

REPUBLIC OF RWANDA

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CARBON POLICY, IMPLEMENTATION STRATEGY
AND GUIDELINES

Kigali, May 2010

ACRONYMS

CBD	Convention on Biodiversity
CBFF	Congo Basin Forest Fund
CCD	Convention to Combat Desertification
CCX	Chicago Carbon Exchange
CDCF	Community Development Carbon Fund
CDM	Clean Development Mechanism
CEPGL	Economic Community of Great Lakes Countries
CER	Certified Emission Reduction
CFM	Community Forest Management
CPF	Carbon Prototype Fund
DNA	Designated National Authority
EDPRS	Economic Development and Poverty Reduction Strategy
ELECTROGAZ	Etablissement de Production, de Transport et de Distribution d'Electricité, d'Eau et de Gaz
ET	Emission Trading
ETS	European Trading Scheme
FCPF	Forest Carbon Partnership Fund
GEF	Global Environment Facility
GOR	Government of Rwanda
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
MDG	Millennium Development Goals
MEA	Multilateral Environment Agreement
MINAGRI	Ministry of Agriculture and Animal Resources
MINECOFIN	Ministry of Finance and Economic Planning
MINICOM	Ministry of Commerce, Investment Promotion, Tourism and Cooperatives
MININFRA	Ministry of Infrastructure
MINIRENA	Ministry of Environment and Natural Resources recently split into two Ministries:
	1. Forestry and Mining and
	2. Lands and Environment
NAMAs	Nationally Appropriate Mitigation Activities
NAPA/PANA	National Adaptation Programmes of Action to Climate Change
NCCCC	National Climate Change Coordinating Committee
NCDMA	National CDM Authority
NICFI	Norway's International Climate and Forest Initiative
OTC	Over The Counter market
PCN	Project Concept Note
PDD	Project Design Document

PES	Payment for Environmental Services
PIN	Project Idea Notes
PRSP	Poverty Reduction Strategic Paper
RCIF	Rwanda Carbon Investment Fund
RDB	Rwanda Development Board
REDD+	Reduced Emissions from Deforestation and forest Degradation (+ includes management of forests)
REMA	Rwanda Environment Management Agency
SSC	Small Scale CDM-projects
SSCOO	Small Scale Carbon Offset Office
tCERs	Temporary Certified Emission Reductions
UN-REDD	United Nations REDD Initiative.
UNFCCC	United Nations Convention Framework on Climate Change
UNDP	United Nations Development Programme
UNEP/PNUE	United Nations Environmental Programme
VCM	Voluntary Carbon Market
VER	Verified Emission Reductions
WMO	World Meteorological Organization

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SECTION 1: NATIONAL CARBON POLICY

1.0 ISSUE

The Government of Rwanda has sought to develop a national carbon policy, strategy and guidelines as a tool to guide her response to the global climate change challenge under her UNFCCC obligations while at the same time taking advantage of the developmental opportunities brought forth by international policy on climate change that created the carbon market.

The main carbon opportunities for Rwanda largely lie under the Clean Development Mechanism (CDM) of the Kyoto Protocol and the Voluntary Carbon Market, with the latter being less regulated and easier to access, but with much lower volume and carbon price. The Copenhagen Accord has ushered in additional opportunities such as the Reduced Emissions from Deforestation and Forest Degradation (REDD) though its scope, modalities and procedures are still being negotiated.

2.0 CONTEXT

Rwanda is signatory to the United Nations Framework Convention on Climate Change that obligates members to reduce and stabilize atmospheric concentration of greenhouse gases (GHG), with a long term objective of stabilizing at levels consistent with the four pillars of the Convention, that is:

- (i) levels that would prevent dangerous human-caused interference with the climate system
- (ii) within a timeframe to allow ecosystems to adapt naturally to climate change
- (iii) within a time frame to ensure that food production is NOT threatened and
- (iv) to enable economic development to proceed in a sustainable manner.

The members' obligations under the Convention are underpinned by the established principles of "equity and common but differentiated responsibilities and respective capabilities".

Rwanda has one of the lowest emissions of GHG in the world, and with the sizeable sequestration in the forestry sector, the country is currently considered a net sink of GHGs. However, given the fast economic growth rate, high energy demand and income elasticity, a business as usual scenario projects Rwanda to become a net emitter of GHGs by the end of 2011 and the net emissions are estimated to approach 4 million tonnes of carbon dioxide equivalent (CO₂e) by 2020.

Rwanda is also signatory to and has ratified the Kyoto Protocol that created the regulated carbon market, that *inter alia*; developed country parties with emission reduction obligations have the option of meeting part of their obligations through emission credits acquired from developing countries consistent to the host country's sustainable development criteria.

Concomitantly, Rwanda's Vision 2020 encapsulates the country's aspiration of becoming a middle income country by 2020, built on a development path away from subsistence agriculture towards a private sector driven knowledge-based economy, with high value agriculture, services, industry and business. This vision requires adequate infrastructure and energy supply both of which have carbon emission implications. This is a vision for low carbon economic growth with high carbon landscapes path for sustainable and clean environment. For example, the Country's new Energy Policy aims to move the economy towards more renewable energy and more efficient utilization of the traditional energy sources such as biomass.

The dearth of resources will make the low carbon path long and arduous; because there is a cost associated with shifting from the business as usual path – *ipso facto*. Rwanda seeks to explore all the avenues to ease the burden of this transformation. Taking advantage of the global carbon market is one of the alternatives to finance or supplement the financing of a green development path.

The carbon policy is a part of Rwanda's effort to fully implement the Convention. Appendix I shows the evolution of the global effort and national concordance to create and implement the Convention.

3.0 VISION, STATEMENT, OBJECTIVES AND PRINCIPLES

3.1 Vision

TO CONSOLIDATE RWANDA'S SUSTAINABLE DEVELOPMENT VISION BY TRANSFORMING THE COUNTRY'S DEVELOPMENT PROFILE INTO A LOW CARBON AND SUSTAINABLE ENVIRONMENT ECONOMY.

3.2 Policy Statement

TO REDUCE GREENHOUSE GAS EMISSIONS AND THEIR RATE OF GROWTH FROM ALL SECTORS WHILE INCREASING CARBON SEQUESTRATION IN FORESTRY AND OTHER LAND-USE SECTORS WITH EMPHASIS ON MOBILIZING RESOURCES AND OPPORTUNITIES ARISING FROM INTERNATIONAL EFFORTS TO REDUCE EMISSIONS ESPECIALLY THOSE AGREEMENTS UNDER THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. THE POLICY SHALL PLACE PRIORITY ON ENHANCING THE CLIMATE CHANGE ADAPTATION AND RESILIENCE OF THE ECONOMY.

3.3 Objectives

The overall objective of the policy is to provide a framework for the Country to meet its obligations under the Framework Convention on Climate Change that contribute to the national aspiration for green growth economy and sustainable environment, while safeguarding the rights of all stakeholders to the accrued carbon benefits.

The specific objectives of the policy include:

- (i) the facilitation of diversification of development of energy resources to reduce the country's dependence on high carbon fossil fuels using the international carbon market,
- (ii) the provision of a framework for the reduction of emissions from energy, land-use and waste sectors and also for the conservation and enhancement of sinks via the carbon market.

3.4 Principles

Development of, and investment in the carbon sectors in Rwanda shall be based on the following principles:

- (i) The Carbon Policy reflects Rwanda's efforts to manage climate change in connection with her short, medium and long term development planning ambitions, with priority on mutually reinforcing mitigation and adaptation projects and/or programmes.

(ii) The Carbon Policy is guided by, and consistent with the principles of sustainable development as stipulated in Rwanda's Vision 2020, medium (MDG's) and short term (EDPRS) development planning frameworks.

(iii) The Carbon Policy is to provide a broad framework for the Country to achieve a green growth economy, based on national and foreign investments.

(iv) Local businesses, communities, public agencies should explore the opportunities offered by the international climate agreements to gain benefits accruing from the reduction of their carbon footprint and acquire sellable credits from such efforts.

(v) Involvement in the carbon market will be in line with the guiding socio-economic philosophy of private sector driven growth, with the Government providing a conducive and enabling environment.

(vi) Affected local communities shall be involved in the whole process from the conception of the green idea to the decisions about the use of the proceeds from the project or the program.

(vii) The proceeds from the carbon market shall be fairly and equitably distributed among stakeholders, with emphasis on maximizing benefits accruing to the affected communities.

(viii) Special emphasis must be observed to integrate gender issues and involve women and youth in the planning and implementation of carbon projects and/or programs.

(ix) Carbon policy must not adversely affect the Country's food security strategies.

(x) Investment in carbon projects and/or programs shall not conflict with the Country's ability to produce agricultural and forest products, neither should this activity play a significant role in driving up the price of the land and the products from land.

(xi) Carbon activities that significantly interfere with the flow of necessary goods and services from the sector shall plan and as much as possible provide for the alternative supply of such flows.

(xii) Public awareness, education and research shall be emphasized as essential for ensuring a successful clean energy and low carbon economy with high carbon landscapes.

4. ANALYSIS

4.1 Carbon Market Pathways

The carbon market is made of two main branches, the compliance market (regulated) and the non-compliance (voluntary) market. The voluntary market predates the former; it arose from the environmental movements of the 1970's and 80's that saw some individuals, private companies, organizations and institutions seeking to offset their carbon footprint by purchasing eligible carbon credits, both in developed and developing countries. The existing regulated market is a product of the Kyoto Protocol that initiated Emission Trading by Annex 1 countries, but it includes the CDM which is the main channel through which Rwanda can enter the carbon market.

The price of CERs will always depend on the demand for emission credits, which is affected by emission levels which in turn depend on the health of the global economy, especially that of Annex 1 countries. In the global economic downturn there has been a decline of 9 percent in emissions and this has partly contributed to the decline in spot and futures CER price. By the end of 2010 benchmark prices was about €13.09 on the European Climate Exchange while CERs closed at €11.52. In this analysis, an average real price of \$15 CER will be used to inform the carbon market potential in the country.

The regulated market will be extended via the Copenhagen Accord which will provide the mechanisms for continued implementation of the Kyoto Protocol after the first commitment period (2012). The Accord has broadened the market architecture and it extends the scope of eligible mitigation activities to more sectors and sub-sectors such as REDD. The Accord will also determine the extent to which the market will be used to complement the use of non-market mechanisms such as designated funds.

4.2 The Clean Development Mechanism (CDM)

The Clean Development Mechanism is one of the three flexible mechanisms of the Kyoto Protocol for reducing atmospheric emissions of greenhouse gases that contribute to global warming. The other two mechanisms which operate within and among developed country parties are the Emission Trading (ET) and Joint Implementation (JI).

The CDM allows developed countries (Annex I) to implement carbon sequestration and/or GHG emission reduction projects in developing

countries (non-Annex I) and generate certified emission reductions (CERs) that can be used to offset their emission reduction commitments under the Kyoto Protocol.

Eligible sectors for CDM project activities include renewable energy (e.g., wind, hydro, solar and biomass); energy efficiency improvement (e.g., improved cooking stoves); energy conservation (unplugging idle appliances and motion sensors for lighting), agro-industrial (e.g., bagasse cogeneration and sisal biogas); forestry (afforestation and reforestation); waste management (e.g., methane capture from municipal waste and livestock waste); and reduction in methane emissions from enteric fermentation in livestock. Such projects can be undertaken by project developers, who can be public-sector bodies, private-sector individuals or companies, utilities or non-governmental organizations (NGOs).

The CDM projects are proposed and developed using strict modalities and procedures to ensure that the generated carbon credits (CERs) are real and verifiable. The credits accrued from forestry are classified as temporary CERs (tCERs) that actually expire after the end of the commitment period for which they were attributed. The temporary nature of tCERs has contributed to their lower market price and ineligibility in some carbon markets such as the ETS. This status is under review with a view to make them fungible.

All credits are used to offset emissions in Annex 1 countries or sold by the project developer to potential buyers, thus generating a revenue stream. The CDM offers developed countries the opportunity to reduce emissions cost-effectively, since emission reductions can generally be achieved at lower cost in developing countries, while the developing country accrues some sustainable development benefits as well. The developing countries such as Rwanda can benefit from CDM in several ways including:

- Promote transfer of clean technologies and knowledge.
- Promote direct foreign investment in host countries.
- Reduce dependence on imported fossil fuels.
- Facilitate efficiency gains in critical sectors, such as energy production, distribution and consumption.

- Generate 'development dividends' associated with particular projects and project-types. Examples include the use of carbon-financed forestry to rehabilitate degraded lands; the provision of electricity to rural clinics and reduction in airborne and watercourse pollution.

According to the World Bank, the primary CDM market – the income earned by project developers – was worth \$7.4 billion in 2007. The secondary market – the income earned by market aggregators and brokers – was worth a further \$5.4 billion, with the total carbon market at \$66.5 billion. In 2008 the total CDM market is estimated to have exceeded \$20 billion, with total carbon market estimated at \$126 billion, rising to \$150 billion in 2009.

