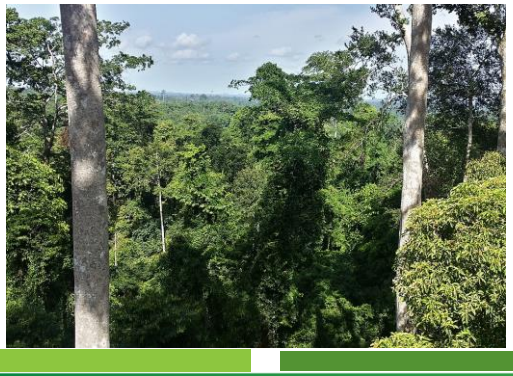
A PLATFORM FOR STAKEHOLDERS IN AFRICAN FORESTRY

# STRENGTHENING CAPACITY OF AFRICAN STAKEHOLDERS TO INTEGRATE AND UPTAKE FOREST AND FARM TREE-BASED ADAPTATION AND MITIGATION OPTIONS IN RESPONSE TO CLIMATE CHANGE IN ANGLOPHONE AND LUSOPHONE AFRICA



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 African Forest Forum P.O. Box 30677 00100 Nairobi GPO KENYA Tel: +254 20 7224203 Fax: +254 20 722 4001 E-mail:exec.sec@afforum.org Website: www.afforum.org. Twitter @ africanff. Facebook / African Forest Forum. LinkedIn / African Forest Forum (AFF).

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# Strengthening capacity of African stakeholders to integrate and uptake forest and farm tree-based adaptation and mitigation options in response to climate change in Anglophone and Lusophone Africa

Paxie Wanangwa Chirwa

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AFD | Agence Francaise de Development |
| AFF | African Forest Forum |
| ARC | Agricultural Research Council |
| ALERT | African Lion and Environmental Research Trust |
| CBNRM | Community-Based Natural Resources Management |
| CC | Climate Change |
| CDM | Clean Development Mechanism |
| CER | Certified emission reduction |
| CFI | Carbon Investment Facility |
| CFU | Conservation Farmers Union |
| CIFOR | Centre for International Forestry Research |
| COMACO | Community Markets for Conservation |
| COCOBOD | Cocoa Board |
| COP | Conference of the Parties |
| CREMA | Community Resource Management Areas |
| CRIG | Cocoa Research Institute of Ghana |
| CSA | Climate Smart Agriculture |
| CSIR | Council for Scientific and Industrial Research |
| CSSL | Conservation Society of Sierra Leone |
| DEFF | Department of Environmental Affairs Forestry and Fisheries |
| DFID | Department for International Development |
| DNA | Designated National Authority |
| EMA | Environmental Management Act |
| FAO | Food and Agriculture Organisation |
| FC | Forest Commission |
| FIP | Forest Investment Plan |
| FLEGT | Forest Law and Enforcement, Governance and Trade |
| FMNR | Farm-based Management of Natural resources |
| FNDS | Fund for Sustainable Development |
| FORIG | Forestry Research Institute of Ghana |
| GEF | Global Environmental Facility |
| GHG | Green House Gases |
| GIZ | German development cooperation |
| GRZ | Government of the Republic of Zambia |
| ICRAF | International Centre for Research in Agroforestry |
| IDA | International Development Association |
| IIED | International Institute for Environment and Development |
| IITA | International Institute for Tropical Agriculture |
| INDCs | Intended Nationally Determined Contributions |
| IPCC | Intergovernmental Panel on Climate Change |
| ITTO | International Tropical Timber Organization |
| IUCN | International Union for Conservation of Nature |

| | |
|---|---|
| LULUCF | Land Use and Land Use Change and Forestry |
| MAFFS | Ministry of Agriculture , Forestry, and Food Security |
| MEST | Ministry of Environment, Science and Technology |
| MoFA | Ministry of Food and Agriculture |
| MoFEP | Ministry of Finance and Economic Planning |
| MLGRD | Ministry of Local Government and Rural Development |
| MOZFIP | Mozambique Forest Investment Project |
| MOZBIO | Mozambique Conservation Areas for Biodiversity and Development Project |
| MRV | Measurement, Reporting and Verification |
| M + A | Mitigation and Adaptation |
| NAMAs | Nationally Appropriate Mitigation Actions |
| NAPAs | National Adaptation Programmes of Action |
| NAP | National Agriculture Policy |
| NaCEF | National Commission for Environment and Forestry |
| NASCCM | National Adaptation Strategy and Climate Change |
| NBSAP | National Biodiversity Strategic Action Plan |
| NCCRS | National Climate Change Response Strategy |
| NDC | Nationally Determined Contributions |
| NEMA | National Environmental Management Act |
| NGO | Non-Governmental Organisation |
| NPAA | National Protected Areas Agency (ANAC) |
| NPCC | National Policy on Climate Change |
| NPE | National Policy on Environment |
| PEDSA | Plan for the Development of the Agricultural Sector |
| PFM | Participatory Forest Management |
| REDD | Reducing Emissions from Deforestation and Forest Degradation |
| RSPB | Royal Society for the Protection of Birds |
| SADC | Southern African Development Community |
| SPGS) | Sawlog Production Grant Scheme |
| SALM | Sustainable Agriculture Land Management |
| SFM | Sustainable Forest Management |
| UNDP | United Nations Development Programme |
| UNFCC | United Nations Framework Convention on Climate Change |
| USD | United States Dollar |
| USAID | United States Agency for International Development |
| VCS | Verified Carbon Standards |
| VERs | Voluntary Emissions Reduction |
| VLUP | Village Land Use Planning |
| VNRC | Village Natural Resources Management Committees |
| WAP-NAP | Western Area Peninsula National Park |
| WWF | World Wildlife Fund |
| ZIFLP | Zambia Integrated Forest Landscape Project |
| ZNFP | Zambia National Forestry Policy |

# EXECUTIVE SUMMARY

## INTRODUCTION

The vulnerability of rural households to climate change in Africa is caused by exposure to climate variability and extreme weather events and by a combination of social, economic and environmental factors that interact with climate change. There is growing evidence that climate change is affecting forests resources in Africa. The effect on the forest resource is mainly as a result of vulnerable communities adapting to climate change through the use and in some cases over use of the forestry goods and services. Since the Kyoto Protocol and several COP Agreements, the role of forestry and trees in a landscape in general in addressing climate change through mitigation and adaptation has gathered pace. This was initially through the promotion of conservation of forests and woodlands as a means of reducing emissions especially carbon dioxide. However, there is increasing understanding that there is an intrinsic link between people and the forest landscape as forests go beyond safety net in addressing the livelihoods of communities in proximity as well as ecosystem services including climate change. The appreciation of forest-based interventions to address climate change adaptation and mitigation has gained attraction; and has been identified by the IPCC including trees in a multifunctional landscape. As a result, a number of donor funded development programme and projects were initiated in Africa response of climate change.

Thus, there was a proliferation of forest-based carbon projects being developed and implemented in Africa. These projects range from reducing deforestation and forest degradation, reforestation, afforestation, improved forest management, sustainable agriculture, bio-energy production and bio-fuels production among many. These development programme simultaneously form forest-based mitigation and adaptation interventions to climate change. This, therefore, enhances their adoption as an efficient tool towards mitigation and adaptation to climate change and sustainable development for the rural populations. Additionally, assessment of forest-based interventions as means of mitigating and/or adapting to the vagaries of climate change can help governments and policy makers to push forward bio-carbon initiatives as an important part of national and regional climate change mitigation and sustainable development strategies, gauge the level of participation of the region to global efforts for climate change mitigation, as well as to lobby for more resources into that sphere depending on their success.

While there have been a number of these development and/or project initiatives, there are few studies, if any, on the extent of success and adoption and scaling up of these as interventions for mitigation and/or adaptation to climate change. One challenge to attracting more tree-based carbon sequestration projects in most African countries is the shortage of organizational capacity to manage and implement climate change interventions including carbon projects and establish links to international buyers. This

study was initiated by the African Forest Forum (AFF) in order to undertake an in-depth analysis that could generate information to guide the strengthening of the capacity of African forestry stakeholders to integrate adaptation and mitigation options in response to climate change and variability in different forest types (rain forest, mountains, mangroves, woodland and savanna), and tree outside forests in Anglophone and Lusophone countries. Specifically, the study had the following objectives:

(i) Identify key stakeholders implementing promising forest-based adaptation and mitigation policies, strategies and actions;
(ii) Identify key stakeholders implementing promising on farm tree-based adaptation and mitigation activities in areas around the chosen forest type through Agroforestry and other Farm-based Management of Natural resources (FMNR) approaches;
(iii) Evaluate the determinants of choice of strategies in (i) and (ii), as well as levels of success in both (i) and (ii) above in addressing climate change and climate variability in the chosen forest and agroforest types;
(iv) Evaluate the external environment, including policies, legislation, incentives, that have facilitated implementation of these promising adaptation and mitigation activities in selected forest types and other land use based on trees outside forests; and
(v) Develop a framework for integrating forest and tree-based adaptation and mitigation options in the chosen forest/agroforest types.

# METHODOLOGY

The study was undertaken in preselected countries representing Anglophone and Lusophone regions in East, West and Southern Africa. These countries included Ghana, Mozambique, Sierra Leone, South Africa Uganda and Zambia, . The study also tried to represent different forest types.

Data collection involved secondary sources through desk review of secondary data from literature, key stakeholder interviews in selected countries with those involved in forest and farm tree-based mitigation and adaptation implementation. The main tool used was a questionnaire that was developed for an in-depth investigation.

Data analysis used content analysis, cross tabulation and Likert scale for comparing and ranking the impact of different factors on implementation of forest and farm tree-based activities.

# MAJOR FINDINGS

The study found that there were several stakeholders involved in implementation of forest-based M+A interventions in all the countries. The policies and institutional frameworks were mostly driven by the government ministries. The stakeholders range from government departments especially for forestry, agriculture, and environment. In all countries, several development agents are involved mostly funded by international

donors. Other stakeholders at government level are also involved in policy development and implementation in relation to climate change and reporting on NDCs.
For *promising forest-based adaptation and mitigation policies, strategies and actions,* all countries had activities relating to afforestation and reforestation to enhance carbon, rehabilitation of degraded lands and forests, woodlot establishment and management, conservation of indigenous forests and promotion and upscaling of agroforestry technologies for mitigation. For the adaptation activities, the trends were similar to that for mitigation.

*Factors that motivated the implementation of forest-based activities* were the high degree of land degradation in all the countries. Land degradation is a serious problem in almost all African countries, which is driven by high population, poor farming practices, over harvesting of the forest resource and high carrying capacity for animals. Secondly, dependency on wood energy was another important factor.

*For the policy and legislation factors contributing to design and implementation of forest-based mitigation and adaptation actions***,** the success of implementing forest-based mitigation activities seems to fundamentally rely on good governance and secure tenure and access to the resource.

The main *constraint associated with implementation of forest-based adaptation and mitigation projects* was the financing of carbon projects. This is actually one of the major factors that has resulted in very few carbon markets in Africa compared to other countries in the world.

In terms of farm tree-based adaptation and mitigation policies, strategies and activitie**s,** *the determinants or factors that have influenced successful implementation* were the quest to increase productivity on farm. Thus, land rehabilitation, agroforestry practices, soil improvement were main M+A intervention drivers.

With respect to *policy factors influencing design and implementation of farm-tree based mitigation and adaptation projects/programmes/plans/activities***,** land tenure was also the single most important. Clear land tenure encourages tree based cropping systems, and in many parts of Africa, there is clear separation of trees on farm between men and women, which has the potential to promote farm-tree based activities for women.

*The main constraints associated with implementation of farm-tree based adaptation and mitigation projects* was the lack of budget allocation to finance CC related activities. In addition, the lack or delay of funding to partners from funders, carbon markets and poor pricing at an international markets was ranked as important, possibly for projects that are funded by climate fund financing.

With respect to *capacity on effective implementation of forest & farm tree-based adaptation and mitigation actions***,** the shortage of organizational capacity to manage carbon projects and establish links to international buyers was the main challenge to attracting forest and farm tree-based carbon sequestration projects in Africa. At the

country level, facilitating successful implementation of carbon sequestration projects requires having adequate national institutional capacity. In this respect, the major barriers were the ability to development of bankable projects in mitigation and adaptation in forestry sector and identifying carbon markets and trading thereof. This was followed by the development of REDD+ and forest based Clean Development Mechanism (CDM) projects. Another insufficient capacity was the methodologies used in Green House Gases (GHG) inventory. Notwithstanding this, other countries have indicated that training has been offered on rapid carbon assessment.

On the level of adequacy on knowledge and skills on REDD+, CDM, Nationally Determined Contributions (NDCs) and Carbon Markets in mitigation and adaptation to climate change programmes/projects, this was moderate in most countries with respect to planning /project design and to a lesser extent for MRV and audit. There was also moderate knowledge on the policies, laws and institutions and the registration processes. However, while most countries had moderate knowledge on commercialization and/or identification of carbon markets, the level of knowledge and skills on credit insurance, financing and benefit sharing was not adequate.

*Framework for successful implementation of forest and farm tree-based M+A interventions,*

In order to have a framework for successful implementation of forest and farm tree-based M+A interventions, the existing policies, strategies and regulations including the Climate Change (CC) and Forest Policies (FP) are the most favourable in most countries as they already integrate forest and farm-tree based adaptation and mitigation action. These are followed by the Environmental, Land and the Agriculture policies. Most importantly, community participation and governance were identified as very important external factors in an institutional framework and can to lead to effective implementation of forest and farm tree-based adaptation and mitigation actions.

From the situational analysis from the different countries (based on a workshop with stakeholders from Anglophone, Francophone and Lusophone countries), strategies for enhancing integrated M+A options in a framework were identified. The following broad approaches are recommended to explicitly enhance integrated M+A programs and projects: key measures and criteria that, where necessary, ensure that M+A is considered at each critical point in the policy process and in the course of developing and implementing programs and projects; policy and landscape level measures are influenced by enabling conditions that will enhance the design and implementation of PPs that will deliver M+A, to be reported to the national and international levels. In both the landscape and policy level approaches, monitoring and evaluation and capacity building is key.

The framework outlined in this report for the promotion of forest-based mitigation and adaptation interventions recognized the sustainable forest management and sustainable livelihood frameworks as the possible main drivers. The framework recognizes the importance of understanding the resource base through proper assessment and monitoring.

# RECOMMENDATIONS

1. It is recommended to streamline and increase the coordination between different government ministries starting with those closely linked to the important policies visa vis Presidency (National Development Plan), Natural Resources (Forestry), Environment, Energy, Agriculture and Land.
2. It is also recommended to build capacity in the areas of carbon. In addition, there will be need to build capacity for monitoring non carbon benefits usually associated socioeconomic analysis.
3. The framework proposed must include monitoring for co-benefits in forest/farm-based mitigation and adaptation projects as these will most likely provide the main adaptation outcomes.

