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Developing countries, monitoring and reporting on greenhouse gas emissions, policies and measures

Country Report Kenya



Euroconsult Mott MacDonald
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Executive Summary

The identification of capacity barriers, gaps and recommendations for the measuring and reporting of GHG emissions and mitigation policies and measures in Kenya, has been a process of stakeholder consultations and iterative thinking. The following steps have allowed the team to arrive to this final country report:

1. Development of a first draft of country report which included national circumstances, based on secondary information. See Annex 1 for country report;
2. First in-country mission: consultation with stakeholders and systematization of findings. During the first visit, stakeholders both from the energy and LULUCF sector, as well as decision makers and politicians were interviewed. Approximately 10 meetings were held with more than 12 key stakeholders such as Information providers, analysts, policy makers and research institutions. See Annex 8 – List of interviewed stakeholders for the list of interviewed stakeholders and Annex 3 for the summary report from the interview minutes;
3. Second in-country mission: which included consultation with stakeholders, country workshop and systematization of findings. During the second mission interviews with stakeholders were completed, mostly on the energy sector (See Annex 8 – List of interviewed stakeholders). The country workshop took place in the Hotel Inter Continental Nairobi on July the 20th, 2010. More than 30 representatives from government – environment, economy and finance, energy and mining, foreign affairs and agriculture; the private sector; civil society and the international community attended the workshop. The objectives set for the workshop were to socialize and validate preliminary findings, to gather more information about barriers, gaps and recommendations, and to identify key work areas for a MRV capacity building project. See Annex 4 for workshop report and list of participants and Annexes 5, 6 and 7 for the sectoral papers developed for discussion at the workshop;
4. Preparation of the final country report. The following report aims to analyze the process of planning, design, implementation and evaluation of NAMAs and low emission development strategies in Kenya. It also includes existing instruments and processes for monitoring and reporting such as GHG inventories and National Communications to the UNFCCC.

This intensive in-country and with-country work allowed to:

- Get insider's perspective on national circumstances, gaps and needs
- Collect as many different perspectives as possible (government, private sector, academia and technicians vs. politicians)
- Build and facilitate stakeholder dialogues
- Develop "to do list" of CB activities that are widely recognized and accepted by stakeholders as important.

This "to do list" is of most importance and besides focusing on GHGI, National Communications, NAMAs and MRV, also had a sectoral focus on energy and forestry, which are elected and validated as key by the countries within the scope of the countries.

From country's perspective a clear listing of the potential activities can be used to identify and prioritize future work to be undertaken with or without support and, in the first case, to approach donors. From donors perspective, it allows them to have a comprehensive view of the necessary Capacity Building activities needed and to increase the efficiency and effectiveness of support avoiding the overlapping of actions and promoting synergies.

Through this in-country stakeholder consultation process described above, this report allowed to identify capacity needs, barriers, and gaps in relation to existing regulations and climate change measures and

related policies in Kenya; and to make recommendations on a way forward and of specific capacity building actions.

From donors perspective, it allows them to have a comprehensive view of the necessary capacity building activities needed and to increase the efficiency and effectiveness of support avoiding the overlapping of actions and promoting synergies.

Below is a brief summary of the Kenyan Climate Change decisions made until present, including the identification of key players and overall policy framework:

- The Ministry of Environment and Mineral Resources (MEMR) is in charge of Climate Change issues and the Focal Point to the UNFCCC negotiations. MEMR was responsible for the coordination and publishing of the National Climate Change Response Strategy (NCCRS) released in May 2010. This is the only document framing Climate Change issues in Kenya,
- Climate Change issues are coordinated by the Inter Ministerial Committee on Environment (IMCE) in which from key ministries/departments, academic and research institutions, NGOs and the private sector are represented. IMCE has created eight technical sub-committees on priority areas, one of which being the National Climate Change Activities Coordination Committee (NCCACC), which has as main objectives to provide advice on the implications of the commitments under the UNFCCC and other international agreements related to climate change
 - The National Climate Change Coordinating Office under the Directorate of Environment in MEMR acts as the secretariat of NCCACC.
- The Kenya Meteorological Department (KMD) acts as the IPCC focal point in the country.
- The National Environment Management Authority (NEMA) established under the Environmental Management and Coordination (EMCA) Act of 1999, acts as the principal instrument of government in the implementation of all policies relating to the environment (NEMA was previously known as the National Environment Secretariat). In addition, NEMA hosts the country's Designated National Authority (DNA), which is responsible for analyzing and approving CDM projects.
- The Kenya Forest Service (KFS) was designated as the body responsible for REDD in Kenya
- The Climate Change Coordination Unit (CCCU) at the office of the Prime Minister plays a supervisory role, appearing to be the new champion of Climate Change initiatives in the country.

Kenya submitted its First National Communication in 2002 and the Second in underway. Kenya associated with the Copenhagen Accord on 27 May 2010 through a *note verbale*. Until the present no mitigation objective has been established.

1. About MRV in this report

MRV stands for Measuring, Reporting and Verification. This concept was first introduced by the “Bali Action Plan” – BAP (Decision 1/CP.13) under the United Nations Framework Convention on Climate Change (UNFCCC). The BAP foresees MRV of nationally appropriate mitigation commitments or actions for developed countries, MRV of nationally appropriate mitigation actions (NAMAs) for developing countries and MRV of financial and technical support for NAMAs.

Later, the Copenhagen Accord provided a broad vision of the overall scope and main goal of the MRV procedures to be created.

"Non-Annex I Parties to the Convention will implement mitigation actions, including those to be submitted to the secretariat by non-Annex I Parties in the format given in Appendix II by 31 January 2010, for compilation in an INF document, consistent with Article 4.1 and Article 4.7 and in the context of sustainable development. (...). Mitigation actions subsequently taken and envisaged by Non-Annex I Parties, including national inventory reports, shall be communicated through national communications consistent with Article 12.1(b) every two years on the basis of guidelines to be adopted by the Conference of the Parties. Those mitigation actions in national communications or otherwise communicated to the Secretariat will be added to the list in appendix II. Mitigation actions taken by Non-Annex I Parties will be subject to their domestic measurement, reporting and verification the result of which will be reported through their national communications every two years. Non-Annex I Parties will communicate information on the implementation of their actions through National Communications, with provisions for international consultations and analysis under clearly defined guidelines that will ensure that national sovereignty is respected. Nationally appropriate mitigation actions seeking international support will be recorded in a registry along with relevant technology, finance and capacity building support. Those actions supported will be added to the list in appendix II. These supported nationally appropriate mitigation actions will be subject to international measurement, reporting and verification in accordance with guidelines adopted by the Conference of the Parties."

The general terms of the Copenhagen Accord as described above do not provide a clear understanding of how the MRV system will function and how its requirements will be implemented. It allows, however, to narrow down the key issues one must address when thinking ahead and start preparing for the establishment of an MRV system for climate policy.

The European Commission is implementing a scoping study aimed at understanding and exploring the needs of developing countries as regards enabling activities related to mitigation – focusing on MRVing emissions, the preparation of National Communications, Greenhouse Gas Inventories, and planning and development of NAMAs. The European Commission is in particular interested in understanding the needs related to capacity building in these areas.

The project, implemented by Euroconsult Mott MacDonald with Ecoprogresso and the Energy research Centre of the Netherlands (ECN), seeks to provide concrete recommendations on the structure and elements for a capacity building programme to be implemented between 2010 and 2013-2014 with a view to assist developing countries in implementing MRV requirements of a future climate change agreement. This capacity building programme will be designed based on and with a view to addressing institutional, procedural and methodological issues, relating in particular to data gathering, barriers, needs, constraints and opportunities, identified during this scoping study through an intensive in-country interactive stakeholder engagement and consultation process.

The following document is the result of a process of stakeholder consultations and iterative thinking that took place from May to July 2010. The process was aimed at identifying capacity barriers, gaps and recommendations for the measuring and reporting of GHG emissions and mitigation policies and measures in Kenya.

This report is structured following a logical sequence starting with an introduction of the country's circumstances relevant to the subject of measuring and reporting of GHG emissions and mitigation policies and measures; followed by an overall presentation of the main findings on gaps and barriers for MRV. The third section focuses on overall recommendations for a way forward that sets MRV as an important need for seizing the opportunities for a low emission economy. Section four focuses on the analysis of gaps and barriers for the development of GHG Inventories and National Communications as key instruments for measuring and reporting.

Finally sections four and five give a more detailed overview of barriers and proposed actions to overcome those, compiled during stakeholder's consultation in interviews and national workshop. Despite the fact that the energy and forest were the sectors selected by the Country for this study, based on their contribution to GHG emissions and their reduction/removal potential, in the Kenyan case the recommendations are actually not so focused on such sectors, since some basic needs to measure and report emissions and the effects of policies and measures in a complete, transparent and timely manner have yet to be addressed, as well as the definition of CC policies. Examples of barriers are the unavailability of data, emission factors and other parameters to measure GHG emissions/reduction, the need to adjust the institutional framework with a clear definition of roles and responsibilities, as to avoid the overlapping of functions, as well as the need to design policies and implement those, mainstreamed in all sectors, public or private.

2. Overview: Kenya, mitigation and MRV

2.1 General Overview

Kenya is a developing East African country known for its wildlife and national parks. The capital city is Nairobi. The second largest city is Mombasa, located on the southeast coast. In August 2010 the population was estimated in about 39 million inhabitants. Kenya is a Republic. The Executive is made of the President (chief of state, commander in chief of armed forces), the Prime Minister (head of government), and two deputy prime ministers.. In terms of administrative subdivisions Kenya established 140 districts, joined to form 7 rural provinces.

After independence (1963), Kenya promoted rapid economic growth through public investment, encouragement of smallholder agricultural production, and incentives for private (often foreign) industrial investment. After that, the growth of the economy decreased and from 2003 to 2007, the Government of Kenya began an ambitious economic reform program and resumed its cooperation with the World Bank and the IMF. Economic growth began to recover in this period, with real GDP growth registering 2.8% in 2003, 4.3% in 2004, 5.8% in 2005, 6.1% in 2006, and 7.0% in 2007. However, the economic effects of the violence that broke out after the December 27, 2007 general election, compounded by drought and the global financial crisis, brought growth down to less than 2% in 2008. In 2009 there was modest improvement with 2.6% growth.

2.2 GHG Emissions Profile and National Communications

From the literature review, the last Greenhouse Gas (GHG) inventory for Kenya was done as part of the First National Communication to the UNFCCC. As shown in the below Table, Kenya emitted 21,466 MtCO₂e in 1994, excluding Land Use, Land Use Change and Forestry (LULUCF). More than 65% of CO₂ emitted is from the transport sector, which is the largest consumer of petroleum products in Kenya. As shown in the table below, carbon intake is higher than carbon release hence there is a net absorption of CO₂ making Kenya a net CO₂ sink. More recent figures from the WB website indicate that CO₂ emissions were 12.14 Mton in 2006 correspondent to 0.33 ton per capita¹.

Table 1. Emissions Summary for Kenya (1994)

Emissions	kton CO ₂ equivalent
GHG emissions without LUCF	21,466.20
GHG net emissions/removals by LUCF	-28,000.20
GHG net emissions/removals with LUCF	-6,534.00
CO ₂ emissions without LUCF	5,512.00
CO ₂ net emissions/removals by LUCF	-28,262.20
CO ₂ net emissions/removals with LUCF	-22,750.30

Source: UNFCCC website²

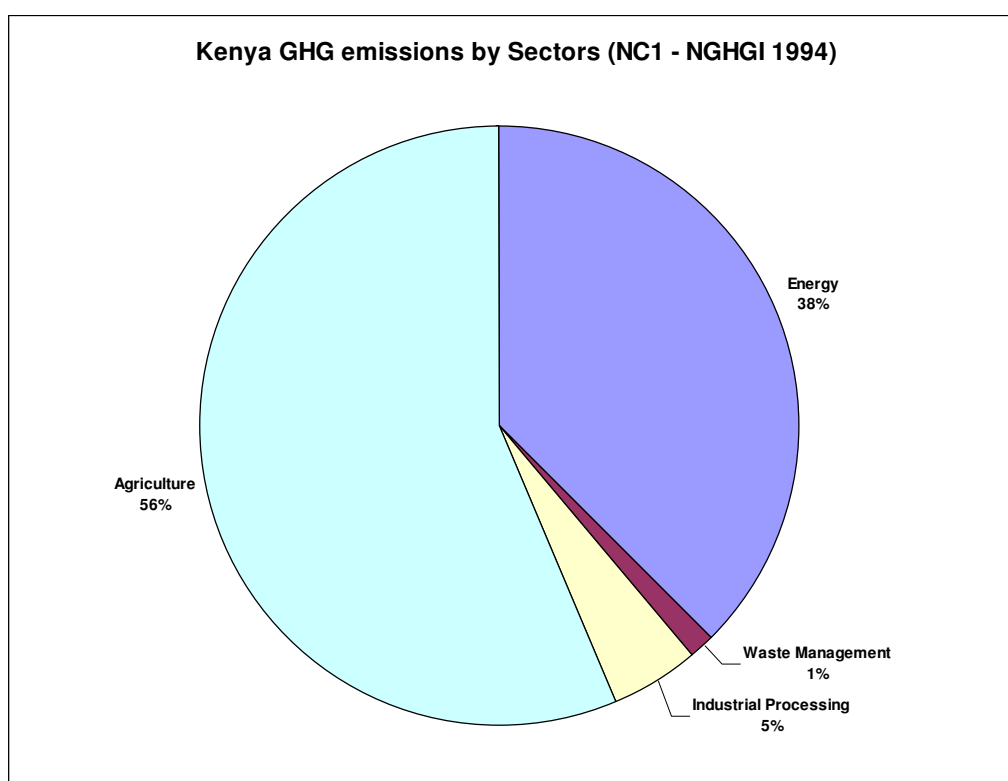
1 <http://data.worldbank.org/indicator/EN.ATM.CO2E.KT>

2 http://unfccc.int/files/ghg_data/ghg_data_unfccc/ghg_profiles/application/pdf/ken_ghg_profile.pdf

The main sources of Kenya's GHG emissions are agriculture (56%) and energy generation (38%), as shown in the Figure below.

Enteric fermentation is the major source of GHG emission in the agricultural sector accounting for 95.32% of total emissions. Emissions from other agricultural activities are considered insignificant. Low levels of N₂O emissions are due to the low usage of fertilizers in the sector.

Figure 1 Kenya 1994 GHG emissions by Sector (without LUCF)



Source: First National Communication, 1994

Kenya submitted its First National Communication to the UNFCCC in 2002. The Second National Communication is in progress. Although from the timetable the process is supposed to have been finalized, institutional barriers have been a hindrance. Ineffective coordination procedures between NEMA and Environment Secretariat at the Ministry of Environment and Mineral Resources (MEMR) and overlapping responsibilities are an example of the need to clearly define the institutional framework on MRV. Interviews with stakeholders also indicated that the technical problems existing during the elaboration of Initial National Communication such as lack of local emission factors have not been fully addressed. Lastly, although the First National Communication served the UNFCCC objective, the extent to which it has contributed to incorporate climate change into the national development plans can be ameliorated: Vision 2030 - the blue print of the country's economic growth - does not make references to Climate Change and, consequently does not pave the way for the adoption of a Low Emission Development Strategy (LEDS).

2.2.1 Overview of the Institutional Framework for Climate Change

Kenya has a complex network of institutions that act on Climate Change issues. Despite the considerable number of entities involved, an analysis of existing environmental policy and legal framework currently in place to guide climate change activities in Kenya performed during the elaboration of the NCCRS, revealed that Kenya currently has no policies or laws in place that deal directly and explicitly with climate change. The only policy that has attempted to address climate change to some extent is the draft National Environmental Policy of 2008. In addition, the Environmental Management and Coordination Act (EMCA, 1999), has only certain provisions relevant to mitigation of climate change, but does not effectively address the problem (NCCRS, 2010).

In this incipient legal framework, there are several actors holding responsibility on climate change issues.

The Ministry of the Environment and Mineral Resources (MEMR) is in charge of Climate Change issues, coordinating the elaboration of the NCCRS and being the Focal Point to the UNFCCC negotiations. In this scope, Climate Change issues are coordinated by the Inter Ministerial Committee on Environment (IMCE) in which from key ministries/departments, academic and research institutions, NGOs and the private sector are represented. IMCE has created eight technical sub-committees on priority areas, one of which being the National Climate Change Activities Coordination Committee (NCCACC). The National Climate Change Coordinating Office under the Directorate of Environment in MEMR acts as the secretariat of NCCACC. The objectives of NCCACC are to provide advice on the implications of the commitments under the UNFCCC and other international agreements related to climate change. This includes translating the objectives of the UNFCCC and related protocols into national development priorities. The committee is also required to establish a networked database on climate change impacts, response strategies and research activities.

Kenya Meteorological Department acts as the IPCC focal point in the country.

Adding to this, the National Environment Management Authority (NEMA) established under the Environmental Management and Coordination (EMCA) Act of 1999, acts as the principal instrument of government in the implementation of all policies relating to the environment (NEMA was previously known as the National Environment Secretariat). In addition, NEMA hosts the country's Designated National Authority (DNA), which is responsible for analyzing and approving CDM projects.