This large and rapidly expanding market for carbon offers considerable potential to augment the flow of Official Development Assistance (ODA), Global Environment Facility (GEF) funding and other revenue streams for Africa. Nevertheless, Africa has, to date not significantly benefited from the CDM. The region currently accounts for little more than 1% of worldwide CDM projects and 2% of the CERs expected by 2012. To promote CDM investment in this region one needs to understand the bottlenecks and design policies and strategies that facilitate more active involvement in the carbon market.

4.2.1 The Objectives of CDM:

The two main purposes of the CDM as stipulated in Article-12 of the Kyoto Protocol to the UNFCCC are:

- (i) To assist developing country Parties in achieving sustainable development, thereby contributing to the ultimate objective of the Convention, and
- (ii) To assist developed country Parties in achieving compliance with part of their quantified emission limitation and reduction commitments under Article-3.

4.2.2 The Architecture of CDM

The architecture of the mechanism is based on project approach, though there have been some recent developments that adopt Program of Activities (POA) approach that allows for consolidation of a suite of vintage projects to allow some flexibility in projects that do not

easily lie within the classical strict definition of a project under the CDM modalities and procedures.

CDM is designed as a part of sustainable development strategy allowing industrialized countries investing in 'clean' projects in developing countries also to gain emission credits. Typically it is cheaper to sequester or reduce emissions in the developing country than in the Annex 1 country. These credits are given in the form of *certified emission reductions* (CERs) which, like all the other Kyoto accounting units, are expressed in *tons of carbon dioxide equivalent* (CO₂e). The financing country can use these units to *offset* its own emissions of greenhouse gases during a given period, or sell them to another country. It can also bank them for use during a subsequent period. Since these investments are viewed in a positive light they also add to the reputations of project developers and investors.

The recipient country gains from an increase in investment in sustainable development - which may be from private or public sources. The host country or local project participants such as associated communities can also receive a share of the CERs which they can dispose of as they wish, either in the market or banking them. Countries that are fast growing will eventually be required to have emission reduction obligations and such credits can be applied towards meeting such anticipated limits.

4.2.3 The Scope of CDM

4.2.3.1 List of Greenhouse Gases (GHG)

The greenhouse gases to be covered in this Policy are those stipulated in the Kyoto Protocol, and as may be revised by future COP/MOP from time to time. Therefore provisional list under this policy shall include:

- (i) Carbon Dioxide (*CO₂*),
- (ii) Methane (*CH₄*),
- (iii) Nitrous Oxide (*N₂O*),
- (iv) Sulphur Hexafluoride (*SF₆*),
- (v) Hydrofluorocarbons (*HFCs*) and
- (vi) Perfluorocarbons (*PFCs*).

The list does NOT include the industrial gases *Chlorofluorocarbons* (CFCs) that are covered under the 1987 Montreal Protocol on Ozone Layer Depleting Substances.

4.2.3.2 List of Sectors

The Policy shall recognize the comprehensive list of sectoral scopes as adopted by CDM-Accreditation Panel, which is based on the list of sectors and sources contained in Annex A of the Kyoto Protocol. Scopes 1 to 9 are industrial sectors, 10 to 13 are sectors based on sources of GHG emissions and 14 to 15 are land-use based sources and sinks. This list (below) will be amended consonant with future amendments by the CDM Executive Board.

1. Energy industries (renewable - / non-renewable sources)
2. Energy distribution
3. Energy demand
4. Manufacturing industries
5. Chemical industry
6. Construction
7. Transport
8. Mining/Mineral production
9. Metal production
10. Fugitive emissions from fuels (solid, oil and gas)
11. Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride
12. Solvents use
13. Waste handling and disposal
14. Afforestation and reforestation
15. Agriculture (includes livestock)

4.2.4 The Functioning of CDM

The CDM is meant to work in a bottom-up approach; proceeding from individual proposals to approval by investor/donor and recipient governments to the issuance of the carbon credit, namely Certified Emission Reduction (CERs) certificate. In other words a CDM project has to follow a definite *CDM project cycle* as illustrated in Figure 1 below.

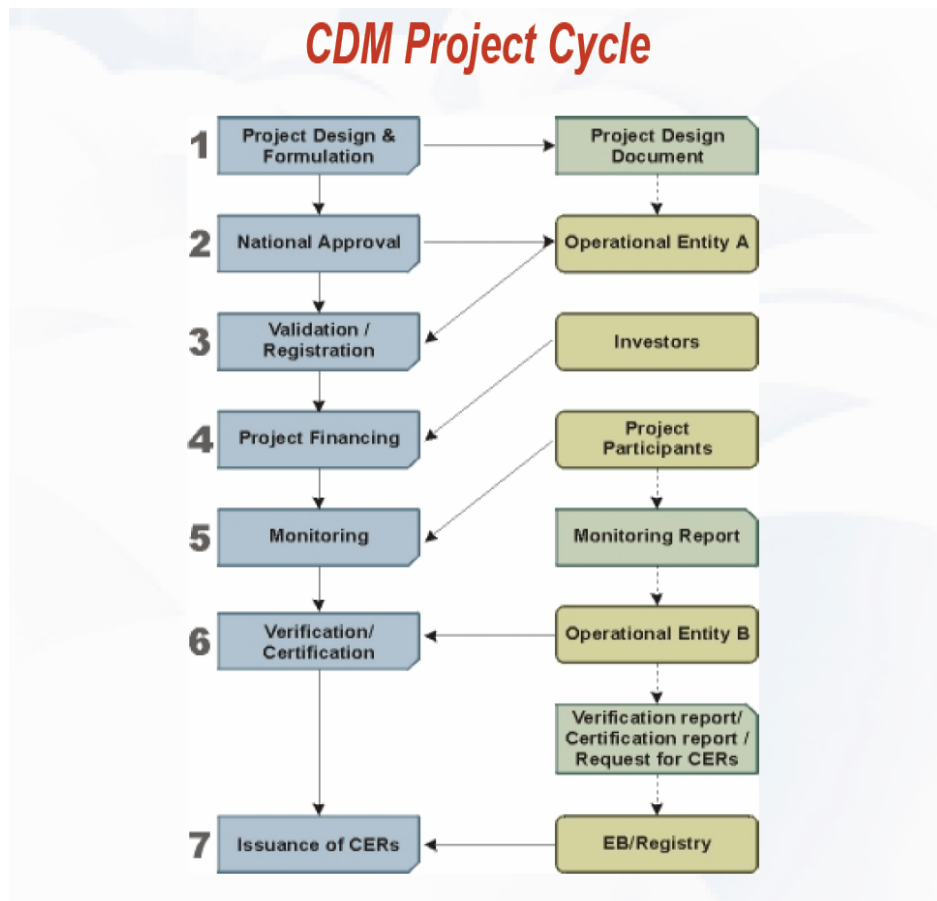


Figure 1: CDM Project Cycle from Conception to Issuance

The CDM is supervised by the Executive Board whose members are elected by the Conference of Parties (COP) with an eye on regional balance.

All projects must result in a net GHG reduction, as in the case of carbon sequestration via afforestation and reforestation, energy efficiency improvement or power generation from renewable energy. For a project to be CDM eligible, it must meet two additionality criteria, that is:

- (i) **Emission Additionality:** The project should lead to real, measurable and long term GHG reduction or sequestration. The additional GHG reductions are to be calculated with reference to a baseline emission profile.
- (ii) **Financial Additionality:** The procurement of CERs should not be from Official Development Assistance (ODA).

To ensure the additionality criteria, CDM projects are based on the concept of baselines which stipulate the emission profile in the absence of the project. As such, the project proposal must clearly and transparently describe methodology of determination of a baseline. It should conform to the following:

- (i) Baselines should be precise, transparent, comparable and workable;
- (ii) Should avoid over-estimation;
- (iii) The methodology for determination of a baseline should be homogeneous and reliable;
- (iv) Potential errors should be indicated;
- (v) System boundaries of baselines should be established;
- (vi) Interval between updates of baselines should be clearly described;
- (vii) Role of externalities should be brought out (social, economic and environmental);
- (viii) Should include historic emission data-sets wherever available;
- (ix) Lifetime of project cycle should be clearly mentioned;

The CDM Executive Board has instituted a provision for small-scale CDM projects (SSC) - renewable energy project activities with a maximum output capacity ≤ 15 MW, energy efficiency improvement project activities which reduce energy consumption, on the supply and/or demand side, by up to the equivalent of 15 GWh per year; and other project activities that reduce anthropogenic emissions by sources, and directly emit less than 15 kilotonnes of carbon dioxide equivalent annually, are eligible for fast track clearance under the SSC.

4.2.5 Sustainable Development Indicators

The modalities and procedures stipulate that the host country will determine and confirm whether a CDM project activity assists it in achieving sustainable development. The CDM projects should also be oriented towards improving the quality of life of the poor from

environmental standpoint. Rwanda will use the following aspects as part of the sustainability criteria for assessing CDM projects activities:

- (i) *Social well being*: The CDM project activity should lead to alleviation of poverty by generating additional employment, removal of social disparities and contribution to provision of basic amenities to people leading to improvement in quality of life of Rwandese.
- (ii) *Economic well being*: The CDM project activity should bring in additional investment consistent with the needs of the country.
- (iii) *Environmental well being*: The design and approval should consider the impact of the project on resource sustainability and degradation, if any, impact on bio-diversity, human health, and on pollution levels in general.
- (iv) *Technological well being*: The CDM project activity should lead to transfer and diffusion of appropriate environmentally safe technologies

4.2.6 Status of CDM and Voluntary Carbon Projects in Rwanda

Over the last 2 -3 years, a number of carbon offset projects have been under preparation in Rwanda (see Appendix II). These can be divided into CDM projects that will be approved through the UNFCCC system, and the rest are voluntary market carbon projects that yield Verified Emission Reductions (VERs) in leau of CERs. The latter tend to be smaller and usually carbon payments are lower and less guaranteed.

Of the projects in the pipeline, the most important carbon projects are in the electricity sector. In addition, there are two pioneering projects in the land use sector involving rehabilitation and reforestation. None of the projects have reached the registration stage.

4.3 Sectoral Analysis

In Rwanda, carbon credits can be generated from two major sectors; energy and land use. As shown in Figure 2 below, about half of the annual emissions come from the energy sector, with the rest from land use. The Carbon policy will essentially be intertwined with respective

policies in energy supply, distribution and demand; forestry and wild lands policy; agriculture, livestock and waste management policies.

The energy sector emissions in 2002 were estimated to approach 1.2 million tonnes of CO₂e, thus providing a measure of the magnitude of possible emissions reduction potential once the growth of the baseline emissions is included.

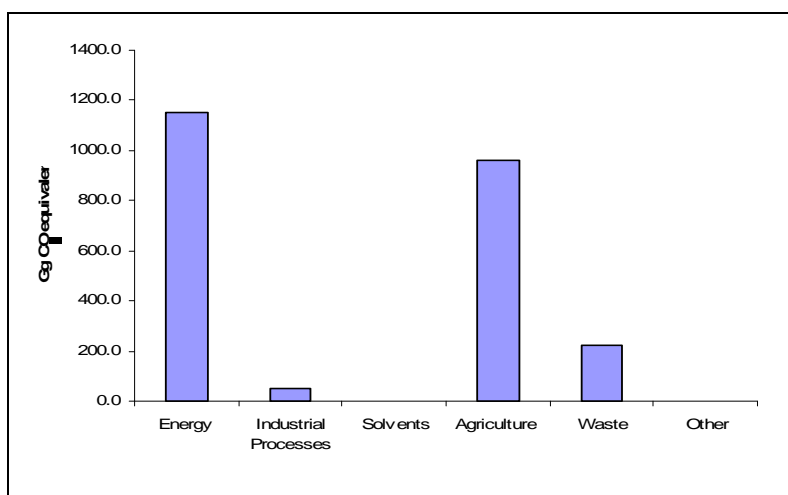


Figure 2: Rwanda's Annual GHG Emissions by Sector (2000 - 2002)

The policy will also commensurately address emission reduction potentials in the non-energy sectors, as well as carbon sequestration in the agricultural and forestry sectors.

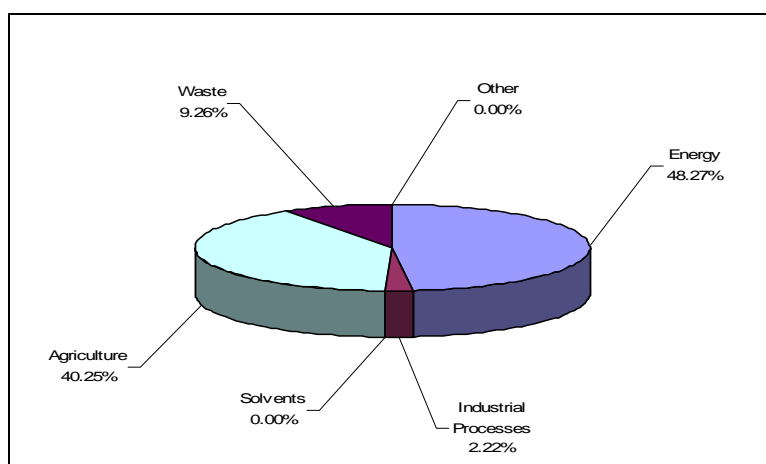


Figure 3: Proportional Contribution of Emissions by Sector

The analysis presented hereunder includes both the voluntary carbon market, CDM and Copenhagen accord avenues. However, this policy is more focused on CDM because this market is much more tightly regulated and its offsets usually more valuable. The market shows that

in 2010, the general demand for VERs is steady but unspectacular, selling from between \$2 and \$5 with pre-CDM renewable energy credits at \$3.50 to \$4. VERs to the Gold Standard are trading at around \$9.50 - \$11 per unit.