# 1.0 INTRODUCTION

The reality of climate change has increasingly gained acceptance in the scientific and political community over the past two decades (Dube and Phiri, 2013; Fisher *et al.*, 2010), with envisaged direct and indirect severe consequences for African societies and economies (Dube and Phiri, 2013; Somorin, 2010; Conway, 2009). The vulnerability of rural households to climate change in Africa is caused not only by exposure to climate variability and extreme weather events, but by a combination of social, economic and environmental factors that interact with climate change (Naidoo *et al.*, 2013). There is growing evidence that climate change is affecting forests resources in Africa, and therefore the livelihoods of forest-dependent communities (Chidumayo *et al.*, 2011). The effect on the forest resource is mainly as a result of vulnerable communities adapting to climate change through the use and in some cases over use of the forestry goods and services. Climate variability and change threats to the livelihoods of rural poor communities and their realization of sustainable development are due mainly to their effects on forest resources on which the people are highly dependent for food, income and shelter, particularly in times of emergencies (Girot *et al.*, 2012; Byron & Arnold, 1999). The influences of climate change are therefore a source of great concern to all African countries (Chidumayo *et al*., 2011). This in a way is also a 'double edged knife'; in that the loss of the forest resource base results in a reduced mitigation capacity to climate change due to reduced sequestration of carbon dioxide.

Since the Kyoto Protocol and several COP Agreements, the role of forestry and trees in a landscape in general in addressing climate change through mitigation and adaptation has gathered pace (Kojwang and Larwanou 2015). This was initially through the promotion of conservation of forests and woodlands as a means of reducing emissions especially carbon dioxide. However, there is increasing understanding that there is an intrinsic link between people and the forest landscape as forests go beyond safety net in addressing the livelihoods of communities in proximity as well as ecosystem services including Climate Change (CC) (Handavu *et al*., 2018). The initial strategies to address CC were initially through ensuring food security, reducing risks associated with CC including drought, flooding, diseases etc. However, the appreciation of forest-based interventions to address CC adaptation and mitigation has gained traction; and has been identified by the IPCC including trees in a multifunctional landscape e.g. agroforestry (Nabuurs *et al.,* 2017). As a result, a number of donor funded development programme and projects were initiated in Africa response of climate change.

Thus, there was a proliferation of forest-based carbon projects being developed and implemented in Africa. These projects range from reducing deforestation and forest degradation (REDD), reforestation, afforestation, improved forest management, sustainable agriculture, bio-energy production and bio-fuels production among many. In most cases these projects have been linked to actions that increase and diversify incomes, improve food security and create employment, especially for smallholder farmers (Mbow *et al.,* 2012; Chomba and Minang 2009; Jindal *et al.,* 2008). However, there is increasing acknowledgement that these development programme

simultaneously form forest-based mitigation and adaptation interventions to climate change. This, therefore, enhances their adoption as an efficient tool towards mitigation and adaptation to climate change and sustainable development for the rural populations. Additionally, assessment of forest-based interventions as means of mitigating and/or adapting to the vagaries of CC can help governments and policy makers to push forward bio-carbon initiatives as an important part of national and regional climate change mitigation and sustainable development strategies, gauge the level of participation of the region to global efforts for climate change mitigation, as well as to lobby for more resources into that sphere depending on their success. While there have been a number of these development and/or project initiatives (see Chomba and Minang, 2009; Jindal *et al*., 2008), there are few studies, if any, on the extent of success and adoption and scaling up of these as interventions for mitigation and/or adaptation to CC. One challenge to attracting more tree-based carbon sequestration projects in most African countries is the shortage of organizational capacity to manage and implement climate change interventions including carbon projects and establish links to international buyers. However, some of the mitigating benefits especially the non-carbon-based benefits far much outweigh the carbon benefits as alluded to earlier. At the country level, building institutional capacity, facilitating successful implementation of carbon sequestration projects requires having adequate national institutional capacity (Dlamini *et al.,* 2015 a, b). The Kyoto Protocol requires each developing country to establish a Designated National Authority (DNA) that serves as the point of contact between international investors and local service providers in addition to securing property rights and land tenure and improving governance.

This study was initiated by the African Forest Forum (AFF) in order to undertake an in-depth analysis that could generate information to guide the strengthening of the capacity of African forestry stakeholders to integrate adaptation and mitigation options in response to climate change and variability in different forest types (rain forest, mountains, mangroves, woodland and savanna,), and tree outside forests in Anglophone and Lusophone countries. Specifically, the study had the following objectives:

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# 2.0 METHODOLOGY

## 2.1 Study sites

The study was undertaken in preselected countries representing Anglophone and Lusophone regions in East, West and Southern Africa. These countries included , Ghana, Mozambique, Sierra Leone, South Africa, Uganda and Zambia, covering different forest types including the dry savannah woodlands and forests in southern Africa, moist forests in Uganda, savannah woodlands and tropical moist forests in Ghana and Sierra Leone. Sierra Leone, Ghana, Mozambique, and South Africa also have mangrove forests in their coastal regions.

**Table 1. Different types of vegetation in the study countries**

| Country | Dry savannah woodlands | Forests | Moist forests | Mangrove forests | Tropical moist forests |
|---|---|---|---|---|---|
| Ghana | Yes | | | Yes | Yes |
| Mozambique | | | | Yes | |
| Sierra Leone | Yes | | | | Yes |
| South Africa | Yes | Yes | | Yes | |
| Uganda | | | Yes | | |
| Zambia | Yes | Yes | | | |

## 2.2 Data Collection and analysis

Data collection involved secondary sources through desk review of secondary data from literature, key stakeholder interviews in selected countries with those involved in forest and farm tree-based mitigation and adaptation implementation. The main tool used was a questionnaire that was developed for an in-depth investigation. The questionnaire covered the following: (i) institutional profiling on forest and tree-based mitigation and adaptation actions; (ii) implementation of promising forest-based adaptation and mitigation policies, strategies and actions (iii) implementation of promising farm tree-based adaptation and mitigation activities; (iv) framework for integrating forest & farm tree-based adaptation and mitigation actions; and (v) capacity assessment on effective implementation of forest & farm tree-based adaptation and mitigation actions.

However, during field visitations, there was limited time to conduct detailed interviews with different stakeholders and therefore open-ended interviews were preferred that still covered all aspects in the questionnaire. The main respondents included either leaders or practitioners of the identified main stakeholder institutions involved in forest and farm tree-based climate change activities in the respective countries. The stakeholders consisted, where possible, the government ministries and departments, state organs

involved in forest-based climate change activities such as agencies and authorities (see Appendix I List of Stakeholders visited)).

An electronic questionnaire was also sent to as many stakeholder representatives as possible. However, from the six (6) countries visited, the response to the questionnaire was very poor with only 12 respondents. These were Ghana (1), Mozambique (2), Sierra Leone (1), South Africa (4) and Zambia (4).

Data analysis used content analysis, cross tabulation and Likert scale for comparing and ranking the impact of different factors on implementation of forest and farm tree-based activities. Ranking was used for policies, strategies and actions that motivated the implementation, policy and legislation factors contributing to design, determinants and constraints associated with implementation of forest-based adaptation and mitigation activities. Similarly, ranking was used for determinants that have influenced successful implementation, policy and constraints associated with implementation of farm-tree based adaptation and mitigation projects, content analysis and cross tabulation was used for listing stakeholders and the forest and farm-tree based activities, and for identifying relevant policies.

# 3.0 RESULTS AND DICUSSSION

## 3.1 Stakeholders involved forest and tree-based mitigation and adaptation actions

Table 2 shows a list of stakeholders in different countries that are involved in forest and farm tree-based actions. The stakeholders in all countries cover the dry forest vegetation type while Uganda and Ghana also covered the tropical forest vegetation type. In Mozambique, there was one stakeholder the National Protection Agency, which also addresses M+A actions in mangrove vegetation type. The stakeholders range from government departments especially for forestry, agriculture, and environment. In all countries, several development agents are involved mostly funded by international donors. In addition, there are international (IUCN, WWF, CIFOR) agencies in some countries (Ghana, Mozambique, Uganda, Zambia) that are involved in forest restoration, conservation, sustainable forest management, sustainable livelihoods and sustainable land use management (Table 2). Other stakeholders at government level are also involved in policy development and implementation in relation to climate change and reporting on NDCs etc.

**Table 2. Institutional profiling on forest and tree-based mitigation and adaptation actions**

| Profile | Stakeholder | Vegetation type | Status implementation | Funding | On-Farm Tree Based | | Forest Based | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Mitigation | Adaptation | Mitigation | Adaptation |
| **Ghana** | Public/CSIR | Rainforests/ Dry forests Mangroves | NA | CSIR/FORIG | x | x | | |
| | KA Opoku | Rainforests/ Dry forests | NA | NA | | | x | x |
| | Cocoa Research Institute of Ghana | Rainforests/ Dry forests | NA | NA | x | x | | |
| | Permian Ghana | Rainforests/ Dry forests | NA | NA | | | x | x |
| | Conservation Alliance | Rainforests/ Dry forests | NA | NA | x | x | | |
| | IUCN | Rainforests/ Dry forests | **NA** | | **x** | **x** | | |
| | Portal Co Ltd | Rainforests/ Dry forests | **NA** | | **x** | **x** | | |
| | Vicdoris | Rainforests/ Dry forests | **NA** | | **x** | **x** | | |
| **Mozambique** | IUCN | Dry forest | On going | Climate Fund | | | x | x |
| | GoM | Dry forest | On going | Climate Fund | x | x | x | x |
| | National Protected Areas Agency (ANAC) | Dry forests/ mangroves | On going | NA | | | x | x |
| | Hilfswerk International | Dry forests | NA | NA | x | x | | |
| | Excellent Development | Dry forests | NA | NA | | | x | x |
| | IIED | Dry forests | NA | NA | x | x | | |
| **Sierra Leone** | Protection Agency | Rainforests/ Dry forests | **Closed** | **Climate Fund** | | | **x** | **x** |

| Profile | Stakeholder | Vegetation type | Status implementation | Funding | On-Farm Tree Based | | Forest Based | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Mitigation | Adaptation | Mitigation | Adaptation |
| **South Africa** | DEFF | Dry savanna | **Ongoing/closed** | **DF(GIZ)** | | | **x** | **x** |
| | Greenpop Foundation | Dry savanna | **NA** | **NA** | **x** | **x** | **x** | **x** |
| | Food & Trees for Africa | Dry savanna | **NA** | **NA** | **x** | **x** | **x** | **x** |
| | SA Reforestation Trust | Dry savanna | **NA** | **NA** | | | **x** | **x** |
| | Good Hope Studies | Dry savanna | **NA** | **NA** | | | **x** | **x** |
| | UNDP | Dry savanna | **NA** | **NA** | | | **x** | **x** |
| | EThekwini Municipality | Dry savanna | **NA** | **NA** | | | **x** | **x** |
| **Uganda** | GoU Ministries | Rainforests/ Dry forests | **NA** | **NA** | **x** | **x** | **x** | **x** |
| | Depart of Forestry | Rainforests/ | **NA** | **NA** | **x** | **x** | **x** | **x** |
| | Vi Agroforestry | Dry forests | **NA** | **NA** | **x** | **x** | | |
| | Environmental Conservation Trust of Uganda | Rainforests/ | **NA** | **NA** | **x** | **x** | **x** | **x** |
| | IUCN | Dry forests | **NA** | **NA** | **x** | **x** | **x** | **x** |
| | WWF | Rainforests/ | **NA** | **NA** | **x** | **x** | **x** | **x** |
| | CARE International | Dry forests | **NA** | **NA** | **x** | **x** | | |
| **Zambia** | CFU | Dry forest | On-going | Development fund (DF) | x | x | | |
| | Forestry Department | Dry forest | closed | DF | x | x | x | x |
| | CAMACO | Dry forest | On-going | DF | x | x | x | x |

| Profile | Stakeholder | Vegetation type | Status implementation | Funding | On-Farm Tree Based | | Forest Based | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Mitigation | Adaptation | Mitigation | Adaptation |
| | Department of Agriculture | Dry forest | On-going | Government | x | x | x | x |
| | Bio-Carbon Partners | Dry forest | On-going | DF | x | x | x | x |
| | Mopani Copper Mines | Dry forest | On going | Self | x | x | x | x |
| | Peace Parks Foundation | Dry forest | On-going | DF | x | x | x | x |
| | WeForest | Dry forest | On-going | DF | x | x | x | x |
| | ALERT | Dry forest | On-going | DF | x | x | x | x |
| | Centre for International Forestry Research (CFOR) | Dry forest | On-going | DF | x | x | x | x |
| | Copperbelt University | Dry forest | On going | DF | x | x | x | x |

## 3.2 Promising forest-based adaptation and mitigation policies, strategies and actions

This aspect of the study was assessed based on the ranking of promising interventions for forest based Mtigation + Adaptation (M+A) in the different countries (Table 3). In terms of mitigation, all countries had activities relating to afforestation and reforestation to enhance carbon, rehabilitation of degraded lands and forests, woodlot establishment and management, conservation of indigenous forests and promotion and upscaling of agroforestry technologies. It is most likely because most of these activities have been on-going, in some cases, for over a decade. Additionally, it may be due to the importance of wood as a source of energy in many parts of Africa (Chirwa and Adeyemi, 2019). The main interventions in many countries for were through afforestation and woodlots. Interestingly, woodlots were ranked very low in Mozambique and Sierra Leone and not even ranked in Ghana. On the other hand, the non-ranking of agroforestry for mitigation in Ghana could be misleading as this was cited as an important activity in Cocoa tree crop systems. In fact, many Cocoa-based systems are traditionally agroforestry based (Asare *et al*., 2019). Similarly, the poor ranking for many mitigation activities in Ghana is rather misleading as there is currently a lot of climate funding whose activities cover most of those highlighted during interviews. In South Africa, most forest activities undertaken by both government (Department of Environmental Forestry and Fisheries) and some NGOs or Trusts mostly involve rehabilitation of degraded lands and forests and conservation of indigenous forests (see Table 3).

For the adaptation activities, the trends were similar to that for mitigation. Zambia moderately ranked most activities including forest-based enterprise, restoration of degraded lands, upscaling AF and promotion of drought tolerant crops. It is most likely that this is because Zambia has a vibrant honey industry (Nyawali, 2017), and is also one of the countries that was first introduced to REDD+ in Africa and is currently REDD+ ready (Kokwe and Kokwe Mickels, 201)). This could also be the case with Ghana where the REDD+ strategy is also oriented towards forest-based enterprise with cash crops (Forest Commission, 2016). The high ranking of the restoration of degraded forestlands in Mozambique could be donor driven, with a lot of carbon funding (see http://www.fnds.gov.mz/index.php/en/our-projects/project-list) for different projects in the country. The moderate ranking of most mitigation activities in Sierra Leone could be due to the need to rehabilitate the natural resource following many years of war. However, the human capacity as discussed under section 3.7 in the report needs to be addressed. There are similar activities in the east and southern African dry forest vegetation regions and other forest vegetation types where there is land scape approach of restoration of degraded lands as part of the AFR100, a contribution to the Bonn Challenge (see https://afr100.org/ ). While data was not available for Uganda, during key stakeholder consultations, forest-based projects were observed in the field such as the FAO funded Sawlog Grant production Scheme, and the National Forestry Authority Commercialization of Forestry.

