbon entrepreneurs, which are not many. Finance ranges from half to US\$3.7 million. Emission reductions range from 7,427 tCO₂e per year to 1.6 million tCO₂e per year, but some more ambitious projects are being planned. Authorized crediting periods range from 20 years to 60 years. Projects are based mainly in deforested or degraded forested areas, although other ecosystems (such as grasslands and bush lands) and sometimes croplands are also included. Project areas range from 40 to 132,600 hectares among operational projects, though larger projects are being planned.

Projects justify their activities by stating that they will contribute to the reduction of GHG emissions from the forest and land use change sectors which are claimed to be around 17 to 20 percent of global GHG emissions.. Most project documents refer to local subsistence patterns and population growth as the leading causes of deforestation and forest degradation, while wider governance and economic issues and activities such as mining and road construction are rarely considered. The activities proposed by projects to tackle these issues are generally concerned with reforestation, establishing protected areas or improving their policing and management, improving forest management and agricultural practices as well as introducing 'alternative' sources of income It is argued, these actions will bring a variety of benefits for the environment and local people besides climate change mitigation, from which income generation and biodiversity conservation are the most mentioned. In these narratives, local communities appear mostly as field workers and recipients of benefits and training. Although, in some cases, they are given the opportunity to participate more actively in project design and in some decision-making, they generally appear to have little control over the project in comparison to project developers. Government actors are rarely involved in projects, which may explain their small or none existent role in either the definition of problems and solutions in project narratives.

Conclusions

This paper aims to provide an account of the state and characteristics of forest carbon projects, policies and market opportunities in Africa, particularly in Kenya, Zambia, Ghana, and Sierra Leone. First, it offers a basic description of the three different types of forest carbon mechanisms in which African projects and programmes participate (CDM, VCM, and REDD+). Then, it compares Africa to other world regions in more quantitative ways, approaching the geographical distribution of forest carbon projects, markets, and programmes at the international and regional level. Finally, the last chapter studies the status, discourses, ecologies, actors, and financial information of 37 forest carbon projects taking place in Zambia, Kenya, Ghana and Sierra Leone. This section will connect these three approaches to the study of forest carbon in Africa, highlighting some general patterns and posing some questions for further analysis.

First, amongst the three types of forest carbon mechanisms in which African forest carbon projects can be classified, the VCM and REDD+ seem to be the most important in numerical terms. The volume of CDM A/R projects globally is very small when compared to other types of CDM projects, and Africa is the smallest producer of CERs from A/R projects. While CDM appears to be a thorny avenue for forest carbon projects, the VCM offers greater flexibility and opportunities. The voluntary market has shown a steady growth in forest carbon projects across the world, especially for REDD-type projects. But here, again, Africa plays a smaller role than Latin America and Asia. National REDD+ programmes are more evenly distributed than VCM and CDM activity across the developing world. However, the same cannot be said for funding. Key players in the forest carbon market in Latin America and Asia-Pacific also lead the numbers in terms of REDD+ investment, though countries in the Congo Basin are close behind.

The database brought some additional insights into these trends. The sample of forest carbon projects studied confirmed that most projects are selling or planning to sell in the voluntary market and very few are operating or planning to operate under the CDM. REDD+ is one of the leading type of project in Kenya, Zambia, Sierra Leone and Ghana, coming only second to reforestation projects. It is worth mentioning that these categories do not seem to be mutually exclusive at project level. Many self-labeled REDD+ projects include reforestation as one of their activities. Forest conservation and improved resource management projects (two types of activities that can be read in the '+' of REDD+) are also mentioned in A/R projects. Such overlaps seem to blur, to some extent, the differences among CDM, VCM, and subnational REDD+ projects in terms of the activities they perform on the ground.

Institutional and financial frameworks are different between mechanisms, though there are some important associations between them. CDM and REDD+ (at international and national level) are led by governments, while VCM is led by a variety of private entities. However, the VCM is greatly influenced by the international and national climate policy environment. The institutional structure of REDD+ is yet to be set by the COP. Currently, activities are taking place under the 'provisional' guidance and institutional arrangements of multiple actors and, in the case of subnational projects, the VCM. While national governments play a central role in national REDD+ processes, they participate only marginally in subnational ones. An institutional pluralism is emerging in REDD+, as well as an apparent disconnection between the institutional frameworks operating in national and subnational activities.

Forest carbon is developing under a complex and changing institutional framework dominated by international actors. While national governments, the private sector, and the NGO sector hold different levels of participation and power in this framework, local communities have only a marginal influence

and position in it. Moreover, local communities are further disfavored by the high levels of scientific, technical, financial and procedural complexity set by multiple institutions around forest carbon, which are mostly inaccessible for local people.

While the classification and roles of actors varies across mechanisms, at the project level the leading participants in forest carbon have very similar profiles. The project database shows that development and conservation nonprofit organisations and private companies (particularly carbon companies) lead project development. They invariably depend on carbon consultancies or research institutes to design the project, calculate carbon and establish the systems necessary to certify the carbon credits produced by the project. Moreover, funding comes from similar sources, particularly from multilateral funds managed by development banks, official development assistance, and private foundations. Host country government agencies do not appear to be involved in project development very often. Local communities are mostly rural and practice subsistence agriculture, small scale logging, and coal production. Foreign actors from developed countries (particularly the UK, USA, and Germany) seem to dominate forest carbon projects, comprising the majority of donors, consultants and project proponents.

Finally, there are some clear commonalities between forest carbon interventions and mainstream forest conservation in Africa. It may appear that there is little new or different about forest carbon when compared to mainstream conservation. Forest carbon is for many an approach to forest conservation. It is, indeed, a market approach to forest management and use by which the carbon stored in and captured by trees is commoditized and used to finance, justify, and place an economic interest on forest conservation. As such, forest carbon initiatives are designed to obtain a product – carbon emission reductions – which is defined and validated by complex technical and bureaucratic procedures. At a theoretic level, forest carbon is meant to operate as a business and be, amongst other things, cost-efficient. This is encountering many difficulties to realize and, as seen in the database, many projects are not profitable nor even economically self-sufficient. Nonetheless, this idea has brought some new actors into the forest conservation picture such as: private carbon companies; carbon retailers; speculators; and the so-called carbon cowboys¹³. It has also created a type of commodity and business whose regulation is premature or non-existent in African countries.

Forest carbon is introducing ideas, objectives, processes, and actors that are new to mainstream conservation interventionism. Further research about the manner in which these actors and ideas are impacting ongoing political, economic, and socio-cultural processes in African forests, and about whether these will result in a better outlook for both forests and forest-dependent communities, is becoming increasingly necessary.

¹³ The term 'carbon cowboys' is popularly used to describe carbon dealers and entrepreneurs who make a profit by establishing unfair, and often fraudulent, contracts with local communities for the sale of the carbon stored in their lands.

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Appendices

Appendix 1. Steps in the CDM A/R Project cycle, in VCS Project cycle, and in the National REDD+ readiness

I. CDM A/R Project cycle

1. Project design: a Project Design Document (PDD) is put together by the project participants
2. National approval: the Designated National Authority (DNA) of the host country approves the 'development' component of the project
3. Validation: an accredited designated operational entity (DOE) certifies the project complies to CDM modalities and procedures
4. Registration: the CDM Executive Board approves the project and lists it under the CDM registry
5. Monitoring: project participants monitor actual emissions
6. Verification: the DOE verifies emission reductions

Source: UNFCCC *undated.d.*

II. National REDD+ readiness

Provisions for REDD+ readiness under the UNFCCC

REDD+ elements for national 'readiness' (UNFCCC 2011c, paragraph 71)

- (a) A national strategy or action plan;
- (b) A national forest reference emission level and/or forest reference level;
- (c) A national forest monitoring system for the monitoring and reporting of REDD+ activities; and
- (d) A system for providing information on how safeguards are being addressed and respected

REDD+ phases (UNFCCC 2011c, paragraph 73)

REDD+ activities should be implemented in three phases:

- [1] the development of national strategies or action plans, policies and measures, and capacity-building;
- [2] followed by the implementation of national policies and measures and national strategies or action plans that could involve further capacity-building, technology development and transfer and results-based demonstration activities; and
- [3] evolving into results-based actions that should be fully measured, reported and verified

REDD+ Readiness process under the UN-REDD Programme

1. National Joint Programme Document (NJP) formulation: The NJP describes the country's current situation and 'readiness' needs in terms of forest policies, institutional capacities, and legal frameworks. The NJP also includes the national strategy plan for REDD+. Formulation is country-led with support from UNEP, FAO and UNDP country offices.
2. National approval: The NJP must be approved by a national validation meeting composed of representatives of the UN, the national government, civil society and indigenous peoples (or by the National REDD Steering Committee if established).

3. UN-REDD Programme approval: The NJP is submitted to the UN-REDD Programme Secretariat and to the UN-REDD Programme Policy Board for approval.
4. Formalisation: Approval of the NJP is formalised by the national government and UN country representatives.
5. Grant Agreement: Finance must be used to implement the national strategy and for capacity building.
6. Progress Reports: Countries must report on their progress to the UN-REDD Programme.

Source: UN-REDD Programme 2009.

Forest Carbon Partnership Facility (FCPF) REDD+ readiness process

1. R-PIN: The country submits a Readiness Preparation Idea Note (R-PIN) to the FCPF requesting participation
2. R-PP: Accepted countries become 'REDD+ country participants' and may formulate a Readiness Preparation Proposal (R-PP) and submit it to the Participants Committee for approval
3. R-PP Grant: If the R-PP is approved, the REDD+ country may gain access to financial and technical assistance
4. R-Package: The REDD+ country must use such assistance to implement the R-PP and prepare a Readiness Package (R-Package), in which the country reports policies, measures, programmes, projects, legal reforms, and other efforts made to become ready for REDD+.

Source: FCPF 2010: 2.

III. Verified Carbon Standard project cycle

1. Methodology: Project proponents choose an approved methodology or develop one
2. PD development: Project proponents develop a project description (PD)
3. PD Validation: Validate PD by an approved validation/verification body (VVB)
4. Monitoring, measuring and reporting: Project carries activities and monitors, measures and reports its emission reductions or removals
5. Validation of emission reduction: a VVB verifies and validates the emission reductions
6. Registration and issuance: The project proponents submit their documents to a VCS registry operator and request issuance of VCUs.

Source: VCS undated b.