Furthermore, since the rules have been meticulously laid down and tested on over 5000 CDM projects at various stages of development since 2004, this policy shall use CDM as a benchmark, within which the voluntary market can be subsumed. The rules for the Copenhagen Accord have yet to be worked out but will hereby be assumed to not contravene those in use for CDM. The analysis of the sectors with significant emission reduction and sequestration opportunities in Rwanda is hereunder presented.

4.3.1 The Energy Sector

The energy sector offers extensive opportunities for generating carbon credits in each sub-sector depending on their contribution to the energy portfolio. It is currently estimated that biomass accounts for 85% of the country's primary energy balance (56% firewood, 23% charcoal and 6% crop residues and peat), with the remainder 11% from petroleum products (mostly for transportation) and 4% from electricity. As shown in Figure 2 above, the emissions from energy sector were estimated at 1.15 million tonnes of CO₂e in 2002, and have been growing proportionate to the fast growth of the economy. Energy Efficiency improvement and Conservation policies offer avenues of gaining carbon credits, specifically via promotion of the use of energy-efficient technologies, identifying inefficiencies and reducing them and offer incentives for energy conservation and augmentation of energy supply.

4.3.1.1 Biomass sub-sector

Biomass fuels, particularly woodfuel and charcoal, provide accessible and affordable sources of energy for the mass of the population. The combination of the PRSP target of annual energy consumption growth rate of 10% and a 30% rural electrification by 2020, it is projected that the country will still be dependent on biomass as a source of 65% of her primary energy demand. This energy use profile is expected to continue further into the future in a reciprocal pace with the evolution of the economy towards modernity.

From this sub-sector, a large potential exists in emission reduction via more efficient biomass utilization and conservation, measures that will

form the backbone of Rwanda's low carbon drive in the near and medium term. If the target is to reduce emissions from the energy system by 50%, then this would earn the country at least \$10 million per year in carbon credits alone.

4.3.1.2 Biofuels sub-sector

There are two main biofuels that can be used in transportation or running generators, that is:

- (i) Ethanol which can be used as a substitute for petrol or as a means of 'extending' petrol. Ethanol is derived from sugar or sugar-related byproducts, corn as well as some lignin based material
- (ii) Bio-diesel which is produced from waste oils or from oil-rich crops such as oil palm, jatropha and pongamia.

The energy policy is promoting limited development of biofuels because they are domestic renewable sources that serve as a substitute for or supplement currently imported fossil fuels. However, since in most cases the use of such fuels requires subsidies and growing them competes with other agricultural crops for land, the current policy has been for enhancing research and development of small-scale projects that can supply biofuels appropriately and economically for particular applications such as remote rural grinding mills and off-grid small and medium power generators.

4.3.1.3 Transport sub-sector

The transport sector offers some low carbon opportunities but have unique challenges given its expansive nature. The sector is large and complex with high significant direct impact to economical development with high social benefits. There are varying intervention points and almost every project is unique. More importantly carbon projects in this sector require large investments. There are specific problems regarding determination of baselines and data availability.

The sub-sector is amenable to a programmatic approach to CDM an issue currently under discussion for the balance of the first commitment period, and whose post 2012 regime has apparently been agreed in the Copenhagen Accord under 7/CP.15 (low carbon development) and 5/CP.15 (nationally appropriate mitigation activities - NAMAs).

4.3.1.4 Other Energy Supply and Distribution

The hub of Rwanda's energy policy and therefore low carbon policy is the refocusing the energy development priority to renewable energy sources, beginning with gradual reduction of the share of biomass-based source of energy (currently 86 percent), the use of small and medium hydro expansion and accelerate plans to use methane gas from Lake Kivu for power generation. Other renewable energy sources such as solar, wind and geothermal are also stressed in the new energy policy. The carbon benefits of shifting to renewable sources of energy can be mobilized to make investment in these sources more attractive.

(i) Hydropower

The government's energy policy objective is to exploit the substantial hydro power potential in the country. Currently, the installed capacity in Rwanda is 69 MW, 51 percent of which comes from hydro. Short term plans involve expansion of the capacity to 130 MW by 2012 mostly through hydro and methane power projects. The methane source is critical due to the likely disruption of power supply from hydro arising from global climate change.

(ii) Renewable Energy Sources.

Rwanda has a significant potential for producing power from renewable sources like peat, solar, wind and geothermal which has lower carbon intensity than the baseline power supply. These renewable sources are more critical to the off-grid and rural electricity demand which is an essential part of the country's rural development policy.

(iii) Regional Power Pools

Rwanda has various initiatives for participation in regional power pools, including the East African Power Grid, the SADC power grid, the Eastern Africa Power Grid involving Ethiopia, and the power trade and exchange with other block neighbours such as those in CEPGL. These initiatives may have carbon implications depending on the carbon intensity differential between Rwanda and the other participants.

4.3.1.5 Energy Consumption

Most of the emissions in energy consumption in Rwanda are pegged on the level of energy efficiency of the equipment and appliances in use as well as wasteful use of energy.

The carbon emission reduction options in this sub-sector involve energy conservation and efficiency improvement in industrial and residential buildings, via lighting, air conditioning, space heating, appliances, architectural interventions and heat islands management. Energy conservation measures may also reduce energy use and the associated emissions. These include reducing idle appliance emissions, use of thermostat to regulate room temperatures, turning off lights in unoccupied space, etc.

4.3.1.6 Landfills

As shown in Figure 3 above, about 10 percent of Rwanda's annual emissions come from waste. Gas extraction from landfills in large cities or municipalities in Rwanda can produce significant amount of electricity to be consumed locally or sold to the grid, while at the same time generating significant carbon emission credits. This policy shall therefore encourage the production of methane or other forms of energy from solid waste landfills or through gasification processes such as conversion to liquid fuel through low pressure de-polymerization. The government shall encourage investors to explore the use of the carbon market for sale of credits as well as carbon finance arising from the Copenhagen Accord in order to augment revenues from gas extraction from landfills.

4.3.2 Forestry sector

The forestry sector provides the bulk of the biomass used for primary energy and other wood products and services. Though the sector was a net sink earlier in the decade due to re-growth of large areas that were deforested in the 80's and 90's, it is fast moving towards a net source of emissions due to overexploitation of the wood resources.

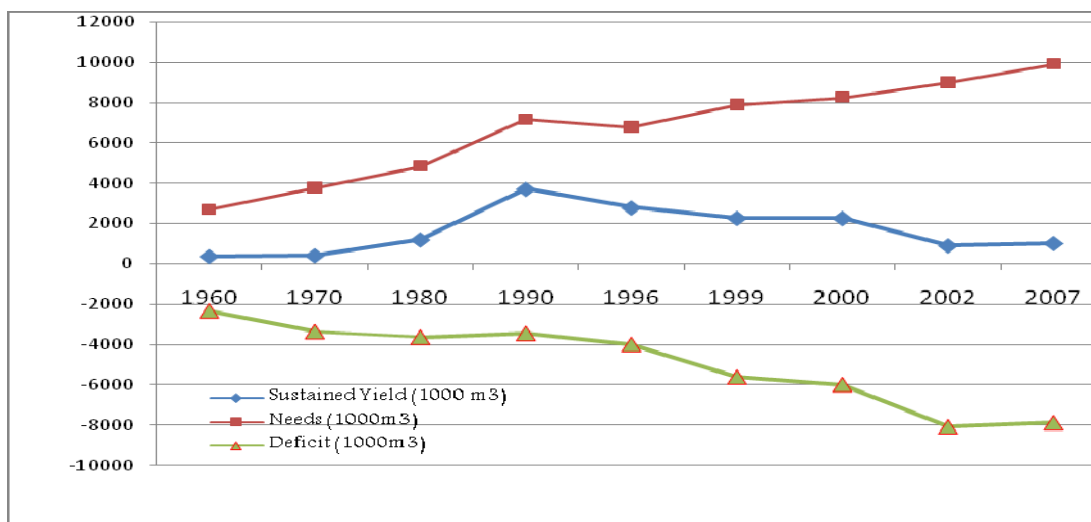


Figure 4: Wood Balance - Biomass Production and Consumption (1960-2007)

The sector offers large sequestration potential through afforestation and reforestation as well as emission reduction from deforestation and forest degradation

4.3.2.1 Afforestation / Reforestation

The Forestry Policy aims to increase Rwanda's forested area in line with EDPRS and Vision 2020, with a targeted increase of forest coverage by 3.5% by 2012 and by another 10 percent by 2020. These goals will inform the carbon policy in this sector.

4.3.2.2 Reducing Emissions from Deforestation and Forest Degradation (REDD+).

In the 2007 Bali roadmap towards a new climate change regime for the second commitment period and beyond, it was agreed to expand the sectoral scope as to include emission reduction from deforestation and forest degradation, including through sustainable management of forests (REDD+). The Copenhagen Accord 6/CP.15 and 8/CP.15, formally endorses REDD+ and proposes a preliminary mechanism for financing the program, initially via positive incentives. Decision 7/CP.15 does not exclude REDD+ from applicable market mechanisms when conditions allow.

REDD+ is a new direction in forest conservation that will require the country to take into account existing research on deforestation and lessons learned from previous forest conservation initiatives in order to formulate effective policies.

4.3.2.3 Forest Industry and Wood Products

The forest sector can accrue carbon credits by utilizing wood waste and sawdust to produce power for use by wood industry and/or sell to the national grid. These credits from co-generation are currently eligible under CDM and VCM.

A new avenue that may be pursued under the Copenhagen Accord is efficiency improvements in conversion of logs to wood products. The current milling efficiency in Rwanda is about 45%. Raising this value to 65% via installation of newer vintage mills will reduce the associated emissions by the same proportion, and these can be sold in the voluntary market or credited in NAMAs under Copenhagen Accord.

4.3.3 Agriculture and Livestock Sector

The opportunities to reduce emissions in the agriculture sector are limited to the emission profile from the sector. As shown in Table 1 and Figure 5 below, the bulk of emissions come from agricultural soils followed by livestock emissions. Rwanda Vision 2020 aims at increasing protection against erosion from 20% to 80% on agricultural lands. Under CDM, the agricultural sector had limited opportunities to reduce emissions and sequester carbon, mostly through agroforestry and methane emission reduction in livestock management.

Table 1: Annual Emissions from Agriculture and Livestock (2000–2002)

Category of sources and (sink) of GHG	Emissions (Gg)				
	CH4	N2O	NOX	CO	NMVOC
Agriculture	37.62	5.63	1.14	56.13	
Enteric fermentation	32.73	-	-	-	
Manure management	1.25	0.13	-	-	
Rice farming	1.05	-	-	-	
Cultivated soils	-	5.44	-	-	
Savannah directed burning	0.34	0.00	0.15	9.05	
Harvest wastes burning	2.24	0.06	0.99	47.07	

Key:

CH₄ = Methane; N₂O = Nitrous Oxide; NO_xs = Oxides of Nitrogen,
NMVOC = Non-methane Volatile Organic Compounds

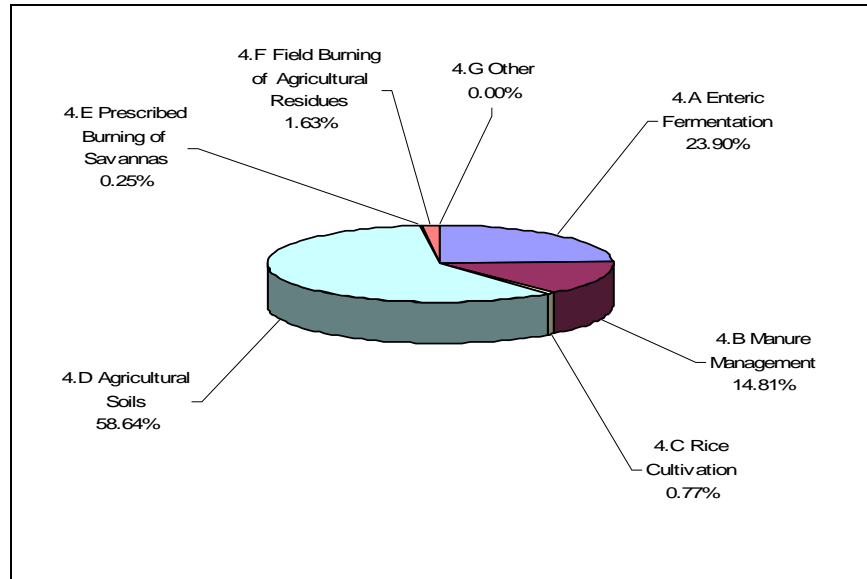


Figure 5: Emissions Sources in Agriculture and Livestock (2000–2002)

In the Copenhagen Accord, REDD+ will involve the agricultural and livestock sector because many of the deforestation and degradation drivers are in this sector. In addition, pending the development of modalities and procedures, Rwanda can include many activities in conservation agriculture as NAMAs. The sector is also available for emission reductions and sequestration for the voluntary market.