**Table 3. Implementation of promising forest-based adaptation and mitigation policies, strategies and actions**

| Climate Change Response | Country/ Rate/Rank (1-3 = Low- Highest) | | | | | |
|---|---|---|---|---|---|---|
| | Zambia (n=4) | Mozambique (n=2) | Ghana (n=1) | Sierra Leone (n=1) | South Africa (n=4) | Mean |
| **Climate change adaptation activities** | | | | | | |
| Promotion of forest-based enterprises such bee keeping | 2.3 | 1.5 | 3 | 2 | 2 | 2.3 |
| Restoration of degraded forests and lands | 2.25 | 3.0 | 3 | 2 | 2 | 2.3 |
| Promotion of drought tolerant trees and crops | 2 | - | - | 2 | 2 | 2.0 |
| Promotion and upscaling of agroforestry practices | 2 | 1 | - | 2 | 2 | 1.8 |
| **Climate change mitigation activities** | | | | | | |
| Afforestation and reforestation to enhance carbon stocks | 2 | 1 | 3 | 2 | 2 | 2.0 |
| Rehabilitation of degraded lands and forests | 2.3 | 1 | 3 | 1 | 2 | 1.8 |
| Woodlot establishment and management | 1.7 | 1 | - | 1 | 2 | 1.3 |
| Conservation of indigenous forests | 2 | 1 | - | 2 | 3 | 2.0 |
| Promotion and upscaling of agroforestry technologies | 2 | 1 | - | 2 | 2 | 1.8 |

### 3.2.1 Factors that motivated the implementation of forest-based activities

Based on the matrix of responses for the different factors that motivated different countries to implement different forest-based activities (Table 4). The most important factor was the high degree of land degradation in all the countries. Land degradation is a serious problem in almost all African countries, which is driven by high population, poor farming practices, over harvesting of the forest resource and high carrying capacity for animals (Chirwa and Larwanou, 2017). Dependency on wood energy was also another important factor. This is expected in most African countries that still largely rely on wood energy for heating and cooking (Gondwe *et al*., 2019).

Two interesting factors in relation to climate change were the appreciation of the forest cover as contributing to improved ecosystem services, and the threat of deforestation. Indeed deforestation is a serious problem driven by the factors highlighted before (population, energy). For the respondents, the forest-based activities seem to also be appreciated more for the non-carbon benefits including livelihoods benefits, as well as biodiversity conservation. Recent studies in other countries including the SADC region has shown that non-carbon benefits were probably more important than the carbon markets due to the poor and low market values of carbon (Chirwa 2015, Jindal *et al*., 2010). Indeed carbon market incentives were only mentioned in Mozambique (Aristides Muhate pers. comm.). Countries with land tracts of land (eg Zambia, Mozambique and South Africa) have indicated that there are opportunities for new green growths. However, this needs to be weighed against the background of meeting socioeconomic benefits visa viz local communities losing land to multi-national companies (Landry and Chirwa, 2011).

In the case of South Africa and possibly other dry countries like Ethiopia, Kenya and dry areas of Nigeria, water may be the limiting factors to increased biomass (carbon) production (Pereira and Pallardy, 1989). Although the adaptation of forests and forest dependent communities and the willingness of the local communities were also cited as important in some countries, this was not apparent in most literature from the region. Most of these activities seem to be mostly donor driven and reports from many countries have shown that community participation is dogged by poor benefit sharing between communities and governments and even commercial forestry industry (Thsidzumba *et al*., 2018; Phiri *et al*., 2012; Senganimalunje et al., 2016).

**Table 4. Factors that motivated the implementation of activities**

| Factors | Zambia | Ghana | Mozambique | Sierra Leone | South Africa |
|---|---|---|---|---|---|
| Suitable and vast land for afforestation and reforestation activities | x | | xx | | xx |
| High degree of land degradation | xxx | x | xx | x | xx |
| Heavy dependence on wood resources (biomass) for energy | xx | | x | x | xxx |
| Low technology required to grow trees | | | | | x |
| Biophysical – high carbon stock forest ecosystems and deforestation threat | xx | x | | x | x |
| Incentive opportunities – voluntary and compliance markets, low opportunity cost | | | x | | |
| Non-carbon benefit opportunities – social and economic benefits, biodiversity conservation | xxx | | x | x | xx |
| Adaptation of forest and forest dependent communities | xxx | | xx | | xx |
| Willingness of communities to engage | xx | | x | | x |

### 3.2.2 Policy and legislation factors contributing to design and implementation of forest-based mitigation and adaptation actions

Table 5 shows the policy and legislation factors contributing to design and implementation of forest-based mitigation and adaptation actions. The success of implementing forest-based mitigation activities seems to fundamentally rely on good governance and secure tenure and access to the resource. In fact, like many other development projects, if there is no secure tenure, communities are not willing to participate in such activities. For example, in Tanzania, the village governments that have promoted secure land tenure have resulted in effective implementation of REDD+ and other forest resource management (Uisso *et al*., 2018). Most forest polices in Anglophone countries have mainstreamed involvement of communities in management of forest resources, but with no devolvement on the sharing of benefits. In all countries assessed, the contribution of technical capacity to develop bankable projects and the related finances were ranked as moderately contributing to the implementation of M+A actions (Table 5). The procedures for developing projects for carbon markets are said to be very expensive and complicated. Some countries have capacity because of donor funding for REDD+ (e.g. Ghana, Mozambique and Zambia). However, this expertise was usually at the central office and there was indication that all countries would benefit from upscaling the training for carbon projects. For example, in Ghana and Mozambique, there is donor funding in the form of a forest investment projects that promote forestry. In terms of availability of local funding, South Africa was the only country that indicated this. This is most likely attributed to commercial forestry and government and development funding for conservation related forest-based M+A activities.

**Table 5. Policy and legislation factors contributing to design and implementation of forest-based mitigation and adaptation actions**

| Policy and legislation factors | Zambia | Ghana | Mozambique | S Leon | South Africa | Average |
|---|---|---|---|---|---|---|
| | | | | | | |
| Governance - tenure and resource rights, political will etc. | **3.0** | 3.0 | **3.0** | 2.0 | **3.0** | 2.8 |
| Technical capacity to develop bankable projects and robust MRV | **2.0** | 3.0 | **2.0** | 3.0 | **2.0** | 2.4 |
| Economic incentives for project proponents | **3.0** | 3.0 | **2.0** | 2.0 | **2.0** | 2.4 |
| Availability of sufficient and sustainable financing | **1.0** | 1.0 | **1.0** | 3.0 | **3.0** | 1.6 |
| Any other, specify and rate | | | | | | |

*Rating scale: 1=Strongly disagree, 2=Agree, 3=Strongly agree*

### 3.2.3 Determinants/factors and constraints associated with implementation of forest-based adaptation and mitigation projects

With respect to determinants and constraints associated with implementation of forest-based M+A projects, the major constraint was the financing of carbon projects (Table 6). This is actually one of the major factors that has resulted in very few carbon markets in Africa compared to other countries in the world (Chomba and Minang, 2009; Jindal *et al*., 2008). However, this was not the case in Mozambique although there were not many projects that have been very successful apart from the Sofala Community and *Nhambita* project, which were somehow long-term donor projects (Jindal *et al*., 2008; Camargo, 2008; Johnson and Ryan, 2012 ).

Similar successes related mainly to REDD+ projects have been reported in Tanzania but were mainly pilot projects through bilateral funding from Norway, Finland and German (Kweka *et al*., 2015). Climate financing in many countries is lacking and those with active projects are as a result of climate/green financing by multilateral or bilateral donors like was the case in Ghana, Mozambique, Tanzania and Uganda . While lack of policy was highlighted as a constraint, a number of countries have developed climate change policy and/or strategies e.g. Ghana , Uganda and Zambia. Other countries have in fact addressed forest-based actions through the development of REDD+ Strategies (Table 11). Interestingly, in some countries like Zambia and Uganda funding for most projects are financed by the treasury if they mainstream climate change. Most countries indicated that skilled labor was not a main constraint, however, there was an obvious lack of skills in carbon project design and marketing aspects as highlighted earlier.

**Table 6. Determinants/factors and constraints associated with implementation of forest-based adaptation and mitigation projects**

| Constraints | Zambia | Ghana | Mozambique | S Leon | South Africa | Average |
|---|---|---|---|---|---|---|
| Lack of human resource (skilled labour) trained to conduct the job | 2.0 | 1 | 2.5 | 1 | 2.7 | 1.4 |
| Lack of budget allocation to finance Climate change related activities | 2.8 | 3 | 1.5 | 1 | 2.7 | 2.2 |
| Lack of policies and strategies by governments to address Climate change impacts | 1.8 | 3 | 2.0 | - | 1.7 | 2.1 |
| Lack Delay in provision of funding to partners of Carbon markets and/or pricing at an international market to trade | 2.5 | 3 | 1.5 | - | 3.0 | 2.5 |

Ranking 1=Low, 2= Medium, 3=High

### 3.3 Promising farm tree-based adaptation and mitigation activities

The study found several governments have put in place enabling policies and strategies to allow for the promotion of farm tree-based adaptation and mitigation activities (Table 11). These activities and/or interventions were initially identified through the NAMAs and NAPAs. For example the forestry, agriculture and environmental policies in many countries have farm tree-based strategies including agroforestry strategies, climate smart agriculture strategies, and even REDD+ that include both sustainable livelihoods (or non-carbon benefits) and carbon sequestration. It is important to indicate that some of the activities are both for M+A and can therefore be included in forest-based activities. Other than activities implemented by relevant government ministries and/or departments, there are many non-governmental organizations also involved. Table 7 outlines some of the stakeholders in different countries. The most common farm tree-based A+M activities in all the countries include climate smart agriculture, woodlot establishment for energy and poles, different agroforestry systems and technologies, reforestation and restoration (Table 7).

The most notable projects in Zambia include the global climate change project by Bio-Carbon Partners and the Lower Zambezi REDD+ Project, which support the implementation of the Zambia –REDD+. Another important project, which has a landscape approach, is that under Ministry of Finance, National Development and Planning. This included the Zambia Integrated Forest Landscape Project (ZIFLP). This project will cover Kafue, Zambezi and Luangwa Water Catchment areas. A few projects are supported by both multilateral and bilateral donors. *The main farm tree-based activities in these project include tree planting, reforestation, assisted natural regeneration in the miombo woodlands, agroforestry/ climate smart agriculture*, among others.

In Mozambique, the largest programme is World Bank funded National Fund for Sustainable Development (FNDS) under the Mozambique Forest Investment Project. There are also mitigation projects in the nature reserves to reduce deforestation. An interesting project specifically on farm tree is the Joint programme on Environmental Mainstreaming and adaptation to Climate Change, which promotes forestry on the farm. There are many other small projects that are also on going in Mozambique including the following:

*Promoting Integrated Landscape Management (US$19.1 million):* Component 1.2 - Promoting multipurpose planted forests, agroforestry systems, and sustainable charcoal production.

- Planted Forests Grant Scheme*,* a performance-based grant scheme for small and medium landholders and local communities for the establishment of multipurpose plantations and areas of restored lands by providing grants and technical assistance to beneficiaries.
- Agroforestry systems.
- Sustainable charcoal production.

*Sustenta" project: Agriculture and Natural Resources Landscape Management project (2016 – 2021) - USD 40 million:* It covers 5 districts in Nampula province and 5 districts in Zambézia province – which are all part of the Emission Reduction (ER) Program area. The project aims to promote inclusive and sustainable agricultural and forest-based value chains.

*MOZBIO - Conservation Area for Biodiversity and Development Project (2016 – 2018) - USD 46.32 million:* Funded by the World Bank through the International Development Association (IDA) and the Global Environment Facility (GEF). Its overall objective is to increase the effective management of conservation areas and to enhance the contribution of these areas to the living conditions of surrounding communities.

*Nhambita Project:* Forest management, Forest Utilization, Agroforestry, Non-Timber Forest Products and Regional carbon management research & Carbon verification
In Uganda, there are many players that contribute to Climate Change forest-based M+A activities. The main activities include tree planting or natural regeneration in afforestation, reforestation, restoration and/rehabilitation and agroforestry, among others. Some of the projects are also on mountain and water catchment conservation, non-timber forest products, farm forestry. The government's major players include Ministry of Water and Environment, Forestry Department, Uganda National Forestry Authority and Ministry of Energy and Minerals. There are also many local and internationals NGOs such as IUCN, WWF and the Environmental Conservation Trust of Uganda. In terms of the Climate Funds, the Forest Investment Plan (FIP) project and the FAO Sawlog Production Grant Scheme (SPGS) are good examples of ensuring benefits accrue to communities, apart from the carbon sales.

In Ghana, most of the farm tree-based mitigation and adaption activities were apparent in the REDD+ Strategy and the Forest Investment Plan (FIP). The programmes include

*promoting a sustainable cocoa and agroforestry landscape off-reserve that is productive, climate smart and environmentally responsible: (i) integration of trees into the cocoa landscape; (ii) managing naturally occurring trees in food and other tree-crop farming systems.* Another relevant component is the support for *community restoration of degraded forest and agricultural landscapes*. Several partners were involved in design and implementation of the investment plan. These include The Ministry of Finance and Economic Planning (MoFEP); Ministry of Food and Agriculture (MoFA); Ministry of Environment, Science and Technology (MEST); Ministry of Local Government and Rural Development (MLGRD); the Forestry Commission (FC); Forestry Research Institute of Ghana (FORIG); Cocoa Board (COCOBOD); Cocoa Research Institute of Ghana (CRIG); Traditional Authorities, Private Sector and Civil Society institutions. In addition, main development partners include Netherlands Government, Agence Française de Développement (AFD), U.K Government (DFID) and European Union. The Community Resource Management Areas (CREMA) pilot projects aim at empowering women in decision-making and in sharing benefits. The main programmes under REDD+ include the following:

*Emission Reductions Programme for the Cocoa Forest Mosaic Landscape:* The programme seeks to significantly reduce emissions driven by cocoa farming and other agricultural drivers, as well as illegal logging and illegal mining, in a manner that will secure the future of Ghana's forests. Ghana's Forestry Commission and Cocoa Board are the main government institutions responsible for managing and implementing Ghana's "Cocoa Forest REDD Programme", in concert with the Ministry of Lands & Natural Resources (which is responsible for the Forest Investment Programme (FIP)) and private sector stakeholders, who will provide critical upfront engagement and investment.

*Emission Reductions Programme for the Shea Landscape of the Northern Savanna Woodland:* This REDD + strategy seeks to promote sustainable approaches to land use, forest conservation, and enhanced community-based resource management to stem the on-going degradation and deforestation from illegal logging, charcoal production, agricultural expansion and illegal mining that threaten the forests and Shea production system.

*Mangrove Eco-Zone Emission Reduction Program:* Despite the fact that mangroves are a highly threatened natural forest ecosystem along Ghana's coasts and inland waterways. USAID/USFS have been supporting work in this area for a number of years. Recent works in Ghana suggests that approximately 2,000 Mg/ha are stored in the mangrove system, one hundred-fold more than in tropical high forests.