Appendix 2. CDM A/R project activities in Africa

Date of registration	Title	Host country	Other Parties	CERs (tCO ₂ e/year)
Requesting registration	Aberdare Range/ Mt. Kenya Small Scale Reforestation Initiative Kibaranyeki Small Scale A/R Project	Kenya	Canada	7,427
Requesting registration	Oceanium mangrove restoration project	Senegal	France	2,704
21 Aug 2009	Uganda Nile Basin Reforestation Project No.3	Uganda	Canada, Luxembourg, Italy , France, Japan, Spain	5,564
07 Dec 2009	Humbo Ethiopia Assisted Natural Regeneration Project	Ethiopia	Canada, Italy, Luxembourg, Japan, Spain, France	29,343
18 Feb 2011	Ibi Batéké degraded savannah afforestation project for fuelwood production (Democratic Republic of Congo)	Democratic Republic of Congo	Spain, France	54,511
04 Apr 2011	Kachung Forest Project: Afforestation on Degraded Lands	Uganda	Sweden	24,702
11 Jun 2011	Aberdare Range/ Mt. Kenya Small Scale Reforestation Initiative Kamae-Kipipiri Small Scale A/R Project	Kenya	Canada, Italy, France, Luxembourg, Japan, Spain	8,542
20 Jun 2011	Uganda Nile Basin Reforestation Project No.5	Uganda	Italy, Luxemburg	5,925
23 Aug 2011	Uganda Nile Basin Reforestation Project No 1	Uganda	Italy, Luxemburg	5,881
23 Aug 2011	Uganda Nile Basin Reforestation Project No 2	Uganda	Italy, Luxemburg	4,861
29 Aug 2011	Uganda Nile Basin Reforestation Project No 4	Uganda	Italy, Luxemburg	3,969
05 Oct 2011	Aberdare Range / Mt. Kenya Small Scale Reforestation Initiative Kirimara-Kithithina Small Scale A/R Project	Kenya	Canada, Luxemburg	8,809

Source: Created with data from UNFCCC 2012d.

Appendix 3. Glossary of technical terms related to forest carbon

Additionality: The effect of a forest carbon project to increase GHG removals by sinks (CDM A/R projects), to reduce GHG emissions from sinks (non A/R VCM projects), or to reduce the rate of emissions from sinks (REDD+ national programmes) within the project boundary with reference to a baseline scenario.

Baseline scenario: For CDM and VCM projects, a GHG emission scenario for a forest carbon project representing the sum of the changes in carbon stocks in the carbon pools within the project boundary that would occur in the absence of the project activity.

Carbon pools: Above-ground biomass, below-ground biomass, litter, dead wood and soil organic carbon.

Registry: An electronic database system that records issuance and distribution of carbon credits to project participants.

CER (certified emission reduction): A unit issued for emission reductions from CDM project activities in accordance with the CDM rules and requirements, which is equal to one metric tonne of carbon dioxide equivalent, calculated using global warming potentials defined by decision 2/CP.3 or as subsequently revised in accordance with Article 5 of the Kyoto Protocol. See also the definition for “ICER” and “tCER”.

Co-benefits: A term used to refer to social and environmental benefits attributable to the project activities which are additional to emission reductions or increases in carbon sinks. This term is most commonly used in REDD+-type activities.

Crediting period: The period in which verified and certified GHG emission reductions or removals by sinks attributable to a project.

Leakage: The increase in GHG emissions by sources or decrease in carbon stock in carbon pools which occurs outside the boundary of a forest carbon project which is measurable and attributable to the project.

Long-term CER or ICER (CDM): A CER issued for an A/R project activity under the CDM which expires at the end of the crediting period of the given project activity for which it was issued.

MRV system: Used in national level REDD+ processes. It refers to a robust and transparent national system for the monitoring, reporting and verification of REDD activities and their impacts, with, if appropriate, subnational monitoring and reporting as an interim measure. It is the primary tool for accounting results-based payments or incentives. It is still under debate whether such a system should focus on emission-related impacts only, or should include other social and environmental impacts.

Permanence: The extent to which the area within the project boundary can store the carbon captured claimed in credits permanently and the approaches taken to account and compensate for a possible future loss of stocks.

REL: A term used in REDD national programmes. It stands for national (or subnational as interim measure) reference emission levels and/or forest reference level. It is still debated whether this should be set in terms of the amount of gross emissions, emissions and removals, or emission rates from forests estimated within a time period. It should represent the business-as-usual scenario, the baseline against which emission reductions should be measured.

Reservoir: A component of the climate system, other than the atmosphere, which has the capacity to store, accumulate or release a substance of concern, for example, carbon, a greenhouse gas or a precursor. Oceans, soils and forests are examples of reservoirs of carbon. Pool is an equivalent term (note that the definition of pool often includes the atmosphere). The absolute quantity of the substance of concern held within a reservoir at a specified time is called the stock.

Social and Environmental Safeguards: In national-level REDD+ processes, safeguards are policies whose purpose is minimizing and mitigating the social and environmental risks associated with REDD+. They set minimum standards, procedures, and compliance mechanisms to be followed by REDD+ countries while respecting national sovereignty, capacities and circumstances.

Sink: Any process, activity or mechanism that removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas or aerosol from the atmosphere.

Source: Any process, activity or mechanism that releases a greenhouse gas, an aerosol or a precursor of a greenhouse gas or aerosol into the atmosphere.

Stock: See Reservoir.

Temporary CER or tCER : A certified emission reduction (CER) issued for an afforestation or reforestation project activity under the CDM which expires at the end of the commitment period following the one during which it was issued.

Definitions based on UNFCCC undated f; IPCC 2007a; UN-REDD Programme 2010a; Andrasko and Koirala 2011; UNFCCC 2011c; UNDG 2010; World Bank 2012; Herold et al. 2012.

Appendix 4. Carbon project standard certifications, registries and databases which have certified, registered or gather information about projects in Africa.

Carbon Standards applicable to forest carbon projects in Africa

- *Carbon Fix:* <http://www.carbonfix.info/>
- *CCB Standards:* <http://www.climate-standards.org/>
- *Plan Vivo Standard:* <http://www.planvivo.org/>
- *ISO 14064-2:* http://www.iso.org/iso/catalogue_detail?csnumber=38382
- *REDD+ SES Initiative:* <http://www.redd-standards.org/>
- *Social Carbon:* <http://www.socialcarbon.org/>
- *The Gold Standard:* <http://www.cdmgoldstandard.org/>
- *Verified Carbon Standard (VCS):* <http://v-c-s.org/>

Carbon project registries tracking the issuance of credits from forest carbon projects

- *APX:* <http://www.apx.com/Registries/Carbon>
- *APX Verified Carbon Standard (VCS) Registry:* <http://www.vcsregistry.com/>
- *Carbon Fix Standard registry:*
<http://www.carbonfix.info/Project.html?PHPSESSID=i068g7191frm3b058ktmnd6v06>
- *CDM registry:* <http://cdm.unfccc.int/Registry/index.html>
- *Markit (carbon project public registry for VCS, Social Carbon, and other standards):*
http://mc.markit.com/br-reg/public/index.jsp?p=&r=10000000000001&u=&scolumn=project_name&sdir=ASC&s=cp&q=
- *Plan Vivo (registered projects):* <http://www.planvivo.org/projects/registeredprojects/>
- *The Gold Standard Registry:* <http://www.cdmgoldstandard.org/our-projects/project-registry;>
<http://goldstandard.apx.com/>

Other forest carbon project databases

- *Climate Community and Biodiversity Standard:* <http://www.climate-standards.org/category/projects/>
- *Ecosystem Marketplace's Forest Carbon Portal:* <http://www.forestcarbonportal.com/projects>
- *Plan Vivo (projects in the pipeline):* <http://www.planvivo.org/projects/project-pipeline/>
- *The REDD Desk:* <http://www.theredddesk.org/countries>

Appendix 5. Variables explored in the Forest Carbon Project Database found in Appendix 6.

Characteristic	Description
<i>General information</i>	
Project name	Title given to the project
Location	Geographical location
Project status	Planning stage (project studies and proposals), implementation (activities ongoing but not selling credits yet), operational (selling credits), retired (credits have been retired from market). Includes dates when the project reached or plans to reach each stage.
Standard certifications	Is the project certified (or planning to be) by any international standards, such as CCB (Climate, Community and Biodiversity) Standards, SocialCarbon, Gold Standard, REDD+ SES, or VCS (Verified Carbon Standard)?
Sources of information	Sources where information was retrieved and contact information
<i>Actors</i>	
Project developer	The main organisation(s) in charge of carrying out the project. May be identified as project promoter, proponent, implementing agency, or developer.
Funding agencies	Donors or investors financing the development of the project
Other organisations	Consultancy companies, universities, government ministries, DOEs, validators, NGOs working in the sector that intervene in the project at certain stages.
Local communities	Local communities impacted by the project
<i>Finance</i>	
Funding scheme	Market mechanism (project is trading or intends to trade its VERs) or funds-based (voluntary donations not related to the generation of offsets and not linked to carbon or ecosystem markets) and at what stages of the project.
Financial costs	How much is the project investment (actual or projected)?
Emission reductions	Measured in tons of CO ₂ e over a period of time, could be verified or expected
<i>Ecologies</i>	
Type of ecosystem	Prevailing ecosystem in the project area
Area covered	In hectares
Project narrative	Main narrative used to present and justify the project, identifies the problem, its consequences, and proposes solutions.
Predominant driver of deforestation and forest degradation	As defined by the project proponent(s)
Activities involved	Reforestation, afforestation, commercial forest plantations, sustainable forestry, sustainable agro-forestry, conservation
Co-benefits claimed	Biodiversity conservation, water resource conservation, ecosystem recovery, social benefits
Challenges*	Issues halting the development of the project

Notes: *Considered only for projects on the planning and implementation stages.

Appendix 6. Forest Carbon Project Database containing projects in Ghana, Kenya, Sierra Leone and Zambia

KENYA				
GENERAL INFORMATION				
Project name	Aberdare Range/ Mt. Kenya Small Scale Reforestation Initiative Kibaranyeki Small Scale A/R Project, Kenya	Aberdare Range/ Mt. Kenya Small Scale Reforestation Initiative Kamae-Kipipiri Small Scale A/R Project, Kenya	Aberdare Range / Mt. Kenya Small Scale Reforestation Initiative Kirimara-Kithithina Small Scale A/R Project, Kenya	International Small Group and Tree Planting Program (TIST) Program in Kenya (6 VCS Projects), Kenya
Location	Aberdare Range and Mt. Kenya Regions, Kenya (catchment areas of the Tana River)	Aberdare Range and Mt. Kenya Regions, Kenya (catchment areas of the Tana River)	Aberdare Range and Mt. Kenya Regions, Kenya (catchment areas of the Tana River)	Central, Rift Valley and Eastern Provencies, Kenya
Project status	Operational since 2010; Crediting expires in 2030	Planning in 2006; Operational since 2011; Crediting period expires in 2021	Operational since 2008; Crediting period expires in 2028	Projects VCS 001, 002, 003, 004 operational since 2007; VCS 005 was operational since 2011; and VCS 006 is operational since 2012
Certifications	CDM registered; Applied to CCB Standard	CDM registered	CDM registered	Certified by VCS and CCB (VCS 006 is Gold Level)
Contact	Mr. Frederick Njau: fnjau@greenbeltmovement.org; Maina Antony: mainaam2000@yahoo.com (Ministry of environment and natural resources) +254 20 375 4904	Mr. Frederick Njau: fnjau@greenbeltmovement.org 254 211842	Mr. Frederick Njau: fnjau@greenbeltmovement.org; Maina Antony: mainaam2000@yahoo.com (Ministry of Environment and Natural Resources) +254 20 375 4904	NA
ACTORS				
Project developer	The project is operated by Green Belt Movement (GBM) on behalf of the Community Forest Association (CFAs) in association with the Ministry of Environment and Natural Resources, Kenya Forest Service (KFS)	The project is operated by Green Belt Movement (GBM) on behalf of the Community Forest Association (CFAs) in association with the Ministry of Environment and Natural Resources, Kenya Forest Service (KFS)	The project is operated by Green Belt Movement (GBM) on behalf of the Community Forest Association (CFAs) in association with the Ministry of Environment and Natural Resources, Kenya Forest Service (KFS)	International Small Group and Tree Planting Program (TIST)

