A PLATFORM FOR STAKEHOLDERS IN AFRICAN FORESTRY

IMPLEMENTATION STATUS OF REDD+, CDM, AFOLU/INDC AND VOLUNTARY CARBON MARKET RELATED ACTIVITIES IN ANGLOPHONE AFRICA



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Cover photos: Coppiced stump from selective harvesting of Miombo woodlands in Zambia (Left), Credit: Forest Department of Zambia. Charcoal making kiln in moist forest setting: south western Côte d'Ivoire (Middle), Credit: Martin NGANJE; *Newtonia hildebrandtii* - Lebombo Wattle, Sand Forest, St Lucia Park, KwaZulu Natal, South Africa via Wikimedia Commons/Brita Lomba (Right).

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Implementation status of REDD+, CDM, AFOLU/INDC and voluntary carbon market related activities in Anglophone Africa

Mulenga, F.

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Acronyms and abbreviations

AFF	African Forest Forum
AFOLU	Agriculture Forestry and other Land use
AR	Afforestation/Reforestation
BSM	Benefits Sharing Mechanism
CCX	Chicago Climate Exchange
CDM	Clean Development Mechanism
CDM-EB	Clean Development Mechanism Executive Board
CIA	Central Intelligence Agency
CIFOR	Centre for International Forestry Research
COP	Conference of Parties
CRB	Community Resource Board of ZAWA
CRC	Constitutional Review Commission
CSO	Central Statistical Office
DNA	Designated National Authority
DOE	Designated Operating Entity
EU-ETS	European Union- Emissions Trading System
EWS	Early Warning System
FAO	The Food and Agriculture Organization
FCPF	Forest carbon Partnership Facility
FD	Forestry Department
FDRE	Federal Democratic Republic of Ethiopia
FREL	Forest Reference Emissions Level
FVA	Framework for Various Approaches

GHG	Green House Gas
GoK	Government of Kenya
GP-LULUCF	Good Practices-Land Use & Land use Cover Forestry
GRZ	Government of the Republic of Zambia
$GtCO_2e$	Gigatonnes of Carbon Dioxide
HIV-AIDS	Human ImmunoVirus-Acquired Immune Deficiency Syndrome
IDLO	International Law Development Organization
IETA	International Emissions Trading Association
IISD	International Institute for Environment and development
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
ITTO	International Timber Trade Organization
KEFRI	Kenyan Forestry Research Institute
LCER	Long Term Certified Emission Reduction
LPG	Liquefied Petroleum Gas
MEST	Ministry of Environment, Science and Technology
MRV	Monitoring Reporting and Verification
NAMA	Nationally Appropriate Mitigation Action
NAPA	National Adaptation Plan of Action
NCB	Non-Carbon Benefit
NEMA	National Environmental Management Authority
NGO	Non-Governmental Organization
NMM	New Market Mechanism
NORAD	Norwegian Agency for Development
PAM	Policies and Measures

PDD	Project Design Document
PFAP	Provincial Forestry Action Programme
PFM	Participatory Forest Management
PIN	Project Idea Note
PLI	Policies, Legal and Institutional arrangements
QUELRO	Quantified Emissions Limitation and Reduction Objective
REDD+	Reducing Emissions from Deforestation and forest Degradation
RET	Renewable Energy Technology
R-PP	Readiness –Preparation Proposal
SFM	Sustainable Forest Management
SWOT	Strengths, Weaknesses, Opportunities and Threats
TAFORI	Tanzanian Forestry Research Institute
tCER	Temporary Certified Emission Reduction
UNDAF	United Nations Development Assistance Framework
UNEP/DTU	United Nations Environmental Programme- Technical Unit Directorate
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations International Children Emergency Fund
URT	United Republic of Tanzania
VCS	Verified carbon Standard
WRC	Wetlands Restoration Conservation
ZARI	Zambia Agriculture Research Institute
ZAWA	Zambia Wildlife Authority
ZHDR	Zambia Human Demographic Report
ZIFL-P	Zambia Integrated Landscape- Programme

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Executive summary

The introduction of REDD+, AR-CDM, AFOLU/INDCs and voluntary carbon market related initiatives as market-based mechanisms aims at reducing global carbon emissions, enhancing environmental resilience and spurring economic growth and development. These mechanisms are attractive to the economies, sustainable environmental management, and livelihood improvements of African countries. The implementation of these market-based mechanisms has resulted in the greater availability of financing, transfer of technology and capacity building incentives that underpin GHG emissions reductions and enhancement of ecosystem resilience. Ultimately this leads to stable ecosystems in which sustainable development that leads to the improvement in peoples' livelihoods would be ensured.

Problem statement and justification

Although African countries are endowed with rich forest biodiversity that underpins their participation in market-based mechanisms, anticipated benefits are often unattained. Instead, African countries continue to suffer from high deforestation and degradation rates with attendant negative environmental impacts. Inadequate capacity (technical, financial and technology) in African technocrats exacerbated constraints to uptake, development and successfully implementing the mechanisms. Ultimately, Africa lacked the energy to transform the mechanisms they were implementing to maximize their potential. This study on REDD+, AR-CDM, AFOLU/INDC and other Voluntary carbon market-related initiatives was undertaken in five Anglophone African countries to establish conditions and determinants for uptake, progress made, and challenges faced on the implementation of these mechanisms. The overall objective of the study was to: contribute to a body of knowledge required for sustainable management and utilization of natural resources and improvement of livelihoods of people in Africa, while its specific objectives were: (i) to generate information that could improve African stakeholders' understanding of vulnerability to climate change and its application to adaptation measures pertinent to AFOLU, (ii) to use the generated information to support/strengthen sound adaptation and mitigation policies and measures associated with improving resilience of social and ecological systems and (iii) to apply the information in designing, formulating and implementing projects that would enhance access to voluntary and compliant markets in order to enhance equitable sharing of benefits from carbon trading.