5. PREFERRED POLICY OPTIONS

5.1 Pathways

Currently there are two main vehicles for entering the carbon market, that is the CDM and the voluntary market. Though the policy is firmly rooted in these two pathways, it shall also be informed by the Copenhagen Accord that provides the framework for future carbon markets. The preferred policy options will cover the same sectors and elements as analyzed in Chapter 4 above.

5.2 Sectoral Policies

The Carbon policy seeks to superimpose carbon considerations in sectoral management and development plans. In this section, areas of emission reduction opportunities as well as those with potential carbon sequestration will be highlighted as carbon policy intervention points in each sector. To operationalize this objective, the policy seeks to establishment a team of experts on emission reduction and carbon sequestration in each sector whose mandate shall be to identify and chart a plan to overlay the carbon considerations on the specific sectoral policy and action plans.

The policy encourages private investors, NGOs and other development partners to exploit the identified sectoral opportunities and invest in carbon offset activities, projects and programs to obtain the carbon offsets using the appropriate offset mechanism; that is, the CDM, the VCM or the Copenhagen Accord.

5.2.1 Energy Sector

Energy Efficiency and Conservation policies offer avenues of gaining carbon credits, specifically via promotion of the use of energy-efficient technologies, identifying and improving inefficiencies and offer incentives for energy conservation. Other options include energy demand management in tandem with energy supply augmentation. The carbon policy in the energy sector shall be to promote and support the exploitation of carbon opportunities in the implementation of the country's 2009 energy policy.

5.2.1.1 Biomass sub-sector

The carbon policy encourages private and public sectors together with development partners to take advantage of carbon market and finance

opportunities available in the implementation of the following energy development programs envisioned in Rwanda's Energy Policy:

- (i) Expansion of biomass supply through increased recovery from existing plantations, establishment of new plantations, woodlots and trees in farms, which shall be enhanced by the removal of regulatory restrictions except those necessary for ecological health.
- (ii) Improved and efficient charcoal production and fuelwood stoves to make more efficient use of biomass fuels. Project proponents shall receive tax relief for carbon offsets in this area due to its extensive environmental and health benefits and the stove construction material shall be central tax exempt. Public institutions like prisons and schools shall give priority to buying charcoal from efficient kiln producers if available in the area.
- (iii) Promotion of the use of under-exploited forms of biomass such as papyrus and typha, peat, and waste, in particular the briquetting of such materials for cooking and heating.
- (iv) Dissemination of biogas digesters to rural families which have the required animals and to schools, hospitals and other institutions where human waste can be transformed into biogas and slurry.
- (v) Promotion of Biogas for power generation especially in areas with large number of animals

5.2.1.2 Biofuels sub-sector

The carbon policy recognizes that biofuels have a significant potential to reduce emissions depending on productivity, technology and utilization. Carbon credits provide an extra source of income that will help make biofuels more price competitive with conventional sources of energy. The carbon policy in the biofuels sector will be:

- (a) To encourage private investment in biofuels on lands that do not compete for agricultural production.
- (b) To limit the extent of land allocation for biofuels to small scale projects in the short and medium term.
- (c) To encourage and enable the development of the infrastructure for conversion, distribution and utilization of biofuels in a phased program consistent with MININFRA infrastructure development plans.

(d) To encourage and facilitate research on appropriate species for different parts of the country, conversion and utilization technologies as well as the socio-economic impacts of the expanded use of biofuels.

5.2.1.3 Transport sub-sector

The Policy encourages interventions to obtain carbon benefits by promoting:

- (i) Energy efficiency improvement in transportation
- (ii) Low carbon alternative liquid fuels such as liquefied natural gas (LNG), mixture of petrol and ethanol (gasohol), etc
- (iii) Renewable bio-diesel from jatropha
- (iv) Increasing the operating efficiency of the system
- (v) Reducing travel and haulage via integrated planning
- (vi) Increased intra city mass transit capabilities

5.2.1.4 Other Energy Supply and Distribution

The carbon benefits of shifting to renewable sources of energy can be mobilized to enhance investment in the energy supply. The carbon policy in power supply shall resonate with the policy to move towards renewable energy sources, with specific effort in identifying and quantifying the carbon benefits and assist the stakeholders in taking advantage of such opportunities.

(i) Hydropower

Under current CDM rules, hydro-generation (especially small scale) is an eligible activity if it can be shown that the baseline or business as usual energy policy is one of higher carbon intensity than that offered under hydro. The carbon policy encourages the exploration of the possibilities of including the hydro power expansion in the carbon market as a source of extra funds towards investments in hydro.

(ii) Other renewable energy sources

The energy policy seeks to expand the use of renewable sources like peat, solar, wind and geothermal which has lower carbon intensity than the baseline power supply. The carbon policy shall be:

(a) To encourage and create enabling environment for investing in renewable energy technologies.

(b) To provide incentives for investment in this sector including phased subsidies where the sub-sector is non-competitive with more conventional energy sources. Such subsidies may include the possibility of retention of all carbon credits by investors.

(c) To undertake more research on the socio-economic impacts of expansion of renewable energy with a goal to prioritize the sub-sectors.

(iii) Regional Power Pools

This policy shall pay cognizance of the Emission Intensity of the collaborating pool vis the national carbon intensity – relevant for baselines and determination of carbon benefits. The carbon policy shall involve the examination of possible collaborative efforts that Rwanda may take advantage of such as exporting low carbon intensive power to neighbours with higher carbon intensity and take the resulting carbon benefits.

5.2.1.5 Energy Consumption

In tandem with the Country's energy policy, the carbon policies in energy consumption shall:

(a) Promote energy efficiency and conservation measures in existing industrial and residential buildings by replacing incandescent bulbs with compact fluorescent energy efficient bulbs, use of solar water heaters, use of efficient air conditioners and space heaters, with the carbon benefits subsidizing the cost of these measures.

(b) Initiate a program to replace old appliances and motors with more efficient vintages such as refrigerators, air conditioners, fans, freezers and electronic appliances through introduction of appliance energy efficiency labeling that includes the carbon footprint of the appliance. This policy shall include regulations and restrictions for importation that puts a tax on inefficient appliances. The carbon accrued from such a policy can be shared by the consumer and the

government, with the latter's share being recycled into further efficiency gains.

(c) Introduce building standards that include architectural interventions like positioning in view of aspect, roof colour, building materials, landscaping vegetation and windows that increase aeration and reduce air conditioning. Besides the energy conserved, significant amount of carbon will be saved and will be shared between the government and the stakeholder.

(d) Resources shall be mobilized to embark in a phased replacement of all energy-inefficient lighting fixtures in public houses, offices and installations, including street lighting; with high efficiency lights, with the principal intervener acquiring all the carbon benefits.

5.2.1.6 Landfills

(i) The policy shall encourage the production of methane or other forms of energy from solid waste landfills or through gasification processes such as conversion to liquid fuel through low pressure depolymerization.

(ii) The policy shall also encourage investors to explore the use of the carbon market for sale of credits as well as carbon finance arising from the Copenhagen Accord in order to augment revenues from gas extraction from landfills.

5.2.2 Forestry Sector

The carbon policy in this sector closely follows the forest policy in forestation and conservation. Like the Energy sector, the policy seeks to overlay the carbon offset dimension in the respective forest policy areas; that is, in carbon sequestration and emission reductions in the sector.

5.2.2.1 Afforestation and Reforestation

In view of the national forestation goals, the national carbon policy is therefore:

(i) To direct all forestry authorities especially NAFA to identify and delineate potential areas of private carbon investment in afforestation

and reforestation consistent with the national forest management plan. NAFA may seek to share part of the carbon credits with the investor.

(ii) To instruct NAFA to overlay the carbon consideration in all her afforestation and reforestation activities derived from the implementation of EDPRS and Vision 2020 targets. This is an additional source of revenues from the eligible activities, with those that will not be eligible under CDM may be funneled via NAMAs of the Copenhagen Accord.

(iii) To encourage establishment of permanent forests in areas that will not require harvesting, such as in water catchment areas and for landscape stabilization and erosion control. These will yield maximum carbon credits per area which are of higher quality due to their more permanent nature and will be open to all investors.

(iv) To encourage establishment of wood production forests using management regimes that produce some CERs, which in general would constitute half of the potential carbon density per hectare. Since these have timber and other non-carbon benefits for the country, the government will provide incentives for investors to participate, including letting the investor keep all the carbon credits. The enabling policies under this section would be:

(a) To use CDM opportunities to undertake afforestation and reforestation projects as provided for in the Kyoto protocol, with the CERs used to meet part of the cost of the forest estate expansion policy.

(b) To seek funding from the Climate Change Fund under the Copenhagen Accord to increase carbon sinks in the forest sector that go beyond the tight land eligibility criteria under CDM.

(c) To tap funding from international donors for afforestation and reforestation programmes and funnel them towards CER eligible projects.

(d) To seek and encourage non-compliance (VCM) carbon market investors to invest in afforestation and reforestation, with an incentive for them to retain all the carbon credits except where these must be shared with a proximal community.

(e) To encourage and facilitate carbon investment that involves communities in tree planting on farm lands,

establishment of woodlots for fuel and poles, landscape stabilization and forest conservation.

(v) To protect the tenurial arrangements such that investors obtain adequate lease on land to effectuate the carbon project, but not to offer excessively long leases. This shall be done on a case by case basis, with a clause of lease review when investor seeks to alter the basic mission of the project.

5.2.2.2 Reducing Emissions from Deforestation and Forest Degradation (REDD+)

Pending the development of modalities and procedures for monitoring, reporting and verification for REDD+, the preliminary policies for Rwanda shall be:

(i) To prepare the necessary preliminary conditions for participation in REDD+ via NAFA and Department of Lands. These steps will include undertaking baseline studies of deforestation and forest degradation in the country as well as identifying and studying the factors and processes underlying deforestation and forest degradation.

(ii) To study and identify effective measures to reduce deforestation and forest degradation.

(iii) To implement those identified measures consistent with the country's forest conservation and sustainable development objectives.

(iv) Seek financing from the Copenhagen Financing mechanisms and from bilateral and multilateral sources to enable Rwanda to implement the proposed measures. Such sources may include but not limited to, the Norway's International Climate and Forests Initiative (NICFI), the World Bank's Forest Carbon Partnership Fund (FCPF), Congo Basin Forest Fund (CBFF) and the UN-REDD.

(v) To encourage local communities, private parties and development partners to implement requisite specific measures in locales that can reduce deforestation and forest degradation.

(vi) To intensify the protection of natural forests and vulnerable ecosystems via public programs as well as encouraging private efforts, allowing the intervener to retain any resulting carbon credits.

REDD+ strategies must include policies outside the forestry sector narrowly defined, such as agriculture and energy, and better coordination across sectors to deal with non-forest drivers of deforestation and degradation. Four types of policies that could reduce deforestation are: policies to depress agricultural rent, policies to increase and capture forest rent, policies that directly regulate land use, and cross-sectoral policies that underpin the first three. Therefore Rwanda shall strive to:

(i) Reduce rent from extensive agriculture in areas that have persistent deforestation caused by conversion of forests to agriculture. This can be achieved through

- (a) measures to depress the targeted agricultural prices,
- (b) creation of off-farm income generating opportunities,
- (c) support intensive agricultural sector near the deforestation frontiers with selective support of extensive agriculture where necessary,
- (d) institute measures to curb deforestation that accompany new roads through forested areas,
- (e) institute policies to secure land rights in agricultural areas.

(ii) Increase forest rent and its capture by forest owners in order to encourage retaining land under forests through:

- (a) higher prices for forest products not derived from deforestation,
- (b) institute and strengthen community forest management (CFM) so as to enhance the capture of local public goods from forests,
- (c) introduce and strengthen the regime for payment for environmental services (PES) such as water, ecotourism and carbon in order to capture global public goods,

(iii) regulate land use and landuse change directly through enforcement of existing laws on forest protection, ordinances and directives on allowable land use in various ecosystems.

(iv) put in place or implement existing cross-cutting policies that moderate land use change, especially those curtailing illegal logging and land cover change. These may include broad measures and policies on:

- (a) decentralization; and
- (b) good governance especially anti-corruption measures in the forest sector

5.2.2.3 Forest Industry and Wood Products

The carbon policy in this sub-sector shall be consistent with that enunciated in the Forest Policy with the following key areas of intervention leading to accrual of carbon benefits:

- (i) To encourage increase in conversion efficiency via installation of modern vintage milling and pulping machinery and equipment. Tax incentives will be offered commensurate to the increased level of efficiency.
- (ii) To encourage and incentivize waste reduction and use of wood waste such as sawdust for producing heat and power complete with PPAs where the generated power exceeds the needs of the wood industry
- (iii) To allow the investor to keep all accrued carbon credits as a further incentive.