Funding agencies	World Bank as a Trustee for the BioCarbon Fund; Government of Canada	International Bank for Reconstruction Development as trustees of the Bio Carbon Fund	International Bank for Reconstruction Development as trustees of the Bio Carbon Fund	Funded in part by the USAID Kenya; CAAC
Other organisations	NA	Governments of Canada, Italy, and Luxembourg (buyers?)	Ministry of Environment and Natural Resources, Kenya Forest Service (KFS); Govt. of Canada; Ministry of sustainable development and infrastructure, Luxembourg; Eco Carbon SAS; Kingdom of Spain; Japan petroleum exploration co. ltd. And Japan Iron and Steel Federation	Institute of Environmental Innovation (USA), USAID
Local communities	Central Imenti Constituency (The Community Association of Central Imenti (CFAs))	Community Forest Associations (CFAs)	Community Forest Associations (CFAs)	45,961 local people organized in 6,218 Small Groups participate directly in the 6 projects, mostly farmers.
FINANCE				
Funding scheme	Canada, BioCarbon Fund, 'public funds and donations from numerous organisations'. Selling of credits in the compliance market.	Governments of Canada, Italy, France, Luxembourg, Japan, Spain; BioCarbon Fund. Selling of credits in the compliance market.	Governments of Canada, Luxembourg; BioCarbon Fund. Selling of credits in the compliance market.	VCS Market
Financial cost	434,716 USD from various sources, including public funds and carbon revenues. The project is part of a set of five AR projects in the area developed by Green Belt movement with a total budget of \$3,7 million USD	NA	\$3.7 million	NA
Emission reductions (tCO2/year and/or USD/year)	7,427 CO2e per year. Crediting period is 20 years, renewable twice (60 years max.)	8,542 CO2e per year. Crediting period is 20 years, renewable twice (60 years max.)	8,809 CO2e per year. 20 (twenty) year crediting period, which may be renewed twice, adding up to a total maximum crediting period of 60 years. 1st April 2008- 31st March 2028	376,605 tCO2/year (sum of 6 projects), 30 year crediting period
ECOLOGIES				
Type of ecosystem	Grassland (degraded forest lands)	Grassland (degraded forest lands)	Grassland (degraded forest lands)	Cropland, grasslands, bushlands
Area covered	Kibaranyeki site: 206.6 ha	227.1 ha	1649 ha	11540.4 ha (all 6 projects)

Project description	<p>The purpose of the proposed activity is to reforest environmentally sensitive lands in the catchment areas of the Tana River within the Aberdate and Mt. Kenya Reserve Forests. The proposed activity adds to sustainable development because it: (1) requires that communities in the area form community associations (CAs) and develop forest management plans; (2) offers income generation opportunities for CA members to plant and tend the seedlings during the first two years; and (3) additional revenue will be generated from the sale of carbon, which will be managed by the Green Belt Movement, in exchange, the GBM will introduce income generating activities (partly by harvesting non-wood products) and financial incentives to sustain community bursaries.</p>	<p>The main purpose of the project is to restore a natural forest ecosystem and its biodiversity in the regions using a mix of fast, medium and slow growing indigenous species. The proposed activity adds to sustainable development because it: (1) requires that communities in the area form community associations (CAs) and develop forest management plans; (2) offers income generation opportunities for CA members to plant and tend the seedlings during the first two years; and (3) additional revenue will be generated from the sale of carbon, which will be managed by the Green Belt Movement. In exchange, the GBM will introduce income generating activities (partly by harvesting non-wood products) and financial incentives to sustain community bursaries.</p>	<p>The main purpose of the project is to restore a natural forest ecosystem and its biodiversity in the regions using a mix of fast, medium and slow growing indigenous species. The proposed activity adds to sustainable development because it: (1) requires that communities in the area form community associations (CAs) and develop forest management plans; (2) offers income generation opportunities for CA members to plant and tend the seedlings during the first two years; and (3) additional revenue will be generated from the sale of carbon, which will be managed by the Green Belt Movement. In exchange, the GBM will introduce income generating activities (partly by harvesting non-wood products) and financial incentives to sustain community bursaries.</p>	<p>Since its inception in 1999 TIST participants, organised into over 8,900 TIST Small Groups, have planted over 10 million trees on their own and community lands. GhG sequestration is creating a potential long-term income stream and developing sustainable environments and livelihoods. TIST in Kenya began in 2004 and has grown to nearly 50,000 TIST participants in over 6,700 Small Groups. As a grass roots initiative, Small Groups are provided with a structural network of training and communications that allows them to build on their own internal strengths and develop best practices. Small Groups benefit from a new income source; the sale of carbon credits that result from the sequestration of carbon from the atmosphere in the biomass of the trees and soil. These credits are expected to be approved under the Voluntary Carbon Standard and, because they are tied to tree growth, will be sustainable. The carbon credits create a new 'virtual' cash crop for the participants who gain all the direct benefits of growing trees and also receive quarterly cash stipends based on the GhG benefits created by their efforts. The maturing trees and conservation farming will provide additional sustainable benefits that far exceed the carbon payments. These include improved crop yield, improved environment, and marketable commodities such as fruits, nuts, and honey. TIST utilises a high-tech approach to quantify the benefits and report the results in a method transparent to the whole world, which includes palm computers, GPS, and a dynamic 'real time' internet based database. (VCS 001 PDD, 2007)</p>
Predominant driver of deforestation and degradation	<p>Not specified. The area has been a grassland since 1987.</p>	NA	NA	<p>The continued need for wood and the expanding population has carried the deforestation into the protected forest, which has a negative effect on biodiversity.</p>

Activities involved	Reforestation of a degraded forest in the catchment area of the Tana River using a mix of fast, medium and slow growing indigenous species.	Reforestation	Associated activities include reforestation, to promote sustainable land use management; alternative household income sources, food security, water harvesting and civic education and advocacy.	Afforestation, Reforestation and Revegetation (ARR): Reforestation, nursery training to farmers, tree planting, selective use of tree products, attempts to improve food security, provide social and health training.
Co-benefits claimed	Social: alternative household income sources, food security, and civic education and advocacy; Income generation opportunities for tree planters. Environmental: water harvesting and improved ecosystem services.	Social: alternative household income sources, food security, and civic education and advocacy; Income generation opportunities for tree planters. Environmental: water harvesting and improved ecosystem services	Social: "...paid labour, purchase of seedlings from community managed nurseries, increased supply of non-wood forest products in the medium to long term including deadwood, animal fodder, and medicinal plants for local utilisation". (http://cdm.unfccc.int/filestorage/5/H/2/5H2VLI89413SFPXUQGCJBNE7K6OWYA/PDD_Kirimara-Kithithina_ver.05?t=c3p8bWJpcnpxfDC1PGLu2JmarC6ZyGFBrs3J)	Social: alternative income, direct revenues from carbon credits, transfer of environmental technology. Environmental: soil erosion reduction, sustainable fuelwood source, biodiversity, improved air quality.
Challenges	NA	NA	NA	According to a recent report, long term sustainability of TIST projects is dependent on the carbon market for afforestation/reforestation credits. Apart from these there are natural risks like drought, pestilence and fire that need constant mitigation. (https://s3.amazonaws.com/CCBA/Projects/TIST_Program_in_Kenya_CCB-003/TIST_KE_PD-CCB-003a_PD_Text_120824.pdf)

KENYA

GENERAL INFORMATION

Project Name	Enosupukia Forest Carbon Project, Kenya	Kasigau Corridor REDD Project - Rukinga Sanctuary, Kenya	Kasigau Corridor REDD Project - The Community Ranches, Kenya	Forest Again Kakamega Forest Project, Kenya	Mbirikani Carbon, Community and Biodiversity Project (REDD project), Kenya
Location	(Mau Forest Complex) Narok, Kenya	Taita Taveta District, Kenya	Taita Taveta District, Kenya	Kakamega Forest, Western Province, Kenya	African savannas near Amboseli National Park, Southern Kenya
Status	Implementation in 2009; Current status unknown.	Operational from 2005 to 2035	Implementation phase in 2010; Operational from 2011 to 2039	Operational from 2009 to 2049	Implementation since 2010 (activities ongoing, baselines study carried in 2011, currently awaiting crediting by VCS and CCB).

Certifications	Claims VCS but was not found in the VCS registry	Certified VCS and CCB Standards Gold Level	Certified VCS and CCB Standards Gold Level	Certified CCB Standard Gold Level	Applied for VCS and CCB standards
Contact	info@enviroaccounts.com	info@wildlifeworks.com	info@wildlifeworks.com	NA	Kathleen H. Fitzgerald, Director, Land Conservation Nairobi, Kenya kfitzgerald@awfke.org Tel: 253 729 406222
ACTORS					
Developer	Greenbelt Movement International	Wildlife Works, Inc.	Wildlife Works, Inc.	Eco2librium (USA-based carbon project consulting and developer company)	African Wildlife Foundation (UK-based conservation INGO)
Funding agencies	Clinton Climate Foundation	Wildlife Works, Inc.	Wildlife Works, Inc.	Hyundai Carbon Fund, USAID	African Wildlife Foundation, Royal Netherlands Embassy
Other Organisations	Narok County Council, Ministry of Environment and Mineral Resources was involved in the feasibility study and baseline survey, Environmental Accounting Services (main consultant).	Rukinga Ranching Company, CalCarbon Ltd (technical support)	CalCarbon Ltd (technical support)	Kenya Forest Service (KFS), the National Museum of Kenya (NMK), Kakamega Environmental Education Programme (KEEP), Moi University - School of Natural Resource Management (MOI), Masinde Muliro University of Science and Technology (MMU), BIOTA-East Africa (BIOTA), Asia e University (AU), Valongi Women's Group (VA), and Ilhoro Community Forest Association (CFA). Rainforest Alliance was the validator.	Mbirikani Group Ranch, Maasai Land Preservation Trust (supporters), Camco (technical partner).
Local Community	NA	Local Taita and Kamba peoples, with a small minority of other tribes. They are cattle herders.	Local Taita and Kamba peoples, with a small minority of other tribes. They are cattle herders.	Muileshi Community Forest Association	15,000 people living on the Mbirikani Group Ranch. 4,500 members of Maasai pastoralists who own and run the Chyulu Hills National Park which borders this ranch.
FINANCE					
Funding Scheme	Clinton Climate Foundation	Market: Credits were sold as pre-issuance to Nedbank with payment milestones at CCB validation and VCS verification (http://www.iisd.org/pdf/2010/12_REDDEII_Nairobi_KasigauCorridor.pdf)	Market: selling of certified VERs	Hyundai Carbon Fund and USAID funded the project start-up in 2009. Selling credits since 2009 in the VCM.	Funded by AWF to start-up, looking for investors, donors, and credit buyers