Methodology for data collection

This study used a two pronged methodology to collect data. Method (i): secondary data on REDD+, CDM and voluntary carbon market- related initiatives were collected from internet sources through desk research. The search for data covered published documents of the

United Nations, Non-governmental Organizations (NGOs), government sources and scientific publications, through official UN-websites and Voluntary Carbon Standards registry. Method (ii): primary data collection was carried out through field visits to Kenya, Tanzania, Ethiopia, Zambia and Ghana. A total of 32 country experts were identified out of which 24 were personally interviewed. Furthermore, an electronic questionnaire was circulated to twenty-six (26) out of the 32 country experts, soliciting in-depth responses to questions on these mechanisms and their Benefits Sharing mechanisms. In an exceptional case, a local community engaged in REDD+ implementation was visited and interviewed in Kenya at Kasigau Wildlife Works site. Due to language barrier for INDCs, data for the AFOLU /INDC part of the study were collected from thirty-four (34) out of fifty-two (52) African countries. Six (6) AFOLU categories were check listed in submitted INDCs and each occurrence of AFOLU category expressed in the INDC was coded per country as Afforestation/Reforestation (AR), Agriculture Management (AM), Forest Management (FM), Bio-Energy (BE), Wetland Restoration Conservation (WRC) and Avoided Deforestation and Degradation (DD). These AFOLU codes were entered in tally sheets per country and ordered according to five regions (North, South, Central, West and Eastern Africa).

Analysis of data

Secondary data on REDD+, AR-CDM, AFOLU/INDCs and Voluntary carbon related initiatives were analyzed for qualitative content while tabulated data were computer analyzed by use of univariate factor analysis of the RC-STATA package. The RC-STATA produced quantitative descriptive statistics and graphics. Data from interviews, group discussions and the questionnaire were coded, tabulated and analyzed through qualitative content analysis. Results were compared to ensure consistency of statements and figures and compared to published records.

Limitations of the study

This study was limited to conducting interviewees in capital cities, which impeded the researcher from reaching project sites that lay in far-flung areas. It was difficult to obtain views from stakeholders at grassroots sites due to limited sampling. Only five (5) experts responded to the electronic questionnaire. This severely limited its use in collecting data for evaluating efficiency and effectiveness, legitimacy and equity of the Benefits Sharing Mechanisms (BSM) among sampled countries. The study employed telephone interviews and use of secondary data as an alternative to the questionnaire. Comments made on the BSM were based on the two alternative methods.

Presentation of the report

The report was structured in 124 pages. Main features of the report are the graphics and tables of study outputs accompanied with narrative statements.

Major Findings

AR-CDM projects in Africa

There were 23 AR-CDM projects in Africa out which 15 were registered and trading in CDM on Voluntary carbon Markets. Afforestation projects were 3, located one each in Congo DR, Senegal and Uganda, while reforestation projects were 17, with five (5) located in Kenya, six (6) in Uganda, and one (1) Niger, one (1) in Mozambique. Tanzania had two (2), Ethiopia also had two (2). Low prices for AR-CDM credits reduced development and implementation of AR-CDM projects in African countries.

REDD+ mechanism in Africa

Eighteen (18) out of 19 African countries participating in REDD+ mechanism had completed their Readiness phase and were preparing to enter into investment phase. However, uptake of REDD+ among the 19 UN-REDD+ partner countries was varied. Major conditions and determinants for uptake of REDD+ were: (i) capacity building; (ii) transfer of technology; (iii) finance; (iv) results/performance-based payments; (v) safeguards; (vi) non-carbon benefits, and (vii) knowledge base. In terms of trade, REDD+ credits were favourite in voluntary carbon markets, characterized with high demand from customers due to environmental protection embedded in them; community appeal, in form of benefits sharing also formed part of the reasons for the high demand for REDD+ credits. REDD+ projects were not found in the compliance markets because of on-going negotiations in the UNFCCC. For sampled countries, Ghana, Tanzania and Kenya, were more advanced in development and implementation of REDD+ projects, and REDD+ was growing fast in African countries and had surpassed AR-CDM projects, which had a very low representation in the continent.

AFOLU and INDCs in Africa

For all 34 African countries examined, agricultural management was considered to be highly important. Every INDC had referenced it (100%). However, the adaptation part of AFOLU was referenced above 80% in the INDCs with West Africa at 100%. Agricultural management was referenced by all African regions because it contributes to improvement of people's livelihoods. AFOLU categories were referenced with variations in the five regions, while the adaptation component of agricultural management and wetlands restoration were regarded as important on the continent. On the AFOLU mitigation part, afforestation/reforestation, avoided deforestation and degradation, bioenergy were highly considered while forest management had both mitigation and adaptation equally referenced at 56%.

NAMAS

There were 103 NAMAs submitted to UNFCCC by African countries, some being integrated into the INDCs. The submitted and funded NAMAs had begun to positively impact infrastructure construction in Kenya and Ethiopia's transport systems

Major challenges

AR-CDM projects were less attractive as long as prices for forest-based credits were low and AR-CDM projects did not attract upfront payments to project developers. Major carbon emissions trading companies continued to reject tCERs from forest-based carbon projects.

REDD+: On-going negotiations in the UNFCCC had contributed to non-completion of policies and modalities that would make REDD+ implementable under UNFCCC and its Paris Agreement. Although REDD+ safeguards were agreed, there was no means of compelling REDD+ participating countries to adhere to principles they espoused.