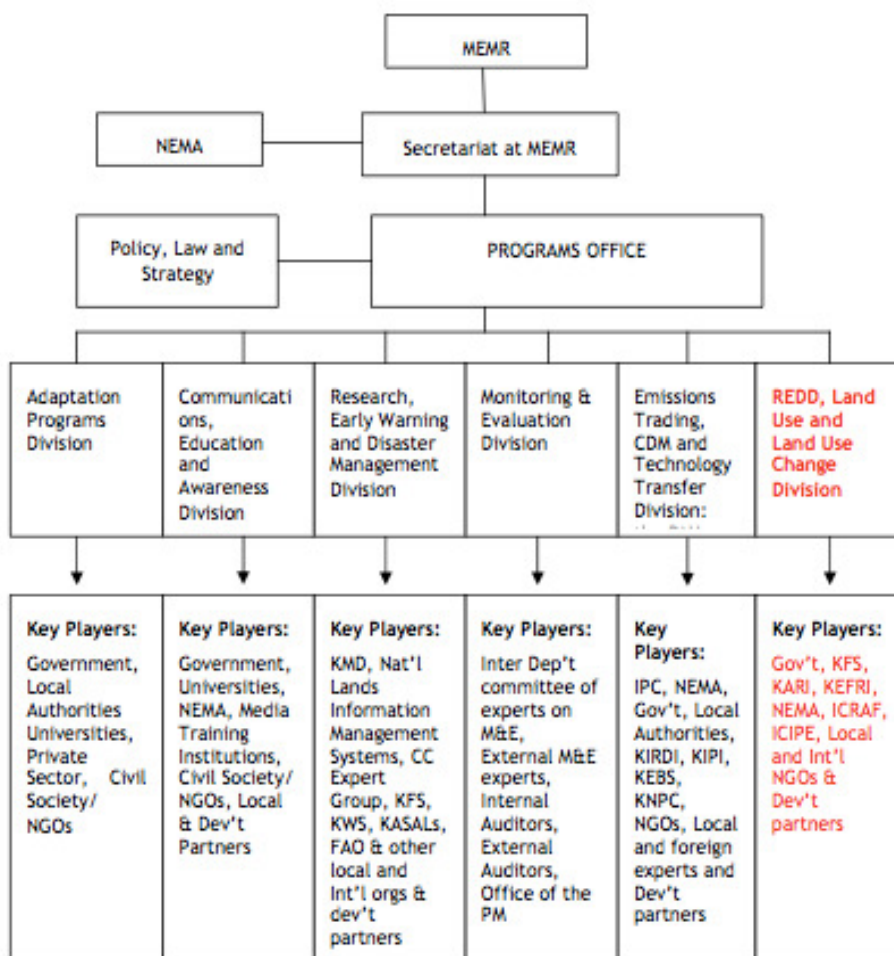
On the other hand, the Kenya Forest Service (KFS) was designated as the body responsible for REDD in Kenya and the Climate Change Coordination Unit (CCCU) at the office of the Prime Minister plays a supervisory role, appearing to be the new champion of Climate Change initiatives in the country.

The NCCRS has established that institutions currently in place to govern climate change affairs are inadequate and proposes a new institutional framework that foresees a Monitoring and Evaluation Division within which MRV can be integrated. It also has recommended that a dedicated and adequately funded Climate Change Secretariat would be established within the MEMR to oversee Climate Change issues including the implementation of the adaptation and mitigation programmes and the other aspects of the NCCRS. This Secretariat, including the proposed structures within it, should be anchored on the provisions of the new Climate Change laws to be enacted.

Further, in relation to Climate Change governance, it is recommended that the National Climate Change Activities Coordinating Committee (NCCACC) would continue to perform its current advisory capacity. It is further proposed that MEMR establishes a National Climate Change Steering Committee to help it gather

and collate input and advice from key climate change stakeholders for its use in the coordination of Kenya’s climate change activities. The Climate Change Secretariat to be established at MEMR will provide secretarial functions for the two committees. The Climate Change Coordination Unit (CCCU) at the Office of the Prime Minister would continue to provide high-level political support to climate change activities in Kenya.

Figure 2 Climate Change Governance Structure Proposed in the NCCRS



2.2.2 Climate Change Policy

Kenya associated with the Copenhagen Accord on 27 May 2010: “on the understanding that the association is without prejudice to the ongoing negotiations within the United Nations Framework on Climate Change Convention (UNFCCC) towards realizing a comprehensive and legally binding Climate Change agreement. (...) Given the urgency and scale of Climate Change threat, the Government of the Republic of Kenya (GoK) calls for the immediate, transparent and unconditional disbursement of quick start funds to developing countries as pledged in the Accord.” However, the GoK did not commit with a mitigation objective.

The GoK is making progress in addressing and mainstreaming Climate Change issues in policy definition and sectoral decision making and recently (in May 2010) MEMR released the National Climate Change Response Strategy (NCCRS), which is understood as the framework for Climate Change interventions and implies the designing and enacting of new Climate Change laws. Despite mentioning NAMAs only in passing, the strategy acknowledges that those can help attract some of the funding required to implement projects to reduce GHG emissions, through the foreseen support system, such as large-scale solar and wind energy plants that Kenya had already identified as having potential for reducing greenhouse gas emissions but which are lacking the necessary investment to be implemented.

The NCCRS's primary focus is ensuring adaptation and mitigation measures are integrated in all government planning, budgeting and development objectives.

Since Kenya currently has no policies or laws that deal directly and explicitly with climate change, the NCCRS recommends that a comprehensive climate change policy and related legislation be put in place. This could be achieved by either reviewing and updating the clauses on climate change in the draft National Environmental Policy or developing a completely new climate change policy. This should be followed by a review of existing laws (in particular, the Environment Management and Coordination Act, EMCA of 1999) to make them climate change responsive.

The NCCRS is divided into ten chapters. It outlines the evidence of climate change (in terms of temperature and rainfall variation) in Kenya, climate change impacts on the country and recommended actions that the country needs to take to reduce these impacts as well as take advantage of the beneficial effects of climate change. These actions range from adaptation and mitigation measures in key sectors, to necessary policy, legislative and institutional adjustments, to ways of enhancing climate change awareness, education and communication in the country, to necessary capacity building requirements, and to ways of enhancing research and development as well as technology development and transfer in areas that respond to climate change.

Despite the fact that NCCRS mentions mitigation, it is mostly focused on adaptation. The reasons for the low profile that Climate Change mitigation has been assuming in Kenya was discussed during the consultation process, where most of the stakeholders did express scepticism in relation to the opportunities accruing from LEDS and NAMAs. Much of such scepticism (and consequent low political priority for mitigation), is mostly linked to the disillusionment with CDM, in which support to mitigation activities did not provide the expected access to financing and clean technology. Similarly to most African countries, a political priority being set for adaptation, and the low levels of absolute and relative GHG emissions also keep mitigation away from political priorities.

Kenya's low participation in the CDM – so far only two projects have been registered for the country³, is hampered by a lack of awareness and expertise across the public and private sectors and of preparedness of the institutional and legal frameworks to attract clean investments.

As mentioned, there is no Kenyan climate change policy which specifically aims at driving the country through a low emission development. However, some of the policies being planned or implemented in Kenya will contribute to GHG emissions reduction, namely:

3 35 MW Bagasse Based Cogeneration by Mumias and the Olkaria III Phase 2 Geothermal Expansion Project

- The Forestry Development Plan (FDP) aims at planting 7.6 billion trees during the next 20 years. This will be done by growing trees by 35,000 schools; 4,300 women groups; 16,350 youth groups, and the six Regional Development Authorities. The FDP is included in the REDD+ Preparedness Strategy PIN
- The Green Energy Development Programme will seek to take advantage of Kenya's abundant renewable energy resources. The proven geothermal steam reserves are equivalent to 7000 MW. The north-eastern parts of the country are ideal for wind power generation. The arid and semi arid areas have long hours of sunshine throughout the year, making them conducive for solar energy capture and utilization. Kenya has an ample potential to grow sugarcane, sweet sorghum, Jatropha and other non-food crops suitable for producing biofuels.
- Policy to promote access to the Carbon Market (included in the NCCRS), which includes the following items:
 - calculation of the baseline GHG Grid Emission Factor (GEF) for the electricity grid of Kenya to facilitate CDM projects in the power sector and assist carbon project developers and consultants,
 - target capacity building for the private sector and investors to increase the knowledge of GHG reduction project development and markets, e.g. developing a handbook for CDM Project Activities detailing the role of government and the UNFCCC, CDM cycle, types of projects, eligibility criteria, CDM transaction costs and how to sell Certified Emission Reductions (CERs),
 - a government-fronted manual to guide CDM implementation to be placed on a public website, as has been done by a number of countries including Tanzania, strengthening relevant institutions such as the Designated National Authority (DNA) and removing barriers to carbon trading such as high initial transaction costs and low level of awareness of CDM potential on the part of private sector, particularly investment and financial organisations,
 - providing tax incentives and favourable import tariffs on technology for projects that reduce emissions,
 - having clear energy pricing and CDM project policies including a clear, strong institutional framework and good governance,
 - ensuring that Kenya establishes itself as a cost-effective host country to GHG emission reduction projects, designing a general ranking of the easiest and most viable project types to the most difficult and least viable (low hanging fruits first to build momentum),
 - creating a database of existing projects, emission reduction volumes, other benefits, project developers, financiers, government support, and
 - exploring ways of integrating carbon markets into the main economy and opening it to conventional legal and banking systems.

As can be seen from the above, when talking about GHG emissions mitigation, the focus remains, despite the previously referred disappointment, on creating enabling conditions for investments under the CDM.

It is interesting to note that the enacted policy to promote access to the carbon markets is extremely relevant for the creation of enabling conditions for the design, plan and implementation of NAMAs, despite the fact that it has been designed to specifically promote CDM and Voluntary schemes. From the stakeholder consultation process, it was possible to realize that experts and institutions are not yet sufficiently aware to see that the approach to promote access to carbon markets, can be easily shifted to a more integrated approach, which goes beyond stand alone projects, to a LEDS or NAMAs perspective. Stakeholders consulted highlighted that this project actually constituted one of the first opportunities to discuss mitigation from this integrated LEDS/NAMA perspective, thus creating opportunities for a new line of work at the different levels.

3. Findings: Gaps, Barriers and Needs

In analyzing gaps, barriers and needs in relation to mitigation and MRV in Kenya, these can be portrayed as:

- Low political priority attached to mitigation
- Institutional responsibilities over climate change divided among several institutions
- Lack of a structured and integrated policy framework
- Loss of capacity and institutional memory (thus reflecting lack of capacity to maintain capacity)
- Low awareness in relation to the opportunities arising from LEDS/NAMAs, aggravated by unfulfilled expectations in relation to the CDM
- Low technical expertise in relation to methodologies to estimate GHG emissions and GHG emission reductions, used to
 - Establish baselines
 - Determine emission projections
 - Elaborate GHG inventories (although to a lesser extent).

Most of these gaps, barriers and needs have already been identified and analyzed in the section on National Circumstances.

Of all countries participating in the project, Kenya may be facing the biggest challenges, as the country has truly not been able to realize (and truly integrate) the opportunities and the economic and development benefits from climate change mitigation. Several reasons and circumstances, which go beyond the scope of this report, may justify this case, but they certainly all are a cause and/or a consequence of the low priority attached to climate change by decision makers, political and business. It is clear from the stakeholder consultation process that lack of awareness, at all levels of decision making, on the costs and benefits of climate change mitigation is the primary barrier that needs to be overcome.

Only after such realization and political priority has been attached to climate change, will the country be able to tackle the remaining barriers, namely those related to ineffective policy design and implementation due to a dispersed institutional setting, where a considerable number of institutions hold responsibilities over climate change.

The lack of clear mandates and responsibilities is a deterrent for advances in Kenya both in terms of mitigation as well as in terms of MRV. If it is true that Kenya does not have a clear climate change policy framework, it is also true that the country is struggling to publish its 2nd NC, which is already 2 years late. Besides some administrative hurdles to the completion of the work, a key barrier found by experts in the elaboration of the GHG inventory is related to the fact that little capacity has been maintained from the previous exercise. No institutional network, paper trail, database, or methodological advancements. The NCSA report noted that changes in the technical staff and institutions involved in the inventory elaboration process constituted an impediment to an effective and efficient procedure (NEMA, undated). According to the report, experts involved in inventory updating a few years later, have to “reinvent the wheel” and repeat the same process of training, identification of available data, etc. as their colleagues did in previous years, which resulted in an expensive process. All concerned stakeholders have expressed deep concern over this and have also expressed concern that it may also not be possible to maintain capacity and memory from the current to the next exercise. In fact, the country is well aware of the fact that it has not been possible to build capacity in response to the gaps, barriers and needs identified several times in previous exercises, namely the National Capacity Needs Self Assessment (NCSA), and the First National Communication and the NCCRS. The NCSA report indicated that lack of funding did not allow the Parties to address some important components (gases and sectors) of GHG inventories included in the IPCC Guidelines, as well as to elaborate national emission factors in some key sectors (NEMA, undated).

In addition, the fact that only two CDM projects have been registered in the country also means that there is very little experience in designing baselines, emission projections with and without the use of given technology and measuring, reporting and verifying emission reductions.

A UNFCCC report on NCs identified the following gaps in preparing the First National Communication of Kenya, which are still to persist:

- IPCC default values were used in various sectors due to lack of local emissions factors;
- due to the time limitation, the inventory did not take into account the great variations in climate, soils, topography, animals and crop species across the country. It was not possible to calculate CO₂ emission from soils because of inadequate data and high variability of Soil Carbon Content;
- lack of data in the correct format for many industries and lack of information on many newly introduced industrial processes. Such information can be obtained if sufficient time is allowed for studying these processes under local conditions and establishing empirical values of emission factors for proper estimations of GHG emissions;
- lack of comprehensive surveys on urban waste management;
- data unavailability and/or unsuitability for inventories, particularly data on trends and rates of land-use change;
- potential sinks, coffee tea, coconuts, cashew nuts were not included in the IPCC methodologies;
- activity data and emission factors in the energy sector are well documented for fossil fuels, but data is lacking for firewood and charcoal consumption and combustion, respectively.

The main gaps and barriers identified both for the energy and LULUCF sectors are focused around two main issues: first, the consequence of the low profile that Climate Change mitigation has been assuming in the country and also the lack of institutional and political articulation for effective planning, design and implementation of NAMAs and the absence of a clear knowledge on the cost and benefits that may arise from that. The absence of sound information and harmonized methodologies for evaluating alternatives of growth and prioritizing mitigation measures will also be a barrier, namely for measuring GHG emission reductions and avoidance, and measuring and reporting on mitigation policies. Scattered information systems and outdated underlying information do not allow for effective planning and monitoring of climate change policies and measures. However, the forestry sector is a step ahead. Due to the elaboration of the REDD preparedness PIN a clearer identification of the needs to MRV mitigation action has been done and the process to implement it is underway. Also, for the other sectors, namely the energy sector, the policies envisaged in the NCCRS directed to the enhancement on the access to the Carbon markets can be further adapted to shift from CDM to NAMAs.

4. Seizing the opportunities of a low emission development: a way forward

Kenya, perhaps illustrates the situation in most African countries, where mitigation is not a very high political priority. That is most likely due to the fact that the:

- The country's total GHG emissions are low, reflecting a low level of industrialization
- The perceived opportunities for reduction are scarce, due to the fact that the CDM did not deliver the promised support for low emission development
- The country focuses its climate change agenda on adaptation
- Stakeholders, from political leaders to private sector decision makers, have not realized the potential benefits for economic development arising from climate change mitigation.

The understanding of this state of play is fundamental in working with Kenya, and is clearly pointed in the *note verbale* sent to associate the country with the Copenhagen Accord, within which it is stated that NAMAs are dependent of external support, and was also evident during the stakeholders' interviews and country workshop. In a time where decision makers, still do not attach economic development and competitiveness to LEDS, a clear understanding of the opportunities attached to a LEDS and to mitigation in general is needed in order to engage all the relevant stakeholders in such an ambitious task.

The way forward in Kenya towards an MRVed Low Emission Development encompasses:

- Enhancing the profile of CC mitigation among all stakeholders, in order to:
 - Raise political priority
 - Facilitate the streamlining of the institutional setting
 - Allow for the definition and adoption of an integrated climate policy
 - Pave the way towards the creation of a long term vision in the scope of national LEDS and for the planning, designing and implementation of NAMAs, and
 - Engage the private sector in the exploration of the opportunities arising from the low carbon economy
- Design and establish a national system, including all legal, procedural and methodological aspects, for:
 - The efficient regular submission of National Communications
 - The efficient regular submission of GHG inventories
 - The collection and management of data and information to MRV NAMAs.

As per the analysis of gaps, barriers and needs, it may become apparent that efforts in Kenya should be concentrated in the institutional setting, as it is a required condition to ensure that any capacity built is maintained.

In this regard, the NCCRS has already proposed a clearer definition of roles and responsibilities of all the currently involved institutions. In that regard, such a scoping exercise could be considered done. The investment should now be made in supporting Kenya in implementing the guidelines inscribed in the NCCRS.

In addition, Kenya's envisaged policy to promote the access to carbon markets addresses several issues which are of relevance to building the country's capacity to plan, design and MRV NAMAs. Future efforts should learn from the barriers encountered and the degree of success in implementing this policy, since the mechanisms envisaged could be easily replicated and used for the promotion of the design and implementation of NAMAs.

5. Proposed Concrete Action

From the evaluation of the needs, gaps, and barriers, two main set of activities proposals for cooperation and potential concrete actions were identified in relation to:

1. the elaboration of GHG inventories and National Communications;
2. the preparation and follow up of NAMAs for seizing the opportunities for a low emission economy.

The proposals for cooperation were discussed in workshops through an in-country intensive and interactive stakeholder consultation process, in order to incorporate the input of stakeholder's views and comments and finally produce a set of validated proposals for capacity building which show the way forward.