5.2.3 Agriculture and Livestock Sector

As discussed in the previous chapter, the agricultural sector had a few opportunities to reduce emissions and sequester carbon under CDM, mostly limited to agroforestry and methane emission reduction in rice cultivation livestock management. However, the new mitigation regime has broadened the contribution of agriculture in emission reduction.

The carbon policy for the agricultural and livestock sector will involve

- (i) Encouraging the inclusion of agricultural practices with emission reduction potential and or carbon sequestration in vegetation, litter or soils in the national agricultural policies. These activities include terracing, mulching, reduced tillage, agroforestry and substituting organic fertilizers for inorganic fertilizers.
- (ii) Encouraging measures that reduce enteric fermentation such as altering the feed regime.
- (iii) Pursue improved livestock management in order to increase output of livestock products per animal, thus reducing emissions per unit kilogram of meat or liter of milk. The emission reductions shall accrue to the farmers and program/project facilitator.

- (iv) Encourage the use of manure for biogas production
- (v) Seeking resources in the Climate Change Fund and Adaptation Fund to invest in adaptation infrastructure such as irrigation and terracing that also has mitigation potential.
- (vi) Ensuring that carbon considerations do not negatively affect food production.
- (vii) Organizing farmers in project areas to form cooperatives that will negotiate with carbon investors. This may involve encouraging the formation of a private proponent or NGO to mobilize the carbon aspect of these agricultural policies in locales such that the credits realized can be fairly distributed by the project proponent and the farmers.
- (viii) To specifically ensure that the distribution of the carbon benefits from these agricultural interventions takes into account gender equity.

6 STAKEHOLDERS' VIEWS

It is important that any national policy is approved by leadership after consultations with stakeholders in the country in order to demonstrate commitment to the policy from the highest levels of leadership to the grassroots.

In line with the consultation, the government shall encourage participation of civil societies and non-governmental organizations in the review and revision of the carbon policy and strategy. The government will encourage and facilitate the creation of climate specific or carbon market focused NGO's that will be actively involved in constant examination of the performance of the policy and by various stakeholders.

6.1 Emphasized Views

[To arise from Reviews and Validation Workshop]

6.2 Endorsement and Review

The carbon policy should not be a static document, but should be periodically reviewed in order to assess its impact and determine the key achievements that have been made over time. The policy document should set the frequency of this review process and state who will be responsible for carrying it out.

SECTION B: STRATEGY

7 IMPLEMENTATION STRATEGY

7.1 General Strategy

Climate change is projected to usher in changes in rainfall patterns, viability of hydro power projects, change in cropping patterns, species migration, change in provenance for afforestation as well as natural forests, changes in wildlife habitats, bio-diversity, wetlands, glaciers and snow cover, water resources, medicinal and aromatic plants, tourism including eco-tourism, health, propensity for soil erosion and life span of water reservoirs, emissions from land use and land use change. As such, the implementation strategy shall have priority in areas where climate change poses threats and carbon offsets provide an avenue to exploit the opportunities arising from these challenges.

The general implementation strategy must be anchored in the three E's - Effectiveness, Efficiency and Equity. To make the strategy meet these criteria, the national carbon management authority proposed under the section on Institutions shall develop a national carbon abatement curve that serves as a national supply curve for potential carbon credits. This is a schedule showing the carbon offset opportunities in each sub-sector and the cost per tonne of CO₂ equivalent for each mitigation option.

This schedule allows the country to decide and rank those areas of priority in the short, medium and long term, including the approximate amount of offsets available for each choice. This way the country can also decide on areas to be set aside for Rwandan investors or future investment as the country grows and acquires various types and levels of commitments to reduce GHG emissions. The graphic below (Figure 2) shows an example of a carbon abatement curve for a country's energy sector.

The CDM Clearing House or an expanded and strengthened DNA – Designated National Authority, shall develop abatement cost curve (CDM supply function) showing the amount of emission reductions available in each sub-sector and the associated cost. The supply curve gives the country a measure of its mitigation potential, a subset of which will be strategically availed for CDM. This curve allows the country to choose areas she wants to put in the market knowing the underlying cost structure and becomes the basis for negotiation on

distribution of credits between the investor and domestic stakeholders. See an example of abatement cost curve below.

The abatement curve can be used as a basis for floating a pipeline of projects/programs whose priority will depend on the compatibility with national energy policy and regulations, land use policy, low risk on the assessment of mitigation costs, as well as assessment of stakeholder views, including but not limited to investors. For example, to the extent that the power sector is looking to expand its supply of electricity, any CDM project which enhances this goal will be of high priority. In the forestry sector, any CDM project that increases the supply of wood or reduces the waste of biomass will be of high priority.

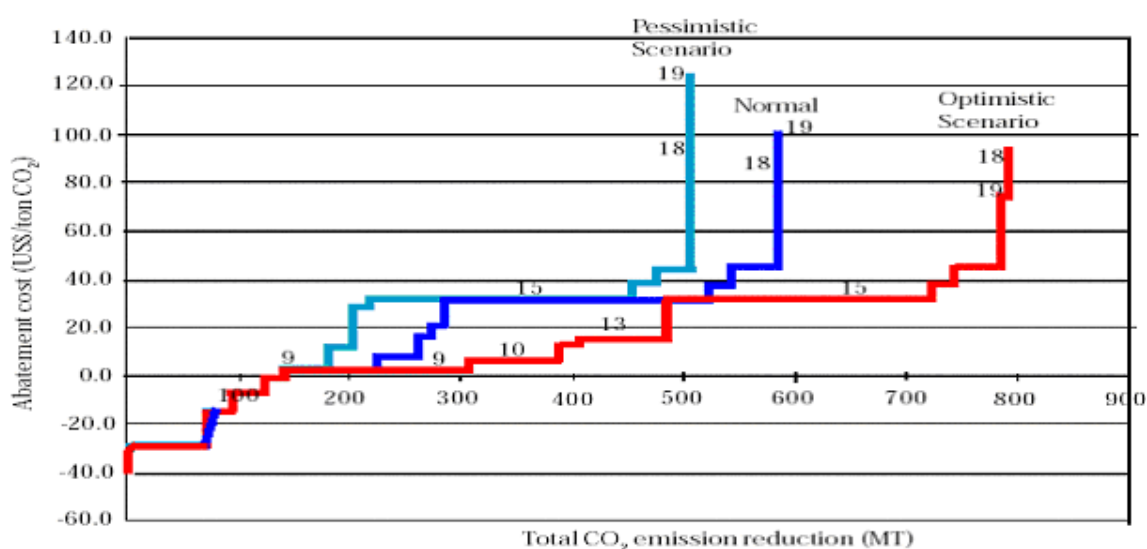


Figure 6: Aggregate marginal abatement cost curve for several mitigation options – coal baseline

Key to the Options:

1. Incandescent to fluorescent (SFL)
2. Gas combined cycle
3. Incandescent to CFL
4. Hydro PP
5. Mini Hydro
6. Co-generation LT
7. Variable speed motor
8. Coal steam PP
9. Utilization of flared gas
10. Co-gen. & heating system reconst. in textile industry
11. Improved waste management in starch factories
12. Waste incineration/fuel switch in pulp & paper plant
13. Boiler improvement in palm oil plant
14. Gas Turbine
15. Geothermal PP

16. Co-generation HT
17. Biomass steam PP
18. Solar thermal

The following general strategies underlie the specific implementation strategy for the carbon policy.

- Promote a research and development program relating to cleaner energy sources such as solar energy, biomass, wind and other renewables to supplement the traditional energy sources,
- Facilitate efforts to acquire and adapt sustainable, safe and economical energy technologies for national development,
- Support research aimed at upgrading hydropower energy production technology,
- Promote research and development efforts aimed at popularization and dissemination of energy technology for rural and urban development, and
- Promote and facilitate research and capacity on monitoring, reporting and verification of baselines, GHG accounting, leakage and permanence of carbon projects and policies in land use landuse change and forestry sector.
- Promote research on conservation agriculture and efficient livestock management
- Promote public support for energy conservation and encourage private investment in energy technologies.

The specific implementation strategy has three main vehicles: institutional, regulatory, and human capacity building. Key to an effective policy implementation is the existence of clear publicly shared goals of which progress is measured against targets as a framework for an outcomes-based performance. From a carbon perspective the goals should include adoption and diffusion rates of the alternative technologies such as biogas, efficient stoves, kilns, lights, etc.

The institutions necessary for the implementation plan can either be policy driven - in that they are intended to facilitate the implementation of specific sector policies; or are embedded within the proposed regulatory and legal framework e.g. REMA.

7.2 Institutions

The main elements of the Carbon Strategy is the establishment of the Infrastructure for the Review, Promotion, Support and Financing of

carbon projects and/or programs. The following Institutions need to be established to accomplish this objective. If possible they can be initiated as part of an existing institution such as REMA or RDB or an expansion of the mandate of the DNA or NCDMA.

7.2.1 Policy-Based Institutions:

Since the bulk of this policy deals with Renewable Energy, the policy must establish a plan of action for renewable energy. The policy proposes the creation or strengthening of the following renewable energy institutions to underlie an active carbon market in this sub-sector.

1. Create a Renewable Energy Promotion Commission (REPC), an umbrella organization for all alternative energy initiatives such as solar, micro-hydro, biogas and geothermal; pursuant to the objectives of the International Renewable Energy Agency (IRENA) into which Rwanda's membership was ratified by the Cabinet in June 2009. *[Check the details of the ratified agreement]*
2. Initiate and strengthen the standard Power Purchase Agreements (PPAs) for small scale electricity producers.
3. The REPC shall be nationally-mandated to establish regional offices for efficient stove promotion, dissemination and technical support attached to regional Forestry Offices. REPC shall undertake training for creating technically capable cadre for participating in efficient stove projects, especially for stove construction be they private, public or NGO driven.
4. REPC shall explore and recommend more efficient kilns to charcoal makers. Lending agencies supporting rural development shall be encouraged to provide soft loans to modern kiln buyers. Institutions like schools, prisons, bakeries etc shall be required to have priority in buying charcoal from efficient kiln operators.
5. Biogas and methane from landfills. Create a department within REPC that promotes biogas and landfill methane development in the country, such as Biogas Support Program that can set targets for biogas development which it tracks and develops over time as well as coordinating assistance for the biogas program from different sectoral Ministries.

To promote electricity generation from medium and large scale biogas and landfill methane plants, the policy proposes establishment attractive feed-in-tariffs that allow sale of electricity to the grid, together with a standard Power Purchase Agreement.

6. Biofuels

The Department of Energy may need to review the strategy to expand production of biofuels, to include possibility of outgrowing by small scale farmers especially those close to private biofuel projects.

Regulations and bylaws will be put in place to ensure that farmers do not abandon food production in favor of biofuels if prices are attractive.

Within the MININFRA review the development strategy to further incorporate the creation of the infrastructure for utilization and distribution of biofuels commensurate with the planned expansion of biofuel in the country.

7.2.2 Regulatory Institutions

7.2.2.1 National Carbon Offset Management Center

In accordance with the Annex decision 17/CP.7 (CDM Modalities and Procedures), the Government of Rwanda is required to constitute a National CDM Authority (NCDMA). However, given the breadth of the carbon market and other mitigation opportunities, this institution will need to serve as a national Carbon Offset Management Center, a clearing house with the mandate to promote, review, support and provide some financing leverage where necessary, for all carbon offset activities in the country.

The Clearinghouse would be responsible for day-to-day operations such as establishing and running an internet-based database for carbon and related capacity building activities. It would also ensure public accessibility to the CDM process, including holding public hearings to discuss proposed projects and supporting a public appeals process.

Strategic priorities may include fast tracking small-scale projects, comprehensiveness of baseline studies, maximization of no regrets projects, and development of an effective institutional setting. In this context, establishment of the national CDM Board and clearinghouse

as well as development of a national CDM manual should be priorities in implementation.

The relationship of the clearinghouse with existing institutions such as line Ministries, REMA, the NCCCC, and the shall be determined by GOR in consultation with key stakeholders.

The Center shall:

(i) Provide information about CDM via broad public discussion in the news media, development of a CDM website, and other appropriate means. A special attention needs to be paid to small-scale projects due to their special needs, and a portion of the website should be devoted to small-scale project requirements and promotional activities.

(ii) Develop and manage national CDM project information and tracking system. This system should also allow separate tracking of large and small-scale projects. Establishment of a national website and posting all non-proprietary carbon business information will make the tracking and dissemination of the relevant information more efficient and transparent.

(iii) Update and provide technical manuals and handbooks to stakeholders, especially potential CDM project developers, relevant government officials, interested communities, and others.

(iv) Provide CDM consulting services for a fee to large projects and/or prospective investors. Small scale projects will be exempted from the upfront fee .

(v) Provide international experts to train local experts in the country for CDM support activities, especially for small-scale CDM projects.

(vii) Recommend Policy initiatives, revisions and Strategies that will help support and accelerate the development of CDM projects in Rwanda.

(viii) Explore opportunities for regional CDM investments by Rwandan stakeholders, be they private, parastatal organizations or public investors. This should be more applicable to regional projects such as regional power distribution or other transnational ventures with significant carbon benefits.