Non-compliance to REDD+ safeguards: REDD+ project developers often abrogated safeguard provisions with regard to equitable benefits sharing. Most developers were not transparent in sharing information about revenue realized from REDD+ carbon credits. They constructed poor quality buildings for communities and bothered less about gender equality and equity. They concentrated on attaining efficiency and effectiveness of benefits sharing mechanism rather than on equity. It was also noted that many African countries could not meet the conditions and determinants for uptake of REDD+ because of uncertainty about unconcluded negotiations.

Implementation of INDCs: All the 46 INDCs submitted by African countries had stressed the desire to receive conditional support on finance, transfer of technology and capacity building to reduce carbon emission through adaptation contributions; this presents a major challenge in that the desired support was voluntary; hence unreliable.

CHAPTER 1 Introduction

Forests provide services that reduce vulnerability and increase environmental resilience to the effects of climate change. Beyond providing environmental services, forests provided intangible products important in livelihoods and economies of African countries. However, demand for agricultural products to meet rising food needs of the African people has continued to compromise management of forests and exacerbated their environmental services. Conversion of forests to agricultural production and other land uses continued to generate substantial (GHG) emissions that negatively affected climate. Agriculture, Forestry and Other Land Uses (AFOLU) in Africa were responsible for nearly 24% of all anthropogenic GHG emissions. AFOLU activities continued to emit 10-12 $GtCO_2e$ annually, of which half came from deforestation and forest degradation. The other half came from agricultural activities, including rumen fermentation. Consequently, the growing populations and changing diets; technological advances that made previously unproductive land productive implied that agricultural areas and related emissions would continue to increase. This situation would escalate GHG emissions to unprecedented levels. There was a need to address climate change, climate variations in to order to build ecosystem resilience and also undertake climate mitigation measure to reduce GHG emissions. These strategic measures require knowledge and skills as well as technology, financing and capacity in people and systems. This study intended to contribute knowledge, which when applied towards highlighted strategic measures would potentially ameliorate the negative impacts of climate change.

SCOPE AND JUSTIFICATION

This study was carried out in five (5) Anglophone countries: Kenya, Tanzania, Ethiopia, Ghana and Zambia: in parallel to another study that was conducted in five (5) francophone countries: DR Congo, Burkina Faso, Ivory Coast, Madagascar and Cameroon. Country selection criteria included (i) a country having been selected to pilot UN-REDD+ and (ii) existence of rich and diverse forest. The study examines successes and failures of implementing CDM, RED+, AFOLU and other Market mechanisms in selected Africa countries. It further evaluates the conditions needed to make these mechanisms sustainable in Africa with the aim of ensuring that mechanisms contribute to social- economic development and ecological resilience.

JUSTIFICATION

Key issues so far are that implementing Market Based Mechanisms has not contributed significantly to Africa's sustainable development. For the first time, information collected

during ten years of implementing CDM, REDD, AFOLU as well as other Market Based Mechanisms will be reviewed, evaluated and synthesized to give a global perspective of success and failures of implementing the market-based mechanisms. This study will ultimately enrich the knowledge base for African countries and provide policy makers opportunities to make informed decisions regarding their participation in these mechanisms. The knowledge that will be generated through this study and its application by policy makers to make decision regarding selecting options for CDM, REDD+, AFOLU and other market-based mechanisms that will contribute to social, economic development and ecological sustainability justifies the need for having undertaken it.

MAIN OBJECTIVE

The overall objective of this study is to contribute information on status of CDM, AFOLU, REDD and other market related mechanisms implementation in Africa based on sampled countries, which will contribute to building a body of knowledge that can be used to plan for sustainable management and utilization of natural resources and environment, ultimately improve people's livelihoods and creating environmental resilience for Africa.

SPECIFIC OBJECTIVES

The study specifically sought to:

(i) generate information that could improve African stakeholders' understanding of vulnerability to climate change and the significance of vulnerability for designing adaptation measures in the context of AFOLU;

(ii) provide information to support/strengthen decision making processes regarding adaptation and mitigation policies and measures in CDM and other Market Based mechanisms; and

(iii) provide information for policy makers to advocate for REDD+ projects that will enhance access to voluntary and compliant carbon markets, in order to accelerate access to equitable sharing of benefits emerging from carbon trade for African countries.

Tasks

To achieve specific objectives, nine (9) tasks were identified and undertaken:

(i) analyse and document progress made by African countries to implement REDD+ processes in different forest types and assess conditions and determinants of uptake of REDD+ mechanism and how REDD+ could be made sustainable in Africa;

(ii) evaluate external and internal challenges as well as opportunities and strengths on development and implementation of REDD+;

(iii) analyse and document progress made on implementation of AR- CDM activities and identify and evaluate different benefit sharing mechanisms and suggest how these could be improved upon to deliver benefits to the communities and also ensure sustainable forest management (SFM) and environmental resilience;

(iv) examine how different policies, legal and institutional framework can impact BSM and also examine factors required to enhance registration of carbon credits; and identify voluntary carbon markets in which African countries can sell their + carbon credits;

(v) evaluate the future of AR-CDM and examine how African countries can improve uptake of forest based carbon projects;

(vi) examine emerging technical/methodological challenges and Evaluate expected conditions required for successful implementation of AFOLU/INDC activities;

(vii) evaluate challenges on development and implementation of forest based CDM projects as well as introduction of voluntary in the context of compliant carbon markets; and Examine the impact of benefit sharing mechanisms on implementation of REDD+ and forest based CDM projects;

(viii) evaluate and analyze the impact of legal, policies and institutional measures on implementation of REDD+ and forest based CDM activities as well as voluntary/compliant carbon markets and trade including benefit sharing mechanisms; and

(ix) provide appropriate key recommendations in relation to the outlined tasks.