In summary, the following areas of potential concrete actions, constituting cooperation opportunities were identified in what concerns mitigation and MRV:

- MRV
 - Define and implement an institutional framework for the regular elaboration of NCs
 - Define and implement a National System that guarantees an accurate, transparent, comparable and timely GHG inventory
 - Sets the Institutional framework, clearly defining roles and responsibilities
 - Ensures data collection, storage, analysis and validation,
 - Identifies needs and develops regional/national/local EFs
 - Defines a QA/QC plan and procedures
 - Identifies and prioritizes opportunities for methodological improvements.
- MITIGATION
 - Enhance the institutional framework for the coordination of climate change policy and its respective integration in sectoral policies
 - Elaborate and disseminate the results of a study on the opportunities and benefits of LEDS to enhance the profile of CC mitigation among stakeholders and define cross-sectoral policies
 - Raise the awareness on Climate Change mitigation benefits, through the development of communication tools, training and “planning” workshops at local, regional and national levels
 - Enhance clarity on potential costs and benefits of MRV for both the public and private sectors
 - Develop capacity to design and implement a Voluntary Carbon Scheme (VCS) as an incentive to MRV emissions/reductions of the private sector, as a mean to differentiate low carbon products (defining benchmarks) to differentiate low carbon products, allowing the reduction of its carbon footprint of products and MRV it

The following table reflects the stakeholders' discussions and comments on the needs, gaps and barriers for the production of GHG inventories and National Communications with concrete actions to overcome those. The information contained in this table is a result of the stakeholder consultation process.

Table 2 Proposed Actions concerning GHG Inventory and National Communication

Gap/Barrier	Classification	Action	Focal stakeholders	Other stakeholders involved	Overall estimate of cost	Past, ongoing and planned activities by other donors
Lack of capacity to regularly elaborate National communications due to loss of institutional memory, which in its turn is a consequence of a less structured institutional framework.	Institutional	<p>Support the design and implementation of an institutional framework for the elaboration of NCs which includes the identification of all the entities which are required to provide information for the report and which includes the opportunity for public consultation.</p> <p>Include support to the design and implementation of an archiving system which allows for the updating of information in subsequent exercises, rather its re-collection.</p>	MEMR NEMA CCU NCCACC	All Sectors and stakeholders	n.a.	NCCRS proposes a new institutional framework which includes a Monitoring and Evaluation Division within which the definition and monitoring of the effect of policies and measures can be accommodated (Co-financed by SIDA)
Lack of capacity to produce complete, replicable and accurate GHG Inventory in a timely and efficient manner	Institutional; Information and Systems	<p>Define and implement a National System, which includes the definition of roles and responsibilities of all institutions involved as well as a work plan for methodological improvement. Establishing a national system includes:</p> <ul style="list-style-type: none"> • Designing legal and institutional arrangements: law and cooperation agreements between key institutions • Strengthening the capacity of key institutions to collect, analyze, validate and synthesise activity data, in a regular manner in order to allow for a timely elaboration of the GHG inventory • Elaborating a methodological improvement plan to set priorities on: <ul style="list-style-type: none"> – Defining nationally, regionally and/or locally appropriate emission factors – Collecting data for the use of higher tier methodologies for estimating GHG emissions and removals • Defining QA/QC procedures • Creating a documenting and archiving system • Define QA/QC procedures • Define data collection periodicity to guarantee the timeliness of the GHGI 	NEMA	Bureau of Statistics KFS ERC KMD MA DSRDRS Universities Research Institutions	n.a.	<p>United States Country Studies Programme (USCSP, 1994) - GHGI was carried out for land use change, energy, industry, agriculture and waste management</p> <p>The UNDP/GEF Capacity Building in Sub Sahara Africa to Respond to UNFCCC 1996 GHGI for 1992. This later inventory was updated to 1994 in order to meet the requirements of the UNFCCC guidelines</p> <p>UNEP/GEF study of IPCC GHG Inventory Methodology for LUC in Africa.</p> <p>UNEP study on the implications of climate change, sea level rise and vulnerability assessment of selected coastlines</p>

Gap/Barrier	Classification	Action	Focal stakeholders	Other stakeholders involved	Overall estimate of cost	Past, ongoing and planned activities by other donors
High level of uncertainty in estimating emissions from the LULUCF sector in the national GHG inventory.	Information and Systems	Complete the design and implementation of the National Emissions Inventory Subsystem for the LULUCF sector, based on the recommendation on the REDD Preparedness PIN , including namely <ul style="list-style-type: none"> • Design and implementation of Regional cooperation programmes to define regional emission factors and LU classification, including the identification of tree and shrub species • Build the capacity for Local communities to act as data gatherers in forestry inventories (species, number of specimens per specie, age...) 	NEMA/KFS	MA Bureau of Statistics Local Communities	n.a.	

Table 3 Proposed cross sectoral actions concerning NAMAs

Gap/Barrier	Classification	Action	Focal stakeholders	Other stakeholders involved	Overall estimate of cost	Past, ongoing and planned activities by other donors
The current institutional framework lacks a clear definition of roles and responsibilities. The low political priority attached to climate change mitigation results in poor institutional leadership on the matter; i.e. no institution is clearly championing CC in Kenya. As a consequence there is low coordination and integration of climate change into sectoral policies.	Institutional	<p>Support to the effective implementation of the roles and responsibilities of the institutional framework proposed in the NCCRS.</p> <p>Provide training on climate change mitigation to staff in key ministries and relevant stakeholders</p> <p>Develop a national programme to design a LEDS, i.e. to integrate climate change mitigation policy and action into the long term development policy (Vision 2030), including a wide stakeholder engagement.</p> <ul style="list-style-type: none"> 	CCU MEMR NEMA	CCACC All Sectors and stakeholders	n.a.	NCCRS proposes a new institutional framework.
Lack of integration of climate change mitigation considerations into sectoral policies can be attributable to a lack of relevant information, which could raise the interest of technical experts and decision makers.	Planning	<p>Develop a study on the challenges, risks, opportunities and benefits of LEDS and NAMAs.</p> <p>Include emissions scenarios and pathways in this study, including costs and benefits associated with each one.</p> <p>Support access and build capacity to use modelling tools, including macro-economic models.</p> <p>Design an awareness raising campaign in order to disseminate the results of the study by all the relevant stakeholders, including the private sector. The campaign may include a web-site, workshops, training and seminars and should include local, regional and national levels</p>	NCCACC	Universities and research centres.	n.a.	SEI's study

Gap/Barrier	Classification	Action	Focal stakeholders	Other stakeholders involved	Overall estimate of cost	Past, ongoing and planned activities by other donors
Determining baselines is a key aspect of planning and designing NAMAs for which there is little capacity in Kenya, namely due to the country's low participation in the CDM.	Designing	Support capacity building in the development and use of methodologies to establish baselines in particular in key sectors such as energy and agriculture. Hands on training with key experts. Potential for work with other countries in the region could be explored.	NEMA	MEMR CCU Universities and research sectors Key sectors.	n.a.	SEI's study
The private sector in Kenya is not engaged in climate change, due to unfulfilled expectations in relation to the CDM.	Planning	Support the design and implementation of a Voluntary Carbon Scheme focused on product carbon footprint which would focus on: <ul style="list-style-type: none"> Measuring, reporting and verifying product carbon footprint Reducing product carbon footprint Defining benchmarks Creating and implementing a Voluntary Carbon trading Scheme among participants 	KAM NEMA	NEMA MEMR CCU Private sector stakeholders	n.a.	n.a.
Much of the identified low capacity to design NAMAs in the Energy sector was attributed to a lack of expertise in terms of baseline determination and lack of awareness on (and actual access to) relevant technologies.	Planning/Design	Create capacity to define integrated energy policies and measures with focus on mitigation by developing a study on low emission options for the development of the energy sector in Kenya, including costs and benefits of different options and technologies and an identification of potential barriers for implementation.	ME ERC	KFS MEMR CCU NEMA Private sector	n.a.	NCCRS SEI's study National Communications

Gap/Barrier	Classification	Action	Focal stakeholders	Other stakeholders involved	Overall estimate of cost	Past, ongoing and planned activities by other donors
Low capacity to develop scenarios and emissions/ reductions projections, including cost-benefit analysis due to lack of activity data in the Forestry sector	Designing	Support data collection and the design and creation of a complete database of forest resources, including: <ul style="list-style-type: none"> • Trees outside forests, biomass in gazettes forests and bush lands • Domestic timber supply and demand • Economic impact of the logging ban in plantations • Charcoal chain value assessment • Impact of fires on carbon stocks by forest burned 	Bureau statistics KFS ERC	of NEMA MA Timber industries	n.a.	REDD strategy
The high interconnection between forestry and energy in Kenya would require a high degree of coordination between the decision makers in both sectors, which currently does not exist and for which there is little awareness.	Planning	Support the development of a study on the linkages between energy and forestry, including a “life cycle analysis” for fuelwood and charcoal, as a contribution for the enhanced coordination of energy and forestry policies	KFS ERC	NEMA NCCACCC MEMR MA	n.a.	REDD strategy (Energy regulation)

Gap/Barrier	Classification	Action	Focal stakeholders	Other stakeholders involved	Overall estimate of cost	Past, ongoing and planned activities by other donors
<p>In designing a LEDS and NAMAs, Kenya will be faced with very little experience in frequent verifiable reporting. In this sense, there will be a need to build capacity on measuring and reporting in all stakeholders involved in NAMAs (be it public or private), which should be taken into account in the design of each NAMA. In addition, there is no capacity for verification in Kenya.</p>	<p>Evaluation</p>	<p>Support to the creation and maintenance of a user friendly, flexible software (data-base) which allows for easy and regular collection of data on the measurement of implementation of NAMAs, in a reportable and verifiable way (thus including tools for the export of data into reports and all the underlying information needed for verification purposes).</p> <p>Develop national capacity for designing and implementing verification systems and procedures and for defining criteria for certifying verifiers.</p> <p>To organize interchanges between Kenyan organizations interested in the matter and similar European entities, both from the public “regulator” and the private “verifier” sides.</p> <p>To exchange experiences and provide training in designing and implementing verification systems and procedures.</p> <p>To exchange experiences and provide training in establishing a system for certification of authorized verifiers.</p>	<p>MEMR</p>	<p>All relevant stakeholders</p>	<p>n.a.</p>	<p>n.a.</p>

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Appendix A. Country Background Report

Kenya associated with the Copenhagen Accord on the 27th May 27 2010: “on the understanding that the association is without prejudice to the ongoing negotiations within the United Nations Framework on Climate Change Convention (UNFCCC) towards realizing a comprehensive and legally binding Climate Change agreement. (...) Given the urgency and scale of Climate Change threat, the Government of the Republic of Kenya (GoK) calls for the immediate, transparent and unconditional disbursement of quick start funds to developing countries as pledged in the Accord.” However, the GoK did not commit with a mitigation objective.

This report is based on desk review and the results of two country visits (in May and July 2010) within which a considerable number of stakeholder’s interviews were performed (see Annex 8 – List of interviewed stakeholders). During the second country visit a workshop was held with the main goal of at understanding and exploring the needs of Kenya as regards enabling activities related to mitigation of Greenhouse Gas (GHG) emissions – focusing on Measurement, Reporting and Verification (MRV) of emissions, the preparation of National Communications, GHG Inventories, and planning and development of Nationally Appropriate Mitigation Actions (NAMAs).

Kenya submitted its First National Communication (2002) with a GHG inventory (corresponding to 1994) and the Second National Communication is in progress. Recently (in May 2010) the GoK released the National Climate Change Response Strategy (NCCRS), which is understood as the framework for Climate Change interventions. The NCCRS mentions NAMAs in passing. The strategy acknowledges that NAMAs programmes can help attract some of the funding required to implementing large-scale solar and wind energy projects. No NAMA programmes however feature in the strategy. In the course of doing this study, most of the stakeholders did express scepticism toward NAMAs. Much of it is linked to disillusionment with CDM. Kenya’s participation in this mechanism is hampered by a lack of information and awareness of the institutional and legal framework, technical infrastructure, enforcement capacity, and human resources needed to implement the mechanism. Only two CDM projects have been registered in Kenya⁴.

A.1. National Circumstances

A.1.1. Geography and Demography

Kenya rises from a low coastal plain on the Indian Ocean in a series of mountain ridges and plateaus, which stand above 3,000 meters in the center of the country. The country covers a total area of 582,646 km² of which only 5% is arable land. Water bodies cover an area of 11,000 km². The remaining 74% comprises arid and semi arid lands. Forests and woodlands covered around 2%.

The United Nations Development Programme (UNDP) statistics estimate the total population in 2008 to around 38.3 million and an urban population of 15.7 million (UNDP, 2010). The population is estimated to increase to 41 million and 63 million in 2010 and 2030 respectively. The vision 2030 projects the urban population to increase to 43 million in 2030. The rapid growth in urban population is likely to sustain infrastructures especially motorized transport.

4 35 MW Bagasse Based Cogeneration by Mumias and the Olkaria III Phase 2 Geothermal Expansion Project

A.1.2. Economy

The Gross Domestic Product (GDP) in 2008 was 30.4 US\$ billion. The World Bank projects GDP to grow at about 4% between 2008 and 2012. GDP per capita in 2008 was 1,580 (PPPUS\$). Improvements in the tourism sector, resilience in the building and construction industry, and the Government's intervention through an economic stimulus package resulted in a GDP growth rate of 2.6% in 2009 (GoK, 2010a). The decline in poverty from 56% in 2000 to 45.9% in 2006 is attributable to improved governance, management of public resources and implementation of key reforms in various sectors of the economy (UNDP, 2010).

Agriculture is the main sector of the Kenyan economy and its performance influences overall economic performance. The share of Agriculture and forestry to GDP stood at 24.4% in 2009 compared to 27.2% in 2001. Over 75% is mostly smallholder agriculture, characterized by low farm inputs, low yields and low-level crop and land husbandry. Fertilizer usage is low, at an average of 25 kg per hectare. In 2007, the forest sector was estimated to contribute about 1% to GDP (KFS, 2010). Manufacturing contributed only 0.5% of GDP in 2009 (GoK, 2010a).

Investments in roads, energy, residential and non residential buildings and communications made the construction sector the second fastest sectoral growth of 14.1 % in 2009. This growth is also reflected in cement consumption, which grew by 21.1% in 2009 (GoK, 2010a). Anticipated growth in the construction industry in South Sudan had led to massive investments in the cement manufacturing sector (Richard Odingo per com). Cement production is among the major sources of GHG emission in the industrial sector.

A.1.3. Energy production and consumption

Wood fuel is the most significant energy source consumed in the country, accounting for about 68% of the national total. Petroleum is the next most important, accounting for 22%, followed by electricity, with 9%. Renewable sources of energy including solar, wind and micro hydropower account for about 1% (NEMA b, undated). By 2000, the biomass demand was 34.3 million ton, whereas sustainable supply of woody biomass was 15 million ton, a shortfall of 19.3 million ton for that year. Per capita consumption of biomass in rural Kenya was 741 kg of firewood, whereas in urban Kenya it was 691 kg (NEMA b, undated). As shown in Table 4, total modern energy consumption in 2009 was 4002 ktoe. The per capita energy consumption was 101.6 toe per person in 2009 (GoK, 2010a).

Total electricity generation was 6,468.8 GWh in 2009 (GoK, 2010a). Hydro electricity generation declined from 3,591.5 GWh in 2007 to 2,122GWh in 2009 due to drought experienced in most parts of the country. This resulted in increased reliance on thermal generation. Electricity generation from thermal sources rose by 39.7% in 2009. Power generation sector consumption of petroleum products increased by 3.3%. Petroleum consumption by the power sector stood at 372.2 ton. Thermal power accounted for 46.3 % of total electricity generation while hydro and geothermal sources accounted for 32.8% and 20% respectively in 2009. Electricity generation from geothermal sources rose by 24.5% in 2009 (GoK, 2010a).

Table 4 Consumption of Primary Energy Sources, Excluding Biomass (thousand toe)

Year	2005	2006	2007	2008	2009
Coal and coke consumption	89.3	119.7	109.5	108.8	94.6
Imports of crude oil	1774	1643.2	1598.7	1773.3	1627.9
Net exports of petroleum	902.7	1264.7	1836	1902.9	2565.6
Stock changes and balancing item	39.2	130.3	-312.9	-543.1	-582.7
Total consumption of Liquid Fuels	2715.9	3038.2	3121.8	3133.1	3610.8
Hydro consumption and Geothermal Energy					
Local Production of hydro power	261.5	260.1	308.8	280.9	182.4
Local Production of geothermal power	86.1	89.9	85	89.3	111.2
Imports of hydro power	2.4	0.9	1.9	2.1	3.3
Total consumption of hydro and Geothermal energy	350	350.9	395.8	372.3	296.9
Total Local Energy Production	347.6	350	393.8	370.2	293.6
Total Net Imports	963	499.1	-125.9	-18.7	-839.8
Total Energy consumption	3155.2	3508.8	3627.1	3614.2	4002.3
Local Production as % of total	11	10	10.9	10.2	7.9
Per capita consumption in terms of Ktoe	89.9	97.2	97.5	97.5	101.6

Source: GoK, 2010a

The total installed capacity in 2009 was 1311.5 MW. Installed hydro and thermal capacity was 730 MW and 421.5 MW respectively (GoK, 2010a). While the large hydro potential of over 30 MW is diminishing, there is great potential in geothermal resource.