*"Togo Plateau" and the dry demi-deciduous forests zone:* Along Ghana's mid-eastern border with Togo, there is an area of Volta Region, commonly referred to as the Togo Plateau, which contains some of the highest carbon stocks in the country due to a mosaic of protected forests, off-reserve forest patches, high biomass cocoa farms and other complex agroforestry systems.

In Sierra Leone, the capacity to implement farm tree-based M+A activities is hampered by human capacity following a long war. The major challenges of forest management include, amongst others, (a) poor governance; (b) weak law enforcement (c) lack of coordination among sector ministries and (d) illegal harvesting. Previously, the European Delegation in Sierra Leone invested in a project, the 'REDD+ Capacity Building in Sierra Leone' project. This project was part of the Global Climate Change Alliance programme supposed to pilot REDD+ at the national level and build the capacity of the Forestry Division of the Ministry of Agriculture Forestry and Food Security (MAFFS) to implement REDD+. The national REDD+ programme became operational in 2013 but was apparently abandoned following mismanagement of funds.
At the sub-national level the 'Gola Rainforest REDD+ project' is being implemented by the Royal Society for the Protection of Birds (RSPB), the Forestry Division of MAFFS, and the Conservation Society of Sierra Leone (CSSL). This is the first REDD+ pilot project in the country and it will inform the national REDD+ planning and implementation process. Feasibility studies for REDD+ have also been developed for the Sierra Leone Bumbuna Hydroelectric Environmental and Social Management Project in the Northern Province, and the Western Area Peninsula National Park (WAP-NAP) in the Western Region.

The Forestry Division of the Ministry of Agriculture, Forestry and Food Security (MAFFS) is responsible for forest management and biodiversity conservation. The National Commission on Environment and Forestry (NaCEF) is responsible for managing the country's natural and environmental resources; and advising the Ministry on policy, project implementation, environmental monitoring, and setting priorities. The Forestry and Wildlife divisions within NaCEF are responsible for natural forest management, management of forest plantations, and management of rangeland and national parks. There is considerable overlap in environmental responsibilities of the NaCEF and other ministries, such as the Ministry of Agriculture and Food Security, Ministry of Lands and Country Planning, Ministry of Works and Technical Maintenance, and Ministry of Mineral Resources. In the Agenda for Prosperity (GoSL/A4P. 2012), the top priority for this subsector is the adoption of a comprehensive land use policy.

In South Africa, farm-based management of natural resources that address mitigation and adaptation interventions include afforestation, reforestation and restoration activities (Table 7). Some projects use natural regeneration, and farmer based natural regeneration approaches. Other activities are on tree planting including urban greening while conservation of biodiversity has been advocated in other areas. The Department of environmental Affairs (now Department of Environment, Forestry and Fisheries) is involved in a number of Climate Change (CC) activities, and it is through this department that many strategies to address CC issues have been formulated in the country. There are also a number of NGOs that are involved in the implementation of projects that have farm and/or forest-based mitigation and adaptation activities. Interestingly, the Department housing forestry does not seem to be very involved in forest-based M+A activities, but the forest policy is amenable to these, especially with the development of the new Agroforestry Strategy.

**Table 7. Promising farm tree-based (agroforestry and other farm-based management of natural resources) adaption and mitigation projects and/or activities**

| Farm tree-based adaptation and mitigation projects | Farm tree-based adaptation and mitigation activities | Duration |
|---|---|---|
| **ZAMBIA** | | |
| GRZ-Lake Tanganyika Development Project | Regeneration<br>Afforestation/reforestation<br>Participatory forest management<br>Smart agriculture and sustainable fishing | 5 |
| CFU | Planting of *Faidherbia albida* | 9 |
| COMACO-Sustainable Agriculture Land Management (SALM) | Agroforestry with *Gliricidia sepium* | |
| GRZ-Forest & Farm Forest Program | Tree nurseries<br>Woodlot establishment | 5 |
| Ministry of Agriculture and Cooperatives | Promotion of woodlots and agroforestry | N/a |
| Bio-Carbon Partners | Improvements in smallholder farmer agricultural technologies and development of NTFPs markets for income generating activities | |
| WeForest | Fruit tree farming<br>Reforestation<br>Bee keeping<br>Tree grafting | NA |
| **GHANA** | | |
| CSIR-ITTO Medicinal Plant Project | Planted timber with medicinal values on farm | 6 |
| Cocoa Res Inst Ghana | Managing cocoa production landscapes | NA |
| Conservation Alliance | Cocoa agroforestry | NA |
| IUCN | Pro poor Agroforestry project | NA |
| Vicdoris Limited | Agroecosystems areas of Dawadawa and surrounding areas in Brong Ahafo | NA |
| **MOZAMBIQUE** | | |
| IUCN | Promoting AF practices in Buffer zone Conservation Areas | 3 |
| MZFIP | Agroforestry, SFM, Restoration | 4 |
| SUSTENTA | Agriculture, Restoration | 4 |
| MOZBIO | Conservation Areas | 4 |
| ENVIROTRADE | Agroforestry, Restoration, SFM | 8 |
| **S LEONE** | | |
| Promoting Forest based cash crop plantation | Cash cropping with cacao | 3 |
| **UGANDA** | | |

| Farm tree-based adaptation and mitigation projects | Farm tree-based adaptation and mitigation activities | Duration |
|---|---|---|
| Vi Agroforestry | Tree planting<br>Sustainable agriculture | NA |
| Environmental Conservation Trust of Uganda | Afforestation &Agroforestry<br>Produce long term viable verifiable voluntary emissions reductions (VERs) | NA |
| Uganda National Forestry Authority | CDM project for small-scale afforestation and reforestation project activities | NA |
| Forestry Department | Peri-urban plantations and pilot wood farms & Farm forestry | NA |
| **SOUTH AFRICA** | | |
| Greenpop Foundation | Agroforestry<br>Woodlots and orchards<br>Tree Nursery establishment | NA |
| Food and Trees for Africa | Tree planting in surrounding home and townships<br>Urban tree planting | NA |
| DEFF | Social forestry<br>Propagation of indigenous plants<br>Planting of fuelwood tree species | NA |
| South African Reforestation Trust | Tree planting<br>Promoting planting of indigenous tree species | NA |

### 3.3.1 Determinants/factors that have influenced successful implementation of farm-tree based adaptation and mitigation projects/activities

The main factors influencing successful implementation of farm-tree based adaptation and mitigation activities were increasing productivity on farm. Thus, land rehabilitation, agroforestry practices, soil improvement were main drivers (Table 8). This is expected since most farming systems in Africa majorly involve food crops and the main constraints to food production in Africa is declining soil fertility, expensive inputs (McKenzie and Williams, 2015). Agroforestry has been reported to improve soil fertility and has even been included by the IPCC as mitigating climate change (Tschora and Cherubini, 2020). Other practices such as climate smart agriculture and conservation agriculture have also been promoted as part of rehabilitating degraded soils. In terms of tree-based interventions, agroforestry with multiple purpose tree species has been promoted widely in many parts of Africa by institutions like World Agroforestry Centre (ICRAF) and International Institute for Tropical Agriculture (IITA). These include intercropping with multipurpose trees such as *Faidherbia albida*, *Gliricidia*, *Sesbania*, among others (Garrity *et al*., 2010). Other notable interventions are farmer managed natural regeneration. This has been very successful especially in the Sahel and are the basis of the Great Green Wall in West Africa (Chirwa and Larwanou, 2017; Maisharou *et al*., 2015). Interestingly, the factors relating to climate change (carbon sequestration, CDM, REDD+, and Voluntary Carbon Markets) were ranked comparatively low (Table

8). This further stresses the point that communities are more preoccupied with interventions that address their livelihoods. Hence, the notion that non-carbon benefit M+A interventions are bound to be more successful in Africa as they directly benefit communities in both short and long term. Financial motivation was not ranked highly, which could have been likely nuanced with the socioeconomic benefits as highlighted for non-carbon benefits. The moderate ranking for biodiversity could be as result of many voluntary carbon market projects that tend to be more favorable to community benefits (see Chirwa, 2015). This was the case for Nhambiata project in Mozambique and could be the same in other countries.

**Table 8. Determinants/factors that have influenced successful implementation of farm-tree based adaptation and mitigation projects/activities**

| *Factors | Zambia | Mozambique | Ghana | Average |
|---|---|---|---|---|
| Soil Improvement | 2.8 | 2.0 | 2.0 | 2.3 |
| Land rehabilitation | 2.8 | 2.5 | 3.0 | 2.8 |
| Biodiversity conservation | 2.0 | 2.0 | 3.0 | 2.3 |
| Climatic change - carbon sequestration, CDM, REDD+, Voluntary Carbon Markets etc. | 2.0 | 1.0 | 2.0 | 1.7 |
| Socioeconomic benefits (balance gender roles security of land and tree tenure availability of inputs - labour, planting materials, Accessibility to information and markets - demand, supply, prices) | 2.0 | 2.5 | 1.0 | 1.8 |
| Potential of the agroforestry system (affordable costs, livelihoods and income benefits); | 2.3 | 3.0 | 2.0 | 2.4 |
| Financial motivation to invest (access to capital/credit, incentives - cash or noncash) | 1.8 | 2.0 | 1.0 | 1.6 |

Key: rating scale: *1=not successful, 2=partly successful 3= very successful;*

### 3.3.2 Policy factors influencing design and implementation of farm-tree based mitigation and adaptation projects/programmes/plans/activities

In terms of policies influencing design and implementation of farm-tree based mitigation and adaptation projects and/or activities, land tenure was the single most important (Table 9). Clear land tenure is reported to encourage tree based cropping systems. In many parts of Africa, while the policies on land tenure are not strong, in other parts of Africa there is clear separation of trees on farm between men and women (Holden and Otsuka, 2014). However, some of the projects relating to REDD+ and participatory land use, for example in Tanzania, have strengthened land and tree tenure (Uisso *et al*., 2018). The moderate ranking of the mainstreaming of agroforestry in policies and extension systems could be a reflection of agroforestry strategies that have been developed in many east and southern African countries. In countries like Nigeria and Kenya, IITA and ICRAF, respectively may have been promoting agroforestry practices for over 3 decades. During field visits, the apparent active promotion of agroforestry as a farm tree-based M+A intervention was mostly through the climate financing as was the case in Mozambique and Ghana. Indeed, some of these interventions were identified during the early developments of the NAMAs and NAPAs, and these features were identified during the visits in the country reporting of INDCs for countries such as Uganda and Zambia. While germplasm was ranked very low in most countries, it has generally been reported that the barrier to upscaling of agroforestry in many parts of Africa is due to poor supply of good quality germplasm (Nyoka *et al*., 2011).

**Table 9. Policy factors influencing design and implementation of farm-tree based mitigation and adaptation projects/programmes/plans/activities**

| Policy and legislation factors | Zambia | Mozambique | Ghana | S Leone | Average |
|---|---|---|---|---|---|
| Land and tree tenure security | **2.3** | 2.5 | 3.0 | 3.0 | 2.7 |
| Seed/germ plasm supply systems | 2.0 | 1.0 | 3.0 | 1.0 | 1.8 |
| Support from extension systems propagating agroforestry technology | 2.3 | 2.5 | 3.0 | 1.0 | 2.2 |
| Clear sectoral policy articulation for agroforestry | 2.0 | 1.5 | 3.0 | 3.0 | 2.4 |
| Opportunities to valorize/incentivize agroforestry environmental services e.g. PES, REDD+ | 2.0 | 2.0 | 3.0 | 2.0 | 2.3 |
| Subsidies to enhance adoption of agroforestry practices | 2.3 | 2.0 | 3.0 | 2.0 | 2.3 |

*Rating scale: 1=disagree, 2=Neutral, 3=Agree*

### 3.3.3 Constraints associated with implementation of farm-tree based adaptation and mitigation projects

The lack of budget allocation to finance Climate Change (CC) related activities was ranked as the main constraint (Table 10). This is somehow expected as most governments prioritize food security, which is mostly grain based cropping, followed by health, education, among others. Notwithstanding, allocation is inadvertently provided where farm-tree based M+A activities contribute to food security, including for example, where agroforestry and other climate smart agriculture technologies are promoted through some bilateral and/or multilateral funding. The lack or delay of funding to partners from funders, carbon markets and poor pricing at an international markets was ranked as important, possibly for projects that are funded by climate fund financing. In most countries, the problem is the poor coordination of the climate change activities between different ministries. This was identified as a problem in Mozambique. However, the issue of carbon markets could be due to the problem of identifying international markets as well as the lack of capacity to prepare viable projects that meet the carbon markets specifications. This is most likely compounded by the low carbon prices on the international market (Chirwa, 2015). The human resource and requisite skills to implement farm tree-based M+A projects/activities as well as enabling policies were not considered as serious constraints. As discussed elsewhere in the report, extension skills for implementing farm tree-based M+A activities may be available but the main problem could be related to the operational costs.

Table 10. Constraints associated with implementation of farm-tree based adaptation and mitigation projects

| Constraints of implementing farm tree-based adaptation and mitigation projects | Zambia | Mozambique | Ghana | S Leone | Average |
|---|---|---|---|---|---|
| Lack of human resource (skilled labour) trained to conduct the job | 1.8 | 2.5 | 1.0 | 2.0 | 1.8 |
| Lack of budget allocation to finance Climate change related activities | 2.5 | 2.5 | 3.0 | 3.0 | 2.8 |
| Lack of policies and strategies by governments to address Climate change impacts | 1.3 | 1.5 | 2.0 | 3.0 | 1.9 |
| Lack Delay in provision of funding to partners of Carbon markets and/or pricing at an international market to trade | 2.5 | 1.0 | 3.0 | 3.0 | 2.4 |

*(Rating scale:* 1=Low, 2= Medium, 3=High)

# 3.4 Framework for integrating forest & farm tree-based adaptation and mitigation actions

## 3.4.1 The existing policies, strategies and regulations that integrate forest and farm-tree based adaptation and mitigation actions

The study also evaluated the policies in the selected countries, especially to what extent they integrate forest and farm tree-based M+A actions (Table 11). Secondly the study sought to provides an analysis of the importance of the different policies based on the five criteria (sustainability, forest-based activities, stakeholder participation/involvement, livelihoods/benefits, forest Investment plan) showing to what extend the 6 main policies identified in the study countries address the forest and farm tree-based M+A interventions (Table 12).