METHODOLOGY FOR DATA COLLECTION AND ANALYSIS

Data collection

This study used a two pronged method to collect data. First, secondary data on REDD+, CDM, AFOLU/INDCs and voluntary carbon related initiatives from internet sources were collected. Published documents of the United Nations, Non-governmental Organizations (NGOs), government and scientific publications were searched for this purpose. Second, field visits were made to Kenya, Tanzania, Ethiopia, Zambia and Ghana to collect primary data. A total of thirty-two (32) country experts were identified and interviewed according to the nine (9) tasks outlined above. To authenticate data collected from interviews and to fill gaps in the published records, an electronic questionnaire was circulated to twenty-six (26) out of 32 country experts soliciting in-depth responses. As an exceptional case, a local

community working on REDD+ was engaged in focus group discussion in Maungu, Kenya. AFOLU/INDC data were collected for thirty-four (34) African countries that had submitted their INDCs in English. Each submitted INDC was coded using six AFOLU categories highlighting the adaptation/mitigation contributions, namely, (i) afforestation/reforestation (AR); (ii) agricultural management (AM); (iii) forest management (FM), (iv) bio-energy (BE); (v) wetland restoration conservation (WRC), and (vi) avoided deforestation and degradation (DD). The number of times a country had expressed the AFOLU measure in the INDC was entered into excel sheet as "times referred to in INDC". Also, country means of implementing AFOLU measures referenced in the INDC were recorded.

Data Analysis

The data were analyzed using the following approaches.

(i) Data collected on REDD+ were grouped into strengths, weaknesses, opportunities and threats (SWOT), and entered into excel sheets. The different factors in the SWOT tables were subjected to simple descriptive statistics in which identified conditions and determinants for uptake of REDD+ were grouped, their frequency determined before finally grouping the results into seven (7) themes. The seven themes were prioritized in order of decreasing magnitude. These thematic factors were discussed in a synthesized manner while keeping in view sampled countries to provide succinct details where good practices were evident and to show differences.

(ii) Data collected on CDM were also subjected to quality and content analysis, through review of CDM records in UNEP/DTU and other records in the voluntary carbon standard registry, in addition to CDM- Executive Board records.

(iii) AFOLU/INDC data was coded and quantitatively analyzed using univariate and multivariate statistics. R and Stata software were used to generate relevant outputs for reporting.

CHAPTER 2 Results and discussion

OVERVIEW OF CDM, REDD+, INDCS AND AFOLU IN AFRICA

Although faced with many challenges, African countries have made marked progress in implementation of forest-based mechanisms. Assessment of progress on AR-CDM showed that African countries had 15 registered AR-CDM projects, with Uganda and Kenya leading in the number of projects. Challenges remained with low prices of AR-CDM credits and lack of investment by Annex I countries' entities in African AR-CDM projects, whereas REDD+ projects were rapidly taking centre stage in the continent as favourite projects for GHG mitigation. By the end of 2016, there were 19 African countries engaged in REDD+ projects out of 64 countries in the world under UN-REDD+ or Forest Carbon Partnership arrangements with many trading in VERs under the voluntary carbon markets. REDD+ mechanism is closely linked with INDCs and NAMAs in which it was expected to contribute substantial GHG emissions reductions to the mitigation contributions of INDCs. All REDD+ participating countries had completed their REDD+ Readiness phase and were in the preparatory phase of implementation and investment. Kenya, Tanzania, Zambia and Congo were among countries that were receiving REDD+ payments from sale of REDD+ credits. NAMAs were also continuously submitted for review and support in the United Nations under the United Nations Development Assistance Framework (UNDAF). There were 52 African countries out of which 46 had submitted their INDCs. It was found that among 34 INDCs examined in this study, 100% had referenced agriculture adaptation as the most important part of the Agriculture Management contributions. This was attributed to the importance of agriculture policies and measures that led to poverty reduction through food security and livelihood improvements, trade and employment. African countries did not place much emphasis on the mitigation part of Agriculture Management but on adaptation (Chendauka, 2016; Kambikambi, 2016; Kajiru, 2016). In terms of policies, laws and institutional arrangement reforms, the study found variations among African countries. Countries like Zambia, Kenya and Tanzania had made tremendous progress to reform their PLI, while Ethiopia and Ghana, though ardent REDD+ implementers, had archaic laws that impeded REDD+ implementation. All African countries implementing REDD+ had not developed benefits sharing mechanisms that were equitable, efficient, effective and legitimate. This would impact negatively on sustainability of REDD+ in Africa because it would trigger reversible actions against gains made in SFM. Full delivery of transfer of technology, capacity building and financing of INDCs would lead African countries to implement the INDCs and meet their adaptation and mitigation contributions to maintain climatic conditions in stable form.

Africa was still underrepresented in AR-CDM, REDD+ and mainstream CDM and trade. Its projects portfolio in AR-CDM was roughly 2% of global total (Fenhann, 2016). Africa needed to develop its internal emissions trading systems to initiate and increase trade in VERs among member states instead of over-relying on Annex I public and private sector entities to buy carbon credits from Africa. In the meantime, Africa should continue to build its technical capacity required to formulate forest-based projects and increase financial contributions required to manage projects based on these mechanisms.