Financial costs	NA	NA	NA	Hyundai: \$35,000 USD; USAID: \$70,000 USD	NA
Emission reduction	a baseline survey was done to determine the changes in carbon stocks (and greenhouse gas removal) over the next 60 years. (estimates NA)	251,432 tCO2/year	1'614,959 tCO2/year	11,000 tons of CO2 per year	NA
ECOLOGIES					
Ecosystem	Closed-canopy forest ecosystem	Dryland forest	Dryland forest	rainforest	lava forest, closed wood forest, open woodland and cloud forest
Area	1400 hectares	30,166 ha	169,741 ha	473 ha	20,000+ ha
Project description	The main aim of the proposed project has been to develop and implement a forest carbon project in Enoosupukia Forest Trust Land, 'which will help alleviate poverty and adapt and mitigate against climate change in the region'. Being the largest closed-canopy forest ecosystem and an important water catchment area 'it provides critical ecological services to the country such as regulating river flow, maintaining ground water, purifying water, regulating microclimates and conserving biodiversity. It proposes to provide local communities with periodic revenue through the sale of carbon credits and will make the region more resilient to climate change'. (http://www.greenbeltmovement.org/sites/default/files/2010_annual_report.pdf)	WWC's first project at Rukinga, Kenya, has been operating since 2005 protecting local wildlife and forests. The aim of this project is to bring the benefits of direct carbon financing to surrounding communities, while simultaneously addressing alternative livelihoods. Human-wildlife conflict has been a problem in the past, as local agents are reliant on flora and fauna as a means for subsistence. The Rukinga project directly addresses such sources of conflict in a holistic, sustainable approach. An additional goal is to secure a contiguous wildlife migration corridor between Tsavo East and West National Parks. (https://vcsprojectdatabase2.apx.com/myModule/Interactive.asp?Tab=Projects&a=2&i=562&lat=-3%2E5915&lon=38%2E79761&bp=1)	This project builds on Wildlife Works' first REDD project (Phase I, Rukinga Ranch) which has been protecting forests, flora and fauna since 2006. The aim of this new, larger project is to bring the benefits of direct carbon financing to surrounding communities, while simultaneously addressing alternative livelihoods and protecting vital flora and fauna. Human-wildlife conflict has been a problem in the past, as local agents are directly reliant on the environment as a means for subsistence. This Phase II project directly addresses such sources of conflict in a holistic, sustainable approach, and on a large scale. This Phase II project is classified by VCS as a mega-project, as it is estimated to reduce over 1 million tonnes of CO2-e per year.' (https://vcsprojectdatabase2.apx.com/myModule/Interactive.asp?Tab=Projects&a=2&i=612&lat=-3%2E944264&lon=38%2E773234&bp=1)	'Reforestation projects like Forest Again are important because carbon dioxide is immediately taken out of the atmosphere as trees grow, which many experts say is necessary ... Reforestation projects create valuable habitat that is declining worldwide and preserve unique and threatened biodiversity. Reforestation projects, especially in Africa, also provide the opportunity to create business enterprises and employment in much needed areas... [This project] mitigates climate change through the sequestration of carbon dioxide in growing African rainforests. In doing so it provides opportunities for some of the poorest people in the world and restores habitat for some of the most unique and threatened biodiversity' (http://www.climate-standards.org/projects/files/kenya0409/Forest_Again_PDD.pdf)	'Less than 3% of Kenya is forested. The Mbirikani community is dependent upon the forest and the rangelands for their livelihoods. Mbirikani contains lava, dryland and cloud forest, which provides important refuge to wildlife... Given the national and local importance of Mbirikani's forest, AWF embarked on a regional and local carbon offset programme with the community. The Mbirikani REDD project has been designed to deliver positive climate change impacts by avoiding forest degradation and deforestation, while delivering numerous other livelihood and ecosystem benefits to the community. The Mbirikani forest is threatened by conversion and change of use; logging for firewood, building materials and rungus (a Maasai weapon); and charcoal production. AWF is working with partners, including the Mbirikani Group Ranch and the Maasailand Preservation Trust, to mitigate the threat to the forest through alternative livelihood programmes...' (http://www.awf.org/documents/climatechange/Mbirikani_Brochure_web_version.pdf)

Predominant driver of deforestation and degradation	Not specified except that what was formerly a 4,000-hectare closed canopy forest had been cleared more than 15 years ago and now lay bare which enormously impacted the local communities who were heavily dependent on the forest for subsistence agriculture.	The primary driver of deforestation is conversion of forest to cropland for annual crops, typically maize, as evidenced by the substantial conversion to maize in the Reference Area during the Reference Period. The primary agents of deforestation are a growing population of local Taita and Kamba people living in the Reference Area.	The primary driver of deforestation is conversion of forest to cropland for annual crops, typically maize, as evidenced by the substantial conversion to maize in the Reference Area during the Reference Period. The primary agents of deforestation are a growing population of local Taita and Kamba people living in the Reference Area.	Fuelwood harvesting, charcoal production, cattle grazing	Increasing population and settlement, increased demand for local timber to satisfy needs for building materials, fuel and charcoal for cooking, and medicinal products. Local timber is also harvested for sale outside of Mbirikani. In addition, trees are being cut for woodcarvings that supply tourism markets, and for rungus, a traditional Maasai weapon. Prolonged drought, overgrazing, lack of water resources, poorly planned development, sub-division of land, and habitat fragmentation has posed the greatest threats to Mbirikani's local environment.
Activities involved	Reforestation with local endemic species; rehabilitation of degraded water catchments.	Reforestation, organic tree nurseries, introduction of cash crops of jojoba as alternative livelihood, forest and biodiversity monitoring, ecotourism, school construction and bursary scheme.	Reforestation, organic tree nurseries, introduction of cash crops of jojoba as alternative livelihood, forest and biodiversity monitoring, ecotourism, school construction and bursary scheme.	Includes production of seedlings, planting of trees, and long-term maintenance of reforested sites.	'Activities include: protect more than 20,000 hectares of forest from further unplanned, mosaic deforestation and forest degradation; prevent future greenhouse gas emissions from deforestation and forest degradation; promote and develop systems for sustainable forest product utilisation with forest-dependent communities; develop alternative livelihoods with forest-dependent communities; build local capacity and understanding of REDD mechanisms; develop systems to facilitate replication in other locations based on the successful application of these methods; sell carbon credits to benefit the community and support the conservation of the forest'. (http://www.awf.org/documents/climatechange/Mbirikani_Brochure_web_version.pdf) [fuel-efficient cookers, improved rangelands, enhanced income from livestock, tree planting, sustainable charcoal, reforestation]
Co-benefits claimed	Social: Enhanced resilience to climate variability and change; increase of yields and median income per family five-fold; civic and environmental education; strengthening community relations. Environmental: rehabilitating degraded water catchment area.	Social: employment opportunities, alternative income, school construction and bursary scheme; Environmental: conserving endangered wildlife.	Social: employment opportunities, alternative income, school construction and bursary scheme; Environmental: conserving endangered wildlife.	Creating jobs and business opportunities for local communities which include seedling distribution, on-farm tree commercialization, and eco-tourism.	The project hopes to benefit all stakeholders/parties who must assume an active role in preventing deforestation; curbing future greenhouse gas emissions from forest degradation, and developing alternative energy and enterprise activities for forest-dependent communities are some of the proposed benefits.

Challenges	NA	NA	Na	NA	NA
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KENYA

GENERAL INFORMATION

Project name	Mikoko Pamoja Carbon project, Kenya	Mpango wa Kudumu Project, Kenya	Dakatcha Woodland Project, Kenya	Tree Flights Kenya Planting Project, Kenya	Sustainable Agriculture in a Changing Climate (SACC) project, Kenya	ESCONET Great Rift Valley Reforestation Project, Kenya
Project name	Gazi Bay, Southern Kenya	Subukia constituency (Rift Valley province) Kenya	Dakatcha (North of Mombasa) Kenya	Bore, (near Malindi) Kenya	Nyando, Kenya	Kenya
Status	Implementation since 2009; Expects to become operational in 2012	Implementation since 2012; Expects to become operational in 2013	Planning stage since 2008	Operational since 2008	Operational since 2010	NA
Certifications	Applied for Plan Vivo Standard	Applied for Plan Vivo Standard	NA	None specified (apparently selling without certification)	Certified by CCB and VCS	NA
Contact	Coordinator: Noel N Mbaru Mobile No:- (+254)0723131086 Email: nmbaru@yahoo.com	Telephone: +254 20 3871523/ 3873057 Email: tmaina@greenbeltmovement.org. bkimani@greenbeltmovement.org	http://www.climatestewards.net/canada-en/aboutus/contactus.html	admin@treeflights.com or 07773001132 (UK)	Gary McGurk, Asstt. Country Director Programs gmcgurk@care.or.ke	NA
ACTORS						
Project developer	Tidal Forest of Kenya Team (a collaboration between Earthwatch International, Kenya Marien and Fisheries Research Institute and the Gazi Community.	Green Belt Movement (INGO based in Kenya)	Climate Stewards is an initiative of A Rocha International (Christian Conservation INGO). The implementer is A Rocha Kenya.	Tree Flights (UK-based NGO)	CARE International	Escarpment Environment Conservation Network (ESCONET) /Carbon Footprint Ltd.

Funding agencies	Aviva (UK insurance company)	Waterloo Foundation (UK) has funded the start-up and initial project development	A Rocha International	UK-based air charter companies and travel agencies	CARE International	NA
Other organisations	Edinburgh Napier University, Bangor University, Edinburgh University (PhD and MSc student researchers)	Green Belt Movement (GBM)	NA	NA (apparently not validated by third party)	CAMCO, ICRAF	NA
Local people	People living at Gazi and Makongeni villages (around 2700 peoples). The Community Forest Association and the Gazi Mangrove Management committee will represent local communities.	Local rural communities living adjacent to forests in the Subukia constituency (about 200,000 people live in Subukia)	Communities surrounding the area who use the woods for charcoal	Farmer communities living in Bore	NA	Local Maasai communities
FINANCE						
Funding scheme	Aviva, Earthwatch Institute, Edinburgh Napier, Bangor and Edinburgh Universities, Kenya Marine and Fisheries Research Institute	Waterloo Foundation has funded the start-up and initial project development, aims to sell credits in the VCM	Funded by A Rocha Int.	Donations and selling of carbon credits (over-the-counter). Also sponsored by UK-based air charter companies and travel agencies.	CARE International	NA
Financial costs	NA	NA	NA	Sold at £10 per tree and £200 per acre of conserved land	NA	NA
Emission reductions	2023 tCO2/year (USD \$12,138/year)	NA	6 million tonnes CO2 expected	Total credits sold: 250	Proposes 3,203,314 tCO ₂ e over a period of 35 years	NA
ECOLOGIES						
Ecosystem	Mangroves	Fertile Volcanic area, dryland	Dry East African forest	Coastal; sparse trees (this includes open taiga, open lichen woodland, forest tundra, steppe and savannah)	river basin	Kikuyu escarpment forest