In Zambia, the main policies that directly relate to climate change, forest and farm tree based adaptation and mitigation, include the national policy on climate change (NPCC, 2017), which stresses implementation of adaptation and disaster risk reduction measures to reduce vulnerability to climate variability and change; implementation of sustainable land-use management practices in order to contribute to reducing Green House Gases (GHG) emissions from land use and land use change and forestry (LULUCF). This is closely followed by the Zambia National Forest Policy (ZNFP, 2014) and Forest Act (2015), whose vision of the forestry sector is attaining sustainable forest management of all types of forests to enhance forest products and services that will contribute to mitigation of climate change, income generation, poverty reduction, job creation and protection and maintenance of biodiversity. However, Climate Change (CC) policy is the overarching policy, whose strategy (National Climate Change Response Strategy (NCCRS, 2012) mission further ensures that climate change is mainstreamed in the most economically important and vulnerable sectors of the economy. Other closely related policies include the national agriculture policy (NAP, 2016), which explicitly recognizes the significance of climate change adaptation by promoting climate-smart agricultural practices such as conservation agriculture and agroforestry and linkages to other sectors such as forestry, energy, land use and infrastructure development. The National Policy on Environment (NPE, 2007) focuses activities on the environment including biodiversity loss, deforestation, land degradation, which is in line with the landscape approach at watershed level of the REDD+ strategy. There are several Acts that formalize the implementation of several forest and farm tree-based mitigation and adaptation (M+A) interventions including the Forest Act (2015), Environmental Management Act (EMA, 2011, The Zambia Wildlife Act No. 12 of 1998, : Local Government (Amendment) Act No. 9 of 2004: Zambia Development Agency Act No. 11 of 2006, among others.

In Mozambique, there is no Climate Change (CC) Policy and most of the other policies (termed Law) are implicit in their reference to CC in relation to the forest-based issues. These include the Forest and wildlife Law Regulation, 1999, 2002, Environment and Biodiversity/ Forests and Land Law, Conservation Areas Law. The most specific on

forest-based intervention is the REDD+ Strategy, which highlights six pillars especially the sustainable management of forests; alternative sources of energy; protection of conservation areas; forest restoration; and sustainable agriculture. This REDD+ Strategy seems to be the foundation of most of the CC forest-based activities with the exception of the old projects. In addition, there are other policies that have incorporated investments in forests in relation to CC and productivity including the Draft National Policy on Biomass and the Land Policy and Community Land delimitation (Table 3).

In Uganda, a National Climate Change Policy, 2015, makes provision for 23armonized and coordinated approach towards climate resilient and low carbon developments. It also mentions the development towards the green economy. The Forest Policy in Uganda promotes sustainable forest management (SFM) of state and private forests. It also makes provisions for involvement of communities as well as promotion of farm tree planting. The National Environment Policy and Act highlight the importance of community-based management. Other relevant policies include the National Policy for the Conservation and Management of Wetlands Resources, 1995. The Land Act, 1998 and the Local Government Act, make provision for communal ownership of land and the resources including forests, participation and equitable sharing of the resources/benefits.

In Ghana, the REDD+ strategy better highlights the main policies, strategies and action plans addressing forest-based mitigation and adaptation. The Climate Change Policy Focus Area 4 seeks to design and implement intervention that increase carbon sinks. The FLEGT and the projects under Ghana's Forest Investment Plan (FIP) provide a strong set of complementary channels for addressing the major drivers of deforestation and degradation. More importantly are the policies that directly relate to the tree crops and other important cash crops such a Cocoa. Indeed Ghana even has the National Climate Smart Agriculture and Food Security Action Plan (2016-2020) to translate to the ground level the broad national goals and objectives in climate-smart agriculture. Other important polies include the National Environment Policy, which recognizes environmental challenges including loss of biodiversity, land degradation, deforestation and desertification land policy which recognizes land rights/tenure.

In Sierra Leone, despite their large extent, rapid growth and increasing importance at the local, national and regional levels for the products and service they provide, forest are not afforded adequate prominence in forest policy, and indeed even in the most recent climate change policy in Sierra Leone. There is a general lack of policies regulating and encouraging forest management, use and conservation. However, in the National Development Plan, the Agenda for Prosperity, recognizes forestry in Pillar 2 – Managing Natural Resources. In addition, the present Forestry Act of 1988 empowers the Minister to declare any area to be a protected area for the purpose of conservation of soil, water, flora, and fauna, but the policy is not explicit on CC. Other relevant strategies include the National Biodiversity Strategic Action Plan (NBSAP), which describes the status of biodiversity, and action plans for its sustainable management.

South Africa seems to have many policies, acts and strategies that although not implicit on CC, have implications on forest-based mitigation and adaptation. The Forestry Policy and Acts highlight sustainable forest management (SFM) including protection, afforestation, and community participation. The Environmental Conservation Act and the National Parks Act stress on the complete protection of the environment especially of trees and forest products. Several other Acts promote planting of trees and conservation of forests including the Conservation Agricultural Resources Act and the Land Bank Act, Mountain Catchment Areas Act, the Restitution of Land Rights, and the National Veld and Forest Fire Act. Others include the National Environmental Management Act, Biodiversity Act, and the Protected Areas Act. In addition, several strategies have been developed that are amenable to forest and farm tree-based CC mitigation and adaptation interventions. These include drafts of the National Climate Change Adaptation Strategy, 2019, Climate Smart Agriculture Strategic Framework, 2018, Agroforestry Strategy Framework, Conservation Agriculture Policy, 2018. The main custodians of these policies, acts and strategies are the Department of Environmental Affairs, Department of Agriculture, Forestry and Fisheries, and the Department of Rural Development and Land Reform.

### 3.4.2 Overview of policies, acts and strategies on forest and farm tree-based mitigation and adaptation

In general, South Africa and Uganda seemed to have more favourable policies for forest-based A+ M interventions. The Climate Change (CC) and Forest Policies (FP) were the most favourable across all the 6 countries studied (Table 12). These were followed by the Environmental, Land and the Agriculture policies. In all the countries, the forest policy (FP) was the most comprehensive in addressing the forest-based M+A interventions. However, in Mozambique, while the FP did not explicitly mention forest investment plans, there are strategies addressing this issue e.g., REDD+ Strategy and the Forest Investment Plan. For the Environmental Policy (EP), only South Africa (SA) addresses all the 5 criteria, while the policies for Mozambique, Zambia and Sierra Leone do not address the forest investment plan. On the other hand, the EP in Uganda does not address the livelihoods and forest investment plans.

On the Land Policy (LP), South Africa has very favourable policy addressing all the 5 criteria. Ghana, Mozambique, Sierra Leone and Uganda address most criteria except the FIP. The Zambian LP was the weakest in the countries assessed lacking recognition for the livelihoods and FIP issues. On the Agriculture Policy, Mozambique and Zambia lack the forest investments, while Ghana and Sierra Leone lack forest-based activities and the forest investments. While Ugandan LP addressed all the 5 criteria, the South African LP does not address the forest-based activities.

Finally, for the Energy Policy, the policies in Uganda and South Africa do not address the investment aspect. For Ghana and Sierra Leone, the policies are weak on forest-based activities, livelihoods and forest investments, while the Zambian policy does not also address the livelihoods and investment aspects.

**Table 11: The existing policies, strategies and regulations that integrate forest and farm-tree based adaptation and mitigation actions**

| Policies/Legislations | List of strategies | | | | | |
|---|---|---|---|---|---|---|
| | ZAMBIA | MOZAMBIQUE | UGANDA | GHANA | SIERRA. LEONE | SOUTH AFRICA |
| Forestry policies | National Forest Policy 1998, 2014<br><br>REDD+ Strategy | The Forest and wildlife Law Regulation, 1999, 2002<br>Forestry strategy, 1997<br>The REDD+ Strategy | National Forest Policy, 2001<br>National forestry and Tree planting Act, 2003 | The 2012 Forest and Wildlife Policy (2012)<br>Forest Law Enforcement, Governance and Trade (FLEGT)<br>The National Tree Crops Policy | National Biodiversity Strategy | Forest Policy<br>National forests Acts, 1998<br>Management of State Forest Act (Act 128 of 1992)<br>National Veld and Forest Fire Act, 1998<br>Agroforestry Strategy Framework 2017 |
| Agriculture policies | National Agriculture Policy of 2014 | Mozambique Comprehensive African Agricultural Development Plan<br>Strategic Plan for the Development of the Agricultural Sector (PEDSA 2010-2019) | | Ghana Cocoa Sector Development Strategy (CSDS) II, 2015<br>National Climate Smart Agriculture and Food Security Action Plan (2016- 2020 | | The Conservation Agricultural Resources Act (Act 43 of 1983)<br>Draft Climate Smart Agriculture Strategic Framework , 2018 |

| Policies/Legislations | List of strategies | | | | | |
|---|---|---|---|---|---|---|
| | ZAMBIA | MOZAMBIQUE | UGANDA | GHANA | SIERRA. LEONE | SOUTH AFRICA |
| Environment policies | National Policy on the Environment, 2007<br>National Policy on Climate Change, 2016<br>National Climate change Response strategy 2010<br>National Climate Change Learning Strategy<br>Conservation Areas Law | Environment and Biodiversity/ Forests and Land<br>The Environmental Law<br>Adaptation Program for Action (NAPA).<br>National adaptation strategy and climate change mitigation (NASCCM, 2012)<br>National Environmental Strategy, 2005-2015<br>National Policy for the Conservation and Management of Wetlands Resources, 1995 | National Environmental Policy, 1994<br>National Environmental Act, 1995<br>National Policy for the Conservation and Management of Wetlands Resources, 1995 | National Environment Policy 2014<br>National Climate Change Policy (2012)<br>National Climate Change Policy Action Programme for Implementation: 2015– 2020<br>Low Carbon Development Strategy | | The Environmental Conservation Act (Act 73 of 1989)<br>The National Parks Act ( Act 57 0f 1976)<br>National Environmental Management Act (NEMA) , 1998 (Act No.107 of 1998)<br>Biodiversity Act, 2004(Act No. 10 of 2004)<br>Protected Areas Act, 2004 (Act No. 57 of 2004)<br>National Climate Change Response Strategy, 2004<br>Draft National Climate Change |

| Policies/Legislations | List of strategies | | | | | |
|---|---|---|---|---|---|---|
| | ZAMBIA | MOZAMBIQUE | UGANDA | GHANA | SIERRA. LEONE | SOUTH AFRICA |
| | | | | | | Adaptation Strategy, 2019 |
| Energy policies | National Energy Policy, 2008 | National Energy Policy, 2003<br>Renewable Energy Strategy for Mozambique | Energy Policy of Uganda, 2002<br>Renewable Energy Policy of Uganda, 2007<br>Biomass Energy Strategy (BEST) | Ghana National Bioenergy Policy 2010 | | National Energy Act, 2008<br>Draft National Energy Efficiency Strategy |
| Water policies | | Integrated Water Resource Management Strategy | Water Policy | | | |
| Other policies | | | Local government Act<br>Land Act, 1998 | Ghana Strategic Investment Framework (GSIF) for Sustainable Land Management (SLM) (2009 – 2015) | | |

**Table 12. Policy analysis for forest and farm tree-based mitigation and adaptation for Ghana, Mozambique, Sierra Leone, South Africa, Uganda and Zambia**

| Policy | Country | | | | | | Total% Score |
|---|---|---|---|---|---|---|---|
| | Mozambique | Zambia | Ghana | S. Leone | Uganda | South Africa | |
| Forest Policy | 1, 3, 4, 5 | 1, 2, 3, 4, 5 | 1, 2, 3, 4, 5 | 1, 2, 3, 4,5 | 1, 2, 3, 4, 5 | 1, 2, 3, 4, 5 | 96.67 |
| Energy policy | 1, 2 | 1, 2, 3 | 1, 3 | 1, 3 | 1, 2, 3,4 | 1, 2, 3, 4 | 56.67 |
| Environmental Policy | 1, 2, 3, 4, | 1, 2, 3, 4 | 1, 2, 3, 4 | 1, 2, 3, 4 | 1, 2, 3, | 1, 2, 3, 4, 5 | 80 |
| Land Policy | 1, 2, 3, 4 | 1, 3, 4 | 1, 2, 3, 4 | 1, 2,3, 4 | 1, 2, 3, 4 | 1, 2, 3, 4, 5 | 80 |
| Agriculture Policy | 1, 2,3, 4, | 1, 2, 3,4 | 1, 3, 4 | 1, 3, 4 | 1,2,3, 4, 5 | 1, 3, 4, 5 | 76.67 |
| Climate Change Policy | 1, 2, 3, 4, 5 | 1, 2, 3, 4, 5 | 1, 2, 3, 4, 5 | 1, 2, 3, 4, 5 | 1, 2, 3, 4, 5 | 1, 2, 3, 4, 5 | 100 |
| **Total Score** | 23/30 | 24/30 | 23/30 | 23/30 | 26/30 | 28/30 | |

Key: 1 = Sustainability; 2 = Forest based activities; 3 = Stakeholder participation/involvement; 4 = Livelihoods/benefits; 5 =Forest Investment Plan

### 3.4.3 External factors identified in institutional framework that have led to effective implementation of forest and farm tree-based adaptation and mitigation actions

The study found that community participation followed by governance are the highly ranked factors in an institutional framework for effective implementation of forest and farm tree-based M+A actions (Table 13). This agrees with the results of many studies that have shown that effective implementation of many projects have failed due to the lack of consultation with communities, which results in poor participation (Thsidzumba *et al*., 2018; Senganimalunje et al., 2016). Poor governances also is an important factors during the implementation of projects due to poor benefits sharing mechanisms due to elite capture (Thsidzumba *et al*., 2018; Phiri *et al*., 2012).

It is therefore important that these factors should be addressed at the planning stage of any program. Another important factor was consideration for the socioeconomic benefits. The poor performance of many participatory forest management is due to lack of socioeconomic benefits. Indeed the sustainable livelihood framework and sustainable forest management both recognize the need or inclusion of community benefits (see Senganimalunje *et al*., 2015). The political establishment was not considered an important factor in many countries, with the exception of South Africa. Political establishments become important at the national or international level. At the local level, project implementations are embraced if they recognize the local and/or traditional institutional institutions.

**Table 13. External factors identified in institutional framework that have led to effective implementation of forest and farm tree-based adaptation and mitigation actions**

| Factors | Zambia | Mozambique | Ghana | South Africa | *Average |
|---|---|---|---|---|---|
| Governance | 2.3 | 3 | 3 | 2.5 | 2.7 |
| Socioeconomic | 2.8 | 2 | 2 | 2.5 | 2.3 |
| Political establishment | 1.8 | 2 | 1 | 3.0 | 1.9 |
| Community participation | 2.8 | 3 | 3 | 2.4 | 2.8 |

Ranking with 1-3=1 being low influence and 3 High influence
*Uganda and Sierra Leone are not included since there were no responses for this questions

# 3.5 Framework for integrating forest and tree-based adaptation and mitigation options

### 3.5.1 Conceptual and theoretical bases of the framework for integrating forest and tree-based Adaptation+Mitigation options in Anglophone and Lusophone Africa.

Following the Rio+20 Summit (2012), there was an increasing interest in Sustainable Forest Management (SFM) - “a process of managing forests to protect and enhance their potential to provide relevant economic, social and environmental functions of all types of forests, now and in the future”[1] in which sustainable utilization and conservation of forest resources play a key role in biodiversity conservation, climate change processes and providing necessary ecosystem services. In the case of Africa, most rural and urban communities are inextricably linked to the forest resource for the daily livelihoods.