The potential for geothermal energy is estimated at 7,000 MW (GoK, 2010a) and the potential for wind energy is estimated at 2,000 MW.

Currently, solar photovoltaic provides 0.4MW of off-grid electricity, mainly to small rural based household consumers (SEI, 2009). Only 15% of Kenyans and 6% of the rural populations have access to grid electricity (KPLC, 2006). The total PV installed capacity is in the range of 0.4 MW (SEI, 2009).

A.1.4. Transportation

The number of newly registered vehicles increased significantly, by 42.8% from 85,324 in 2007 to 121,831 in 2008 (GoK, 2009). Motorized transport is by far the most dominant and is a major source of pollution and emitter of GHG, especially in the urban areas.

A.1.5. Forestry

According to the World Bank (WB) the forest area was 34,980 km² in 2007 (Table 5). The estimated rate of deforestation is as high as 931 km² or 0.5% of the forest area per year (WB, 2007). The forest plantation stocking decreased from 114 thousand hectares in 2008 to 107 thousand hectares in 2009. The decline of about 6.1% was mainly attributed to high planting failures and fire damages totalling 8.7 thousand hectares in 2009 (KFS, 2010).

Table 5 Forest Plantation stocking (thousand hectares)

Stocking	2005	2006	2007	2008	2009
Previous planted Area	114.5	117.6	110.5	112.3	114.0
Area Planted	7.3	6	5.5	5.7	3.5
Total	121.8	123.6	116	118	117.5
Area cleared felled	4.2	2	2	3	1.8
Planting failures/fire damages	-	11.1	1.7	1	8.7
Total Area	117.6	110.5	112.3	114.0	107

Source: KFS, 2010

A.1.6. Development Strategy

The "Vision 2030" is Kenya's development blue-print projecting the country as a middle income economy by the year 2030. The Vision aims to achieve an average GDP growth rate of 10% per annum by 2012. Millennium Development Goals (MDGs) are expected to be met by the 2015 deadline. The Vision 2030 is planned to be implemented in successive five year Medium Term Plans, with the first such plan covering the period 2008 – 2012. Climate change is not fully recognized in the Vision 2030 as a problem that could hamper the country's ambitious development goals the vision articulates. As discussed later in this document, there are significant economic benefits for Kenya in following a low carbon development path, as well as large environmental and social benefits. Low carbon development paths such as improvements in electricity and transport efficiency, domestic stoves and agriculture, can enhance economic growth.

A.2. GHG Emissions Inventory

From the literature review, the last Greenhouse Gas (GHG) inventory for Kenya was done as part of the First National Communication to the UNFCCC and resulted from the update of the 1992 exercise in the scope of the UNEP/GEF Capacity Building in Sub-Saharan Africa. As shown in the Table below, Kenya emitted 21,466 MtCO₂e in 1994, excluding Land Use, Land Use Change and Forestry (LULUCF). Without LULUCF, CH₄ accounted for 72.38% of total emissions, followed by CO₂ (25.68%) and N₂O (1.94%). With LULUCF, CO₂ accounted for 58.38%, while CH₄ accounted for 40.47%.

More than 65% of CO₂ emitted is from the transport sector, which is the largest consumer of petroleum products in Kenya. As shown in the table below, carbon intake is higher than carbon release hence there is a net absorption of CO₂ making Kenya a net CO₂ sink. More recent figures from the WB website indicate that CO₂emission was 12.14 Mton in 2006 and 0.33 ton per capita⁵. The IEA data shows CO₂emissions from coal and oil were 0.3 and 11.2 Mton⁶.

5 <http://data.worldbank.org/indicator/EN.ATM.CO2E.KT>

6 <http://www.iea.org/co2highlights/co2highlights.pdf>

Table 6 Emissions Summary for Kenya (1994)

Emissions	kton CO ₂ equivalent
GHG emissions without LUCF	21,466.20
GHG net emissions/removals by LUCF	-28,000.20
GHG net emissions/removals with LUCF	-6,534.00
CO ₂ emissions without LUCF	5,512.00
CO ₂ net emissions/removals by LUCF	-28,262.20
CO ₂ net emissions/removals with LUCF	-22,750.30

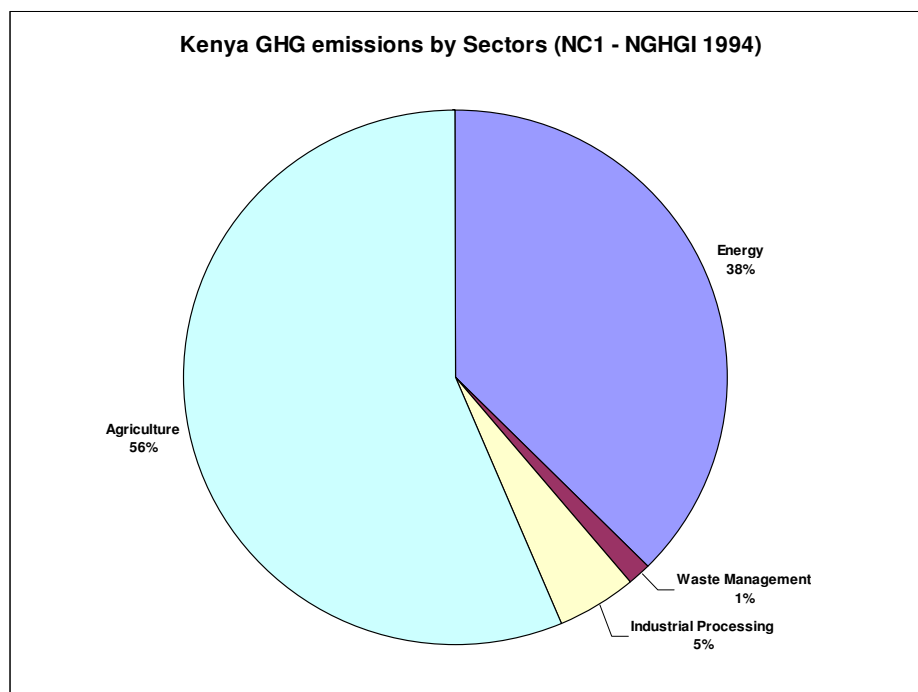
Source: UNFCCC website⁷

The main sources of Kenya's GHG emissions are agriculture (56.4%) and energy generation (37.5%). This is shown in the Figure below.

As shown in the Table below, the energy and industrial sectors are the leading sources of emissions from anthropogenic activities. The agricultural sector accounts for 76.8% of the methane emission from anthropogenic sources.

Enteric fermentation is the major source of GHG emission in the agricultural sector accounting for 95.32% of total emissions. Emissions from other agricultural activities are considered insignificant. Low levels of N₂O emissions are due to the low usage of fertilizers in the sector.

Figure 3 Kenya 1994 GHG emissions by Sector (without LUCF)



Source: First National Communication, 1994

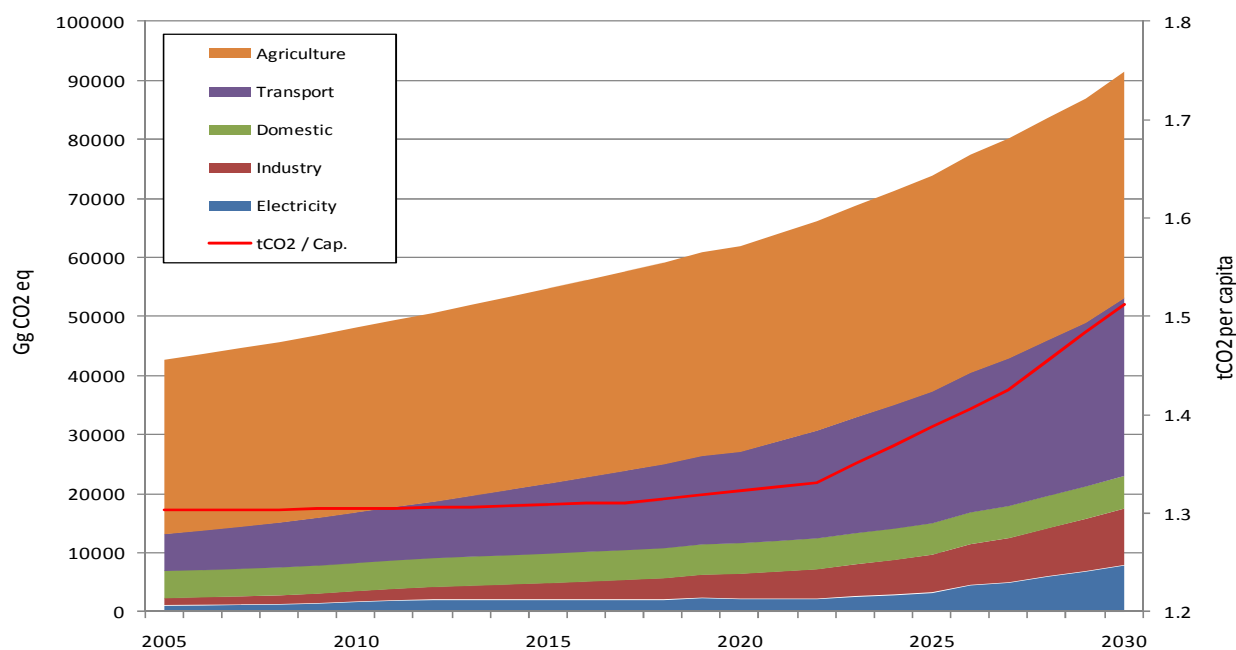
⁷ http://unfccc.int/files/ghg_data/ghg_data_unfccc/ghg_profiles/application/pdf/ken_ghg_profile.pdf

Table 7 Summary of GHG emissions from anthropogenic activities in 1994 (kton)

Sector	CO ₂	CH ₄	N ₂ O
Energy	4522	148	1.3
Industry	990.1		
Agriculture		576	
Land use/Forestry	-28261	11	0.1
Wastes		15	
Total	-22751	750	1.4

Source: First National Communication, 1994

The only other reference to GHG emission projections in Kenya is the Stockholm Environment Institute (SEI) study on the Economics of Climate Change in Kenya (SEI, 2009). The study used the projections in the Vision 2030 to illustrate the future growth in emissions. The study projected that emissions will increase from 42 Mton CO₂e in 2005 to 91 Mton CO₂e in 2030. It is also estimated that Kenya's per capita emissions could increase to over 1.5 ton CO₂ by 2030. As shown in the Figure below, the agricultural and transport sector will still remain the major sources of pollution.

Figure 4 Projections of Kenya's GHG emissions (kton CO₂e), 2005-2030

Source: SEI, 2009

A.3. Climate Change Policy Framework

A.3.1. Institutional Set Up

Kenya ratified the United Nations Framework Convention on Climate Change (UNFCCC) on 30th August 1994. In the context of UNFCCC, the Ministry of Environment and Mineral Resources is the focal policy

making entity, responsible for international negotiations. The National Environment Management Authority (NEMA) established under the Environmental Management and Coordination Act (EMCA) of 1999, acts as the principal instrument of government in the implementation of all policies relating to the environment (NEMA was previously known as the National Environment Secretariat). In addition, NEMA hosts the country's Designated National Authority (DNA), which is responsible for analyzing and approving CDM projects. The Kenya Forest Service (KFS) was designated as the body responsible for REDD in Kenya.

Climate change issues are coordinated by the Inter-Ministerial Committee on Environment (IMCE) with representation from all key ministries/departments, academic and research institutions, NGOs and the private sector. IMCE has created eight technical sub-committees on priority areas. The technical sub-committee on climate change is called the National Climate Change Activities Coordination Committee (NCCACC). The National Climate Change Coordinating Office under the Directorate of Environment in MEMR acts as the secretariat of NCCACC. The objectives of NCCACC are to advise on implications of the commitments under the UNFCCC and other international agreements related to climate change. This includes translating the objectives of the UNFCCC and related protocols into national development priorities. The committee is also required to establish a database on climate change impacts, response strategies and research activities. Kenya Meteorological Department acts as the IPCC focal point in the country.

Climate change governance is not streamlined in Kenya. This has reduced the effectiveness of the country's climate change programmes and projects. The National Climate Change Response Strategy (NCCRS) launched in May 2010 has proposed a new climate change governance structure. The Ministry is in the process of establishing a Climate Change Secretariat to coordinate the implementation of the NCCRS. The Climate Change Secretariat will have powers to enforce new laws and regulations relating to climate change.

Ways to promote synergies between the Ministry of Environment and units working on climate change outside its docket are not clearly defined. For instance there is a Climate Change Coordination Unit (CCCU) at the office of the Prime Minister. Although, the office of the Prime Minister plays a supervisory role, CCCU appears to be the new champion of climate change initiatives in the country. This is, however, a positive development in terms of ensuring high level political support to climate change activities in the country. In June 2009, the Kenyan Government through the Prime Minister's office established the National Taskforce on Accelerated Development of Green Energy. Majority of those interviewed by this study expressed concern that the NCCAC has been very ineffective in its mandate to develop and harmonize multi-sectoral programmes.

The COP12 in Kenya in 2006 has boosted much of the attention. A remarkable follow-up initiative is the Parliamentary Network on Renewable Energy and Climate Change (PANERECC), which both creates awareness but also contributes to influence of policy making relevant for climate change and renewable energy.

The Energy Act 2006 prioritizes renewable energy for promotion and development and also urges government through Parliament to set aside funding for renewable energy. However, the Act is quiet on climate change and its causative effect, notwithstanding the fact that the search for new and renewable energy technologies is important in the mitigation and long-term response to the threat of global climate change. PANERECC was established to champion the link between renewable energy and climate change. PANERECC is a network of cross-party politicians, mostly Parliamentarians, whose mission is to promote renewable energy and climate change issues in and outside Parliament and it is hosted by the Parliamentary Committee on Energy, Communications and Public Works (PC-ECPW). The goal of

PANERECC is to tackle climate change and its negative impacts on development as well as to promote the accelerated development of sustainable energy from renewable sources to achieve social and economic equity, to reduce fuel imports and foreign exchange drain, to enhance Kenya's domestic and the global environment, and to promote private sector growth and employment generation in the renewable energy sector. The immediate objective of PANERECC is to ensure that parliamentarians are educated and better informed on the impact of climate change, and the need for improved policy instruments and legal frameworks that address climate change adaptation and mitigation. Other objectives include:

- to facilitate deeper understanding of climate change issues in particular Kyoto Protocol mechanisms and their relevance to national development;
- to strengthen understanding on new and renewable energy technologies, challenges and opportunities related to their increased uptake and their link to climate change;
- to provide information on available financial and investment opportunities for promoting adaptation to climate change.

Institutional Set Up for Forestry

The Kenya Forest Service (KFS), under the Ministry of Forests and Wildlife, is the state agency charged with ensuring sustainable management and conservation of forest resources in the country. There are also a number of other technical institutions supporting the forestry sector including a Technical Forestry Training College, two Universities offering forestry degree courses, the government forestry research institution, KEFRI, and several civil society organizations that play advocacy and awareness raising roles. Civil society organizations have an important role in forest governance in Kenya and have proved to be an effective means of raising awareness and changing attitudes and behaviour. The timber processing sector is represented by the Timber Manufacturers Association. Technical competence within these institutions is high (KFS, 2010).

Institutional Set Up for Energy

The Ministry of Energy has the mission to facilitate provision of clean, sustainable, affordable reliable and secure energy for national development while protecting the environment.

The Ministry was assigned the following functions:

- energy policy development;
- electric power development;
- oil and other fossil fuels exploration and development;
- exploration and exploitation of non-convention energy sources such as wind, biogas, solar, geothermal and wood fuel.

The Ministry also has an oversight role over service delivery by the following parastatals / statutory bodies in the energy sector:

- Kenya Power and Lighting Company Limited (KPLC);
- Kenya Petroleum Refineries Limited (KPRL);
- Kenya Electricity Generating Company Limited (KenGen);
- National Oil Corporation of Kenya (National Oil);
- Kenya Pipeline Company Limited (KPC);
- Energy Regulatory Commission (ERC);
- Rural Electrification Authority (REA);
- Energy Tribunal;
- Geothermal Development Company (GDC);

- Kenya Electricity Transmitting Company (KETRACO).

A.3.2. The National Climate Change Response Strategy

In an endeavour to effectively address climate change agenda in the country, the Government launched, in May 2010, the National Climate Change Response Strategy (NCCRS). NCCRS made a linkage between climate change and Vision 2030. The strategy also outlined adaptation and mitigation interventions. Unlike the Technology Assessment Needs report, NCCRS went a step further and put cost on the activities in the strategic plan. The estimated cost of some of the mitigation activities selected are shown in Table below. Mitigation measures were identified in the energy, transport and agricultural sectors. Energy efficiency measures are also proposed in the manufacturing sector. These measures include:

- accelerate the development of geothermal energy. Approximately 1,000MW of geothermal electricity can be harnessed at a cost of US\$ 0.06 per kWh in the next three to four years;
- accelerate the development of green energy including wind, solar and renewable biomass. Strategies for accelerating green energy include:
 - resource assessment;
 - credit facilities to enhance solar rural electrification;
 - regulations for mandatory installation of solar water heaters in building;
 - investing in renewable biomass energy including bio-fuels and sustainable charcoal⁸⁹;
 - investment in bio-ethanol processing;
 - investment in cogeneration;
 - thermal energy electricity conversion by manufacturing sector planting trees;
 - converting municipal solid waste into energy;
 - developing National Appropriate Mitigation Actions (NAMAs);
- Energy Efficiency programmes and projects include:
 - mandatory energy audits by large commercial and industrial consumers;
 - reviewing tax policy on importation of motor vehicles;
 - subsidies and tax incentives for adoption of energy-efficient fluorescent bulbs;
 - reviewing building codes to encourage energy efficient buildings;
- Measures in the agricultural sector include:
 - appropriate use of biotechnologies;
 - using waste to produce biogas;
 - improved crop production practices;
 - promotion of intercropping in plantations;
 - promotion of organic farming;
- measures in the transport sector include:
 - promotion of public and non motorized transport;
 - enforcing vehicle inspection rules.