Area	117 ha.	55,170 ha	38,000 ha	40.46 ha	132,629 ha.	NA
Project description	'The overall objective of this project, called 'Mikoko Pamoja', is to channel finance to the protection and restoration of mangrove ecosystems in Kenya through the provision of and payment for quantifiable ecosystem services. The proposed project aims to protect, enhance and expand an area of mangrove forest at Gazi in southern Kenya, in the expectation that this will inform mangrove conservation throughout Kenya... Through the initial forest protection and planting activities we will increase the quality and extent of the current forest and maintain and enhance carbon sinks. These biological and physical impacts will raise income for the Gazi Bay community group... will reduce coastal erosion and enhance the ecological value of the forest...' (http://www.planvivo.org/wp-content/uploads/gazi_pin_PlanVivo_Kenya.pdf)	'The main objectives of the project are to improve livelihoods and reduce poverty in the subukia constituency of Kenya, by protecting and restoring the local environment, so as to improve environmental services, including carbon sequestration, promote food security and water harvesting initiatives. This will be achieved using the Plan Vivo payments for ecosystem services model' (http://www.planvivo.org/wp-content/uploads/PIN-GBM-Mpango-wa-Kudumu-Project.pdf)	'The Dakatcha Woodland is an area of 38,000ha of dry East African forest north of Mombasa. It is home to rare birds found nowhere else in the world. Recently it has become the target of charcoal burners who are cutting down the large trees to make charcoal for cooking fires in the towns. Substantial areas have been cut down in the last two years. From a climate change point of view this is a double whammy because the charcoal-making process is a very inefficient one which produces a lot of CO ₂ for relatively little charcoal. At the same time we are losing the potential to absorb CO ₂ as these trees grow. The project aims to reduce the deforestation by educating local people about the benefits of the forest and conservation agriculture as well as providing them with alternative incomes such as bee-keeping and woodlots.' (http://www.climatestewards.net/canada-en/projects/kenya.html)	It is a small scale initiative that works with small-scale farmers to remove carbon from the atmosphere. 'Kenya's Coastal Forest is under enormous threat from charcoal burning, conversion of land to agriculture and settlement expansion. You can help us do something concrete about this by sponsoring the planting of cashew trees or by protecting existing forest'. (http://treeflights.com/)	The project is designed to deliver positive climate change impacts by promoting afforestation and reforestation, crop diversification. These activities will contribute to carbon storage and hence less carbon will be released to the atmosphere in the form of carbon dioxide. In addition to this climate benefit, the project delivers livelihood benefits to the local communities living around the river basin	It is a new tree planting programme that aims to offset carbon dioxide emissions, reduce poverty, provide wildlife habitats, support local communities, and create a brighter future for orphans and people living with HIV/AIDS. It aims to 'effectively mobilise and build 'the local communities' capacity to rehabilitate, conserve and protect the natural ecosystems and promote the sustainable maintenance of a clean, healthy environment'.

Predominant Driver of Deforestation and Forest Degradation	The main current pressure on the forests comes from collection of wood for timber and firewood, although past clear felling for industrial uses has left large areas denuded of trees.	Illegal logging, fire outbreaks and illegal charcoal burning - these activities are associated with the need for alternative livelihoods for the rural communities.	It has been the target of charcoal burners who are cutting down the large trees to make charcoal for cooking fires in the towns.	Small-scale charcoal burning, conversion of land to agriculture and settlement expansion. Fuelwood gathering, and grazing also mentioned	Over grazing, intensive agriculture. Soil erosion, climate change are some of the natural drivers.	Deliberate destruction of the escarpment environment through charcoal burning, logging for timber and fuel wood, ring-debarking of medicinal trees and overgrazing has resulted to virtual depletion of forest vegetation cover
Activities	Mangrove restoration and conservation. Delineation and mapping of protected areas and monitoring and evaluating their development. Reforestation of degraded areas and maintenance of nurseries. Determination of the carbon storage capacity of the Gazi mangroves using remote sensing. Planting of Casuarina plantations and other fast growing trees to subsidize mangrove wood. Expansion of community funds for financing community projects, such as new school buildings, installation of electricity in the school, scholarships, agricultural diversification.	Facilitate the local community in 'establishing and management of agroforestry systems including boundary planting, interspacing trees with crops and establishing woodlots on private farms'. Coordinate and support the community in maintaining trees they have planted. Support in planting and maintaining trees in the state owned forests. (http://www.planvivo.org/wp-content/uploads/PIN-GBM-Mpango-wa-Kudumu-Project.pdf)	Education and alternative incomes ('educating local people about the benefits of the forest and conservation agriculture as well as providing them with alternative incomes such as bee-keeping and woodlots').	Planting of cashew trees and sponsoring the protection of forested land	Boundary planting, woodlots, reduction in livestock numbers, switch from goats to sheep, introduction of zero grazing, reduce soil erosion through contour planting,	Reforestation

Co-benefits claimed	<p>Environmental: enhance the quality and extent of degraded mangrove cover, reduce coastal erosion, enhanced ecological value of the forest</p> <p>Social: raise incomes, new job opportunities in the form of assistants for nurseries, outplanting, and overall project policing.</p>	<p>Social: the project will raise income for the community through the sale of Plan Vivo Certificates. Other intended benefits include: poverty alleviation; contributing to food security; increase diversity of non-farm tree crops and tree cover to buffer farmers against the effects of climate change; improve nutrition for target communities; increase access to other tree products such as medicinal herbs; and shade.</p>	Social: alternative incomes	<p>Social: income and food from cashew-nuts, local jobs at the tree nurseries, 50p per tree donation are invested in the primary school.</p> <p>Environmental: water harvesting.</p>	<p>Social/environmental: enhanced agricultural production, forest product production and income from selling these products.</p>	<p>Social: Poverty reduction through job creation; water/food security, ecotourism,</p> <p>Environmental: conservation of water catchment areas in turn creating water/food security; conservation of wildlife habitat; bee keeping, and general beautification of the environment.</p>
Challenges	NA	<p>Implementation barriers as reported include: lack of adequate funds; capacity building and awareness of targeted beneficiaries; organisational, cultural and social barriers.</p>	NA	NA	NA	NA

GHANA							
GENERAL INFORMATION							
Project name	Carbon Credit Project (CCP), Ghana	Nkoranza District Sustainable Charcoal, Ghana	Nyankamba CREMA Site in the Northern Region, Ghana	Pro-Poor REDD+ Pilot in Wassa Amenfi West District, Ghana	Climate-friendly Cocoa, Ghana	Ghana Cocoa-Carbon Initiative (GCCI)	Climate Stewards' Carbon Project in Ghana
Location	Throughout the southern part of Ghana. Badu and Dumasua were selected for case studies, located in the Brong Ahafo Region, Ghana.	Nkoranza District of Brong-Ahafo Region, Ghana	Northern Region, Ghana: Nyankamba Escarpment, Gonja Traditional Area	Wassa Amenfi West District, Ghana	Bia-Juabeso, Ghana's Western region	Juabeso (Western Region) Asunafo North Municipal / Asutifi (Brong Ahafo Region) Assin North (Central Region)	Kumasi in central Ghana and Damongo in the drier North of the country
Status	Implementation stage (2012)	Planning stage (Feasibility Study) in 2010; current status unknown	Planning (pre-feasibility study, Project Idea Note) in 2010, Feasibility assessments in progress.	Implementation from 2009 to 2013 (credit sale is not projected)	Implementation since 2011	Planning stage (2009-2010); current status unknown	Implementation (2012)
Certifications	NA	Aiming for CDM registration	Aiming for VCS and CCB	NA	NA	Aiming for CCB and VCS	NA
Contact	Email: info@vision2050forestry.com/edbossman@btopenworld.com ; Telephone: +233 (0) 3220 94956/+233 (0) 201144366 ; Contact Person: Dr. Ed Bossman Yeboah	E-mail: rasare@forest-trends.org ; Contact Person: Rebecca Asare	E-mail: rasare@forest-trends.org ; Contact Person: Rebecca Asare	NA	Contact person: Stuart Singleton-White, +44 (0)7710-403092	Contact: info@ncrc-ghana.org	Contact E-mail: ghana@arocha.org Contact Telephone: +233 0302 222417
ACTORS							
Developers	Innitially Vision 2050 Forestry (NGO based in Ghana), but taken over by Environmental and Rural Development (ERD) Ghana Limited.	Nature Conservation Research Centre	Nature Conservation Research Centre	IUCN	Rainforest Alliance	Nature Conservation Research Centre (NCRC)	Climate Stewards is an initiative of A Rocha International (Christian Conservation INGO). The implementer is A Rocha Kenya.

Funding agencies	Environmental Development Consultants Ltd (EDC), a UK-based environmental consultancy firm.	NA	NA	DANIDA	NA	The Rockefeller Foundation, NORAD, Gordon and Betty Moore Foundation.	A Rocha International
Other organisations	TREES Forest Carbon Consulting (to determine emission reductions), Environmental Development Consultants Ltd (EDC) (technical support).	Katoomba Incubator	IDESAM (Brazil), Oxford University, Forest Trends	NA	NA	The Katoomba group, Forest Trends	NA
Local communities	Project beneficiaries comprise of active farmers and absentees, who plant or pay to plant trees in their lands.	NA	Nyamba CREMA (Community Resource Management Area)	'The Wassa Amenfi West District has a population of 186,000 including native people and large numbers of immigrants from other parts of Ghana [...] a complex and rich social mosaic'. (IUCN 2012)	36 cocoa-farming communities	Local communities (particularly cocoa farmers) in proximity of the Kokrosua Forest Reserve, Bia National Park, forest reserves in Asunafo, Asutifi, and Assin North	Local communities in Kumasi and Damongo
FINANCE							
Funding scheme	Funds-based but aims to access the VCM. US\$750,000 from EDC UK and ERD Ghana Ltd; income generated plantations belonging to Vision 2050 Forestry, registration fees paid by farmers, small donations.	Aiming to sell in the compliance carbon market (through CDM registration)	Current funding NA. Carbon finance would be combined with NTFP and other revenues to finance improved protection, fire control, conservation incentives, and investments in food security and income generation. (Katoomba Group) http://www.katoombagroup.org/incubator/project.php?id=220 "Forest Trends: US\$100,000; Contribution sought from the BioCarbon Fund: US\$ 3.57 million through 2017" (Project Idea Note)	Financed by DANIDA	NA	Funded by the Rockefeller Foundation, NORAD, Gordon and Betty Moore Foundation. Aims to develop REDD projects to sell in the voluntary carbon market.	Climate Stewards funds the materials, management, and training for community and student participation, with best practice rewarded. The involvement of the wider community will ensure the success of the project as families, churches and businesses see the social, economic and environmental value of tree-planting. (Climate Stewards)
Financial costs	USD \$750,000+	NA	Preparation costs US\$0.46 million; US\$3.21 million operating costs through 2017	NA	NA	NA	NA

Emissions reduced	231 to 274 tCO2e /ha, expected to increase to approximately 320 tCO2e/ha (TREES FCC, 2010).	Up to 2 tonnes of CO2 for every ton of charcoal produced, depending on the methodologies employed. (Katoomba Group) http://www.katoombagroup.org/incubator/project.php?id=214	3.8 million tCO2 of REDD credits (Katoomba Group) http://www.katoombagroup.org/incubator/project.php?id=220	NA	NA	NA	150,000 tCO2 (no period stated)
ECOLOGIES							
Ecosystem	Semi-deciduous forest fragments in the midst of Savanna shrubs and grasses.	Forest-Savanah belt	Savannah/ Woodland transition zone	Semi-deciduous and tropical forest	Rain Forest	Degraded forest, active and abandoned cocoa farms	Forest
Area	NA	NA	240,000 ha	NA	27,000 hectares	NA	NA