Thus, following the debate on forest sustainability at the Climate Conference in Paris (2015), the forestry sector has the greatest opportunities for SFM through Participatory Forest Management (PFM) to contribute to mitigating the impact of CC in African countries. Moreover, land reform in Africa, as in many other developing countries noted for colonialism and adoption of the natural resource policies thereof have resulted in conflicts as people have been denied access to forests, and this is presently an issue of serious contestation (Tshidzumba et al., 2018). This concern has drawn attention to the

[1]United Nations General Assembly resolution (2014), ‘Non-legally binding instrument on all types of forests’ (www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/62/98/); accessed10/07/2019.

concept of PFM to present opportunities for stakeholders and communities, while also contributing to sustainable management of forest resources. It is imperative to stress that both forest managers and government embrace this method to resolve rampant land grabs and people's displacement as well as ensuring the empowerment of the communities. Furthermore, the significance of PFM to resolve current and future challenges in a more coordinated approach have been emphasized (Tshidzumba et al., 2018).

Conversely, in order to sustain forests productivity, indicators that make provisions for SFM and equitable sharing of benefits have been developed by different multinational processes in the past years. In addition, the indicators have currently been included as part of the regulating and reporting framework for the global Sustainable Development Goals (FAO, 2016). Most importantly, the policy and legal framework (FAO, 2016) have been developed to support SFM with a platform to involve stakeholder's PFM in the policy dialogue. They provide important policies and regulatory issues relevant to the African forestry sector highlighting the important roles of forests in national economic and livelihood development, reducing hunger, and enhancing environmental protection and other forest ecosystem services (FAO, 2016).

Thus, sustainable forest management (SFM) provides a flexible, robust, credible and well-tested framework for simultaneously reducing carbon emissions, sequestering carbon, and enhancing adaptation to climate change. At the same time it can help supply environmentally friendly forest products, protect biodiversity, secure freshwater supplies, and provide other essential ecosystem services

- SFM encompasses seven thematic elements: 1) the extent of forest resources; 2) biological diversity, 3) forest health and vitality, 4) productive/provisioning functions and/or socioeconomic functions of forests;5) protective/ regulatory functions of forests; 6) Socioeconomic functions; and 7) legal, policy and institutional frameworks.

In terms of the framework for this study, a few important factors and their interactions are presented in Figure 1. The framework draws heavily from the discussion and presentation in the *Strategic Framework for Forests and Climate Change: Collaborative Partnership on Forests 2008 and the FAO SFM tool Box.* It is hypothesized that addressing these issues will deliver a better implementation of any forest-based mitigation and adaptation programmes, projects and/or activities.

### 3.5.2 What needs to be considered developing the framework for integrating forest and tree-based adaptation and mitigation options in different landscapes

*3.5.2.1 Forest-based climate change mitigation and adaptation measures should proceed concurrently*

From the study, it was not possible to separate the adaptation and mitigation objectives in many projects except for those where the sustainable livelihoods were included. Thus it must be recognized that these are usually interlinked and compatible, and so policy

approaches to address them can be mutually supportive. From the study this was well recognized in all countries that have developed the CC Policies and REDD+ strategies visa viz Zambia, Mozambique, and Ghana etc., (Not very apparent in the Sierra Leon CC Policy/Strategy).

The framework should recognize the importance of Co-Benefits in all measures for climate change mitigation and adaptation, whether it is conservation or community based natural resource management. This is the essence if incorporating participatory 'Bottom up' approaches in planning. ALL levels must be involved, climate-change policymakers, governments, and other stakeholders, including Indigenous communities.

*3.5.2.2 Recognition of cross-sectoral collaboration, economic incentives, and the provision of alternative livelihoods*

The SFM framework and indeed most countries' Forestry and CC policies, REDD+ Strategies recognize the need to collaborate with other sectors, e.g. the energy sector for increasing the forest area through afforestation and reforestation, restoring degraded forests, and substituting carbon-intensive materials with wood and fossil fuels with wood-based biofuels. This approach directly addressed climate change mitigation. Economic activities within this framework directly provides income and livelihoods especially for the rural based communities, and in some cases provides a good measure of adaptive response to CC.

*3.5.2.3 Capacity building for addressing Climate Change*

While several countries have developed strategies for forest-based mitigation and adaptation in the form of e.g. REDD+, CC Strategy etc., there is still lack of capacity in relation to technical aspect to assessment of the resource for baseline information, project formulation, MRV, carbon markets, etc. Most of the current projects are donor funded e.g. Ghana, Mozambique, Uganda, and Zambia. The respective countries do not have sufficient financial or technical resources undertake these activities. Notable areas lacking capabilities include Meteorology (e.g. Sierra Leone), Developing Managing Carbon projects and Carbon Assessments at Regional/National level (Sierra Leone).

Many countries, particularly developing countries, have insufficient financial or technical resources to design, implement and monitor effective measures for forest-based climate change mitigation and adaptation. There may be need to deliberately mainstream M+A in especially government development plan in the relevant sectors, as has been the case in Zambia and Uganda.

*3.5.2.4 Sound Governance and institutional framework*

The implementation of the forest-based M+A should also imply that the communities involved must be fully involved in the planning and the governance structure of any programme/project, ultimately realizing equal benefits. In addition, the participatory approach should provide a sense of empowerment to the communities through e.g. land tenure rights, cultural norms, and addressing the sustainable livelihood framework Senganimalunje et al 2015). This includes use of traditional natural resources

governance structures such as village natural resources committees (VNRC). Community based natural resources committees (CBNRC), village land use planning (VLUP), among others (Amani et al 2018) and sustainable forest management plans that deliver co-benefits to the communities beyond Carbon.

*3.5.2.5 Monitoring and assessment*

The robust monitoring of forest status and area change is necessary for the design, implementation and verification of climate change commitments. Some countries like Zambia and Mozambique have established national forest monitoring system units in forestry departments with the plan of using them for general forest inventories but also for baseline measurements for carbon thus creating synergies by integrating carbon-monitoring requirements in overall forest inventory and monitoring efforts that address the full range of forest goods and services. Similarly, monitoring at national levels would help to supply data to the department or agency that reports the country communication for the NDCs. However, there is need to improve capacity in these areas beyond forest-based monitoring to include farm-based M+A agroecosystems.

Most importantly, in this framework is to understand the multidisciplinary nature of these projects and socioeconomic implications of broadening the concept of sustainable forest management (SFM) to include the management of carbon pools, and into the potential ecological and carbon impacts of resultant changes to forest management. This will only be achieved with research and long-term monitoring of both carbon gains and improvement on the socio-economic wellbeing of the communities. Such strengthening is best achieved through interdisciplinary research and sustained interactions between scientists, policymakers and practitioners. This also implies cross sectoral approach for the ministries/departments involved.

In addition, there is need to increase awareness between both policymakers and scientists that the forest science-policy interface must be strengthened, if long-term sustainable strategies for the forest sector's contribution to climate change mitigation and adaptation are to be developed. Appendix 2 shows the instructional framework for implementing CC mitigation and adaptation in Uganda and Zambia, where the level of importance is high as the Office of the President.

*3.5.2.6 Finance and investment*

The framework should also deliberately embark on forest-based Mitigation +Adaptation projects that have financial aspects in order to encourage public private partnerships with both local and international investors. Many REDD+ projects currently in Africa are donor funded and at pilot stage level.

**BOX 1: The link between Sustainable Forest Management (SFM) and forest-based Mitigation and Adaptation**

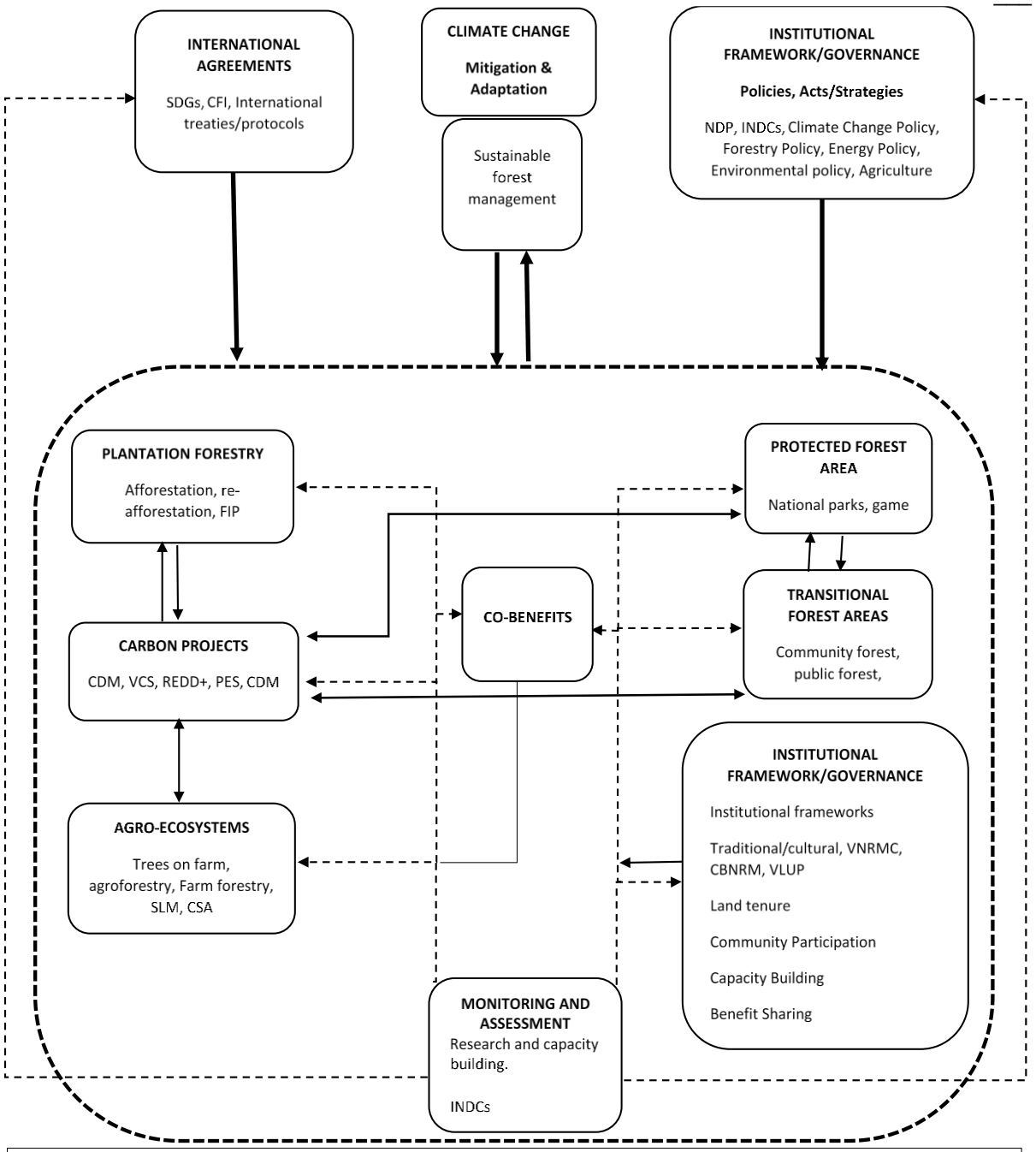
**Mitigation**

Forest-based mitigation activities implemented under the Kyoto Protocol, including the CDM, have to date been limited. Opportunities to increase activities include simplifying procedures, developing certainty over future commitments, reducing transaction costs, and building confidence and capacity among potential buyers, investors and project participants. In addition to REDD, forest-related mitigation options under the umbrella of SFM include forest conservation, forest restoration, afforestation, wood-based bioenergy production, and the use of sustainably produced wood products as substitutes for emissions-intensive materials. The potential of GHG emissions reductions from reduced deforestation and from forest management, afforestation and agroforestry differs greatly between activities, regions and system boundaries, as well as over time. In the short term, the mitigation benefits of reducing deforestation are likely to be greater than the benefits of afforestation and reforestation.

**Adaptation**

Adaptation should be treated as part of national development, even if it is sometimes seen as an additional cost and even if it adds complexity to the delivery of other development goals. In many cases, adaptation will have the same target outcomes as development—such as sustaining or improving social protection, health and security, and economic wellbeing. SFM provides a suitable framework for the development of the forest sector's capacity for climate change adaptation. SFM also serves as a vehicle for sustainable development by promoting the maintenance and improvement of environmental quality, social justice, and economic wellbeing.

Modified from*: Strategic Framework for Forests and Climate Change: Collaborative Partnership on Forests 2008*




**Key**: **CBNRM**= Community Based Natural Resources Management, **CDM**= Clean Development Mechanism, **CSA**= Climate Smart Agriculture, **CFI**= Carbon Investment Facility, **FIP**=Forest Investment Plan, **INDCs**= Intended Nationally Determined Contributions, **NDC**= National Determined Contribution, **NDP**=National Development Plan, **SDGs**= Sustainable Development Goals, **SLM**= Sustainable Land Use Management, **PES**= Payment for Ecosystem Services, **REDD+**=Reducing Emissions from forest Deforestation and degradation, **VLUP**=Village Land Use Plan, **VNRMCs**= Village Natural Resources Management Committees.

**Figure 1: Framework for forest Based Climate Change Adaptation and Mitigation**

### 3.6 Strategies for enhancing integrated Mitigation and Adaptation options framework

The situational analysis from the different countries, highlight the potentials of programs and projects to simultaneously deliver Mitigation and Adaptation **(**M+A), and the implications of policy and institutional factors on the design and implementation of such interventions. From these, the following broad approaches are recommended to explicitly enhance integrated M+A programs and projects. It is comprised of key measures and criteria that where necessary, ensure that M+A is considered at each critical point in the policy process and in the course of developing and implementing programs and projects. The policy and landscape level measures are influenced by enabling conditions that will enhance the design and implementation of programs and projects that will deliver M+A, to be reported to the national and international levels (Figure 2). In addition, key questions are also put forward to permit the assessment of efforts that is being made the relevant to enhance integrated M+A in climate change policy making, programs and projects. In both the landscape and policy level approaches, monitoring and evaluation and capacity building is key.