8 An Italian company, Nove Iniziative Industriali sri, is clearing 55,000 hectares leased from the Malindi County Council for the jatropha plantations. The biodiesel would be for local use as well as export to Italy. It also promises to contribute electricity to the national grid and generate gas for domestic use. But the first scientific audit of the tree by KEFRI and World Agroforestry Center, says the crop is not economically viable when grown as a monoculture or in plantations. Daily Nation, May 28, 2010. Miracle Tree May Lack the Magic Touch its Fabled to have after all.

9 Tomomatsu and Swallow also question the viability of production at farm level. In a study they carried out, they concluded that the profitability of jatropha production for smallholder farmers is expected to be minimal unless farm-level production is accompanied by investments and policies promoting decentralized oil extraction and transesterification (Tomomatsu and Swallow, 2007).

Table 8 Selected Mitigation Action Plans Identified by the NCCRS

Specific Activity	Implementati on time frame (years)	Resource requirement per year (Billion Ksh) ¹⁰
Accelerated development of geothermal power by the government and its development partners	10	20.3
Accelerated development of geothermal power by the private sector	10	12.1
Accelerated development of green energy (solar, wind, renewable biomass etc) by government and its development partners	5	15
Provision of efficient (fluorescent) bulbs to domestic consumers	10	0.36
Provision of improved cook stoves	10	0.075
Promotion of low-end solar devices including solar drip irrigation, solar water heating etc	10	3
Development of a Bus Rapid Transit (BRT) system	4	8.75
Development of Light Rail	3	3.1

Source: NCCRS, 2010

The NCCRS mentions National Appropriate Mitigation Actions (NAMAs) in passing. The strategy acknowledges that NAMAs programmes can help attract some of the funding required to implement large-scale solar and wind energy projects. No NAMA programmes however feature in the strategy. In the course of doing this study, most of the stakeholders did express scepticism toward NAMAs. Much of it is linked to disillusionment with CDM. Kenya's participation in this mechanism is hampered by a lack of information and awareness of the institutional and legal framework, technical infrastructure, enforcement capacity, and human resources needed to implement the mechanism. Only two CDM projects have been registered in Kenya¹¹.

A.3.3. Options for mitigation of fossil fuel emissions

Kenya, like many other developing countries, contributes only with relative small amounts of GHG emissions from fossil fuels and the potential for mitigation using CDM is little. There are few emissions to be offset. The estimated annual release of CO₂ from fossil fuel imports to Kenya is 6 Million tons (based on ACTS, 2007) with the largest share (2/3) attributed to the transport sector. This is not to claim that no 'savings' can be made.

The emissions in Kenya and Sub-Saharan Africa are less than 0.5 ton of CO₂ per capita per year. The emission of CO₂ is on average ca. 4 ton per capita globally, ca. 1 ton per capita in low income countries, and ca. 12 ton per capita in high income countries. The annual emission of CO₂ per capita is 9 ton for UK and Denmark and 20 ton for USA.

The higher oil prices will create some incentives for energy efficiency and fuel switching towards renewable energy sources. Fuel switching driven by higher oil prices is happening in the tea sector. Other renewable energy options will also be feasible, e.g. windmills, solar panels, biofuels, including biodiesel, and sustainable charcoal. The major share of the energy production in Kenya is already from hydropower, wood fuel and other non-fossil sources. The current effective electricity demand in Kenya is 923 MW (annual

¹⁰ The current exchange rate is about 78 Kenya shillings to the US dollar.

¹¹ 35 MW Bagasse Based Cogeneration by Mumias and the Olkaria III Phase 2 Geothermal Expansion Project

growth rate 5%) and the effective installed capacity is 1,051 MW. Hydropower capacity is ca. 680 MW (ca. 70 percent of grid production) and the rest is from thermal, geothermal and wind. Kenya has some wind turbine potential but the established capacity is so far limited (< 0.4 MW). It has been estimated that the potential for geothermal energy in the Rift Valley may be in the order of 2,000 MW. Current production capacity is 128 MW. The small hydropower potential could be as high as 6,000 MW on smaller rivers.

Kenya Tea fuel switch and Carbon Credits Project

Tea is an important cash crop in Kenya contributing 4% to the national GDP, third only after tourism and horticulture. About 60% of the total crop in the country is produced by the small-holder growers who process and market their crop through their own management agency – the Kenya Tea Development Agency (KTDA) which in turn, is the largest single producer of tea in the world. Kenya contributes 10% of total global tea production and commands a remarkable 21% of all global tea exports outside producing countries. Over 3 Millions Kenyans, 10% of the population, are directly and indirectly employed by the tea industry, which is the largest sub-sector in the agricultural sector.

The cost of tea processing has been escalating due to the soaring oil prices over the years and it has been an earnest endeavour of the tea factories to switch from the use of fuel oil (diesel) to sustainable fuel wood sources. Most factories have been able to switch partially, ranging from 20% – 70% success rates but the lack of sustainable fuel wood sources is a constraint. The supply of fuel wood is mostly from small-scale land-owners adjacent to the tea factories.

Nevertheless, in these efforts to cut down the cost of production, the issue of sustainability has yet to be addressed exhaustively since the supply of fuel wood to the factories is implemented on an ad-hoc basis. 'Kenya Tea Fuel Switch & Carbon Credit Project' aims at assisting tea factories switch successfully from fuel oil to sustainable fuel wood sources by mobilizing carbon finance from the sale of carbon emission reduction (CER) units emanating from fuel switching. The first phase of the project carried out in 2005 was a feasibility study to ascertain the availability of land for trees within an economical radius to the factories and test the willingness among land owners to set aside land for trees as a commercial venture. The study found out that the potential of planting trees is high, especially if introduced as a cash crop. The challenges of tree planting for fuel wood are wood lot management and selecting of tree species that can co-exist with tea and other food crops.

Land use, forests and biomass

While developing countries do not release significant amount of GHG from fossil fuels there are often larger contributions from land use and forestry. In terms of mitigation, sustainable land management can avoid the emissions and stocks of carbon can be replenished, e.g. by reforestation.

According to a Ministry of Energy study in 2002 as much as 70% of final delivered energy to the economy is from biomass sources, i.e. fuel wood, charcoal and crop residues.

In the Initial National Communication to UNFCCC (2002) it was noted that Kenya is a net sink of carbon due to an increase in forest cover. The release from the CO₂ from fossil fuels was estimated at ca. 5.5 Mton CO₂. While the uptake of CO₂ in forest cover and other trees was estimated at ca. 28.6 Mton CO₂, the net emission was a negative ca. 22.7 Mton CO₂. There is no forest inventory to substantiate what the net sequestration of carbon in forests is and whether there has in fact been a net up-take in the past five years compared with the release from deforestation despite the 1999 commercial logging ban.

The energy sources by choice by the rural and urban poor in Kenya are wood and charcoal respectively. It consists of a potential large source of CO₂ emission as well as a large potential for mitigation through a sustainable production of wood fuel. A national survey of charcoal (ESD, 2005) found that in Kenya 1.6 Million tons of charcoal is produced annually. This requires as much as 10-15 Million m³ of wood, which could be sustainably produced. Most of the charcoal production has until recently been illegal but the subsidiary legislation on charcoal to the Forest Act (2005) is in progress. The value of the charcoal production is KSh 32 Billion (ca. USD 450 Million) generated in total annual income from charcoal (on average 20,000 KSh/ton). This is almost equal to the income generated from the tea industry. There are 200,000 charcoal producers, and 500,000 traders are involved in charcoal trade. Over 90% of charcoal producers are using inefficient, traditional earth kilns with recovery rates as low as 10%.

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SEI's study has considered a number of the most promising low carbon options from the sectoral analysis that could put Kenya on to a lower carbon development path way and sectors where emissions are projected to be significant (SEI, 2009).

- the analysis has considered future emissions for Kenya, consistent with planned development. Emissions of GHG could double between 2005 and 2030. Moreover, plans across the economy could 'lock-in' Kenya into a higher emission pathway;
- the study has investigated a low carbon alternative pathway. This finds that a large number of 'no regrets' options that would enhance economic growth, as well as allowing further access to international carbon credits. They also have economic benefits from greater energy security and diversity, reduced air pollution, reduced environmental impacts;
- the study estimates energy related emission savings of 22% could be achieved by 2020, relative to the baseline, even for a small selection of options. Over 80% of these options can be realized at net negative cost. When carbon credits are included, this amount is likely to be even higher;
- overall, because of its location, availability of resources and socio-economic conditions, the study concludes that there are significant economic benefits for Kenya in following a low carbon development path, as well as large environmental and social benefits;
- the study has outlined a number of recommendations and future priorities.

Kenya currently has relatively low levels of GHG emissions (in total and per capita¹²). This is due to a high proportion of renewables in the electricity sector and the use of biomass energy by households. The largest emitting sector is agriculture, primarily from emissions from livestock, followed by energy consumption, primarily from consumption of oil products in transport and industry. In many areas Kenya is already initiating measures and policies that are consistent with low carbon development. These provide practical demonstrations of the benefits of such policy. The most obvious progress is in the electricity sector, where carbon intensity has been falling, as well as reducing energy costs and improving the environment. There has also been progress in more efficient use of biomass in the domestic sector, industrial energy efficiency and sustainable land use management.

The key priority options identified in the study include:

- electricity sector de-carbonization, including decentralized technologies;
- reducing transport fuel consumption through improved vehicle efficiency;

12 Kenya has low emissions in global terms (ranked 76th globally) and also low per capita emissions of 1.3 tCO₂ (all GHG but excluding LUCF). This compares to per capita emissions of around 11 tCO₂ in the UK and over 20 in the USA. World Resources Institute, Climate Analysis Indicators Tool (CAIT).

- introducing efficient public transport system;
- improving the efficiency of the biomass stove stock;
- industry efficiency improvements;
- reducing agriculture emissions through livestock and cropland management;
- reducing forestry emissions through forest protection and afforestation.

Although an intensive analysis of the options in the energy sector has been carried out, there is a need to do a similar detailed analysis of the options in the agricultural and forestry sectors.

A.3.4. Carbon financing from mitigation of GHG

The attention on mitigation of climate change is on the optional financing mechanisms. The two main options relevant to Kenya for carbon financing for mitigating climate change are: i) Generation of Certified Emissions Reduction units (CER) under the Clean Development Mechanism (CDM), and ii) Verified Emission Reduction units (VER) under the voluntary carbon market (VCM). The CDM and VCM are financing mechanisms to cover the opportunity costs of mitigation activities, but some mitigation activities can also be technically feasible and implemented even without the additional carbon financing if there are no opportunity costs, e.g. forest planting on idle land.

A.3.5. Status of CDM in Kenya

The Designated National Authority (DNA) is established in NEMA and located in the MENR. The role of the DNA is among others to assess the contribution of the proposed projects to sustainable development for the host country.

As referred earlier, so far only two projects have been registered for the country¹³. Other projects which have been approved by the Kenyan DNA but are still under development include: Eburru Geothermal Project (production 21 GWh), Olkaria II Geothermal Expansion Project (276 GWh), Redevelopment of Tana Power Station Project (130.3 GWh), Optimization of Kiambere Power Project (60 GWh), Kipevu Combined Cycle Power Project (223 GWh) and Sondu Miriu Power Project (330 GWh). All these are KenGen's CDM projects under development with a total production of 1,040 GWh and an estimated potential CER of annual 665,790 ton of displaced CO₂.

A.3.6. Potential CDM projects and barriers

Project developers in the private sector in Kenya have demonstrated enthusiasm to participate in CDM projects. Their interest primarily stems from the opportunity to access additional project financing, and they admit a limited knowledge of the CDM, its regulations and the project activity cycle.¹⁰ They have stated the need for ongoing assistance with respect to assessment of the financial viability of using carbon financing, baseline selection, and finally the development of CDM projects. There is some potential for CDM projects within various sectors of the country:

- **renewable energy and energy efficiency:** Large scale renewable projects with geothermal and wind turbines. Small-scale, off-grid projects, e.g. biogas, solar, wind-pumps, hybrid systems, micro-hydro, and energy efficiency;
- **Land-Use, Land-Use Change and Forestry (LULUCF):** Only 1.7% of Kenya is officially with forest cover. There is a great potential for reforestation with increased popularity among civil society,

¹³ 35 MW Bagasse Based Cogeneration by Mumias and the Olkaria III Phase 2 Geothermal Expansion Project

government, donors and private sector investors. The importance concerns both local livelihoods, supply of wood and fiber and carbon sequestration. One example is the Green-Belt-Movement.¹⁴ There is potential for large-scale CDM efforts by bundling smaller projects with combined social and livelihood benefits;

- **Land-fill and waste management:** Double benefit of CDM finance and waste management. Can also provide a source of energy from captured methane. Small scale biogas and large scale land-fills may be considered for emission reductions.
- **biofuels and fuel switching:** There are potentials in ethanol and bio-diesel production especially where there is no competition with food production. Kenya has the capacity since there has formerly been a commercial production and use of bio-ethanol. There are potential economic benefits switching from fossil fuels to natural gas or bio-waste, for example, in the tea, horticulture and cement sectors. The financing is from reduced power expenditures, CDM and other carbon financing, and a potential for delivery of surplus energy to the grid.

There are several constraints to the development of CDM projects and securing carbon finance, e.g.:

- low awareness and experience in particular among policy makers, manufacturing industries and financial institutions; and
- the difficulties in developing baselines and methodologies for some of the projects especially the land use based ones. There is progress towards solving these constraints as Kenya has motivated individuals and institutions that are capable of developing a 'learning by doing' capacity. There is also general recognition that the DNA office at MENR/NEMA could be strengthened to cope with the increasing inquiries and interest in CDM.

A.3.7. Voluntary Carbon Market (VCM)

VCM originated from countries that have not ratified the Kyoto protocol, especially the USA and Australia. This market uses similar procedures to CDM, but these are more flexible and variations in procedure and methodology are accepted. In the US the VCM is dominated by the Chicago Carbon Exchange (CCX) and the 'Over-The-Counter' (OTC) markets. In Australia the market is dominated by the New South Wales Greenhouse Gas Abatement Scheme.

The voluntary market is growing and is receptive to urban and rural community type projects such as renewable energy, reforestation and fuel-switching. Carbon credits are also created in the voluntary market, but unlike the compliance market where credits are tradable (fungible) under the Kyoto flexible mechanisms, the credits in the VCM are generally non-fungible, i.e. there is no trade possible between the various schemes.

In Kenya, the VCM is developing independently of government policies and guidelines and is slowly attracting businesses, NGOs, and communities in the carbon offset market. There are now more than half a dozen carbon trading companies located in Kenya. They have registered over 50,000 tones of carbon from community projects such as tree planting, brick building, methane capture from slaughter houses and energy efficiency in hotel industry as of August 2007.

¹⁴ The project of the Green Belt Movement with the World Bank Biocarbon Fund proposes to reforest 1,876 ha of degraded public land and private land with high community access in the Aberdare Range and Mount Kenya watersheds. The project is expected to sequester around 0.1 Mt CO₂e by 2012 and 0.38 Mt CO₂e by 2017 to be purchased by the World Bank BioCarbon on a forward contract.

A.4. National Communication and GHG Inventory

A.4.1. National Communication, including the GHG Inventory

Kenya submitted its First National Communication to the UNFCCC in October 2002 at the eighth Conference of the Parties. It was coordinated and elaborated by the Ministry of Environment and Natural Resources through the National Environment Secretariat (currently referred to as NEMA). The activities for the preparation of the National Communication were carried out by a national communication/project management team and four technical working groups (TWGs) established along the thematic areas of the Convention. The technical working groups comprised of: National GHG Inventory; GHG Mitigation Options; Climate Vulnerability and Adaptation and Impacts Assessment; Education Training and Public Awareness. Members of the working groups were drawn from Government ministry focal points, universities, and research institutions. Participation of the private sector and civil society was considered minimal. The involvement of consultants from the Government was a positive aspect because it increases the likelihood that recommendations put forward in the national communications would have a greater chance of being considered by policy makers.

The project on national communication built on previous studies related to Climate Change Enabling Activities. These studies include:

- the United States Country Studies Programme (USCSP) in 1994. GHG emission inventory was carried out for land use change, energy, industry, agriculture and waste management;
- the UNDP/GEF Capacity Building in Sub Sahara Africa to Respond to UNFCCC in 1996. GHG Inventory for the year 1992. This later inventory was updated to 1994 in order to meet the requirements of the UNFCCC guidelines;
- UNEP/GEF study of IPCC GHG Inventory Methodology Applied to land Use Change in Africa;
- UNEP study on the implications of climate change, sea level rise and vulnerability assessment of selected coastlines.