<p>Project description</p> <p>'The dominant narratives associated with the project are deeply rooted in forest degradation, and its detrimental effects on agricultural productivity and livelihood security. Forest degradation is popularly blamed on wildfire....The routine use of fire in slash and burn agriculture, charcoal production, group hunting and palm wine tapping is also blamed for the high incidence of wildfire and the resulting degradation of forest habitats. Forest degradation is also linked directly to rapid population growth which increases the demand for farming lands, timber, fuelwood and human settlements' (TREES FCC, 2010)..Vision 2050 Forestry, sees carbon emissions from forest degradation as primarily responsible for climate change, hence the justification to reclaim degraded forests by planting trees for carbon sequestration and ultimately climate change mitigation. Carbon sequestration through reforestation will ultimately improve agroecological conditions for sustained food production. The project also derives some justification from high levels of rural poverty and youth unemployment that facilitate rural-urban migration. Tree planting for carbon credits is touted by Vision 2050 Forestry.for sustainable income-. venture and pro-poor policy intervention. Based on a booming carbon market scenario, the dominant narrative further holds that carbon revenue can serve as enough incentive not just to curb rural-urban migration of</p>	<p>Pilot a district wide effort to ensure more efficient production methods, which can reduce carbon emissions by reducing the amount of wood required to produce charcoal. Specifically, this will mean introducing more efficient earthen mounds and/or kilns... •The Incubator is researching the applicability of CDM-approved small scale methodologies for biomass conversion efficiency and methane flaring, assessing kiln options, and estimating project benefits and costs. •A project implementation note and project proposal will be developed. •As the project is implemented in cooperation with charcoal producer associations, traditional authorities, and other stakeholders, woodlots (A/R) and improved forest management practices will be promoted to increase sustainability' (Katoomba Group) http://www.katoombagroup.org/incubator/project.php?id=214</p>	<p>Goals: To conserve wildlife and to promote sustainable alternative land uses for the local communities, such as sustainable farming and charcoal production, forest management, sustainable harvesting of non-timber forest products (NTFPs) such as shea nuts, and ecotourism. REDD funding would pay for conservation activities including environmental education, social and health programs, etc. This site has been included as a priority site in Ghana's REDD Readiness Preparation Proposal (RPP), creating conditions for potential finance as well as potential to shape REDD policy in Ghana' (Katoomba Group) http://www.katoombagroup.org/incubator/project.php?id=220</p>	<p>IUCN/ DANIDA's pro-poor project helps develop and promote a pro-poor approach as part of the building of Ghana's REDD+ national strategy. IUCN's pro-poor project in Ghana has focused on the strengthening of links between local and national REDD activities. Currently a thorough assessment is needed of the social and cultural implications of REDD-plus and the potential risks it poses to the livelihoods of forest communities and other vulnerable groups. The project contributes to the development of a strategy for the consultation of stakeholders and the transfer of knowledge. The pro-poor project is contributing to the discussion on land and tree tenure in Ghana. The lack of clarity of land and tree rights can make it difficult for local people to share in benefits. The IUCN pro-poor project has organised a number of consultations and is analysing options for the incorporation of customary law and administration into legal options for benefit sharing. The transfer of knowledge and information to grassroots organisations and communities has priority, and the establishment of a community level pro-poor REDD-plus multi-stakeholder platform is planned. (IUCN 2012).</p>	<p>'Some of the world's last remaining forest elephants and leopards roam what is left of Ghana's highly degraded and fragmented forests. And while the need to protect these dwindling areas is undeniable, the relationship between local communities and the forests is fraught with challenges. Ghanaian citizens lack even the most basic ownership rights when it comes to their forests. As a result, farmers are often compelled to remove the trees that dot their land -- a preemptive measure to avoid possible incursion on their farms by government-authorized loggers. Mindful of these major conservation disincentives, the Rainforest Alliance set out to find a way to work with local farmers to restore forest cover, improve livelihoods and mitigate climate change. The natural starting point: cocoa, a crop that forms the basis of many local incomes...' (Rainforest Alliance) http://www.rainforest-alliance.org/publications/newsletter/ghana-cocoa-conservation</p>	<p>The Cocoa Carbon Initiative (CCI) represents an effort to alter the economics of deforestation and forest degradation from cocoa expansion by providing cocoa farmers and cocoa farming communities the opportunity to benefit from carbon finance. In partnership with key farmer associations, NGOs, and institutions operating within the cocoa and forestry sectors, the CCI aims to Reduce Emissions from Deforestation and Forest Degradation (REDD) and increase carbon stocks on farm within the larger cocoa landscape (REDD+) through tree planting and other activities so as to provide economic, agronomic, and ecological benefits that can help to bolster the sustainability of the cocoa sector while improving livelihoods and conserving the country's forests'. (Cocoa-Carbon Initiative in Ghana)</p>	<p>'In recent years Ghana's forests have been devastated. Since 1990 the country has lost more than a quarter of its forest cover. Trees are cut down for the timber export trade or to increase the area available for cocoa cultivation or simply for firewood. Our pioneer project in Ghana invests in many small-scale tree-planting programmes through A Rocha's network of school and university groups and rural communities. Planting is currently in the area of Kumasi in central Ghana and Damongo in the drier North of the country. A mix of native trees, including mahogany and kapok, will be planted on designated sites to suit local needs. Local people design and manage the planting and aftercare from beginning to end. Despite the heavy flooding during the 2007 rainy season all the plantings survived.' (Climate Stewards) www.climatestewards.net</p>
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<p>Predominant driver of deforestation and degradation</p> <p>Forest degradation is popularly blamed on wildfire. The routine use of fire in slash and burn agriculture, charcoal production, group hunting and palm wine tapping is also blamed for the high incidence of wildfire in the transition zone and the resulting degradation of forest habitats. Loss of wind breaks due to forest degradation enhances wind speed which increases the rate of spread of wildfire. Forest degradation is also linked directly to rapid population growth which increases the demand for farming lands, timber, fuelwood and human settlements, as well as youth unemployment and migration (TREES Forest Carbon Consulting, 2010).</p>	<p>'Charcoal production, primarily for urban markets, is a significant driver of deforestation and forest degradation in Ghana. A REDD strategy focusing on this deforestation driver would aim to establish sustainable charcoal production practices, including local regulation of production substitution of woodlots for fuelwood from natural forest and improved efficiency in charcoal production.' (The Redd desk) http://www.theredddesk.org/sites/default/files/doc_2612.pdf</p>	<p>'The primary activities causing deforestation and degradation in the project area include:</p> <ul style="list-style-type: none"> • Conversion of forested lands to annual agriculture use (slash and burn agriculture) • Cutting of forested lands for the production of fuel wood and charcoal for external markets. • Damage to forest cover by pastoralists seeking fodder for their livestock during the dry season. <p>These are to some extent driven by residents of the area, but also by settlers and resource users from other regions, with authorization of local authorities. Forest areas are not legally protected and only generate income for local communities through clearing and unsustainable extraction. In the absence of a clear economic incentive that enables forest conservation, this area is likely to experience intensifying pressure to clear forests for agriculture and extract fuelwood and charcoal for urban consumers. Historic deforestation data is not available for this site, but a conservative 1% p.a. rate (1/2 of Ghana's national average) was considered for preliminary assessment purposes.' (Project Idea Note)</p>	<p>Lack of clarity around the rights over trees and carbon are a challenge in Ghana and this is partly a result of conflicts between statutory and customary laws on land administration. Landowners do not automatically hold ownership over the trees that grow on their lands. This means that people are often not incentivised to protect trees because the government can give concessions to contractors to come in and cut them. Because such operations often cause damage to crops, people regularly try to destroy trees before they grow to maturity.'</p>	<p>'Ghanaian citizens lack even the most basic ownership rights when it comes to their forests; the government owns all native trees. As a result, farmers are often compelled to remove the trees that dot their land -- a preemptive measure to avoid possible incursion on their farms by government-authorized loggers.' (Rainforest Alliance) http://www.rainforest-alliance.org/publications/newsletter/ghana-cocoa-conservation</p>	<p>'...cocoa cultivation has played a major role in the conversion of Ghana's forests and the adoption of low to no shade cocoa farming systems...[deforestation caused by cocoa expansion] has also occurred in an effort to benefit from the fertility of forest soils (forest rent), and to avoid the need for fertilizers in already cultivated areas... [low average yields] due to poor farming practices and continual degradation of the agro-ecosystem... promotes further cocoa expansion and the cultivation of "larger" farms in order to ensure an adequate harvest' (Cocoa-Carbon Initiative in Ghana)</p>	<p>Trees are cut down for the timber export trade, or to increase the area available for cocoa cultivation, or simply for firewood' (Climate Stewards)</p>
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Activities	<p>Agri-silviculture agroforestry (before tree canopies close completely), woodlot plantations after two years when tree canopies have closed completely. Active farmers are trained to plant trees and to cultivate food crops in the first two years before tree canopy closes. Tree canopies gradually outcompete food crops after two years and tree stands are thereafter managed as woodlot plantations. Woodfire prevention.</p> <p>Small Scale Energy Efficiency and Methane Destruction through improved kiln options for charcoal production. Aforestation and reforestation, improved forest management practices will be promoted.</p>	<p>'The project uses a Community Resource Management Area (CREMA) structure under the Wildlife Division of the Forestry Commission to devolve authority for land management to communities.. [it promotes] sustainable alternative land uses for the local communities, such as sustainable farming and charcoal production, forest management, sustainable harvesting of non-timber forest products (NTFPs) such as shea nuts, and ecotourism (Katoomba Group)'http://www.katoombagroup.org/incubator/project.php?id=220</p>	<p>Consultations, social studies, analysing options for the incorporation of customary law and administration into legal options for benefit sharing, transfer of knowledge and information to grassroots organisations and communities, establishment of a community level pro-poor REDD-plus multi-stakeholder platform is planned.</p>	<p>Sustainable agricultural methods; Rainforest Alliance certified products will access premium prices and markets; organising producers to gain a stronger political voice, better bargaining power and greater marketing ability and for planning and coordinating local conservation and production activities; training workshops on beekeeping and hive construction.</p>	<p>Reforestation of cocoa farms (promote shaded cocoa); improved farming practices (agroforestry); intensification (rather than expansion) of cocoa farms.</p>	<p>Reforestation: small-scale tree planting by A Rocha network of school and university groups and local communities with participation of local peoples.</p>	
Co-benefits claimed	<p>Environmental: Wildfire prevention; social: job creation and poverty alleviation, particularly for migrant farm labourers who are regularly hired to weed around tree seedlings and prune mature trees.</p>	<p>NA</p>	<p>Social: support social and health programmes Environement: conservation</p>	<p>Social: poverty reduction, sustainable development</p>	<p>Social: improved income; alternative income (beekeeping) Environmental: biodiversity</p>	<p>Social: Poverty reduction. Environmental: biodiversity conservation</p>	<p>Social and economic (not specified)</p>
Challenges	<p>NA</p>	<p>NA</p>	<p>NA</p>	<p>Tree tenure is usually held by the State</p>	<p>Tree tenures held by the State incentivize deforestation</p>	<p>Governance issues: tree tenure is 'the main constraint ... since it is acts as a strong disincentive to farmers to keep trees, especially timber trees', tree tenure fosters 'perverse incentives' to deforest as farmers prefer to cut the trees to avoid risk of damage of farms by loggers. (http://www.theredddesk.org/sites/default/files/doc_2352.pdf)</p>	<p>NA</p>