Africa should also shift focus from AR-CDM projects and concentrate on REDD+, INDCs, AFOLU, as well as voluntary carbon related initiatives, until prices improve in forest-based CDM projects. Also, African countries should begin to view critically, proposals of chapter six of the Paris Agreement, which asserts that REDD+ might be operated in the UNFCCC and Paris Agreement under new market mechanism window and modalities that include its framework of various approaches (FVA). There was urgent need to reform subsidiary legislation, principal sector laws and constitutions in order to provide clear legal support to, and obtain benefits from, forest-based mechanisms. To ensure irreversibility of REDD+ in SFM, benefits sharing should be effective, efficient and equitable. This should be based on broad consultation to legitimize the BSM. In all these mechanisms, gender inclusiveness/equality should be mainstreamed as a rule of the thumb rather than an exception. INDCs were quite tacit on gender issues, hence did not offer comfort as to what the roles of men, women, vulnerable groups would be in implementation of INDCs, which from the onset did not mainstream gender issues.

EVOLUTION OF FOREST MITIGATION MECHANISMS IN AFRICA

From 2003 up to 2016, AR-CDM projects in Africa rose from one (1) to twenty-three (Figure 1), while other CDM projects grew from few to 244 over the same period (Figure 2).

Initially, AR-CDM projects grew slowly due to numerous challenges faced by African countries among which the following were prominent: (i) lack of guidelines for AR-CDM projects formulation; (ii) lack of experts to formulate AR-CDM projects; (iii) lack of data and information to construct land cover maps for land eligibility criterion; (iv) exclusion of avoided deforestation prevented forest dependent communities from participation in AR-CDM projects, and (v) low carbon prices depressed investment in AR-CDM projects (; Mayo & Sessa, 2012; CCIAM, 2009; CDM-EB, 2015). However, rapid growth in other CDM projects was particularly noted in Asia and Pacific regions during the same time. CDM projects grew from 22 to 6,967, while in Latin America they grew from 21 to 1,101 from 2000-2016. Africa had surpassed the Middle-East, Europe and central Asia in number of CDM projects (Figure 3 & 4). The growth in Africa's CDM projects was attributed to: (i) previous capacity building efforts impacted on project development; (ii) local experts began

to actively identify, and develop AR-CDM projects; (iii) European Union started to finance AR-CDM more in developing countries away from projects in China, India and Brazil (Gonzalez, 2013; FAO, 2013). China and India represented over 85% of CDM projects in Asia and Pacific region while Latin America had 1101 CDM projects (Figure 5). Asia and Pacific region had 1045. China and India had been successful with CDM projects because of highly competent technical experts that prepared PINs and PDDs. Furthermore, China and India were among top net polluters in the world, which made them attractive to Annex I countries for CDM projects. Growth of CDM projects in China was also partially attributed to development of an internal Emissions Trading System (ETS) China.

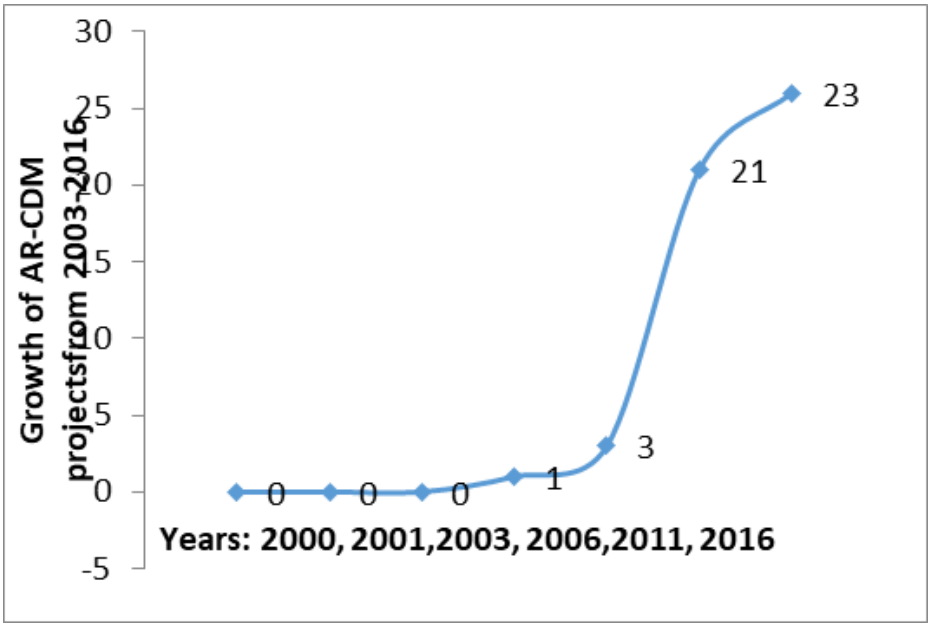

Figure 1. Trends in AR-CDM projects in Africa
Source: Constructed using data from Fenhann (2016)

a) REDD+ mechanism

REDD+ came into global forest mitigation mechanisms in 2005 (UNFCCC, 2006) and grew faster than AR-CDM. In 2009, twenty-one (21) countries piloted REDD+. By 2014, the number had reached sixty (60) REDD+ participating countries (ITTO, 2015); number of REDD+ participating countries was expected to rise after COP21 (IISD, 2015).

b) Nationally Appropriate Mitigation Actions

Nationally Appropriate Mitigation Actions (NAMAs) had also increasingly formed a large part of African mitigation projects'. One hundred and three (103) NAMAs had been submitted between 2012 and 2015. The latest market based mitigation and adaptation mechanism, the INDCs only became official in 2015 and already over 192 countries had submitted their INDCs to the UNFCCC before COP 21. Africa had submitted 52 INDCs (Fobissie & Nkem, 2015). This was the fastest mechanism in growth because it was the first mechanism to

combine mitigation and adaptation measures agreed by all Parties in developing and developed countries (UNFCCC, 2015).