By the time of writing the First National Communication indicators on climate change did not exist. Indicators of specific impacts of climatic variability's like droughts and floods, and levels of urban atmospheric pollution had not been developed. According to the National Communication report, lack of comprehensive data storage and management systems on an annual basis created constraints in the analysis. A subsequent UNFCCC report identified the following gaps in preparing the First National Communication:

- IPCC default values were used in various sectors due to lack of local emissions factors;
- due to the time limitation, the inventory did not take into account the great variations in climate. Soils, topography, animals and crop species across the country. It was not possible to calculate CO₂ emission from soils because of inadequate data and high variability of Soil Carbon Content;
- lack of data in the correct format for many industries and lack of information on many newly introduced industrial processes. Such information can be obtained if sufficient time is allowed for studying these processes under local conditions and establishing empirical values of emission factors for proper estimations of GHG emissions;
- lack of comprehensive Survey of urban waste management;
- data unavailability and/or unsuitability for inventories, particularly data on trends and rates of land-use change;
- potential sinks, coffee tea, coconuts, cashew nuts were not included in the IPCC methodology;

- activity data and emission factors in the energy sector is well documented for the fossil fuels, but data is lacking for firewood and charcoal consumption and combustion, respectively.

The NCSA report indicated that lack of funding did not allow the Parties to address some important components (gases and sectors) of GHG inventories included in the IPCC Guidelines, as well as to elaborate national emission factors in some key sectors (NEMA, undated).

The NCSA report also noted that changes in the technical new staff and institutions involved in the process were an impediment (NEMA, undated). According to the report experts involved in inventory updating a few years later, have to “reinvent the wheel” and repeat the same process of training, identification of available data, etc. as their colleagues did in previous years, which resulted in an expensive process. However, expertise developed during the UNDP/GEF capacity building project was utilized through inclusion of individuals from this project as members of the technical working groups

Another report on REDD noted that attempts to assess GHG emissions from land use in Kenya was hampered by forest classifications in Kenya. The classification does not correspond to the classification contained in the draft of the 1993 Intergovernmental Panel on Climate Change Gases Inventory Workbook. The use of international data is also difficult because of inconsistencies between international databases. A good example is between FAO forest data and data from World Resource Institute.

The First National Communication was subjected to scrutiny and reviews at several levels including at sectoral, national and international. UNEP and the UNEP/GEF/UNDP National Communications Support Programme (NCSP) supported this technical review. The initial budget for the First NC of \$372,000 was scaled down to \$172,800. Shortage of expertise and resource limitations did not allow the identification and assessment of least cost mitigation options for the various sectors. The project was approved in March 1999 and the final report printed in June 2002. The proposal indicates that the project was planned for 1 year. Though completed after 3 years, it was still within the UNFCCC target as stated in article 12, paragraph 5. Interviews done for this study indicate that human resource capacity required to do the Second and subsequent National Communications exists in the country. The universities, for instance, are adequately staffed with knowledgeable resources in various topics covered in the National Communication. Specialized training on areas such as baseline development, climatology/ meteorology and use of up to date modelling software is still required. This can be easily achieved through short-term courses. UNEP organized specialized training on vulnerability and assessment, GHG inventories and GHG abatement options during the First National Communication. There were a total of 30 participants in each workshop. The training was not adequate given that its duration was quite short (about 2 hours training on IPCC software for 2 days) and a number of technical working group members were unable to attend (Karekezi, 2003). According to one of the stakeholders, one of the main challenges will be the ability to do predictions because of the recurrent droughts¹⁵.

An evaluation of the First National Communication done for UNEP rated the report as Good (3 in a scale of 1-5). The evaluation however noted that resources allocated for public awareness were not sufficient to meet the ambitious targets envisioned (Karekezi, 2003). Another shortcoming identified was that the four technical working groups largely worked in isolation from each other and only interacted during workshops.

The Second National Communication is in progress. Although from the timetable the process is supposed to have been finalized, institutional barriers have been a hindrance. Interviews with stakeholders also

15 Prof. Francis Nganga per com

indicated that the technical problems which existed during the First National Communication elaboration, such as lack of local emission factors, have not been addressed.

A.4.2. Data Availability for GHG Inventory

The Central Bureau of Statistics, Department of Resource Survey and Remote Sensing and the Regional Centre for services in Surveying Mapping and Remote Sensing carry out observational/monitoring activities which gather data/information on vegetation index, species distribution and variability, human settlement patterns and socio-economic issues some of which are relevant to climate change.

Other institutions that have been a source of data include: the Kenya Agricultural Research Institute (KARI), Kenya Forestry Research Institute (KEFRI), Kenya Industrial Research and Development Institute (KIRDI), Kenya Marine and Fisheries Research Institute (KEMFRI) and East African Institute of Meteorological Training and Research.

According to the NCCRS, there are currently no institutions based in Kenya that monitor the country's GHG emissions. The international Energy Agency (IEA) is the only institution that periodically tracks and reports GHG emissions in the country. The NCCRS recommends that an institution should be established to undertake periodic determination of levels of GHG emissions in order to identify high emission sectors and areas where significant GHG reductions can be realized.

A.5. Donors' Activities related to Climate Change Mitigation

A.5.1. Stockholm Environment Institute (SEI)

The project *Economics of Climate Change – Kenya* has been funded by the Royal Danish Embassy (DANIDA) and DFID (UK's Department for International Development). Additional resources on the economics of climate adaptation and low carbon growth in Africa were provided under the AdaptCost project from UNEP and the EC ClimateCost project.

Figure 5 Economics of Climate Change - Kenya



A.5.2. National Climate Change Response Strategy (NCCRS)

The development of the document was financially and technically supported by the governments of Denmark and Sweden through the DANIDA/SIDA EPS. Other development partners, such as UNDP, UNEP, the international Development Research Centre (IDRC), IGAD Climate Prediction and Applications Centre (ICPAC) assisted in the regional workshops.

The Forest Carbon Partnership Facility (FCPF)

Assists developing countries in their efforts to reduce emissions from deforestation and forest degradation – called REDD – by providing value to standing forests¹⁶.

Donors include:

- Agence Française de Développement (AFD) ;
- Government of Australia;
- Government of Finland;
- Government of the Netherlands;
- Government of Norway;
- Government of Japan;
- MAFF - Ministry of Agriculture, Forestry and Fisheries;
- MOF - Ministry of Finance;
- Government of Spain;
- Government of Switzerland;
- Government of the United Kingdom;
 - DFID - UK Department for International Development;
 - DECC - UK Department of Energy and Climate Change;
- Government of the United States of America.

The FCPF has the dual objectives of building capacity for REDD+ in developing countries in tropical and subtropical regions, and testing a program of performance-based incentive payments in some pilot countries, on a relatively small scale, in order to set the stage for a much larger system of positive incentives and financing flows in the future. Two separate mechanisms have been set up to support these objectives:

- Readiness Mechanism: The FCPF's initial activities relate to technical assistance and capacity building for REDD+ in IBRD and IDA member countries in the tropics across Africa, East Asia and Pacific, Latin America and the Caribbean and South Asia. Specifically, the FCPF is assisting countries to arrive at a credible estimate of their national forest carbon stocks and sources of forest emissions, work out their national reference scenarios for emissions from deforestation and forest degradation based on past emission rates for future emissions estimates, calculate opportunity costs of possible REDD+ interventions, adopt and complement national strategies for stemming deforestation and forest degradation, and design national monitoring, reporting and verification systems for REDD+. These activities are referred to as 'REDD+ Readiness' and supported by the Readiness Fund of the FCPF.
- Carbon Finance Mechanism: It is expected that around five countries that will have made significant progress towards REDD+ readiness will also participate in the Carbon Finance Mechanism and receive financing from the Carbon Fund, through which the Facility will implement and evaluate pilot incentive programs for REDD+ based on a system of compensated reductions. The selected countries, having: (a) demonstrated ownership on REDD+ and adequate monitoring capacity; and (b) established a credible reference scenario and options for reducing emissions; will benefit from performance-based payments for having verifiably reduced emissions from deforestation and/or forest degradation through their Emission Reductions Programs. The structure of these payments will build on the options for REDD+ that are currently being discussed within the United Nations Framework Convention on Climate Change (UNFCCC) process, with payments made to help address the causes of deforestation and

¹⁶ <http://www.forestcarbonpartnership.org/fcp/node/12>

degradation. Within the Carbon Finance Mechanism, payments will only be made to countries that achieve measurable and verifiable emission reductions.

Together, these two mechanisms seek to learn lessons from first-of-a kind operations and develop a realistic and cost-effective large new instrument for tackling deforestation, to help safeguard the Earth's climate, reduce poverty, manage freshwater resources, and protect biodiversity. However, it is important to note that the Facility itself is not a panacea to "save the world's forests." Rather, the experiences generated from the FCPF's methodological, pilot implementation and carbon finance experience will provide insights and knowledge for all entities interested in REDD+. The FCPF thus seeks to create an enabling environment and garner a body of knowledge and experiences that can facilitate development of a much larger global program of incentives for REDD+ over the medium term.

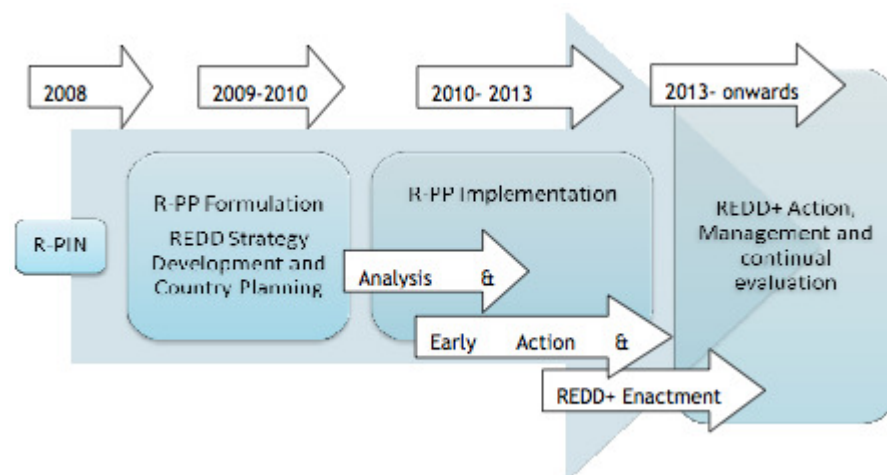
Kenya's Readiness Preparation Proposal (R-PP) outlines the process by which the Government of Kenya will develop its national strategy for participating in an evolving international mechanism for reducing emissions from deforestation and forest degradation, conserving and enhancing stocks and sustainably managing forests (REDD+). While this R-PP does not preclude any future policies or anticipate any outcomes, the Government is committed to the REDD+ readiness process and is participating actively in international REDD+ negotiations. Even if an international mechanism to provide carbon finance for emissions management activities in forests do not reach the magnitude many are hoping, the Government of Kenya aims to design policies and measures to protect its remaining forest resources from deforestation and degradation and to enhance forest carbon stocks in ways that help improve local livelihoods and biodiversity. The Government of Kenya's priority is to implement environmentally and socially sustainable land-use and forest policies, and this plan establishes a set of actions to achieve this aim. We are committed to communicating the lessons learned from the Readiness Process both within Kenya and to the World Bank's Forest Carbon Partnership Facility (FCPF) and broader international community.

The R-PP provides a detailed assessment of the forest sector and the policy, social and legal framework that currently drive activities in this resource. It presents various components that propose:

- four strategy priority areas and actions to design and test REDD+ measures that have emerged from the R-PP formulation process as options for Kenya's forest carbon emission management strategy;
- a management and consultation approach that will underlie all activities in the upcoming R-PP implementation phase, and recommends some legal, economic and financial arrangements for subsequent REDD+ implementation;
- an approach to design Kenya's carbon emissions reference scenario and the means for monitoring these emissions;
- an approach to assess and subsequently monitor social and environmental impacts from the REDD+ strategies and an overall REDD+ program monitoring mechanism.

Each Component has a related list of next steps and initial activities planned to carry out the work plan leading to REDD+ readiness implementation. Each activity has an estimated overall cost, and the sum total of the actions amounts to \$9,672,500.

Figure 6 Timeline of REDD+ Readiness preparation in Kenya



This Figure illustrates the timeline for REDD+ readiness preparation in Kenya. The data to be monitored as part of Component 4a include changes in the area of each REDD+ activity class (deforestation, forestation, forest degradation, sustainable forest management, enhancement of forest carbon stocks) and the resulting changes in carbon stocks. Emission reductions will be verified at the national scale, but monitoring and reporting may be implemented at sub-national and local scales. Data collected at subnational scales will be integrated into the national accounting structure via a national data clearinghouse, where NRCO performs additional quality assurance/quality control measures and ensures against double counting.

Accomplishment of that involves two sub-goals:

- quantification of historic emissions/removals from deforestation, degradation and enhancement of carbon stocks for the proposed period post 2000 to 2010+ at a national scale, using the IPCC framework, and spatially represented to reflect differences in sub national activities in use and cover of the land; and
- development of future trajectories of emissions/removals over different time periods and under different economic and development scenarios. This will take into consideration such factors as Kenya's Vision 2030 goals, GDP, population growth, agricultural expansion, industry growth, sectoral development plans, specific investment programs, and/or adjustment coefficients otherwise derived from such factors and data.

It has a component that describes the MRV of Emissions Levels, and the arrangements needed to quantify carbon emissions and removals from implementing the REDD+ strategies. Because international discussions are ongoing and new monitoring technologies are evolving, the exact details of a MRV system are not finalized in the R-PP.

However, a potential MRV framework and terms of reference are discussed that can be modified and revised as the process moves forward (Error! Reference source not found.). It includes capacity building, activity data monitoring and carbon stock change monitoring.

A.5.3. UNDP

The UNDP's Kenya Country Office Climate Change Strategy is aligned to UNDP cooperate Climate Change Strategy priorities of giving greater attention to mainstreaming climate change consideration in programming activities, helping strengthen national systems that manage climate variability, and securing financing for both environmentally-friendly investments and supporting the implementation of national adaptation priorities. In the spirit of delivering as one UN, the country office actively works with other UN agencies, in addition to other development partners including bilateral, multilateral donors, NGOs and the private sector.

Under the current UNDP Kenya Country Action Work Plan (CPAP), climate change priority intervention areas include:

- building Kenya's capacity to address climate change by providing a set of integrated support services geared towards helping the country:
 - assess climate change impact and realistic response strategies;
 - develop and implement relevant policies and regulations;
- mainstreaming climate change into core government development areas, including energy, agriculture, health, waters resources and infrastructure, emphasizing that climate change is not only an environmental issue, but a core developmental concern;
- helping diversify funding sources Kenya can access to facilitate effective financing of sound solutions;
- building the country ability to access foreign direct investment and appropriate technologies through environmental finance opportunities such as the Clean Development Mechanism (CDM).

On going and pipeline Climate Change Programs include various projects. The more relevant are listed below.

1. UNDP/UNEP CDM Capacity Development Project in Kenya: This is part of a bigger program covering 6 countries (Kenya, Ethiopia, Mozambique, Ethiopia, Tanzania and Zambia) in the South and East Africa regions of Sub-Saharan Africa. The project forms part of the "UNDP-UNEP Partnership on Climate Change", launched at COP12/MOP2 in Nairobi 2006, which is intended to optimize and unify the activities of both organizations in the area of CDM capacity building and adaptation. The Project also forms part of the UNDP/UNEP contribution to the Nairobi Framework that was announced at the Nairobi COP/MOP. The objective of the project is to enhance public and private sector capacity to access carbon finance, and to overcome barriers impeding the take-off of a carbon project market in sub-Saharan Africa. Particular emphasis is placed in creating the enabling conditions for CDM, particularly addressing technical knowledge and awareness deficits through a targeted programme of workshops and tutorials. UNDP/GEF Standards and Labels Project: This is a 5 year program designed to remove barriers to market transformation of energy efficient products and services in Kenya. The goal of this project is to reduce energy (electricity) related CO₂ emissions through working with the government and the private sector to improve energy efficiency of selected appliances and equipment in residential, commercial and industrial sector.
2. Market Transformation for Highly Efficient Biomass Stoves for Institutions and Medium-Scale Enterprises: This project seeks to remove market barriers to the adoption of sustainable biomass energy practices and technologies in schools, hospitals and restaurants by promoting adoption of highly efficient cook stoves and establishment of woodlots. One of the project main performance indicators is the reduction of CO₂ emissions.

3. Development of Kenya National Climate Change Strategy: UNDP has pledged to provide high-level technical support towards this initiative. The government of Kenya is talking to various donors for support for this effort.

A.6. References

GoK, 2007. Kenya Vision 2030. Government Printers, Nairobi.

GoK, 2009. Economic Survey: 2009. Kenya National Bureau of Statistics, Nairobi Kenya

NEMA, 2001. Kenya National Guidelines on the Clean Development Mechanism. http://www.nema.go.ke/index2.php?option=com_docman&task=doc_view&gid=123&Itemid=35

NEMA, 2004, State of the Environment

NEMA, 2007. State of the Environment 2006/7

NEMA undated. Climate Change Thematic Report on the National Capacity Needs Self Assessment (NCSA) for Kenya.

NEMA Undated. Kenya's Climate Change Technology Needs and Needs Assessment Report under the United Nations Framework Convention on Climate Change

UNEP/GEF, undated. Proposal for Review- Climate Change Expedited Financing (Interim) Measures for Capacity Building in Priority Areas Part II

Kenya First National Communication

Available at:

<http://unfccc.int/resource/docs/natc/kennc1.pdf>; <http://unfccc.int/resource/docs/2005/sbi/eng/18a02.pdf>

Constraints and Challenges. Available at:

<http://www.dewpoint.org.uk/Asset%20Library/Climate%20Risk%20Assessment%20Flier%20-%20Kenya.pdf>

Country Screening and Recommendations – WB. Available at:

http://siteresources.worldbank.org/INTAFRICA/Resources/Kenya_Country_Note.pdf

GoK, 2010a. Economic Survey 2010. Kenya National Bureau of Statistics, Nairobi Kenya

Karekezi, S. 2003. Evaluation of the UNEP/GEF sub-project Enabling activities for the preparation of initial national communications related to the UNFCCC – Kenya. UNEP Evaluation of Oversight Division.