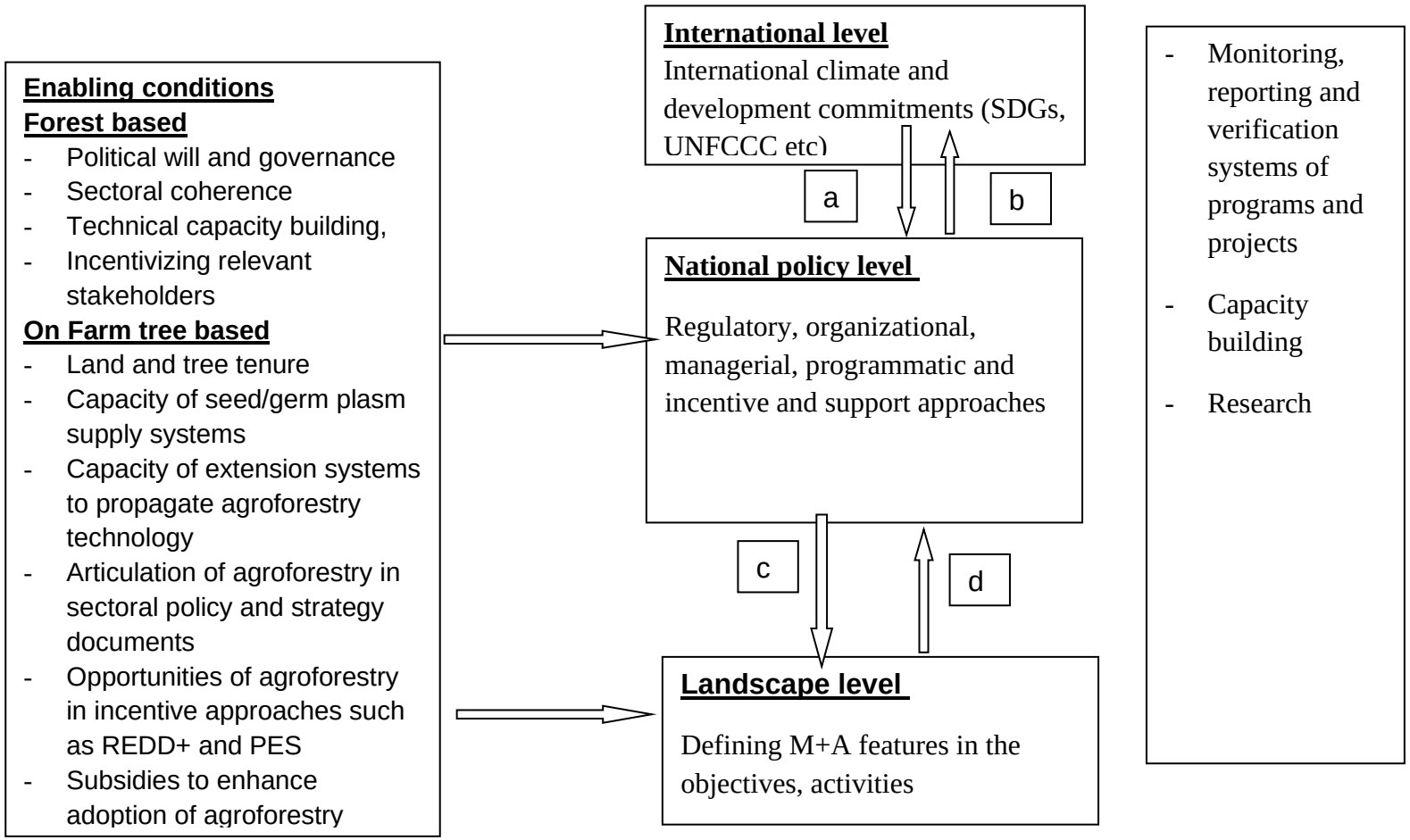



**Figure 2:** Framework for integrating mitigation and adaptation in forest and on farm tree-based interventions in Africa.
Key: *a= financial, capacity building and technological support, b= reporting Mitigation+Aadaptation (M+A) outcomes to the international level, c= facilitating the design and implementation of* programs and projects *at the landscape level, d= reporting M+A outcomes to the national level.*

### 3.6.1 Key measures at the policy /strategic level

It combines several approaches and criteria that are linked to programmatic, regulatory, and managerial, incentive based and inter- and intra-organizational collaboration requirements (Table 14). These are broad orientations, that provide possibilities to capture evolution in the national climate and forestry related processes and can be fine-tuned to fit into context specific country situations.

### 3.6.2 Key measures at the landscape level – programs and projects

At the landscape level, several measures should be considered by stakeholders developing integrated M+A programs and projects. The measures are presented in table 15, alongside assessment questions.

**Table 14. Key policy and institutional measures to enhance the uptake of integrated Mitigation and Adaptation (M+A) forestry interventions**

| Key measures | Criteria | Key assessment questions |
|---|---|---|
| Promote inter- and intra-organizational collaboration and coordination | - Collaboration and joint actions between the forestry and the environment ministries are promoted to advance integrated M+A interventions<br>- Forestry and environment departments within a ministry collaborate and undertake joint actions, generate shared knowledge and develop capabilities that advance integrated M+A interventions<br>- Integrated M+A interventions is promoted between and across agencies, Civil Society Organizations etc. | - Does the forestry and environment ministries meet regularly to share ideas on emerging climate change response opportunities such as the integrated M+A?<br>- Do they jointly put together project ideas?<br>- Does the forest and environment departments engage and undertake joint actions to promote M+A integration?<br>- -Are there multi-stakeholder platforms that share information and knowledge on the development of integrated M+A actions? |
| Institutionalize integrated M+A interventions and promote them in current and future programs | - Core activities of forestry departments is modified to integrate M+A in on-the-ground operations, projects and programs<br>- The managerial and working structures e.g. services, departments, agencies etc., is modified to better address and institutionalize M+A integration, | - Have departments introduce both M+A as expected results in their forestry operations?<br>- - Have departments explicitly institutionalized integrated M+A options in their traditional service arrangements? |
| Enhance regulatory | - Existing plans, policies, strategies are revised to explicitly capture integrated M+A option<br>- Relevant instruments that can foster the integration of M+A are created | - Does integrated M+A explicitly referred to in revised policy and strategic documentation?<br>- - Are there instruments created to foster integrated M+A options in forestry? |
| Develop financial and stakeholder's awareness of and technical capacities on integrated M+A interventions | - Targeted funding support to actions that integrate M+A in forestry is provided<br>- Staff and other relevant stakeholders are trained on the integration of M+A in forestry<br>- Access to incentive mechanisms e.g. PES, | - Is there a special financial support for integrated M+A interventions?<br>- Are stakeholders aware of the existence of the fund?<br>- Are stakeholders trained on the |

| | | |
|---|---|---|
| | voluntary markets, is facilitated<br>- Pilot programs to create an evidence base of the successes of integrated M+A interventions are developed<br>- - Forest science-policy dialogue improved to create more awareness on integrated M+A interventions | development of integrated M+A options in forestry?<br>- Have sufficient evidence been documented on lessons learned from integrated M+A projects?<br>- - Is there a knowledge sharing platform on integrated M+A approaches? |

**Source: developed from Wamsler, 2015 and stakeholder opinions**

**Table 15. Measures to be considered when designing and implementing forestry interventions that integrate Mitigation Adaptation (M+A)**

| Key measures | Criteria | Key assessment questions |
|---|---|---|
| The health of forests ecosystems should be maintained or enhanced | - Assess the vulnerability and impacts of climate change on forest ecosystems<br>- Assess the carbon value of forest ecosystems and the drivers of deforestation and forest degradation<br>- Propose forest management and other related activities relevant for conserving or enhancing forest carbon stocks and adaptation of forests and other related systems<br>- Assess the environmental impact assessment of project activities<br>- - Put forward strategies to reduce impacts or enhance biodiversity and ecosystem services | - Does the project proponent have robust findings on the vulnerability of forest ecosystems, carbon values, drivers of deforestation?<br>- Has the environmental impacts of interventions been analyzed, and safeguard measures proposed? |
| The adaptive capacity of forest-dependent communities should be ensured | - Assess the livelihood resources/assets in project and program areas<br>- Evaluate the impacts of projects and programs on livelihood resources and assets<br>- Design and implement strategies to | - Are there adequate information on livelihood resources and livelihood impacts of interventions?<br>- Have alternative livelihood strategies introduced in communities?<br>- - Where communities involve in the |

| Key measures | Criteria | Key assessment questions |
|---|---|---|
| | enhance the livelihood assets of communities (A)<br>- Enhance community participation in the identification and design of livelihood activities | identification of both forestry and livelihood activities? |
| Robust carbon and adaptation indicators should be developed, monitored and verified | - Develop indicators to monitor and report carbon values<br>- - Develop indicators to monitor and report adaptation values | Is there a robust approach to monitor and report on carbon and non-carbon benefits? |
| Forestry and tree-based interventions should demonstrate the need to plan and expect both M+A outcomes | - The population or social groups vulnerable to climate change and willing to carry out forest carbon activities should overlap<br>- The location vulnerable to climate change and suitable for forest carbon activities should overlap<br>- - Forestry and on farm tree-based activities implemented should potentially contribute to both M+A outcomes | - Does the need for mitigation, overlap with the need for adaptation of communities and forest ecosystems?<br>- - Does the chosen forestry activities show potentials to deliver both M+A? |

**Source: developed from Chia *et al.,* 2016, and stakeholder opinions**

## 3.7 Capacity assessment on effective implementation of forest & farm tree-based adaptation and mitigation actions

The challenge to attracting forest and farm tree-based carbon sequestration projects in Africa is the shortage of organizational capacity to manage carbon projects and establish links to international buyers (Chirwa 2015). At the country level, facilitating successful implementation of carbon sequestration projects requires having adequate national institutional capacity. The Kyoto Protocol requires each developing country to establish a Designated National Authority (DNA) that serves as the point of contact between international investors and local service providers. In addition, securing property rights and land tenure and improving governance is of great importance in the establishment of carbon projects.

In a few countries evaluated on capacities and skills levels to perform forest-based or climate change related functions and tasks, the major barriers were the ability to development of bankable projects in mitigation and adaptation in forestry sector and identifying carbon markets and trading thereof. This was followed by the development of REDD+ and forest based Clean Development Mechanism (CDM) projects (Table 16). Another insufficient capacity was the methodologies used in GHG inventory. Notwithstanding this, other countries have indicated that training has been offered on rapid carbon assessment, which has been offered in a number of countries in Africa by the African Forest Forum. Mozambique, Ghana and Zambia have also had in-country training on forest-based climate change adaptation and mitigation.

**Table 16. Insufficient capacities and skills levels to perform forest-based or climate change related functions and tasks in some organization/institution**

| Capacity Gap | Zambia | Mozambique | Ghana | Sierra Leone | South Africa |
|---|---|---|---|---|---|
| Methods and techniques used in Greenhouse gas inventory | xx | | | x | xx |
| Development of REDD+ projects | xx | xx | | x | x |
| Development of forest based Clean Development Mechanism (CDM) projects | xx | x | | x | x |
| Development of bankable projects in mitigation and adaptation in forestry sector | xx | xx | x | x | x |
| Carbon markets and trading | xxx | x | x | x | xx |
| Forest-based climate change adaptation and mitigation trainings | AFF Rapid C Assessme | Rapid C Forestry appraisal | CSIR/ FORIG | | |

| Capacity Gap | Zambia | Mozambique | Ghana | Sierra Leone | South Africa |
|---|---|---|---|---|---|
| | nt<br>Silva Carbon<br>ZEMA<br>IUCN<br>UNZA | GH Inventory | PSP | | |

On the level of adequacy on knowledge and skills on REDD+, Clean Development Mechanism (CDM), Nationally Determined Contributions (NDCs) and Carbon Markets in mitigation and adaptation to climate change programmes/projects, this was moderate in most countries with respect to planning /project design and to a lesser extent for MRV and audit (Table 17). There was also moderate knowledge on the policies, laws and institutions and the registration processes. However, while most countries had moderate knowledge on commercialization and/or identification of carbon markets, the level of knowledge and skills on credit insurance, financing and benefit sharing was not adequate. It has been acknowledged that many projects in Africa have difficulties on understanding the financing mechanisms for carbon and REDD projects (Chirwa, 2015; Jindal et al., 2010). The knowledge and skills on benefit sharing mechanism was also low. This is a very crucial are as it has resulted in failure of many especially those that involve communities (Tshidzumba *et al*., 2018).

**Table 17.Level of adequacy on knowledge and skills on REDD+, Clean Development Mechanism (CDM), Nationally Determined Contributions (NDCs) and Carbon Markets in mitigation and adaptation to climate change programmes/projects**

**a) REDD+ and CDM**

| Process/Key steps in REDD+/CDM | Zambia | Mozambique | Ghana | S Leone | South Africa | Average |
|---|---|---|---|---|---|---|
| Planning/project design and coordination | 2.0 | 2.0 | 2.0 | 2 | 2.5 | 2.1 |
| Policies, laws and institutions/Registration | 2.0 | 2.0 | 1.0 | 2 | 2.0 | 1.8 |
| Monitoring, Reporting and Verification (MRV) and audit | 2.0 | 2.0 | 2.0 | 1 | 1.5 | 1.7 |
| Benefit sharing | 1.7 | 2.5 | 1.0 | 1 | 1.0 | 1.4 |
| Financing | 1.7 | 2.5 | 1.0 | 1 | 1,.0 | 1.4 |
| Demonstration and Pilots | 1.7 | 3.0 | 2.0 | 1 | 1.0 | 1.7 |
| Credit Insurance | 1.0 | 2.0 | 1.0 | 1 | - | 1.3 |
| Commercialization or identifying carbon markets | 1.7 | 2.5 | 1.0 | 2.0 | - | 1.8 |

Ranking with 1-3=1 Not adequate, 2 Moderate, and 3 Highly adequate

### b) Carbon markets

| Key steps | Zambia | Mozambique | Ghana | Sierra Leone | South Africa | Average |
|---|---|---|---|---|---|---|
| Selection of suitable voluntary emission reduction (VER) and certified emission reduction (CER) project technology | 2.0 | 2.5 | 1.0 | 1 | 2 | 1.7 |
| Selection of VER & CER standard | 2.0 | 2.0 | 1.0 | 1 | 2 | 1.6 |
| Checking VER & CER requirement | 2.0 | 2.0 | 1.0 | 1 | 2 | 1.6 |
| Developing VER & CER project on the standard | 2.0 | 2.0 | 1.0 | 1 | 2 | 1.6 |
| VER & CER transaction and deal | 2.0 | 2.0 | 1.0 | 1 | 2 | 1.6 |
| Others | | | Offer training (CSIR) | | Offers training (ARC) | |

Ranking with 1-3=1 Not adequate, 2 Moderate, and 3 Highly adequate

Based on the analysis of the level knowledge and skills on the carbon markets, most countries still had lower than moderate understanding on the processes of selection of the technology and standard for emission reduction. Similarly, on checking the requirement and even the development of the VER or CER projects, and finally the transaction deals involved for the carbon markets. This is directly related to the lack of knowledge on carbon projects and markets highlighted in Tables 16 and 17a)

# 4.0 CONCLUSION AND RECOMMENDATIONS

The study showed that generally, all the countries are aware of the Climate Change impact and have undertaken measures to respond albeit at different stages of implementation of the strategies.

## 4.1 Conclusions

The study found that there were several stakeholders involved in implementation of forest-based Mitigation+Adatatation (M+A) interventions in all the countries. The policies and institutional frameworks were mostly driven by the government ministries. The stakeholders in all countries cover the dry forest vegetation type while Uganda and Ghana also covered the tropical moist forest vegetation type. The mangrove vegetation type was covered in Mozambique, Ghana and South Africa. The stakeholders range from government departments especially for forestry, agriculture, and environment. In all countries, several development agents are involved mostly funded by international donors. Other stakeholders at government level are also involved in policy development and implementation in relation to climate change and reporting on INDCs etc.