Figure 2. Mainstream CDM projects in Africa
Source: Fenhann (2016)

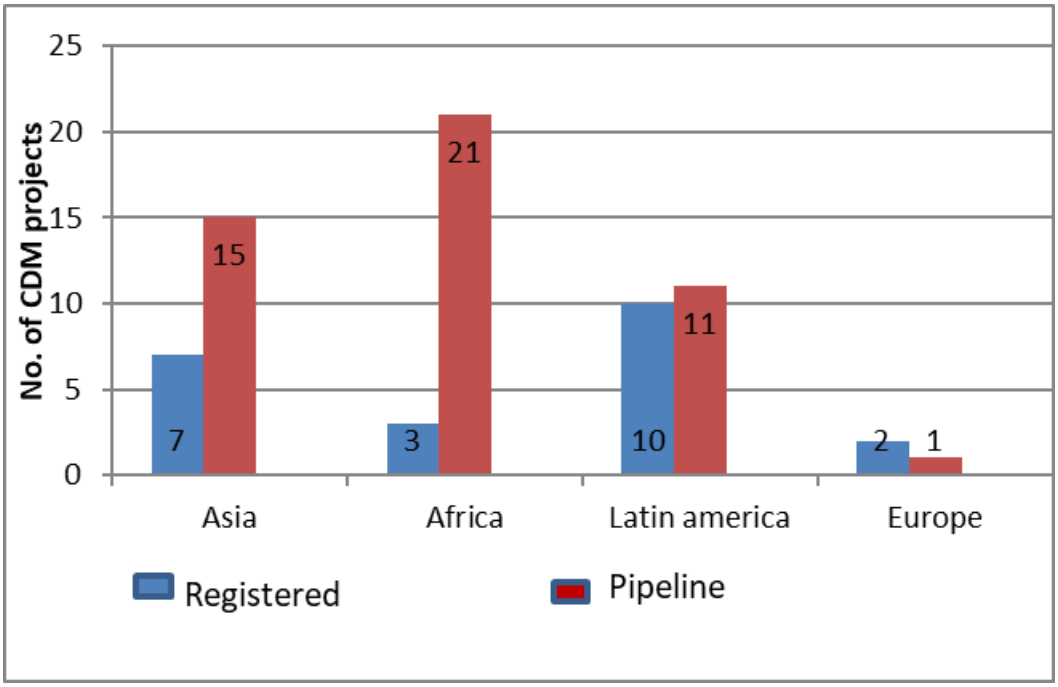

Figure 3. Global CDM projects
Source: Constructed with data from Fenhann (2011)

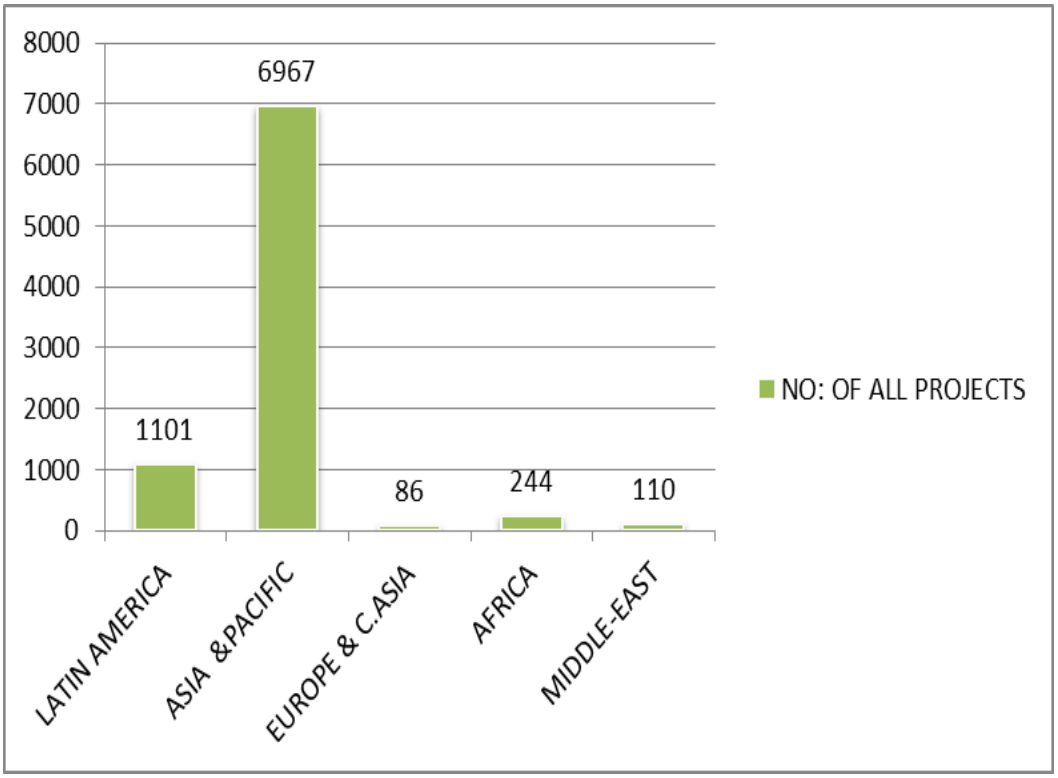

Figure 4. Global CDM projects in 2016
Source: Constructed with data from Fenhann (2016)

EVOLUTION OF FOREST CARBON MARKET ACTIVITIES IN AFRICA

Five forest-based mitigation mechanisms are used to illustrate evolution of forest carbon market activities in Africa, namely, (i) Afforestation/Reforestation Clean Development Mechanism (AR-CDM); (ii) Reducing Emissions from Deforestation and forest Degradation[1] (REDD+); (iii) New Market Mechanisms (NMM); (iv) Nationally Appropriate Mitigation Actions (NAMAs), and (v) Intended Nationally Determined Contributions (INDCs).