Government of Kenya, 2010. National Climate Change Response Strategy. Ministry of Environment and Natural Resources, Nairobi.

Ministry of Energy, 2008. Feed-in Tariffs for Renewable Energy Resource Generated Electricity: Guide for investors.

KFS, 2010. Forest Carbon Partnership Facility (FCPF), Readiness Preparation Proposal (R-PP): Kenya.

UNDP, 2010. UNDP Kenya Country Programme Document 2009-2013. Available at: <http://www.ke.undp.org/publications>

SEI, 2009. Economics of Climate Change: Kenya. Stockholm Environment Institute.

KPLC, 2006. More Kenyans to Access Electricity. <http://www.kplc.co.ke/news/More-Kenyans-to-access-electricity.pdf>

Tomomastu Y. and Swallow B, 2007. *Jatropha curcas* Biodiesel Production in Kenya. World Agro-forestry. Working paper # 54.

Annex 1: Selected consultants who participated in the preparation of the initial national communication for Kenya

Table 9 Selected consultants

Name	Qualification	Participation in the project (task performed or area of responsibility)	Experience in Climate Change Issues
Mr. Stephen Manegene	BSc/MSc	Review of papers presented by other consultants, Finale editing and compilation of the national communication	5 years
Mr. F. Kihumba	BSc/MSc	Wastes and Industrial pollution	20 years
Mr. A. Oroda	BSc	Data collection and processing, report compilation	2 years
Mr. Kinuthia Mbugua	BA	Chaired review workshop on the draft national communication	2 years
Dr. Christopher Oludhe	PhD	Drafted the section on the science of climate change, impacts and policy options for Kenya	10 years
Mr. Robin Achoki	Post graduate qualification in economics	preparation of economic policy perspectives in the communication	4 years
Mr. Simon Gacheru	Msc	Education and public awareness	10 years
Mr. Paul Mbuthi	Diploma	Mitigation of greenhouse gases	15 years
Mr. Edward Owango	Bsc	Land use change and forestry	5 years

Source: Karekezi, 2003

Appendix B. List of interviewed stakeholders

Name of the organization	Ministry of Environment and Mineral Resources
Name of the interviewed	Agnes C. Yobterik
Role in the organization	Director Programmes, Projects and Strategic Initiatives
Role of the Organization in the country's climate policy	Formulate national policies and strategies on climate change and participating in bilateral and multilateral agreements
Sector to which the organization belongs (e.g. waste, forestry, transport...)	Cross- cutting environment themes
Name of the organization	University of Nairobi, Department of Geography
Name of the interviewed	Prof. Richard Odingo
Role in the organization	Professor
Role of the Organization in the country's climate policy	Participates in climate change as an individual not organization. Former chair of the National Climate Change Coordination unit and a chair of Second National Communications
Sector to which the organization belongs (e.g. waste, forestry, transport...)	National Communications and CDM
Name of the organization	University of Nairobi, Department of Meteorology
Name of the interviewed	Prof. John Nganga
Role in the organization	Professor
Role of the Organization in the country's climate policy	Training meteorologist. Member of the National Communication subgroup on mitigation
Sector to which the organization belongs (e.g. waste, forestry, transport...)	Training and capacity building
Name of the organization	Kenya Meteorological Department
Name of the interviewed	Joseph Mukabana, Peter Ambenje, John Kimori
Role in the organization	Director and Assistant Director
Role of the Organization in the country's climate policy	Providing data for the inventories. IPCC Focal Point in Kenya. Members of the National Communications
Sector to which the organization belongs (e.g. waste, forestry, transport...)	Meteorological Data

belongs (e.g. waste, forestry, transport...)	
Name of the organization	Ministry of Energy
Name of the interviewed	Paul Mbuti
Role in the organization	Renewable Energy Officer
Role of the Organization in the country's climate policy	Formulate national policies and energy related strategies on climate change and renewable energy projects Member of the Second National Communication technical working group on mitigations
Sector to which the organization belongs (e.g. waste, forestry, transport...)	
	Energy
Sector to which the organization belongs (e.g. waste, forestry, transport...)	
Name of the organization	Department of Resource Surveys and Remote Sensing
Name of the interviewed	Jaspat Agatsiva
Role in the organization	Director
Role of the Organization in the country's climate policy	Coordinator for Greenhouse Gases Inventories
Sector to which the organization belongs (e.g. waste, forestry, transport...)	
	Provide spatial data for the inventories
Sector to which the organization belongs (e.g. waste, forestry, transport...)	
Name of the organization	Kenya Forestry Service
Name of the interviewed	Alfred N. Gichu
Role in the organization	Senior Assistant Director: Climate Change Response Programme
Role of the Organization in the country's climate policy	REDD and National Communications
Sector to which the organization belongs (e.g. waste, forestry, transport...)	
	Forestry

Name of the organization	UNEP Adaptation Management Unit/Former NEMA employee
Name of the interviewed	Emily Massawa
Role in the organization	Former National Communication Coordinator
Role of the Organization in the country's climate policy	UNFCCC focal point
Sector to which the organization belongs (e.g. waste, forestry, transport...)	Cross- cutting environment themes
Name of the organization	UNDP
Name of the interviewed	David Githaiga
Role in the organization	National CDM Coordinator
Role of the Organization in the country's climate policy	Capacity Building
Sector to which the organization belongs (e.g. waste, forestry, transport...)	Cross- cutting environment themes
Name of the organization	National Environment Management Authority- NEMA
Name of the interviewed	Susan Lekoiyet
Role in the organization	UNFCCC Focal Point
Role of the Organization in the country's climate policy	UNFCCC Focal point responsible for National Communications
Sector to which the organization belongs (e.g. waste, forestry, transport...)	Cross- cutting environment themes
Name of the organization	SEAP Consult
Name of the interviewed	Mary Karanja and Joyce Onyango
Role in the organization	Consultants
Role of the Organization in the country's climate policy	Various components of the National Communications
Sector to which the organization belongs (e.g. waste, forestry, transport...)	Cross- cutting environment themes

Name of the organization	Energy Alternatives Africa
Name of the interviewed	Mark Hankins
Role in the organization	Private consultant
Role of the Organization in the country's climate policy	Promoting solar energy technologies
Sector to which the organization belongs (e.g. waste, forestry, transport...)	Renewable Energy
Name of the organization	Energy Regulatory Commission
Name of the interviewed	Bernard Osawa and Alex Njuguna
Role in the organization	Energy Regulation
Role of the Organization in the country's climate policy	Developing energy and environmental standards and energy planning
Sector to which the organization belongs (e.g. waste, forestry, transport...)	Energy
Name of the organization	Kridha Limited
Name of the interviewed	Suresh Patel
Role in the organization	Private Consultant
Role of the Organization in the country's climate policy	Private sector participant in the UNFCCC COPs, carbon trading, CDM projects and energy auditing
Sector to which the organization belongs (e.g. waste, forestry, transport...)	Cross- cutting environment themes
Name of the organization	National Environment Secretariat
Name of the interviewed	Richard Mwendandu
Role in the organization	Head of Kenyan delegation to the COPs and head of multilateral Agencies
Role of the Organization in the country's climate policy	Policy and strategy formulation
Sector to which the organization belongs (e.g. waste, forestry, transport...)	Cross- cutting environment themes

Appendix C. Workshop Report - Developing Countries, Monitoring and Reporting on Greenhouse Gas Emissions, Policies and Measures – Kenya National Workshop Proceedings

The Developing Countries, Monitoring and Reporting on Greenhouse Gas Emissions, Policies and Measures – Kenya National Workshop was held at Intercontinental Hotel, Nairobi, on the 20th July 2010 (see Annex I – Agenda). A total of 30 stakeholders from the government, universities, civil society, private sector and donor society, among others participated (see List of Workshop Participants).

The workshop was one of the activities envisaged under European Commission's scoping study Developing Countries, Monitoring and Reporting on Greenhouse Gas Emissions, Policies and Measures and was aimed at understanding and exploring the needs of Kenya as regards enabling activities related to mitigation of Greenhouse Gas (GHG) emissions – focusing on Measurement, Reporting and Verification (MRV) of emissions, the preparation of National Communications, GHG Inventories, and planning and development of Nationally Appropriate Mitigation Actions (NAMAs). The EU is in particular interested in understanding the needs related to capacity building in these areas.

The study will provide concrete recommendations on the structure and elements for a subsequent capacity building programme to start being implemented by January 2011 - the period of implementation of the contract will be 18-24 months from this date - with a view to assist Kenya in implementing MRV requirements of a future climate change agreement. This capacity building programme will be designed based on and with a view to addressing institutional, procedural and methodological issues, relating in particular to data gathering, barriers, needs, constraints and opportunities, identified during this scoping study through an intensive in-country interactive stakeholder engagement and consultation process.

C.1. Welcome Address

The workshop was opened by Daniel Plas, the Head of Social and Environment Section, European Union Delegation in Nairobi. He introduced the various activities that the EU is undertaking in Kenya and how they relate to this project. He also gave an introduction to the Copenhagen Accord.

C.2. Measuring, Reporting and Verification: EU's Perspective

Erasmia Kitou from the European Commission introduced the scoping study by presenting to the benefits in having an MRV system highlighting that a transparent MRV system can provide access to financial support. She gave the historical perspective on MRV beginning from the Bali Action Plan. She linked financial and technical support and the importance of the National Communications and highlighted the need to build a reporting framework, including information sharing and good practices. She also explained the important links between MRV, carbon markets and financial support and provided an overview of EU mitigation policies and future mitigation actions highlighting in particular the EU ETS.

C.3. Methodology, Objectives and Project Results in Kenya

Inês Mourão, EC's consultant, introduced the Kenyan National Report. She presented the methodology, objectives and results of the project. She linked MRV to the Bali Action Plan and the Copenhagen Accord. She also presented the way forward for the Government, Private Sector and the Civil Society – including international donors (please see Annex 4 – Measurement, Reporting, Verification: Working with Kenya in identifying gaps and barriers and actions to overcome those).

According to the presentation the key question being addressed is: “What does Kenya need to design, plan and implement measures that reduce GHG emissions or enhance carbon dioxide removals which are in line with its development strategy and to MRV it?”.

The participants highlighted the need to have adaptation as a major component. They proposed that a similar exercise for adaptation should be carried out. A reference was made to the support that the Clinton Foundation is providing in defining the MRV architecture for the REDD+ RP.

C.4. The National Climate Change Response Strategy

Richard Mwendandu from the Environment Secretariat, Ministry of Environment and Natural Resources (MEMR) presented the recently launched National Climate Change Response Strategy (NCCRS). The strategy aims to strengthen and focus nation-wide actions towards climate change adaptation and GHG emission mitigation. He presented the process of preparing the document and participatory process conducted country wide. The Secretariat is currently presenting tangible projects to be implemented on the ground.

The participants expressed the need to adequately factor the strategy into most of the sectors of the country economy including Government development policies and plans. This also includes the Government's blue print; the Vision 2030. Richard was also questioned on the priorities for the strategy implementation and if that would be the adequate place to accommodate the implementation of the MRV project, namely the implementation of the capacity building programme. The answer was in the sense that the priorities yet defined for NCCRS' implementation is adaptation and subsequently more immediate actions will be on that.

C.5. The Process of Preparing Kenya's National Communication

This section was presented by Ms. Emily Massawa from UNEP and former coordinator of the Kenyan Initial National Communication. Emily presented the various components of the National Communication, the methodologies used in preparing the report and the constraints and gaps that Kenya has faced in the process. The process of preparing the Second National Communication in Kenya has stalled due to institutional problems. Most of the problems faced are both institutional and financial.

On the issue of a potential need to update and adapt the guidelines and what would be the elements of a revised version which would enable a more frequent National Communication for Developing Countries, Ms. Massawa stated that main problem in the preparation of national communications is the lack of adequate resources. The participants pointed out that due to lack of regular data collection, fast changing emission trends are not being captured. There is therefore a need for an office dedicated to the National Communications and responsible for carrying out data and information collection or gathering on a regular

basis. With the advent of NAMAs countries will be required to be much more rigorous in their reporting and more resources will be required to meet these challenges.

C.6. Kenya's Greenhouse Gas Inventory

The section on GHG Inventories was presented by Mr. Jaspat Agatsiva, the Director of the Department for Surveying and Remote Sensing (DSRS) and the Kenyan Focal Point for the project. Mr. Agatsiva has been the coordinator of GHG inventories for both the Initial and Second National Communications in Kenya. He presented the historical process, the challenges and gaps that have emerged in preparing the inventories. The available data is not reliable since it originates in different sources and for different purposes. This was especially a major problem for solid waste. Two other major problems include the continued use of default emissions factors – due to the inexistence of local, national or regional, misclassifications – for instance in the forestry and agriculture sectors, and staff and institutional memory retention.

C.7. The Role of the Private Sector

The last presentation was focused on the role of the private sector and was presented by Mr. Suresh Patel (Kenya Association of Manufacturers – KAM) and Mr. Paul Kirai (International Finance Corporation – IFC). The key focus of this session was to try and identify how the private sector can be brought on board. The private sector has not actively participated in data mining especially on energy efficiency. Areas were highlighted where the EC can cooperate with the Kenyan private sector in the field of GHG inventories and mitigation. One of the problems that the private sector is facing is lack of a GHG baseline. There is also no systematized programme for GHG emissions. There is a need for capacity building consisting of training experts on how to establish a baseline. This can be integrated into already existing programmes such as the KAM Environmental Impact Assessment programme. KAM will however be required to play a more regulatory role. Similar problems as those experienced with the CDM should be avoided. The key driver for the private sector however is provision of information. This has been a major barrier with the CDM and this is seen as a NEMA/DNA responsibility. In addition, incentives need to be created for the private sector to participate. These incentives could for instance be part of the licensing and taxation programme. A Public Private Partnership with potential for implementation also needs to be explored. The main concerns of the private sector include the following

- uncertainty: How much value can be put in the project related to Carbon?
- who bears the cost: Ways of recouping the cost of the investment in clean technologies.

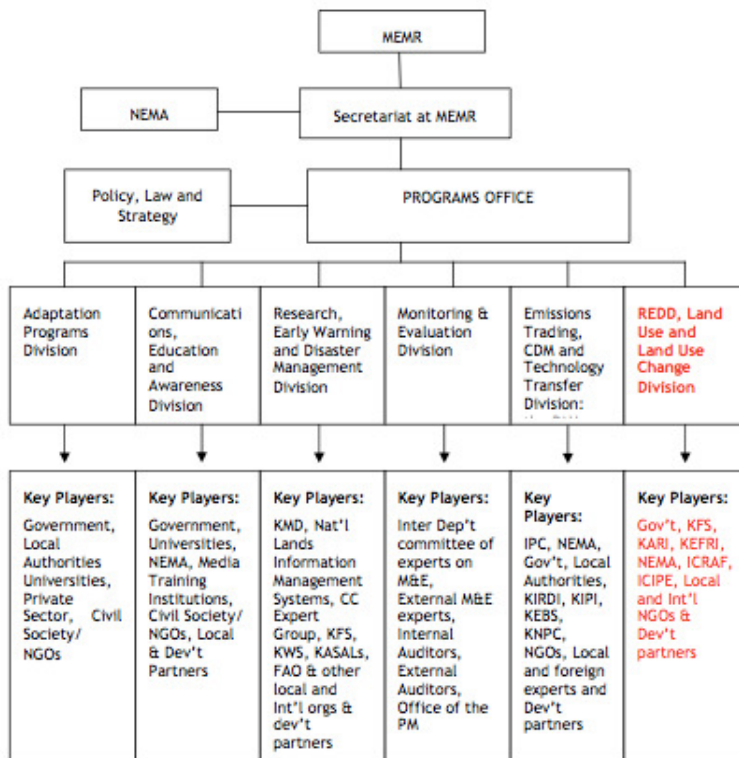
C.8. Mitigation Policies and Information Systems: Gaps and Opportunities

The main objective of the workshop was to identify the way forward through the clear identification of concrete capacity building actions to address the barriers, gaps and constraints identified in Kenya related to MRV of GHG emissions, mitigation policies and NAMAs. At the end of this session and previous interviews, participants were expected to have identified some concrete recommendations and priorities to be included in the proposed EC capacity building programme. This was to be concluded through the validation of options previously identified and the proposal of new initiatives in the workshop.

The basis for this round table's discussion was a memo prepared on Energy and Forestry. Participants were requested to go through the two memos and validate the findings of the national report.

The round table discussion focused on the need for an institutionalized system for MRV in Kenya. The Figure below represents the institutional framework proposed by the MEMR on the NCCRS.

Figure 7 Climate Change Governance Structure Proposed in the NCCRS



Currently, it does not appear as if there is a policy or regulatory framework, for doing MRV in the country. Although, there are parallel initiatives by different institutions such as the Kenya Forestry Services, Kenya Agricultural Research Institute, Kenya Electricity Regulatory Commission, Department of Meteorology, National Council of Research and Technology, Universities, and KAM. These initiatives are not harmonized. What is required is one central institution responsible for data collection system in the country. NEMA because of institutional history and wide network was proposed to be the coordinating unit bringing all the sectors together. Enhancing the capacity of NEMA should therefore be vital in the MRV capacity building programme. The other sectors or focal points should also have a dedicated unit for data management and inventory management. Local communities especially in forestry can assist with measurements and they need to be trained. Any new framework to be developed needs to be integrated and harmonized with the new structure proposed in the National Climate Change Response Strategy. Incentives for the private sector to participate in data mining need to be developed.