7.2.2.2 Small Scale Carbon Offset Promotion Office

This should be within the Management Center with a mandate to institute and implement a promotion plan to build a pipeline of small-scale carbon offset projects.

Most large CDM projects are likely to be developed of their own accord. However as mentioned above, small-scale CDM projects have specific promotional needs. Because the tendency in any organization will be to work on the larger, more cost-effective projects, these additional recommendations discuss how to specifically promote small-scale CDM projects.

- (i) The main focus of the SS office should be to promote small-scale carbon offset projects.
- (ii) The center should liaise with lead regional authorities where there may be a need for regional offices to support CDM activities.
- (iii) The center should undertake targeted publicity and outreach to raise the awareness of project developers so that they consider alternatives to their “business as usual” practices that would reduce GHG emissions and qualify as CDM projects.
- (iv) The center shall build adequate capacity in order to be able to provide technical support to project developers and minimize their CDM transaction costs.
- (v) Cost recovery for CDM technical support activities should be through either a fixed up-front fee or a fixed percentage of future CER revenues.

7.3 Human Resource Capacity Building

The strategy shall aim at building human capacity with respect to CDM on such areas like carbon credits regime, eligibility, emission and financial additionality, sustainable development indicators in the areas of social, economic, technological and environmental well being; baselines, project cycle, approval processes, minimum CERs generation, identification of international buyers, preparation of Project Idea Notes (PIN), Project Concept Notes (PCN) and Project Design Documents (PDD) for individual as well as for bundled projects.

GoR will establish effective human capacity building programs that result into the:

- (a) Existence of effective and efficient regulatory framework and enhanced operational capacity of governmental institutions to assess and approve CDM projects within clear timelines
- (b) Mainstreaming of Carbon finance issues into national sectoral strategies and plans, and included in inter-agency development coordination. Specifically to have carbon expert in each sector to identify areas of intervention and realization of the carbon benefits.
- (c) Increased capacity of local institutions to intermediate, finance, and appraise CDM project transactions on a sustainable basis
- (d) CDM projects portfolio created within the country through targeted assistance to project developers
- (e) Through the Investment Climate Facility for Africa (ICF) Capacity Building and Transactions Support project, the Government is committed to developing an overall framework and long term capacity in negotiating and establishing relations with the private sector regarding carbon offset projects and programs.

The training of such groups will have short, medium and long term objectives.

- (i) In the short term experts can be hired from everywhere, with a plan to be understudied and train local staff.
- (ii) In the medium term, nationals will pursue seminars, workshops, study tours or short courses for specific skills relevant to carbon offset markets.
- (iii) In the long term, nationals shall undertake diploma and degree courses to suite the long term human capacity needs of the sector.

Some of these courses and programs are currently offered abroad. It shall be the policy of the GoR to move towards revision of the curricula of national educational institutions to include climate change science and business. Education on climate change needs to be taught at all levels of education in order to inculcate the attitude and knowledge towards sustainable and green development in the young.

However, in the near term, carbon market training activities are to be conducted for various target groups, including:

(a) Policymakers in CDM-related line ministries such as Energy, Forestry, Lands, Agriculture, Infrastructure and Environment as well as investment promotion agencies and local municipalities.

(b) CDM project proponents, particularly in the private sector and public-owned enterprises

(c) DNA staff members and associated committees

(d) National experts such as local consultants, academics, and engineers from the line ministries, industry and national consultancy firms

(e) Local banks and financial institutions interested in investing in or financing carbon projects in the country.

7.4 Implementation Strategy Specific to Forestry (A/R & REDD+)

NAFA shall earmark areas set aside for afforestation and reforestation and allocate them to local and foreign project proponents, paying attention to how these areas shall meet some of the future demand for forest products while at the same time reaping carbon benefits. These will be clearly enunciated in the PDD. The strategy thus requires the injection of carbon component in the existing Forestry Policy and Strategy, as applicable for CDM, VCM or The Copenhagen Accord.

Even though the REDD+ is still under deliberations, the national strategy can be informed by the existing pilot-phase REDD infrastructure. The Forest Carbon Partnership Facility defines a national REDD strategy to be “an economically effective, efficient and socially equitable national strategy formulated and vetted through a meaningful policy/stakeholder consultation process,” and should include:

- (i) Identification of drivers of deforestation/degradation and sector assessments
- (ii) Opportunity cost analysis & setting of priorities
- (iii) Assessment of political, social and institutional feasibility of proposed actions and programs

- (iv) Identification of affected social groups
- (v) Risk analysis
- (vi) Discussion of safeguards
- (vii) Proposals for policy and regulatory changes, development programs and implementation arrangements

Many REDD funding sources would only consider a project under REDD pilot if it:

- Includes an accounting framework that ties the project emission reductions into a state or national accounting system;
- Includes protocols to precisely quantify leakage;
- Establishes an emissions baseline for the larger accounting unit (state or nation);
- Includes a sound monitoring system for deforestation;
- Includes protocols for precisely quantifying emission reductions;
- Is consistent with existing legal and regulatory constraints;
- Conforms to indicative guidance from COP13 REDD Annex.

8 FINANCIAL IMPLICATIONS

Given the novelty of the carbon sector in the country, it is not possible to project the financial implications of the carbon policy at this stage. The financial impact depends on the growth of investment in carbon activities in Rwanda, and especially on the operationalization of the Copenhagen Accords which will broaden the scope of carbon market in light of low carbon growth. However, the financial outcome will depend on (i) the extent of reduction of emissions from current levels and (ii) reduction in baseline growth of emissions (iii) the market price of carbon. For Rwanda to maximize financial returns from the carbon market, there has to be in place efficient financial institutions with mandate to facilitate the carbon business in the country.

8.1 Finance Institutions

The centerpiece of the proposed institutional framework for CDM project financing and CER marketing is a **Rwanda Carbon Investment Fund**, which would serve as a vehicle for raising and channeling domestic and international investment capital for CDM projects as well as consolidating and managing the sale of CERs from the resulting projects. RCIF shall be located within the structure of RDB in order to reduce the proliferation of institutions and supporting financial and monitoring systems.

By combining these functions, the Fund would be able to negotiate more favorable terms for both debt capital and the CER sale price. It could also help raise CDM project preparation funds either by seeking grant funding or a technical assistance from development partners.

For investors and CER buyers, the Fund would provide a single window for accessing opportunities for CDM projects in Rwanda. By bundling CDM projects into larger portfolios, the Fund could create CDM investment funds that would allow international investors and CER buyers to hedge their risks by buying into a portfolio of projects rather than into individual projects.

The concept of portfolio financing and CER sales is similar to the carbon funds, such as the World Bank's Prototype Carbon Fund (PCF) and the Community Development Carbon Fund (CDCF). The principal benefit of such a Fund would be in the leveraged negotiations that such a fund could provide CDM project developers and proponents.

The key elements of such a Fund should be:

- (i) Financial backing for the Fund should be developed from development partners, especially multilateral financial institutions like the African Development Bank, The World Bank, and the East African Development Bank.
- (ii) A national financial organization (RDB) should manage the Fund .
- (iii) The Fund should work in close cooperation with the Rwanda Carbon Management Center to identify and develop projects worthy of financing.
- (iv) The National CDM Project Management Center should allow the Fund to manage the sale of the CERs generated from those projects for which the Center would have provided upfront technical support services.
- (iv) The Fund could also channel international investment into attractive CDM projects, or at least advise the investors of such opportunities
- (v) RDB in collaboration with MINICOM and MINECOFIN should conduct a detailed assessment of possible capitalization of such a fund and propose its mode of operation and supervision.

8.2 Sale of CERs from Small Scale Projects

Any large project e.g. a natural gas generation project of say 100 MW does generate enough CERs to be able to sell them directly. Projects that can pre-sell or can access the market directly need not pursue the following option.

Neither international CDM project investors nor CER buyers are likely to seek out small-scale projects in Rwanda. The costs of identifying and screening such projects is too great and the potential rewards too small to make this an attractive activity. Therefore, it is recommended that:

- (i) An office of the RCIF be dedicated to the sale of the CERs from small-scale projects.
- (ii) The office should purchase the CERs from multiple small-scale projects and bundle them into packages according to technology,

location, or other factors that will make them attractive to potential buyers.

(iii) Standard marketing practices shall be used to sell CERs from both small- and large- scale projects.

(iv) The office can either extract pre-determined level of fees from these transactions or buy and resell the CERs at a markup to recover their costs.

CER accounts and the revenues earned from carbon credits shall be treated as export earnings and governed by the prevailing rules of export earnings.

9. LEGAL AND REGULATORY FRAMEWORK

[The Rwanda Attorney General's office shall identify relevant laws that need amendment or propose new law to accommodate the functioning of the carbon market under CDM, Voluntary Market and The Copenhagen Accord. The narrative below may provide some guidance and key information for this task]

The main purpose of this Regulatory Framework is to create a set of optimum structures for carbon market regulation and achieve identifiable and measurable progress towards the policy goals. Sufficient regulatory regime shall be established to promote and manage carbon activities in the country.

Eligible carbon offset projects are quite comparable to priority projects for investment in Rwanda under the Investment Code. The Project cycle for the CDM includes the following steps:

- (i) Project design and formulation
- (ii) National approval
- (iii) Validation/registration
- (iv) Project financing
- (v) Project Implementation
- (vi) Monitoring
- (vii) Verification/certification and issuance of CERs

The starting point would be to use the Foreign Direct Investment (FDI) process, laws and regulations to govern CDM projects since in general, FDI roughly follows the same steps like those for CDM, i.e.,

- (i) The National Approval is similar to the approval given within the ambit of the Rwanda Development Bureau or its forerunner Investment and Export Promotion Agency (RIEPA)
- (ii) The structure of information required for the project design document of the CDM is the same as that required for FDI
- (iii) For validation and registration by a designated operational entity (DOE), will review the project design document. These would typically

be private companies approved by the CDM Executive Board. A validation exercise by outside experts could also accompany many FDI related projects.

(iv) Monitoring, verification and certification functions are carried out as required by Environmental Impact Assessments (EIA) or by specific requirements of particular industries.

(v) As with FDI projects, the technical review of projects will often involve the ministries or agencies of the relevant sector.

(vi) In general, the legal framework required for FDI would also apply to CDM, save for some specific unique elements that need to be clarified under the law.

9.1 Domestic Property Laws Relevant to CDM Projects

CDM projects comprise a range of different property assets, each of which may be governed either by the general Rwandan property law, or specific laws enacted to regulate the asset either independently or in the context of broader domestic regulation of the CDM. The property assets likely to form part of a CDM project include the:

- (i) land on which the project is to be developed;
- (ii) equipment, technologies and materials required to construct and operate the project;
- (iii) resources and other inputs involved in the project (e.g. water, wind or landfill gas for electricity generation projects, industrial materials to be processed in industrial CDM projects, and fuel and electricity);
- (iv) materials or other outputs generated by the project, such as electricity, industrial or manufactured products or landfill;
- (v) proprietary security interests in the assets comprising the project, such as mortgages over land or equipment benefiting banks, financiers or other secured creditors;
- (vi) GHG reductions (CERs and VERs) achieved by the project and revenues from their sale.

Legal entitlement to each of these assets is generally governed by existing Rwanda general property law (General Law No 14/2004 – establishment of public establishments and Law No 06/2001 – Code of Value Added Tax) both as amended to-date. Otherwise they are covered under relevant commercial contracts between the CDM asset owner and other stakeholders. Such contracts may, in turn, be governed by another jurisdiction, for example contracts for the sale and purchase of CERs.

Domestic laws will also deal with the protection of property rights, including any limitations on the terms and conditions on which property may pass under contract, as well as expropriation or nationalization. In Rwanda the national and local legal regime does not yet encompass intangibles such as GHG emission reductions, much less CERs and VERs in their specificity. There is a need for a specific law governing CERs and other carbon instruments.

9.2 Legal Requirements for Proprietary Rights to CERs

Domestic property laws that clearly define and adequately protect the property rights of project participants will give project developers and investors confidence that a CDM project can be successfully implemented in the country, and that the project outputs and returns on investment can be secured appropriately. A further complication in such jurisdictions can arise from dealing with communal ownership of GHG reductions. The evolution of such laws would need to consider issues of recognition of the property in such GHG reductions, how risk, property and title in such GHG reductions could be passed, and how this can be measured. Specifically, there are often gaps with respect to their treatment under domestic laws with respect to:

- (a) the status or general classification of GHG reductions and CERs or other tradable carbon assets;
- (b) the allocation of title to such assets once generated or issued; or
- (c) the contractual transfer of title to such assets.

In accordance with accepted international legal practice, the existing CDM Rules from the Executive Board confine themselves to issues of international law and procedure, and do not address domestic issues related to property assets and rights associated with CDM projects and CERs. As a result, where a host country's domestic legal framework establishing and protecting property rights does not address title

issues around CDM projects, then the regulatory treatment of these rights will remain uncertain. While the market has dealt with these uncertainties to date (primarily by representations and warranties under commercial contract), this uncertainty does have the potential to become a source of risk that discourages stakeholders, including prospective investors, from participating in CDM projects in the non-Annex 1 countries, thus reducing the ability to realize the CDM potential.