For *promising forest-based adaptation and mitigation policies, strategies and actions,* all countries had activities relating to afforestation and reforestation to enhance carbon, rehabilitation of degraded lands and forests, woodlot establishment and management, conservation of indigenous forests and promotion and upscaling of agroforestry technologies for mitigation. Adaptation activities are moderately favored including activities including forest-based enterprise, restoration of degraded lands, upscaling AF and promotion of drought tolerant crops.

*Factors that motivated the implementation of forest-based activities* were the high degree of land degradation in all the countries. Land degradation is a serious problem in almost all African countries, which is driven by high population, poor farming practices, over harvesting of the forest resource and high carrying capacity for animals. Secondly, dependency on wood energy was another important factor. This is expected in most African countries that still largely rely on wood energy for heating and cooking.

*For the policy and legislation factors contributing to design and implementation of forest-based mitigation and adaptation actions***,** the success of implementing forest-based mitigation activities seems to fundamentally rely on good governance and secure tenure and access to the resource. In fact, like many other development projects, if there is no secure tenure, communities are not willing to participate in such activities.

The main *constraint associated with implementation of forest-based adaptation and mitigation projects* was the financing of carbon projects. This is actually one of the major factors that has resulted in very few carbon markets in Africa compared to other countries in the world.

The most common farm tree-based M+A activities in all the countries include climate smart agriculture, woodlot establishment for energy and poles, different agroforestry systems and technologies, reforestation and restoration. In terms of farm tree-based adaptation and mitigation policies, strategies and activitie**s,** *the determinants or factors that have influenced successful implementation* were the quest to increase productivity on farm. Thus, land rehabilitation, agroforestry practices, soil improvement were main M+A intervention drivers.

With respect to *policy factors influencing design and implementation of farm-tree based mitigation and adaptation projects/programmes/plans/activities***,** land tenure was the single most important. Clear land tenure encourages tree based cropping systems, and in many parts of Africa, there is clear separation of trees on farm between men and women, which has the potential to promote farm-tree based activities for women. However, *the main constraints associated with implementation of farm-tree based adaptation and mitigation projects* was the lack of budget allocation to finance CC related activities. This is somehow expected as most governments prioritize food security, which is mostly grain based cropping, followed by health, education, among others. In addition, the lack or delay of funding to partners from funders, carbon markets and poor pricing at an international markets was ranked as important, possibly for projects that are funded by climate fund financing.

With respect to *capacity on effective implementation of forest & farm tree-based adaptation and mitigation actions***,** the shortage of organizational capacity to manage carbon projects and establish links to international buyers was the main challenge to attracting forest and farm tree-based carbon sequestration projects in Africa. At the country level, facilitating successful implementation of carbon sequestration projects requires having adequate national institutional capacity. In a few countries evaluated on capacities and skills levels to perform forest-based or climate change related functions and tasks, the major barriers were the ability to development of bankable projects in mitigation and adaptation in forestry sector and identifying carbon markets and trading thereof. This was followed by the development of REDD+ and forest based Clean Development Mechanism (CDM) projects. Another insufficient capacity was the methodologies used in GHG inventory. Notwithstanding this, other countries have indicated that training has been offered on rapid carbon assessment.

On the level of adequacy on knowledge and skills on REDD+, CDM, Nationally Determined Contributions (NDCs) and Carbon Markets in mitigation and adaptation to climate change programmes/projects, this was moderate in most countries with respect to planning /project design and to a lesser extent for MRV and audit. There was also moderate knowledge on the policies, laws and institutions and the registration processes. However, while most countries had moderate knowledge on commercialization and/or identification of carbon markets, the level of knowledge and skills on credit insurance, financing and benefit sharing was not adequate.

In order to have a framework for successful implementation of forest and farm tree-based M+A interventions, the existing policies, strategies and regulations including the

Climate Change (CC) and Forest Policies (FP) are the most favourable in most countries as they already integrate forest and farm-tree based adaptation and mitigation action. These are followed by the Environmental, Land and the Agriculture policies. Most importantly, community participation and governance were identified as very important external factors in an institutional framework and can to lead to effective implementation of forest and farm tree-based adaptation and mitigation actions.

From the situational analysis from the different countries (based on a workshop with stakeholders from Anglophone, Francophone and Lusophone countries), strategies for enhancing integrated M+A options framework were identified. The following broad approaches are recommended to explicitly enhance integrated M+A programs and projects: key measures and criteria that, where necessary, ensure that M+A is considered at each critical point in the policy process and in the course of developing and implementing programs and projects; policy and landscape level measures are influenced by enabling conditions that will enhance the design and implementation of PPs that will deliver M+A, to be reported to the national and international levels. In both the landscape and policy level approaches, monitoring and evaluation and capacity building is key.

The framework outlined in this report for the promotion of forest-based mitigation and adaptation interventions recognized the sustainable forest management and sustainable livelihood frameworks as the possible main drivers. The framework recognizes the importance of understanding the resource base through proper assessment and monitoring. In addition, successful implementation must establish strong institutional frameworks at the local (community based traditional institutional structures e.g. Village Resource Committees, Community Based Natural Resource Management etc., national (e.g. national CC Strategies, REDD+ Strategies etc.), and international CC Protocols (e.g. NDCs) levels.

## 4.2 Recommendations

- ✓ It is recommended to streamline and increase the coordination between different government ministries starting with those closely linked to the important policies visa vis Presidency (National Development Plan), Natural Resources (Forestry), Environment, Energy, Agriculture and Land.
- ✓ It is also recommended to build capacity in the areas of carbon. In addition, there will be need to build capacity for monitoring non carbon benefits usually associated socioeconomic analysis.
- ✓ The framework proposed must include monitoring for co-benefits in forest/farm-based mitigation and adaptation projects as these will most likely provide the main adaptation outcomes.

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# APPENDICES

## Appendix 1: List of stakeholders met during visitations

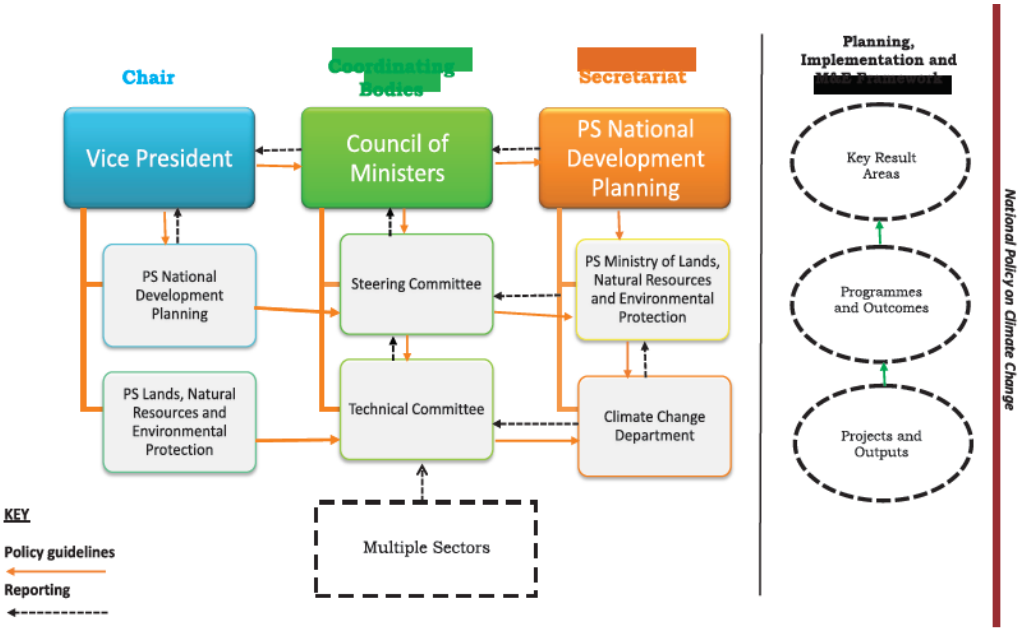
| NAME OF PERSON | INSTITUTION/AFFILIATION |
|---|---|
| MOZAMBIQUE | |
| Mauricio Xerinda | IUCN<br>xerinda68@gmail.com<br>+258 844787689 |
| Telma Manjate | MITADER |
| Claudio Afonso | DINAF (National Directorate of Forestry)<br>MITADER<br>cmiafonso@gmail.com<br>+258 861995624 |
| Almeida Sitoe | University of Eduardo Mondlane |
| Mario Falcao | University of Eduardo Mondlane |
| Aristides Muhate | FNDS<br>aristides.muhate@fnds.gov.mz |
| Regina Cruz | FNDS<br>regina.cruz@fnds.gov.mz |
| ZAMBIA | |
| Ignatius Makumba | Department of Forestry<br>inmakumba@gmail.com |
| Gondwer | Director, Department of Environment |
| Esther Mulekwa | Department of Environment<br>esther.mulekwa@gmail.com |
| Thecla M Kafwimbi | Department of Forestry<br>theclamsk@yahoo.com |
| Kaala Moombe | CIFOR, Zambia<br>moombekb@gmail.com |
| Ephraim Mwepya Shitima | Department of Climate Change<br>emshitima40@gmail.com |
| Davies Kashole | Department of Forestry<br>dkashole@gmail.com |
| Collins Nkatiko | Chief Executive Officer |

| NAME OF PERSON | INSTITUTION/AFFILIATION |
|---|---|
| | Conservation Farming Unit Ltd<br>collins@conservationagriculture.org |
| Dale,Lewis (WCS) | COMACO, Zambia<br>dlewis@wcs.org |
| UGANDA | |
| Michael S. Mbogga, | Lecturer, School of Forestry, Environmental and Geographical Sciences<br>College of Agricultural and Environmental Sciences<br>MAKERERE UNIVERSITY. PO BOX 7062 KAMPALA<br>michael.mbogga@gmail.com |
| Willie Kakuru | FAO, Uganda Office,<br>Willy.Kakuru@fao.org |
| Semambo Muhammad Kasagazi | Climate Change Department<br>medi.ssema35@gmail.com |
| Xavier Mugumya | Uganda National Forest Authority, REDD+ Coordinator<br>xavierm1962@gmail.com |
| Nelson Turyahabwe | Makerere University<br>nturyahabwe@gmail.com |
| Zainabu Kakungula | FAO SPGS, Uganda<br>Zainabu.Kakungulu@fao.org |
| GHANA | |
| Thomas Gyambrah | Climate Change<br>National REDD+ Coordinator<br>Forestry Commission<br>Accra<br>nanayaw239@yahoo.com |
| Gloria Djaney Djagbletey | Forest and Climate Change Division<br>CSIR-Forestry Research Institute of Ghana<br>UP Box 63, KNUST-Kumasi<br>Ghana, West Africa<br>**gdjaneydjab@gmail.com** |
| Joseph Osikwan | Ministry of Lands and Antural Resources (Forest Services Division) |
| SIERRA LEONE | |

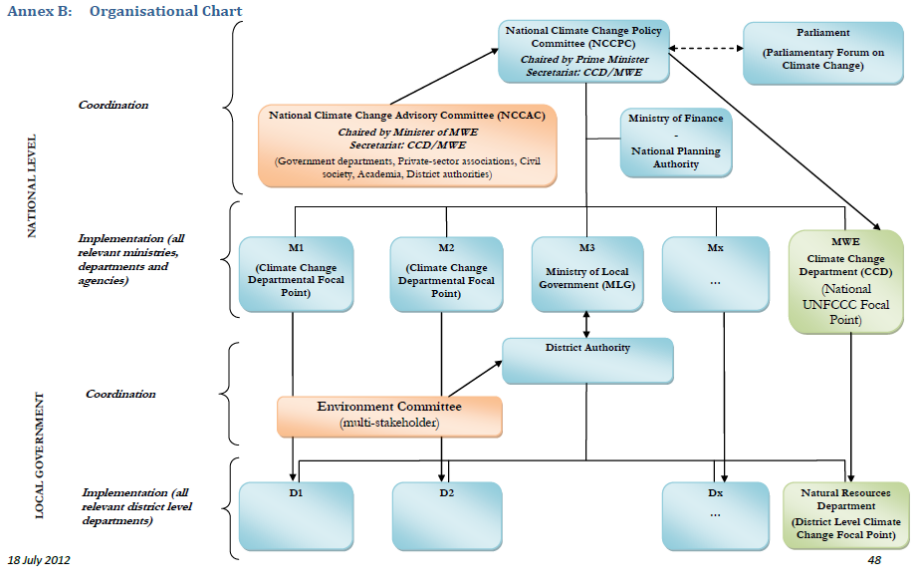
| NAME OF PERSON | INSTITUTION/AFFILIATION |
|---|---|
| Alhaji Malikie Siaka | Project Manager of Sierra Leone Biodiversity Conservation alhajimsiaka@gmail.com |
| Abdul Salim | Deputy Director Climate Change Secretariat abdul.salim@epa.gov.sl |
| George Rogerson | Forstry Department rogersonbm@gmail.com |
| Edward Sesay, | Programme Manager, Conservation Society of Sierra Leone |
| SOUTH AFRICA | |
| Brigid Letty | National Research Institute BLetty@inr.org.za |
| Churchill Mkwalo | Department of Agriculture Forestry and Fisheries ChurchillMK@daff.gov.za |
| Chidiebere Ofoegbu | African Climate & Development Initiative University of Cape Town, South Africa ofoegbu.c@gmail.com |
| Cori Ham | Stellenbosch University cori.ham@margulesgroome.com |
| Nwabisa Langa | TWK Agriculture (Ltd) enviro@twkagri.com |
| Phokele Maponya | Senior Researcher: SmallHolder Farmer & Enterprise Development Agricultural Research Council – VOP Roodeplaat MaponyaP@arc.agric.za |

# Appendix 2: National Climate Change Institutional Structure for Zambia and Uganda

*Institutional arrangement for the coordination of CC Action in Zambia*




## *Uganda National Climate Change Policy Organizational Chart*



Findings of the study indicate that there are multiple actors in the sector with the private sector playing an increasingly dominant role in both primary and secondary forest production as government focuses on creating an enabling environment. A variety of tree species are managed in natural forests but *P. caribaea* and *E. grandis* are the major species managed in plantations. The planted forest estate approached 90,000ha with an estimated 7 million cubic metres of growing stock. Secondary forest production involved production of various forest products ranging from fuelwood to non-timber forest products. While the primary production sector exhibited appreciable performance, the secondary sector was curtailed by limited supply of round wood. Vertical and horizontal linkages were generally weak with relationships being more informal than formal but emerging players seemed to be pursuing strategies for vertical integration while a section of players in the primary sector made efforts to integrate horizontally. However collaborative arrangements between the public and private sectors have been successfully implemented with appreciable achievements and there is potential for further collaboration for the benefit of the forestry sector. This will help consolidate the achievements so far made, particularly contributions of the private forestry sector such as advocacy, employment generation, social services and value addition to forest produce.'

African Forest Forum
P.O. Box 30677-00100
Nairobi GPO KENYA
Tel: +254 20 722 4203 Fax: +254 20 722 4001
E-mail: exec.sec@afforum.org
Website: www.afforum.org