AR-CDM projects and the Compliance Market

The first African AR-CDM project was the Humbo[2] Reforestation project that started around 2006 and was registered by the CDM- Board in the year 2009. The project achieved Gold Level Validation under the Climate Community and Biodiversity standards in 2011. After its registration in 2012, it sold Certified Emission Reductions credits. The 30-year project was expected to sequester an estimated 880,295 tCO_2 with total revenue of USD 3,961,328 at an estimated cost of USD 4.5/ton (Bekele et al., 2015). By 2016, there were 23 AR-CDM projects in Africa, of which 15 were registered. Not all registered AR-CDM projects traded their credits in the compliant carbon market. Among studied countries, AR-CDM credits from Kenya and Uganda had entered CDM markets while the largest CERs traded in CDM came from few large projects in Asia, Latin America and China (Prag & Briner, 2012) (Figure 5).

Five countries, namely, Brazil, Argentina, Colombo, India and China from Southern America and Asia accounted for eight large scale AR-CDM projects that supplied the largest amounts of CERs to the compliance carbon markets (UNEP/DTU, 2016). India and China topped the world's afforestation/reforestation projects that supplied about 86% CERs to the compliance market respectively (UNEP/DTU 2016). Argentina, Brazil and Colombo followed China and India in this parameter, while African countries' afforestation /reforestation-CDM projects were not reported on the UNEP/DTU (2016} website. Out of the 15 registered African afforestation /reforestation projects, none had traded significant quantities of CERs in the compliance market to deserve a place among the large scale projects. Africa's CERs were absent from the compliance market due to over-dominance of few large-scale projects in this market (CDM-EB, 2015). Secondly, the high rejection of forest-based projects submitted by African countries from 2004-2015 also reduced the potential for small scale AR-CDM projects to contribute credits into the compliance markets. Eighty-nine percent of

[1] REDD+ which includes in addition to other activities which are; enhancing carbon stocks, sustainable forest management and conservation of forests.

[2] The Humbo reforestation project is found in Ethiopia.

the African AR-CDM projects were rejected by Designated Operating Entities (DOEs) while (11%) were rejected by the CDM-Executive Board (Figure 6).

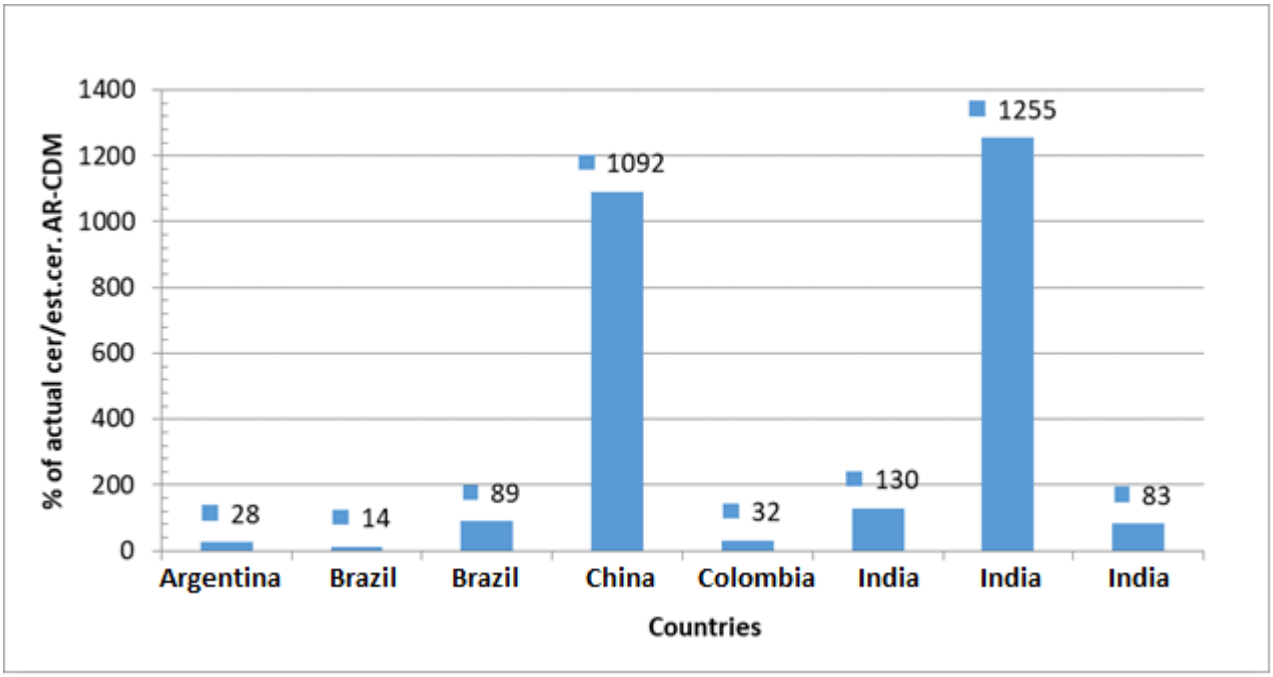

Figure 5. CERs from large AR-CDM projects
Source: Constructed with data from UNEP/DTU (2016)

The rejected AR-CDM projects did not meet material standards of the examining bodies hence validation was terminated. Over the same period, Africa had submitted 235 CDM projects out of which 13 were AR-CDM (Figure 7).