SIERRA LEONE

GENERAL INFORMATION

Project name	Western Area Peninsula Forest Reserve (WAPFoR) REDD+ project, Sierra Leone	Gola Forest National Park REDD project, Sierra Leone	Enviro-Carbon Access SL, Ltd. Forest Carbon Concessions, Sierra Leone	Kono District Avoided Deforestation Project (Eco-Tech Timber), Sierra Leone	Bumbuna Upper Watershed, Sierra Leone	Sierra Leone Mutual Forestation (REDD+ project), Sierra Leone	Sierra Gold Corporation Carbon Credit Projects (SL1 and SL2), Sierra Leone
Location	Western Area Peninsula Forest Reserve, Sierra Leone (around Freetown)	Gola Forest National Park, Sierra Leone	Trying to develop projects in Outamba Kilimi NP and the Kangari Hills forest reserve, a total of four Sierra Leone's National Parks and Forest reserves (excluding Gola and WAPFoR), Sierra Leone	Kono District and other land-use management leases in Sierra Leone.	Loma National Park community reserves surrounding hydro electric reservoir of the Bumbuna Upper Watershed, Northern Province	Freetown, Bo, Kenema and Makenie	Two unspecified sites in Tonkolili district
Status	A conservation project has been implemented since 2009; a REDD+ feasibility assessment was carried in 2011; the conservation project will terminate in 2014	Planning 2011-2012 (Applying for VCS and CCB certification in 2012, expects to become operational in 2013)	Implementation from 2010 to 2013 (according to concession agreement)	Planning (concession agreements have been approved); current status unclear	Planning stage in 2009; current status unknown	NA	Planning (project idea note) in 2009 for SL2 and SL1; SL2 was expected to be registered under the CDM in 2010. On 2011, the project was still looking for additional funds and addressing technical issues. Apparently, the issues were resolved in 2012 and is now CDM awaiting approval. As of May 2012, it was not registered under the CDM
Certifications	Aims for VCS certification	Aims for VCS, CCB and Gold Standard certifications	Aims for VCS certification	NA	NA	Aims for CDM and/or VCS	Aims for CDM registration
Contact	Jochen.Moninger@welthungerhilfe.de	E-mail: cepf@conservation.org	NA	Julius Cuffie: julius@ecotechtimber.com	John Mason: info@ncrc-ghana.org	NA	Doug Evans: dougevans@sierragoldcorp.com

ACTORS

Project developers	Forestry Division of Ministry of Agriculture, Forestry & Food Security (MAFF), Welthungerhilfe and National Forum for Environmental Action in Sierra Leone (ENFORAC)	Gola Forest Programme (GFP) partners: Forestry Division of the Ministry of Agriculture, Forestry, and Food Security, Conservation Society of Sierra Leone and the Royal Society for the Protection of Birds	Enviro-Carbon Access (SL) Ltd (a company run by a Dutchman and the son of Sierra Leone's Minister of the Interior)	Eco-Tech timber (American company)	Bumbuna Hydro Authority, Ministry of Energy (?)	Emission Securities LLC	Sierra Gold Corporation
Funding agencies	The conservation project is jointly funded by the European Commission (80%) and Welthungerhilfe (20%).	Consultancy funded by the Critical Ecosystem Partnership Fund (CEPF), a joint initiative of l'Agence Francaise de Developpement, Conservation International, the GEF, Govt. of Japan, John D. and Catherine T. MaxArthur Foundation, World Bank (http://www.cepf.net/Documents/APO_GuineanForests_March2011.pdf)	Aiming for funds from the World Bank's FCPF (fieldwork data)	NA	NA	NA	So far Sierra Gold Corporation is funding the development of the project, but donors/investors are sought through the UNFCCC CDM Bazaar (advertising site for CDM project opportunities) and through the services of a consultancy agency
Other organisations	Environment Division of the Ministry of Land, Country Planning & Environment (MLCPE), Österreichische Bundesforste AG (OBf) Consulting	Winrock International led the consulting. University Of Sierra Leone and some government departments carried out soil sampling and mapping	Ministry of Agriculture, Forestry and Food Security, the Ministry of lands, Country Planning and Environment of the Government of the Republic of Sierra Leone, the Sierra Leone Environmental Protection Agency and the Enviro Carbon Access SL.	NA	Katoomba Group/Forest Trends	Emission Securities LLC	Bio-Carbon Solutions International Inc (consultant on technical and fundraising services)
Local communities	1,5 million people live in and around Freetown, including 50,000 inhabitants of the 30 villages scattered around the peninsula forest in Western Area Rural District Council	3 local governments, 7 chiefdoms, and the landowners around the Gola Forest Reserves (RSPB report)	NA	NA	NA	Freetown, Bo, Kenema and Makenie	NA
FINANCE							
Financial scheme	The conservation project has total funding of 3.1 million Euros, contributed by the EC (80%) and Welthungerhilfe (20%)	Funded by CEPF initially, but expects to sell at the voluntary carbon market	Expects to sell in the Voluntary Carbon Market (current funding unknown)	NA	Bambuna Hydroelectric Project Trust Fund (capitalized through a percentage of hydropower sales), aims to sell in the voluntary carbon market	Aims to sell credits in the voluntary and/or compliance carbon markets	Project planning is funded by Sierra Gold Corp and two unidentified third party investors. Aims to sell at the compliance (CDM) market. If carbon results unprofitable, the company plans to harvest the trees for timber.

Financial costs	\$0.8 million for start-up (2012) and an average of around \$0.2 per annum from 2013 until 2031	NA	NA	NA	NA	NA	NA
Emission reductions	57,000 to 124,000 tCO2e (OBF 2011)	NA, but expect to generate \$1 million usd/year for sale of credits (http://www.bozone.com/index.php/features/show_article/42764)	\$30 million-45 million (USD?) in 3 years (Concession Agreement, appendix A)	Kono District Deforestation Project: 22 million carbon credits, with an annual average of 1,2 m tCO2e. Potential revenue is estimated at over \$8,5 million per year	Anticipated USD \$1 million/year revenue	NA	NA, but expecting 'eight(8) figure proceeds'.
ECOLOGIES							
Ecosystem	Humid forest	Rainforest	Forest	Tropical rainforest	Tropical rainforest	NA	Forest and grasslands
Area	17,928 ha.	71,070 ha	NA	75,000 ha (initially), plans to reach 150,000 ha by 2012	35,000 ha	375,000 ha	Project SL1: 16,996 ha (42,000 acres); Project SL2: 28,328 ha (70,000 acres)

<p>'The project will be one of the first kinds (sic) in Sierra Leone. The project is special as it is located in natural forest close to the capital, providing important environmental services to the urban/peri-urban population (estimated at roughly 2 million people) in Freetown. If the forest disappears, it will have disastrous effects for the growing urban population: flooding, landslides, loss of drinking water, less shade, increased temperatures and loss of recreational opportunities can be expected. The project will introduce a number of innovations, being located in an urban/peri-urban environment, including exploring ways to check urban expansion, develop potentials for PES schemes (water, carbon), use for recreation, ecotourism and environmental education etc' (OBf 2011)</p>	<p>The Guinean Forest of West Africa covers only 15% of its original forest cover and is seriously affected by fragmentation in addition to unsustainable human activities impacting the forest and its biodiversity... This project has been instrumental towards the implementation of a sustainable financing mechanism for this National Park through carbon trading and hence supporting pilot work to establish sustainable financing mechanisms for Sierra Leone's Protected Areas' (RSPB report, 2011). At the opening of the Park, Sierra Leone's President, Ernest Koroma, stated 'carbon financing "is a win-win for the environment and for economic development...By protecting our forest we can generate substantial income while retaining all of the natural benefits that a living, breathing forest provides" ... (http://www.csmonitor.com/World/Africa/Africa-Monitor/2011/1209/Africa-Rising-Carbon-credits-save-Sierra-Leone-s-Gola-Rainforest)</p>	<p>One of the main objectives of this agreement is the generation of funds for the Ministry from the sale of Voluntary Carbon Credits to compensate and motivate local communities/people (including Paramount Chiefs) into voluntarily stopping illegal logging. The prevention of illegal logging is essential to obtain carbon credits which are based on avoided deforestation. By offering the local communities and Paramount Chiefs alternative funds to voluntarily combat illegal logging, this program aims to be one of the best weapons against the Sierra Leone's forests' continued suffering from severe deforestation. The Ministry has agreed to grant concession rights to Enviro Carbon Access SL on the terms and conditions hereinafter described. This contract specifically aims to realise the Carbon Credit potential of the Forestry of Sierra Leone, from any funding it may derive internationally. It will form stage one of the overall potential that Enviro Carbon Access SL can assist Sierra Leone in achieving' (Agreement Preamble 1.4-8) [Apparently, the agreement allows Enviro Carbon to 'exploit' carbon anywhere in Sierra Leone's forests. 1% of their revenues goes to the MAFFS, and 5% to a community trustfund]. (Concession Agreement www.oaklandinstitute.org/sites/oakland...)</p>	<p>'... [rain]forests are being destroyed since the value of the land is perceived as only the value of its timber by shortsighted governments, unethical multi-national logging companies, and uninformed landowners. Revenues will be generated by the sale of carbon credits created through the company's REDD and Afforestation/Reforestation projects. Additionally, sustainably sourced wood and non-wood forest products will be produced for global market consumption. Our economic goal is not merely to create shareholder value, but to create sustainable shareholder value. We will only be able to reach this goal by managing our forests properly so that will provide products in perpetuity' (Leach). 'EcoTech Timber's Kono District Avoided Deforestation project is a project that aims to protect the natural rainforests against any threat of deforestation and degradation, including commercial logging, mining, and agricultural encroachment. Conversion of forests through slash-and-burn agricultural techniques... are the main contributors to deforestation in Africa. Further, wood harvesting for the production of wood fuel is a major contributor as well... Part of EcoTech Timber's mitigation plan for the cessation of wood fuel harvesting is by the production of green charcoal, and biochar, which will be produced from wood waste materials from the Company's activities, such as wood wastes from SFM activities, sustainable wood sources from the Company's plantations, and materials from agricultural wastes. The use of biochar will increase carbon sequestration, reduce deforestation by providing sustainable wood fuel and also improve agricultural yields.' (http://www.ecotechtimber.com/red)</p>	<p>The Bumbuna Hydroelectric project is a major hydropower project with an innovative component designed to include long-term funding for watershed management activities through a trust fund capitalized through a percentage of hydropower sales. Project(s) could potentially encompass reforestation (AR) activities in the upstream watershed as well as avoided deforestation (REDD) activities in and around the Loma National Park, with an interesting combination leveraging multiple sources of ecosystem finance (water+carbon). The existing programs and fund management structure (trust) provide a potentially attractive platform to implement REDD and AR activities in a transparent manner, though additionality issues need to be carefully addressed' (http://www.forest-trends.org/documents/files/doc_2612.pdf)</p>	<p>NA</p>	<p>'Because of our farming land interests, we were approached to consider entering into a Carbon Credit Project. This kind of project is environmentally friendly in addition to creating ongoing work for the local villagers and provides funds to manage the project. Our next step was for Sierra Gold Corporation to approach the landowners, paramount chiefs and local council/government this past summer and we successfully secured their support for the project. In order to proceed forward with the project, Sierra approached 2 third parties who provided project funding for a participatory interest and we have now reached the stage of project submittal for approval. Should this project be approved as expected, the carbon credits available for the project can be forward sold and we are advised the proceeds of such a transaction would result in eight(8) figure proceeds. These proceeds will allow Sierra Gold Corporation to develop and complete a 20,000 acre Kiri project as well as supporting all of Sierra Golds other activities.' (http://www.sierragoldcorp.com/letter_from_the_ceo.php)</p>
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<p>Predominant drivers of deforestation and degradation</p> <p>'Main agents [of deforestation] are urban developers, land speculators, construction and mining companies, illegal loggers and fuelwood producers, stone miners and fish smokers. The most serious driver of deforestation is urban land expansion and encroachment into the reserve. Shifting cultivation, marihuana farming, stone quarrying, illegal logging, fuelwood extraction, and charcoal production are of secondary importance as deforestation drivers and mainly contribute to degradation... Important underlying causes for DD [Deforestation and Degradation] in the reserve are said to be urban expansion, population growth, rural-urban migration, poor governance, corruption, lack of law enforcement, conflicting mandates and weak inter-sectoral cooperation and last but not least widespread poverty' (OBf 2011)</p>	<p>'...the hotspot is under pressure from forest clearance, mining, road construction and commercial bushmeat trade. Further, as expected after a period of civil strife, there is relatively low capacity in the field of natural resource management, either within government or civil society' (www.cepf.net/Documents/A PO...)</p>	<p>Illegal logging</p>	<p>'commercial logging, mining, and agricultural encroachment. Conversion of forests through slash-and-burn agricultural techniques... are the main contributors to deforestation in Africa. Further, wood harvesting for the production of wood fuel is a major contributor as well.' (http://www.ecotechtimber.com/red)</p>	<p>NA</p> <p>NA</p> <p>NA</p>
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Activities	<p>Greatest forest protection against urban encroachment (providing an expanded force of forest guards, with houses and posts); alternative livelihoods for communities living near the reserve (vegetable gardening, bakeries, improved fish smoking ovens, honey collecting, agricultural training, improved seed, fertilizer programmes, agroforestry extension, woodfuel tree nurseries) (Leach). Plus, sustainable energy supply and energy-saving technologies, raising environmental awareness and sensitization of the general public, specially the youth (OBf 2011).</p>	<p>Community-based conservation</p>	<p>Avoided deforestation (activities unspecified)</p>	<p>Production of green charcoal, and biochar, which will be produced from wood waste materials from the Company's activities (http://www.ecotechtimber.com/red_d)</p>	<p>Aforestation, Reforestation, Avoided deforestation</p>	<p>'Native and exotic plantings: less than 50% native' (Aims to be a REDD+ project)</p>	<p>Conservation and afforestation. Kira tree nursery for reforestation. (But looks more like a commercial forest plantation)</p>
Co-benefits claimed	<p>Social: attractiveness tourism industry; employment opportunities; alternative livelihoods (OBf 2011) Environmental: provision of ecosystem services (clean drinking water and protecting urban areas from flash floods and landslides); and biodiversity conservation (chimpanzees, endemic toad); conservation of landscape.</p>	<p>Environmental: Biodiversity conservation (is actually the main interest, carbon credit sales is seen as a financing mechanism)</p>	<p>; Social: (according to the agreement) 5% of revenue shall be put in a trust to fund 'roads, schools, hospitals, etc.' as part of the corporate social responsibilities of Enviro-Carbon Access Ltd Environment: Conservation</p>	<p>Social: 150 locally sourced jobs; sustainable income; full education and training in new career fields, sustainable access to medicinal plants and traditional treatments; protection of natural resources for benefit of future generations; development of ancillary community projects; improved infrastructure (Leach); Ecotourism and recreation (http://www.ecotechtimber.com/red_d). Environmental: sustainable wood fuel; improved agricultural yields; habitat protection (biodiversity); protecting ecosystem services (ie. watershed protection; climate stabilization) (http://www.ecotechtimber.com/red_d)</p>	<p>NA</p>	<p>NA</p>	<p>None. The interest of the company is purely economical. The trees will be harvested and sold for timber if carbon market is unprofitable</p>
Challenges	<p>N/A</p>	<p>Land tenure complexity in community forest areas surrounding the Park.</p>	<p>NA</p>	<p>NA</p>	<p>Additionality</p>	<p>NA</p>	<p>Funding and technical issues</p>