9.2.1 Proprietary Rights to CERs under International CDM Rules

The following information may be useful in writing the national law and regulations governing this class of assets.

CERs are internationally tradable units generated and issued in accordance with international law. Under the CDM Rules, each CER represents a reduction in GHGs in the atmosphere equal to one tonne of carbon dioxide (therefore known as one tonne of CO₂ equivalent, or CO₂-e). As a result, Annex I Parties can use CERs, and the GHG reductions that underpin them, to comply with their GHG emission reduction commitments under the Kyoto Protocol. CERs are issued by the CDM Executive Board. A unique electronic serial number is ascribed to each and every CER that may then be used to identify the CERs.

9.2.1.1 Legal framework regarding the sale of CERs

According to the UNFCCC and the Kyoto Protocol, the reduction or control of greenhouse gases, including the sale of CERs, are a form of voluntary activity rather than a legal duty for the government and enterprises in Non-Annex I Countries. It is therefore proposed to treat revenues earned from carbon credits as export earnings so that the regulatory framework should be conducive and shall promote CDM and carbon offsets as other export sectors as per Rwanda Investment Code.

From the perspective of domestic laws and regulations in Rwanda, there may be a number of legal barriers to the sale of CERs.

(i) THERE ARE CURRENTLY NO SPECIAL LAWS OR LEGAL PROVISIONS ON THE SALE OF CO₂ CERs.

Nonetheless, the absence of specific domestic laws and regulations to support the international treaties can slow implementation. The

relevant treaties and international documents from which authority emanates are:

- United Nations Framework Convention on Climate Change, Rio de Janeiro, 1992;
- Kyoto Protocol to the United Nations Framework Convention on Climate Change Kyoto, 1997, in particular the Article 12 on CDM;
- The Marrakech Accords establishing Modalities and Procedures for operationalizing the Kyoto Protocol, 2001

What this policy requires is a national legal framework through which CERs and VERs can be created and transacted.

(ii) QUITE POSSIBLY THE EXISTING DOMESTIC LEGAL SYSTEM HAS NOT YET CLARIFIED THE NATURE AND STATUS OF EMISSION CREDITS.

The concept of emission credits may not have been clarified by Rwandese Law. Depending on the discrepancies that may exist between the legal structures in Rwanda and those countries that have already incorporated emissions credits into their legal systems, e.g., the EU and the U.S., it may not be possible to use these other legal systems of such credits as reference. If major discrepancies exist, legal reform would need to be undertaken to address the concept, nature and status of emission credits.

(iii) THERE ARE NO DOMESTIC REGULATORY PROVISIONS REGARDING THE SALE OF CERS UNDER CDM PROGRAMS.

In general, CERs, represent a new and special commodity that has not been covered by the existing property laws in all countries. In theory, they fall into systems of quasi-property rights. As a special commodity, CERs could not be sold by the sellers and bought by the buyers in free market without intervention of the public authorities. Instead, the sale of CERs would, in principle, need to be approved, monitored and checked by the competent international, national and even local public authorities.

There may be some provisions on the sale of instruments and products like CERs in some treaties and other international documents (e.g. Kyoto Protocol and Marrakech Accords), but there may not be specific provisions regulating the sale of CERs in the existing Rwandese laws and regulations. In order to develop a legally valid approach for the trading of emission rights, especially the trading of CERs, it may be

necessary to institute new laws and regulations that support such activities.

9.2.1.2 Applicability of Existing Carbon Purchase Agreement to Rwanda Legal Systems

The most comprehensive carbon purchase agreements were developed pursuant to Resolution No. 99-1 of 20 July 1999 of the Executive Directors of the World Bank that established the Prototype Carbon Fund.

The "Prototype Carbon Fund Emission Reductions Purchase Agreement between Project Entity and the World Bank as trustee of the Prototype Carbon Fund" (the Agreement), drafted by the PCF, as one of the standard agreements for carbon purchase and sale, is a very complex instrument. It is composed of 13 articles covering all the legal issues regarding the purchase and sale of the emission reductions (ERs), such as the minimum amount of emission reductions, the transfer of legal title, the price and payment, the project development and initial verification, the monitoring plan, the verification and certification, project operation and management, the certified emission reductions, warranties and legal liabilities.

In principle, this Agreement can also be applicable to CDM and VCM projects in Rwanda. The standard agreement, in its legal nature, is one of the international commercial contracts for the purchase and sale of ERs, a kind of new and special commodity between Project Entity and the PCF, based on the general legal principal of self-governance in the field of private laws, in particular the contract laws. Thus, the parties to the Agreement can determine freely, according to their own requirements, whether to buy or sell, from whom to buy or to whom to sell the ERs. They can also freely determine the terms and conditions of the agreement for the purchase and sale of ERs unless otherwise required by the mandatory domestic laws, regulations or international documents regarding CDM.

Despite the fact that the Agreement can be applicable on the whole to the CDM projects in Rwanda, there may also be some barriers in the existing legal systems that need to be addressed:

(i) First of all, the legal nature and status of the ERs, a kind of new and special property and commodity that could be purchased and sold in the market needs to be clarified. According to the Agreement, "The Project Entity agrees to sell to the Trustee and the Trustee agrees to

purchase from the Project Entity the Contract ERs together with any Option ERs requested by the Trustee" (Article 2, Section 2.01); "Legal title to the Contract ERs shall pass from the Project Entity to the Trustee upon receipt by the Project Entity of the Annual Payment" (Article 3, Section 3.01(a)); "At the time of signing this Agreement, and again separately upon both the production of the Greenhouse Gas Reductions and the transfer of the Contract ERs and any Option ERs, it has full title to all of the GHG Reductions generated by the Project free of any Encumbrance" (Article 10, Section 10.02(d)). Thus, the project entity's full and complete title to the ERs is one of the prerequisites for it to enter into and execute the Agreement, to sell the ERs to buyers.

Most likely, from the perspective of existing Rwandese property laws and regulations, the existing domestic legal system has not clarified the nature and status of CERs and VERs. In other words, if ERs are not included in the current Rwandese legal system of property rights, and they have not been acknowledged or envisaged as a legal property by the existing laws then legal clarity is in order.

(ii) Second, the legal system for public management of the sale of CERs needs to be formally established. According to Article 9 Section 9.04 (a), "The Parties agree to co-operate in order to obtain Registration and all other approvals of the Project," to "take any necessary actions to have the Project approved by the Host Country." Thus, the Agreement is not the same as a common commercial contract that can be executed without prior approval from competent public authorities. Rather, it is a special commercial contract that is based on both the contracting parties' will and the competent authorities' approval.

(iii) Third, for CDM projects in Rwanda, particularly small scale projects which generate only a limited number of CERs (and thus yield only modest economic benefit from the sale of CERs), agreements negotiated and executed on a case by case basis, are not likely to be cost effective. Although project developers will need to decide for themselves, it may not be practical to sell CERs derived from small scale project to foreign buyers. The option proposed of bundling CERs in order to reduce the transaction costs may pose some legal challenges that need to be addressed.

9.3 Legal and Regulatory Framework for the Voluntary Carbon Market.

Internationally, the voluntary carbon market is dominated by US and European buyers seeking to 'carbon neutralize' their activities. The market came under serious pressure three years ago, when governments, environmentalists and media began focusing on a host of projects with little or no environmental integrity. Since then several international standards have emerged, such as the Gold Standard (GS) and the Voluntary Carbon Standard (VCS), to ensure VERs represent real reductions of carbon emissions. But many voluntary projects in many countries do not necessarily apply the GS or the VCS. This allows the VERs not to go through a serious rigorous process to ensure the integrity and permanence of the VERs.

Voluntary projects in the agriculture and forestry sectors in general have a challenge in raising project quality and the verification process leaves much to be desired. However, the good quality VERs reaching the market are often of good quality because they come from projects intended for the CDM market that have suffered delays in registration with the UNFCCC Executive Board process.

Rwanda needs to be loyal to the climate change objectives and as such the integrity of voluntary credits needs to be upheld by domestic regulations. These must include a legal framework and a stable and reliable voluntary credits arising from Rwanda. Such regulations will attract buyers of quality credits into Rwanda and broaden the country's opportunities in both the regulated and the voluntary markets.

9.4 Treatment of CERs and VERs in Rwandan Tax System

The nature of CERs (including temporary CERs) and their sale may pose some unique legal tax issues that need to be addressed.

SECTION C: IMPLEMENTATION GUIDELINES

10 GUIDELINES

10.1 Priorities

1. Priority shall be given to carbon projects with adaptation component whose ranking must be conducted by National Climate Change Committee and this ranking would be used to prioritize project areas allocated for mitigation.

2. Initially, the following Adaptation priority areas identified in Rwanda NAPA can be used to prioritize areas of carbon investments.

- (i) An Integrated Water Resource Management – IWRM;
- (ii) Setting up information systems to early warning of hydro-agro meteorological system and rapid intervention mechanisms;
- (iii) Promotion of non agricultural income generating activities;
- (iv) Promotion of intensive agro-pastoral activities;
- (v) Introduction of species resisting to environmental conditions;
- (vi) Development of firewood alternative sources of energy.

10.2 Eligibility criteria for CDM projects in Rwanda

The second of the key objectives of CDM is to promote sustainable development. To that end, Rwanda's DNA shall apply nationally appropriate sustainability criteria when designing or considering CDM projects for approval in the country. The minimum criteria shall include:

- Compliance with the Environmental Management Act and its Environmental Impact Assessment and Audit Regulations.
- Address National Environmental Policy and related action plans and strategies
- Aim at transferring a technology which is environmentally friendly
- Aim at poverty alleviation by generating additional employment and improving standards of life (i.e., be in line with the EDPRS, MDG and Vision 2020.
- Bring in additional investment finance or capital flows.

- Foster or create partnerships with local institutions, NGOs or local private companies.
- Bring economic and social development to the country

10.3 Acceptability Criteria

For the purpose of the sustainable development criteria in Rwanda, CDM projects should at least lead to the following benefits:

10.3.1 Socio-economic benefits

- Job Creation
- GDP Growth
- Wealth creation
- Capacity Building (Innovation)
- Health Improvement
- Social Acceptance of Technology
- Good effect on balance of trade
- Use of local resources (Human and Material)

10.3.2 Market Potential

- Finance and Affordability (capital)
- Investment sustainability
- Low maintenance – Durability
- Commercially viable
- Replicability

10.3.3 Climate/Environmental protection

- Low GHG emissions
- Minimal harm to environment
- Enhance sinks
- Waste resource recovery
- Compliance with or non-contravention of, other Conventions and Multilateral Environmental Agreements like the Montreal Protocol, the CBD and CCD.

SECTION D: APPENDICES

APPENDIX I: Rationale for the Carbon Policy and Strategy

1 In 1988, after noting increasing scientific evidence and concern that anthropogenic emissions of GHG may have been dangerously interfering with the global climate, the United Nations General Assembly (UNGA) instructed UNEP and WMO to form the Intergovernmental Panel on Climate Change (IPCC) to provide policy makers with authoritative scientific information to address the problem. This culminated into the Framework Convention on Climate Change (UNFCCC) which was opened for signature at the Earth Summit in Rio de Janeiro in June 1992, when it was signed by 154 states and European Community. It entered into force on March 21, 1994. Rwanda signed the UNFCCC on June 10, 1992 and ratified the Convention in August 18, 1998.

2. In 1997 the Kyoto Protocol to the Framework Convention on Climate Change was signed and came into force in 2005. Rwanda ratified the Protocol on July 22, 2004. The Protocol committed signatories to reduce emissions of greenhouse gases into the atmosphere given their common but differentiated responsibilities. Parties in Annex I (developed countries and those in transition) took binding commitments under the Kyoto Protocol to reduce emissions by an average of 5.2 percent of their 1990 emission levels, excluding emissions from aviation and international shipping. On their part, non-Annex I (developing countries) agreed to collaborate with Annex I parties to assist them meet their binding commitments while pursuing sustainable development. This interaction is encapsulated in the protocol's article 12 - Clean Development Mechanism (CDM) that allows emitters to reduce emissions in non-Annex I countries and use part or all of the emission reductions to meet their obligations under the Protocol. CDM is one of the three flexibility mechanisms under the protocol involving carbon trading/offsets, with the other two, international Emission Trading (ET) and Joint Implementation (JI) being restricted to Annex I countries.

3. In tandem with the Intergovernmental negotiation process predating the UNFCCC commitments, some GHG emitters and private companies/groups initiated voluntary emission reduction efforts either in situ or elsewhere, seeking to neutralize their carbon footprint or simply being good environmental hostess of the earth. In all cases, this may have also been good for public relations. These efforts became the genesis of the Voluntary Carbon Market (VCM).

4. Along the two tracks of The Kyoto Protocol and the Voluntary Carbon Market was a cadre of business pioneers who saw an opportunity to sell carbon reductions from non-Annex I countries to those who would want to buy as the world moves towards a serious effort to reduce atmospheric emissions to mitigate against climate change. The CDM and the VC markets can be transacted at, among other places, the Chicago Carbon Exchange (CCX) and the Over The Counter (OTC) market. These markets do supplement other carbon markets within Annex I countries such as the European Trading Scheme (ETS) and New South Wales Market, which conduct the bulk of carbon business.