Another major observation is the need to build the capacity of institutions rather than individuals. This would reduce the problems created by high staff turnovers and having to train once again new experts. Institutional training refers to creating systems, writing down methodologies and procedures.

Table 10 Summary of Gaps and Opportunities from the Round Table Results Discussion

Target Institution/Group	Activity	Period	Comments
NEMA and Universities	Developing localized emission factors	Short-term	NEMA should become the focal point for data management and its capacity should be enhanced
Local consultants	Building capacity of local consultants to do National Communications	Short-term	
NEMA	Strengthening the capacity of DNA	Medium term	The current DNA is under staffed and under skilled. CDM is not being promoted by the entity
Energy Regulatory Commission	System of monitoring energy activities for all sectors at ground level e.g. something like the smart metering	Medium term	This kind of database has not been developed
Environment Secretariat	Incorporating climate change in learning institutions, through CV disciplines in higher school and university	Long term	
Prime Minister's Office/Environment Secretariat	Create political commitment at senior level through sensitization Nominate Climate Change create every sector	Medium term	NCCAC can be strengthened.
Environment Secretariat/NEMA	Establishment of a permanent MRV institution with autonomy and responsibility	Long term	
Treasury and Environment Secretariat	Financing and budgeting	Medium term	Capacity to perform cost-benefit analysis in terms of technology and capacity to collect/gather data
NEMA	Training and retaining staff	Long term	Trained staff who are talented and well paid
KAM/KEPSA	Provide private sector with incentives like carbon voluntary schemes and subsidies	Medium term	
	Increase private sector ability to participate in the UNFCC Negotiations	Short-term	
DSRSS	Specialized equipment for activity data collection and analysis, namely related to satellite images and Geographic Information Systems	Medium term	
	Training local communities to collect data on Forestry	Long term	
NEMA	Refined guidelines for activity data collection	Short-term	
NEMA/DSRSS	Training of trainers on GHG Inventory	Medium term	
NEMA	Developing a local carbon exchange	Long term	
Treasury and Environment Secretariat	Removing DNA from NEMA to an investment Authority	Long term	DNA need to be managed by people who understand business as is the case in other countries

Annex I – Agenda

8:30 – 9:00	Participants' Registration	
	Opening Session	
9:30 – 9:45	Welcome address <i>Daniel Plas, European's Union Delegation</i>	
9:45 – 9:50	Organization of the workshop <i>Timothy Ranja, EC's consultant</i>	
9:50 – 10:30	National Mitigation Measures and Measuring, Reporting and Verification (MRV) Systems: EU's Perspective <i>Erasmia Kitou, EU</i>	
10:30 – 10:50	Methodology and Objectives and Project Results in Kenya <i>Inês Mourão, EC's Consultant</i>	
10:50 – 11:20	Q&A	
11:20 – 11:45	Coffee break (25 min)	
	National Circumstances	
11:45 – 12:05	The NCCRS (including Implemented and Projected Mitigation Actions) Richard Mwendandu, MEMR	
12:05 – 12:25	The process of preparing Kenya National Communication Emily Massawa, UNEP	
12:25 – 12:45	Kenyan Greenhouse Gas Inventories Dr. Jaspat Agatsiva, DRSRS	
12:45 – 13:00	Q&A	
13:00 – 14:00	Lunch	
	Round tables Mitigation Policies and Information Systems: Gaps and Opportunities	
14:00 – 14:30	The role of the Private Sector Suresh Patel, KAM Paul Kirai, IFC	
14:30 – 18:00	Energy	Agriculture and Forestry (including REDD)
	Closing	

C.9. List of Workshop Participants

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1	Inês Mourão	EC/Ecoprogresso	imourao@ecoprogresso.pt	(+)351217981210	(+)351912144507
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Appendix D. Forestry Sector Memo for discussion at the workshop

It is estimated that Kenya has 3.47 million ha of forest (indigenous forests, open woodlands, and plantations) and an additional 24.5 million ha of “bush-land”. Kenya loses about 12,000 ha of forest each year through deforestation (primarily conversion of forests to agriculture or for public or private development projects). The remaining forests are degraded due to among others unsustainable utilization illegal logging, uncontrolled grazing and exploitation for charcoal. Deforestation and degradation is evident in both the high elevation water catchment forest areas (popularly referred to as water towers), and in bush land in the arid and semi-arid lands (ASAL) areas. Charcoal making is rampant because majority of Kenyans, especially those living in peri-urban and urban areas, heavily depend on charcoal as a source of energy for cooking and heating.

The plantation resources make a substantial contribution to economic development in Kenya and are an import source of raw materials for economic development in the wider region. In the mid 1990s, it was estimated that the sawmilling industry provided 30,000 direct jobs and 300,000 indirect jobs in Kenya. In 2007, the forest sector was estimated to contribute about 1% to GDP (Ksh 16.4 billion) to the economy, and that more than 10% of households living within 5 km from forest reserves depend on them for subsistence resources.

Deliberate efforts are being made by the government, private sector, development partners, local communities and civil society to conserve and restore degraded forest areas throughout the country. The water catchment forests have received close attention due to their significance in soil, water and biodiversity conservation, in addition to amelioration of regional climatic conditions. Further, the forests in water catchments have been flagged out as important in supporting the realization of Kenya’s long term development agenda, the Vision 2030.

A number of broader national level plans and strategies are relevant to forest governance including the Vision 2030, The National Climate Change strategy, the Arid and Semi Arid Lands policy, the Livestock Development policy, and the Charcoal policy. In addition, the international conventions signed by Government of Kenya are relevant, including the CBD, CITES, UNFCCC, and UNCCD. Pending legislation on land reform and a revision of the constitution may also impact on forest governance.

The Kenya Forest Service (KFS), under the Ministry of Forests and Wildlife, is the state agency charged with ensuring sustainable management and conservation of forest resources in the country. There are also a number of other technical institutions supporting the forestry sector including a Technical Forestry Training College, two Universities offering forestry degree courses, the government forestry research institution, KEFRI, and several civil society organizations that play advocacy and awareness raising roles. Civil society organizations have an important role in forest governance in Kenya and have proved to be an effective means of raising awareness and changing attitudes and behavior. The timber processing sector is represented by the Timber Manufacturers Association. Technical competence within these institutions is high (KFS, 2010).

According to the First National Communication, in 1994 Kenya was a net Carbon sink, absorbing about 22,751 kton CO₂/year. This is due to the regeneration of forest and non-forest trees, which is responsible for absorbing 28,000 kton CO₂/year.

The agricultural sector is the major emitter of CH₄ and is attributable to enteric fermentation. Kenya relies heavily on agriculture for food security, economic growth, employment creation, stimulation of growth in off-farm employment and foreign exchange earnings. About 80% of Kenya’s population live in rural areas and

depend directly or indirectly on agriculture for their livelihoods. GHG emissions associated to the sector were 12,088kton CO₂e.

The Kenya government launched its National Climate Change Response Strategy (NCCRS) during COP 15 at Copenhagen in December 2009, which was developed using a consultative process that included seeking views from participatory regional workshops. The strategy thus will support the implementation of Nationally Appropriate Mitigation Actions (NAMAs) for Kenya, though this has not yet been elaborated. The implementation of part of the strategy has now been taken up by the Office the Prime Minister, starting with an effort to harmonize environment and climate change policies (KFS, 2010).

Management arrangements for implementation of the RPP are designed within the wider context of the NCCRS.

Mitigation options for the sector include REDD+ strategy. For that Kenya's Readiness Preparation Proposal (R-PP) outlines the process by which the Government of Kenya will develop its national strategy for participating in an evolving international mechanism for reducing emissions from deforestation and forest degradation, conserving and enhancing stocks and sustainably managing forests (REDD+). While this R-PP does not preclude any future policies or anticipate any outcomes, the Government is committed to the REDD+ readiness process and is participating actively in international REDD+ negotiations. Even if an international mechanism to provide carbon finance for emissions management activities in forests do not reach the magnitude many are hoping, the Government of Kenya aims to design policies and measures to protect its remaining forest resources from deforestation and degradation and to enhance forest carbon stocks in ways that help improve local livelihoods and biodiversity. The Government of Kenya's priority is to implement environmentally and socially sustainable land-use and forest policies, and this plan establishes a set of actions to achieve this aim. We are committed to communicating the lessons learned from the Readiness Process both within Kenya and to the World Bank's Forest Carbon Partnership Facility (FCPF) and broader international community.

The R-PP provides a detailed assessment of the forest sector and the policy, social and legal framework that currently drive activities in this resource. It presents various components that propose:

- four strategy priority areas and actions to design and test REDD+ measures that have emerged from the R-PP formulation process as options for Kenya's forest carbon emission management strategy;
- a management and consultation approach that will underlie all activities in the upcoming R-PP implementation phase, and recommend some legal, economic and financial arrangements for subsequent REDD+ implementation;
- an approach to design Kenya's carbon emissions reference scenario and the means for monitoring these emissions;
- an approach to assess and subsequently monitor social and environmental impacts from the REDD+ strategies and an overall REDD+ programme monitoring mechanism.

Each Component has a related list of next steps and initial activities planned to carry out the work plan leading to REDD+ readiness implementation. Each activity has an estimated overall cost, and the sum total of the actions amounts to \$9,672,500.

Figure 8 Timeline of REDD+ Readiness preparation in Kenya

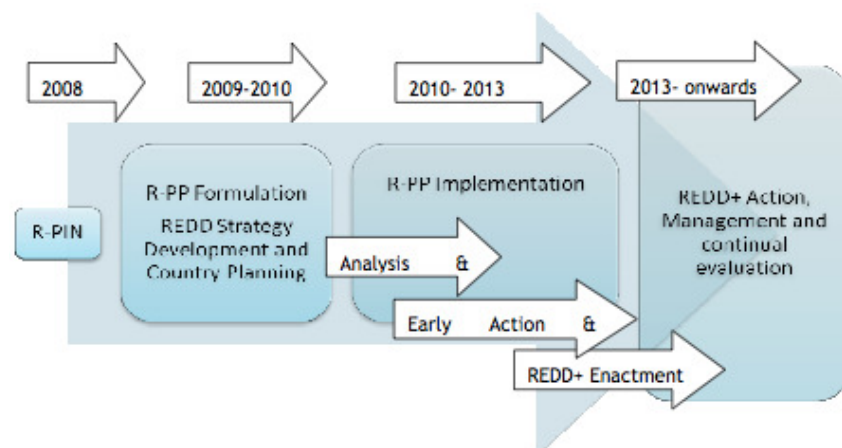


Figure illustrates the timeline for REDD+ readiness preparation in Kenya. The data to be monitored as part of Component 4a include changes in the area of each REDD+ activity class (deforestation, forestation, forest degradation, sustainable forest management, enhancement of forest carbon stocks) and the resulting changes in carbon stocks. Emission reductions will be verified at the national scale, but monitoring and reporting may be implemented at sub-national and local scales. Data collected at subnational scales will be integrated into the national accounting structure via a national data clearinghouse, where NRCO performs additional quality assurance/quality control measures and ensures against double counting.

Accomplishment of that involves two sub-goals:

- quantification of historic emissions/removals from deforestation, degradation and enhancement of carbon stocks for the proposed period post 2000 to 2010+ at a national scale, using the IPCC framework, and spatially represented to reflect differences in sub national activities in use and cover of the land; and
- development of future trajectories of emissions/removals over different time periods and under different economic and development scenarios. This will take into consideration such factors as Kenya's Vision 2030 goals, GDP, population growth, agricultural expansion, industry growth, sectoral development plans, specific investment programmes, and/or adjustment coefficients otherwise derived from such factors and data.

Figure 9 Outcome chain for designing and implementing a MRV system for REDD+ in Kenya



It has a component that describes the MRV of Emissions Levels, and the arrangements needed to quantify carbon emissions and removals from implementing the REDD+ strategies. Because international discussions are ongoing and new monitoring technologies are evolving, the exact details of a MRV system are not finalized in the R-PP.

However, a potential MRV framework and terms of reference are discussed that can be modified and revised as the process moves forward. It includes Capacity building, Activity data's monitoring and Carbon stock change's monitoring.

Appendix E. Energy Sector Memo for discussion at the workshop

Wood fuel accounts for about 68% of the national total energy. Firewood, charcoal and agricultural wastes are the main sources of energy in the rural areas. Petroleum is the next most important accounting for 22% of the national total, followed by electricity 9%. Renewable sources of energy including solar, wind and micro hydropower account for about 1% of the national total.

The total installed capacity in 2009 was 1389 MW. Installed hydro capacity was 750 MW. The potential for hydro power has dramatically reduced during the past 20 years because of the destruction of water catchment areas. With climate change, the situation is likely to worsen as extreme events like the frequent and prolonged droughts will lead to the reduction of water levels in dams, thereby affecting hydro power production potential. Thermal electricity installed capacity was 420MW in 2009.

While the large hydro potential of over 30 MW is diminishing, there is great potential in geothermal resource. The Government is currently focusing on exploiting the geothermal power. The current installed capacity of geothermal energy is 163 MW. The potential for geothermal energy is estimated at 7,000 MW. Potential generation potential from bagasse is estimated to be about 192.8 MW. Mumias sugar factory is currently exporting 26 MW to the national grid. The potential for wind energy is estimated at 2,000 MW. The country has only two operational wind power turbines. The KenGen's turbine is based in Ngong hills and the KPLC's turbine in Marsabit. KenGen is currently has an installed capacity of 5.5 MW in Ngong Hills and plans to increase output by 10 MW. Other companies in the wind energy production include Lake Turkana Wind Power (LTWP), which is establishing a 300 MW wind power project in Turkana. Currently, solar photovoltaic provides off-grid electricity, mainly to small rural based household consumers. The total installed capacity for solar energy is about 3600kWp

The road transport and aviation sector continued to be the largest consumer of petroleum fuels accounting for 73.3% of total domestic sales. An assessment by UNEP projected that petroleum demand by the transport sector will rise from 1.9 million tons in 2004 to between 5.3-8.6 million tons in 2030. Coal is exclusively used in the industrial sector, particularly in the cement industry for process heat.

Energy sector emissions in Kenya are estimated to have increased by as much as 50% over the last decade. In order to achieve a low-carbon developed society, Kenya should pursue an energy mix that greatly relies on carbon –neutral energy sources such as geothermal and other renewable.

To help facilitate renewable energy development, the Kenyan Government established the National Task Force on Accelerated Development of Green Energy with a mandate to accelerate development of green energy through mobilization of technical and financial resources. The task force has identified green energy projects which it considers highly desirable and implementable in the short to medium term. To further promote green energy, in 2008, the Government developed a renewable energy feed in tariff policy with the aim of attracting investments in this sector. Limiting the capacity to below 50 MW has been a barrier to large scale investors.

The Geothermal Development Company, a state owned company, was formed by the Government of Kenya, as a special purpose vehicle, to fast track the development of geothermal resources.

The Rural Electrification Programme, begun in 2005/2006 financial year and to date has installed solar power in 134 institutions. The Government in conjunction with KPLC is currently implanting a programme to replace 1 million incandescent bulbs with fluorescent bulbs. KPLC estimates that the fluorescent bulb will save the country 49 MW.

Kenya has also established a Climate Change Technology Needs and Needs Assessment Report under the United Nations Framework Convention on Climate Change.

Measures that can lead to green energy development programme in Kenya include the following:

- accelerate the development of geothermal energy. Approximately 1,000MW of geothermal electricity can be harnessed at a cost of US\$ 0.06 per kWh in the next three to four years;
- accelerate the development of green energy including wind, solar and renewable biomass. Strategies for accelerating green energy include:
 - resource assessment;
 - credit facilities to enhance solar rural electrification;
 - regulations for mandatory installation of solar water heaters in building;
 - investing in renewable biomass energy including bio-fuels and sustainable charcoal;
 - investment in bio-ethanol processing;
 - investment in cogeneration;
 - thermal energy electricity conversion by manufacturing sector planting trees;
 - converting municipal solid waste into energy;
 - developing National Appropriate Mitigation Actions (NAMAs);
- Energy Efficiency programmes and projects include:
 - mandatory energy audits by large commercial and industrial consumers;
 - reviewing tax policy on importation of motor vehicles;
 - subsidies and tax incentives for adoption of energy-efficient fluorescent bulbs;
 - reviewing building codes to encourage energy efficient building.

Glossary

CCU	Climate Change Unit
CDM	Clean Development Mechanism
DNA	Designated National Authority
DRSRS	Department of Resource Surveys and Remote Sensing
EB	Executive Board
EC	European Commission
ERC	Energy Regulatory Commission
GHG	Greenhouse Gases
GHGI	Greenhouse Gases' Inventory
GoK	Government of Kenya
KAM	Kenya Association of Manufacturers
KFS	Kenya Forestry Services
KMD	Kenya Meteorological Department
LEDS	Low Emission Development
MA	Ministry of Agriculture
MEMR	Ministry of the Environment and Mineral Resources
MRV	Measurable, Reportable and Verifiable
NAMAs	National Appropriate Mitigation Actions
NCCACC	National Climate Change Activities Coordination Committee
NCCRS	National Climate change Response Strategy
NEMA	National Environment Management Authority
NEMA	National Environment Management Authority
QA/QC	Quality Assurance and Quality Control
REDD	Reducing Emissions from Deforestation and Degradation
SEI	Stockholm Environment Institute
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change