ZAMBIA			
GENERAL INFORMATION			
Project name	Oversy Reforestation Project, Zambia	Sustainability of the Miombo Ecoregion through the Enlargement and Improved Management of Protected Areas, Zambia	Miombo Ecoregion REDD+ Feasibility Studies, Zambia
Location	Unimodal Eastern Plateau, Chipata, Eastern province of Zambia (100-150° South, 300-330° east longitude)	West Lunga National Park and new protected areas surrounding it, located in the southern part of the Mwinilunga District of North Western Zambia	Miombo Ecoregion in Namibia, Zambia and Mozambique
Status	Planning phase (apparently) as of 2011	Planning as of 2010 (The project was implemented from 2008-2010 as a conservation project. A feasibility study was carried in 2010 for REDD+ in the area. No operational forest carbon project is found in the area as a result of this initiative yet)	Planning (Feasibility and policy situation/needs study) in 2011
Standard certification	NA	NA	NA
Contact	Contact: +44(0)208-144-4340. E-mail: support@oversy.com	http://www.bmu.de/english/contact/content/4126.php	profor@worldbank.org
ACTORS			
Project developer	Oversy (NGO)	Zambia Wildlife Authority through United Nations Development Programme (UNDP)	World Bank Programme on Forests (PROFOR)
Funding agency	NA	International Climate Initiative (Germany)	World Bank Programme on Forests (PROFOR)
Other organisations	NA	Munich Advisors Group, Envirotrade and UNIQUE forestry and land use carried out the feasibility study for a REDD+ project in the West Lunga National Park and surrounding areas	International Institute on Environment and Development (IIED) (consultant)
Local communities	Agricultural workers and farmers in the districts of Chipata, Katete, Chadiza and Lundazi	NA	100 million people living in the miombo region

FINANCE			
Funding scheme	Aiming for the voluntary carbon market	International Climate Initiative (Germany)	Study funded by World Bank's PROFOR, the project aims to sell carbon credits in the VC market or under a future REDD+ mechanism
Financial costs	NA	€ 2'060,704	NA
Emissions reduced	12,100 tCO2/year	13 million tCO2 (no time period set)	Namibia: 3,3 million tCO2/year or USD\$ 8 million; Mozambique: 9,8 million tCO2/year or USD\$25 million; Zambia: 26,8 million tCO2 or USD\$99 million, if deforestation is eliminated
ECOLOGIES			
Ecosystem	Uncultivable, fallow or marginal croplands'. The original ecosystem is miombo woodlands (subtropical woodland savanna)	Evergreen dry forest	Miombo woodlands
Area covered	7'000,000 ha	600,000 ha	270 million to 360 million ha
Project narrative	'In order to take part in solving the problem of global warming, reforestation and forest preservation carbon offset projects are launched. Forest-based carbon offset projects not only fight climate change by sequestering carbon dioxide emissions from the atmosphere in trees and soil, but also add many co-benefits for the community and local wildlife. Jobs are being created, wildlife habitats are preserved and even expanded, a lot of attention is dedicated to biodiversity protection, as well as improving the quality of local environment (sic)'	'Zambia has very large tracts of wild areas with low human population densities that, with sound management, could provide important refugia for flora and fauna that are rapidly being extirpated elsewhere in the Miombo Ecoregion (a WWF Global 200 Ecoregion). The government is committed to the conservation of biodiversity, including species and ecosystem functions. Protected areas provide the primary vehicle for the management of biodiversity, and government policies emphasise the need to improve the management of protected areas to achieve this aim. The objective of the project is to set up the West Lunga National Park and new protected areas surrounding it. This will protect forest carbon reservoirs covering an area of 600,000 hectares and conserve the constituent biodiversity. The project will also allow Zambia to adapt to the expected vulnerabilities from climate change regarding the dry evergreen forests by underwriting the costs of putting in place the necessary infrastructure to manage the fire risks. The expected result of the project will be the additional sequestration of almost 13 million tonnes of carbon, an increase in the capacity to adapt to the effects of climate change with specific emphasis on forest fires, an increase in management effectiveness at the Zambia Wildlife Authority and improved socio-economic conditions for the local communities involved in the management of protected areas.' (http://www.bmu-klimaschutzinitiative.de/en/projects?p=1&d=199)	'For two reasons the Miombo woodlands of eastern and southern Africa provide an important opportunity for developing pro-poor payments for avoided deforestation and degradation. Firstly, there is strong scientific evidence that the loss of woodlands is associated with a decline in livelihoods. Secondly, there are two decades of successful community-based natural resource management (CBNRM) in the Miombo region. This gives the region a ready-built institutional basis on which payments for reduced emissions for deforestation and degradation (REDD+) can be established as well as generating wider lessons for their implementation. Poverty is deeply entrenched across southern Africa and to be successful REDD+ will have to be pro-poor...'

Predominant drivers of deforestation and degradation	Illegal charcoal burning; farming	NA	'...Inherently infertile soils, disabling forestry policy, general marginalization of the forestry sector, decades of low economic growth and political insecurity have pushed people towards rapid exploitation of woodlands... The main reasons for land use change in the Miombo are the conversion of woodland for agriculture and settlement, the extraction of fuel wood to meet household, urban and sometimes industrial purposes, and the extraction of hardwood timber. These changes occur because conversion provides higher short-term benefits to households and communities than conservation. [Also]... the development of roads, economic growth points and investments in mining often attract migrants to previously unsettled or sparsely settled areas'.
Activities	Developing tree nurseries, propagating seeds, transplanting them to reforestation areas, nurturing the new trees, protection and policing of existing forest and new plantations	Establishing new protected areas: 'set up the West Lunga National Park and new protected areas surrounding it'	Avoided deforestation
Co-benefits claimed	Social: income generation by 160 jobs created (aiming to create 200 in total) in operation and maintenance of plants with higher-than-average income in the area; involvement of women in project activities; training in arboreal and equipment matters; all equipment purchased locally Environmental: helps prevent soil erosion; combats illegal charcoal burning; soil fertilization by dropping leaves; saving 200,000 ha of forest from total deforestation in the next 10 years; rare species protection; natural habitat restoration	Social: an increase in management effectiveness at the Zambia Wildlife Authority (governance); improved socio-economic conditions for the local communities involved in the management of protected areas Environmental: protection of biodiversity; an increase in the capacity to adapt to the effects of climate change with specific emphasis on forest fires	Social: poverty alleviation. The study affirms that to be successful, REDD+ in the miombo ecoregion would have to be pro-poor and it establishes a series of conditions to achieve this
Challenges	NA	NA	Clarify and devolve to farmers and communities rights to land, resources and carbon; put in place legal and policy frameworks that value and reward forest land uses other than agriculture; farmers must be compensated for the full range of uses they lose to carbon projects (agriculture, timber, charcoal); adapt activities to local contexts; address governance challenges at all scales.