5. In its Fourth Assessment Report, the Intergovernmental Panel on Climate Change (IPCC) concluded that atmospheric temperatures must be held to 2.8° Celsius (5° Fahrenheit) above pre-industrial levels. Other leading climate scientists, non-governmental groups, the European Union and the African Ministerial Conference on the Environment, have called for keeping the average temperature increase below 2°C to improve the chances of averting the worse consequences of climate change.

6. Atmospheric temperatures already have increased 0.8° C and will increase another 0.5-1.0° C because of greenhouse gases already emitted. Computer models project that on our current trajectory, atmospheric temperatures could increase as much as 4.5° C this century, leading to the extinction of up to 30 percent of all species on earth and water stress and displacement of hundreds of millions of people.

7. The world has a 50-50 chance of remaining at or below a 2.8°C if it stabilizes atmospheric concentrations of CO₂ at 440 parts per million (ppm) or less. Atmospheric concentrations are now 385 ppm and are growing at an annual rate of 2 ppm. Under its most optimistic projections, the IPCC says CO₂ concentrations will rise to 500 ppm; and with less ambitious efforts by the world community, concentrations will rise to between 700 and 1,000 ppm before they stabilize.

8. The world community will have its best chance to remain below these levels if carbon emissions stabilize and begin to decline in industrial economies during the 2015-2020 period, and begin to decline worldwide in about 2020.

9. Under the non-binding agreement reached in Bali in December 2007, the emissions-reduction target established for industrialized nations is 25-40 percent below 1990 levels by 2020 and 80 percent by 2050. This is subject to negotiations in Copenhagen at COP15. Along with the call to deepen the emission reduction commitments, the Bali Declaration expanded the scope of emission reductions to include Reduced Emissions from Deforestation and Degradation (REDD) in developing countries.

10 Rwanda is a signatory to, and has ratified both the Framework Convention on Climate Change as well as the Kyoto Protocol to the Convention. As part of her obligation, Rwanda has submitted the Initial National Communication to the UNFCCC giving assessment of sources and sinks of GHGs and describing the climate change outlook in the country. Rwanda has also completed a report on National Adaptation Programme of Action that identifies vulnerabilities and adaptation measures and potential projects as mandated by the Conference of the Parties to the Convention.

11 Rwanda's Vision 2020 encapsulates the country's aspiration of becoming a middle income country by 2020 built on a development path away from subsistence agriculture towards a private sector driven knowledge-based economy, with high value agriculture, services, industry and business. This vision requires adequate infrastructure and energy supply both of which have carbon emission implications. In its Energy Policy Rwanda has made a choice to move the economy towards more renewable energy and more efficient utilization of the traditional energy sources such as biomass. This is a vision for low carbon economic growth with high carbon landscapes path for sustainable and clean environment.

12 The dearth of resources will make the low carbon path long and arduous because there is a cost associated with shifting from the business as usual path – *ipso facto*. Rwanda seeks to explore all the avenues to ease the burden of this transformation. Taking advantage of the global carbon market is one of the alternatives to finance or supplement the financing of a green development path.

13 The Government of Rwanda has sought to develop a national carbon policy, strategy and guidelines as a tool to guide the response to global climate change challenge under her UNFCCC obligations while at the same time taking advantage of the developmental opportunities brought forth by international policy on climate change. The main carbon opportunities for Rwanda largely lie under the CDM (or its

successor after Copenhagen) and the Voluntary Market, with the latter being less regulated and easier to access, but with much lower price per tonne of carbon dioxide equivalent. An agreement in Copenhagen will usher in new opportunities under REDD.

14 Carbon markets potential in the 21st century is projected to grow in the same pattern the Information Technology (it) industry propelled itself in the last part of the 20th century. The global carbon market increased from US \$30 billion in 2006 to over US\$64 billion in 2007, and has again doubled in 2008 and now totals US\$126 billion despite the turmoil in the financial world.

15 The United States though the largest historical emitter, has not been party to the Kyoto Protocol. If the U.S. joins the international agreement from Copenhagen and takes even a modest commitment, and if the Annex I parties deepen their commitment pursuant to Bali declaration, the demand for carbon offsets will skyrocket, thus pushing carbon market to an order of magnitude higher. Moderate estimates show that the average demand of about 600 million tonnes of CO₂e per year for the next commitment period (2012 – 2020) compared to just about 80 million tonnes of CO₂e that was registered in the CDM in its best year so far.

APPENDIX II: CARBON OFFSET PROJECTS IN THE PIPELINE IN RWANDA

Energy Sector Carbon Offset projects

1. **CFL project** is implemented by ELECROGAZ and includes the importation and distribution of a total of 800,000 energy saving lamps to replace incandescent bulbs. The project is implemented with assistance from the World Bank Carbon Prototype Fund (CPF) and has been in preparation since 2007. The official emission purchase agreement was signed early July 2009 and the contract will be for 21 years. The total avoided emissions are expected to be 156,000 CO₂ by the year 2015 with an estimated total value of \$2.2 million exceeding the total costs of the bulbs and their distribution.
2. **Rukara and other small hydro projects** in a bundle not exceeding 15 MW. Consultations are ongoing with a commercial

carbon asset company which has made a proposal for the purchase of an estimated 221,000 tCO₂ in the first commitment period at an estimated value of € 2.7 m (or about € 0.5 m/year) . After 2012 the purchase will be on a commission basis. The total contract period will be 21 years.

3. **Nyaborongo hydro power project of 27.5 MW.** Consultations are ongoing with a commercial carbon asset company which has made a proposal to purchase the produced carbon credits against a commission once the project is commissioned in 2012. The total contract period is expected to be 21 years again. The estimated reductions are 60,000 tCO₂ /year and the sales value is estimated at \$ 500,000 per year, depending on the prevailing market prices in the future.
4. **Lake Kivu Gas methane project** is a unique technology for extracting dissolved methane from the lake bed and use it to produce power. The intention of the ministry is to develop this carbon asset as one project covering the activities of various investors KP1, Contour Global, REC and other new comers. This could qualify and be registered under the program of activities (POA) type of project in CDM. The proceeds of the carbon credits will be shared between the ministry and the companies. The ministry is in discussion with two carbon companies which have shown interest in this proposed project. Carbon offset returns from these power projects can not be given for the future because it depends on the emission factors of the electricity being replaced on the grid which will continue declining as more and more power comes from renewable energies. However, returns may be in the order \$ 10 – 20 million for 200 MW output given the current prices and emission factors.
5. **MANNA, a US based organisation,** has proposed a project to install UV based water purification systems using solar PV for electricity generation. MANNA intends to claim the carbon emission reductions by using the use of firewood for water cooking as a baseline. The proceeds of the carbon credits will be used to construct biogas systems in schools. The project is technically supported by the UNDP carbon program. Actual proceeds will depend on the quantity of avoided emissions which in turn will depend on the proportion of firewood replaced that was being procured from unsustainable sources.

B Land-Use Sector Carbon Offset Projects

There are two main projects in the pipeline in the Land use sector. The first one (GACP) is being developed as a voluntary market project with a possibility to sell the qualifying credits to the regulated market, possibly CDM and/or REDD when operative. The second project (ERA Ltd) is a suite of REDD/AR projects that are proposed for the Voluntary Market.

1. Gishwati Area Conservation Program (GACP) is sponsored by Great Apes Trust of Iowa was started in 2007 as a bonafides conservation project, but in 2009 the sponsors have applied to raise funds for the project via the CDM route. This would involve reforestation of pastures and fields within the legal boundaries of Gishwati, where forests have been previously harvested. The initial proposal is to reforest 716 ha with estimated 8 tonnes of CO₂e per hectare per year with more revenues arising from sale of carbon from existing 886 ha of core forests apparently for emission reduction from eminent deforestation.

The project is also considering a plan to connect Gishwati with the Nyungwe National Park, about 50 km to the south. This would provide an opportunity for reforestation of an additional 5,000 hectares that would enrich and help to preserve Gishwati's biodiversity. The project has not yet been validated.

2. The second is a suite of Land-based offset projects proposed by Ecosystem Restoration Associates of Canada, beginning with the Gishwati Land Rehabilitation Project. The ERA suite offset projects are at different stages of development, with the Gishwati REDD/AR project at the PDD stage.

The following table provides rough estimates of costs and benefits for ERA & Prospective Joint Venture Partners and local stakeholders for the Suite of Projects.

Offset Opportunity Description	Gishwati REDD- AR Combo – 200 ha AR per year over 20 years	MINAGRI Dispersed Agforestry Programmatic AR - 30 trees per 800,000 rural households	Nyungwe-Gishwati REDD-AR Combo – 750 ha of AR per year over 20 years	Agforestry Rotating Sink AR – 1000 ha of AR per yr over 20 years	Jatropha Closed Loop AR with Fuel Switch combined (includes oil/fuel revenue which is 5X offset value)
Project Timeline (years)	20	20	20	20	20
Project Location	in and around the Gishwati Forest Reserve with possible focus on wildlife corridor	dispersed country wide	inside the park and the reserve and in the periphery of the park and reserve	focus on low elevation sub basins with high historic erosion levels	eastern province flat, dry, non-productive sites in non inhabited areas
Project Participants	Great Apes Foundation; smallholder coops in Gishwati Reserve; MINIRENA	smallholder coops; MIG; MINAGRI	smallholder coops; MIG; MINIRENA; ORTPN; Wildlife Conservation Society	smallholder coops; MIG; MINIRENA	Rwanda Prisons, MIG, Thermal Generating Company
Project Development Costs (validation and verification included)	\$252,000	\$235,000	\$420,000	\$125,000	\$90,000
Investment Yr 1 (implementation and development)	\$312,000	\$3,000,000	\$1,137,000	\$525,000	\$470,000
Average Annual Investment Yr 2 to Project End	\$172,000	\$2,900,000	\$875,000	\$450,000	\$1,800,000
Project Net Revenue Year 1	\$42,000	\$40,000	\$1,600,000	-\$40,000	-\$450,000
Total Government and Community Net Revenue Share (over project timeline)	\$5,100,000	\$51,000,000	\$16,000,000	\$14,000,000	TBD
Average Annual Added-value of Bio-products (including Bio-fuels)	\$3,600,000	\$36,000,000	\$3,750,000	\$10,000,000	\$5,416,667

APPENDIX III: Afforestation/Reforestation Activity Eligibility Test for CDM

Legal background to the A/R CDM project activities:

FCCC/KP/CMP/2005/8/Add.3
ANNEX

Definitions, modalities, rules and guidelines relating to land use, land-use change and forestry activities under the Kyoto Protocol:

A. Definitions

(a) "Forest" is a minimum area of land of 0.05–1.0 hectare with tree crown cover (or equivalent stocking level) of more than 10–30 per cent with trees with the potential to reach a minimum height of 2–5 meters at maturity in situ.

A forest may consist either of closed forest formations where trees of various storeys and undergrowth cover a high proportion of the ground or open forest. Young natural stands and all plantations which have yet to reach a crown density of 10–30 per cent or tree height of 2–5 meters are included under forest, as are areas normally forming part of the forest area which are temporarily unstocked as a result of human intervention such as harvesting or natural causes but which are expected to revert to forest.

(b) "Afforestation" is the direct human-induced conversion of land that has not been forested for a period of at least 50 years to forested land through planting, seeding and/or the human-induced promotion of natural seed sources.

(c) "Reforestation" is the direct human-induced conversion of non-forested land to forested land through planting, seeding and/or the human-induced promotion of natural seed sources, on land that was forested but that has been converted to non-forested land. For the first commitment period, reforestation activities will be limited to reforestation occurring on those lands that did not contain forest on 31 December 1989.

(d) Article 12

13. The eligibility of land use, land-use change and forestry project activities under Article 12 is limited to afforestation and reforestation.

B. Conclusions to the legal background:

1. The term eligibility is used only in connection with activity, namely: Afforestation and reforestation.

2. There is no definition of eligibility of land hence; any procedures for demonstration of eligibility of land are not directly based on Marrakech Accord.

3. Afforestation and reforestation are defined as direct human-induced conversion of land, i.e. both require land use conversion to be eligible for A/R CDM project activities.

4. Definition of forest is based on two features:

- Current: crown cover, and
- Potential: height

5. Procedures to define eligibility of activity for the first commitment period shall be based on:

- Assumption that tree planting for the CDM purposes involves species and management practices which will lead to creation of a stand that will have crown cover and height greater than the thresholds invoked in the definition of forest. This shall be substantiated in the PDD.
- Testing that the planting is a land use change.
- Testing that, the reforestation activities will be limited to planting occurring on those lands that did not contain forest on 31 December 1989.

Further assumptions that:

- In land use practice, the crown cover is the only feature that may be assessed precisely in the current and past situations (e.g. using EO, land cover maps, forest maps or PRA).
- Potential of trees to reach a minimum height of 2–5 meters at maturity in situ may be assessed based on site conditions, tree species used and management practices applied. This is doable for both current and past conditions.