Africa's CDM projects were distributed as follows: South Africa (71), Egypt (22), Uganda (19), Morocco (18), Kenya (24) and Nigeria (12). Others were Senegal (8) and Rwanda (7). Among sampled countries, Kenya led with five reforestation projects and (19) other CDM projects (Figure 8). The rest of the sampled countries had less than (5) CDM projects. However, in discussions, experts indicated that Kenya had (40) CDM projects (Nyatichi, 2016), the UNEP/DTU website showed 24 while the other (16) projects were recorded in the Voluntary Carbon Market registry. Among sampled countries CDM projects distribution was deeply skewed (Table 1). Kenya had (24) projects distributed across CDM subsectors while other countries had maximum of (3 to 4) projects with a low distribution in subsectors. Notably, none of these countries had an afforestation project.

CDM projects on energy efficient stoves and landfill had also been initiated in sampled countries: (i) the Ashave CDM project for waste management; (ii) forest management and premium coffee production; and (iii) Sodo community reforestation project. These projects were in the voluntary carbon registry (Bekele, et al., 2015). The Sodo community reforestation project was registered under the Gold standard and was validated under the

Gold Standard Foundation, the Carbon Fix Standard and the Climate Community Biodiversity Standards. It had an estimated total of 189,027 tCO_2 CERs over 35 years crediting period.

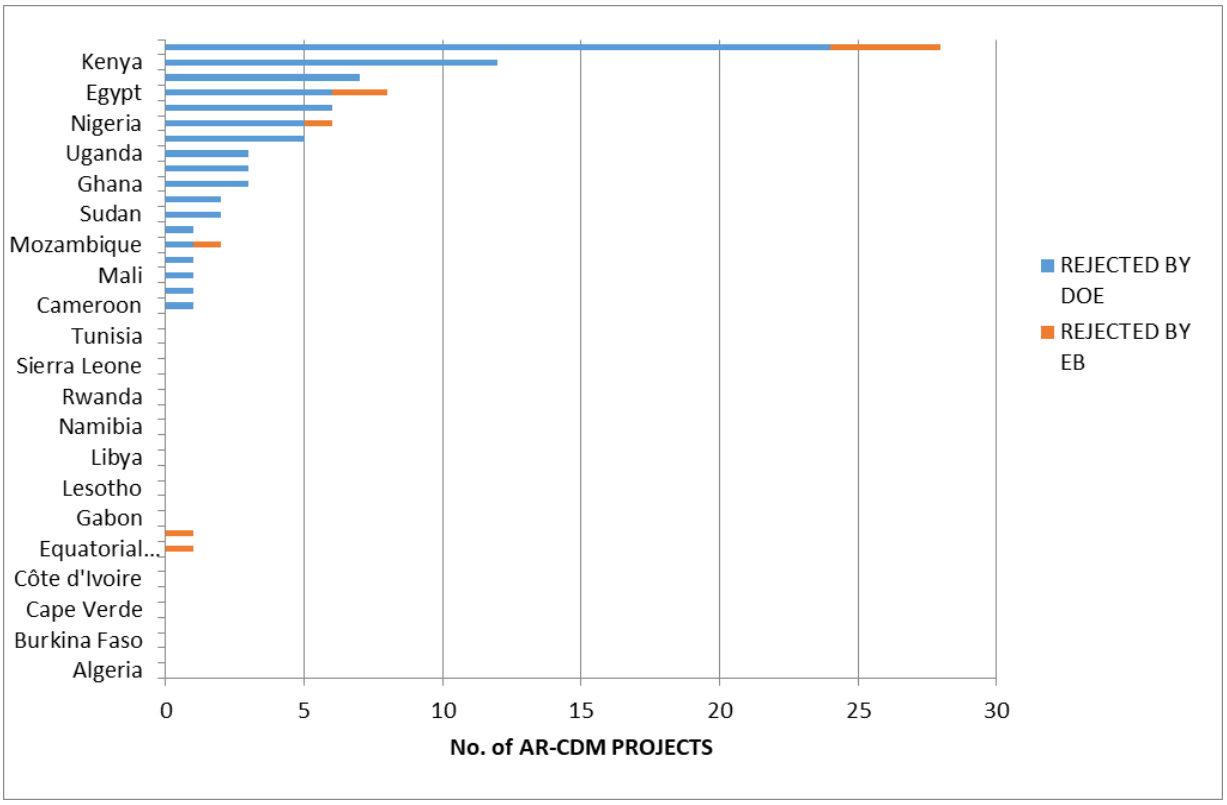

Figure 6. AR-CDM projects rejected by Designated Operating Entities and CDM-Executive Board
Source: Constructed with data from UNEP/DTU (2016)

REDD+ Voluntary Markets

REDD+ projects implemented in Africa and elsewhere had targeted the Voluntary Carbon Markets (Fenhann, 2016). The architecture, modalities and guidelines in the Verified Carbon Standards (VCS) were available and voluntary carbon markets were trading in credits from REDD+ projects across the world. As the REDD+ guidelines were in the process of being developed in the UNFCCC, REDD+ credits were on high demand in the voluntary markets and had surpassed carbon credits from AR- CDM projects (ITTO, 2015). Out of sixty four (64) UN-REDD+ partners, nineteen (19)[3] were in Africa in which Kenya and Uganda had

[3] Benin, Cameroon, Central African Republic (CAR), Ivory Coast, Democratic Republic of the Congo, Equatorial Guinea, Ethiopia, Gabon, Ghana, Kenya,- Nigeria, Republic of Congo, South Sudan, Sudan, Tanzania, Uganda, Zambia, Zimbabwe and Madagascar.

traded REDD+ credits (http://www.UN-REDD.net/index; Guigon et al., 2009). Kenya was more prominent at continental and global levels in the voluntary markets compared to other sampled countries. Countries like Zambia had only one REDD+ project that ever sold its carbon on the voluntary market (http://biocarbonpartners.com).

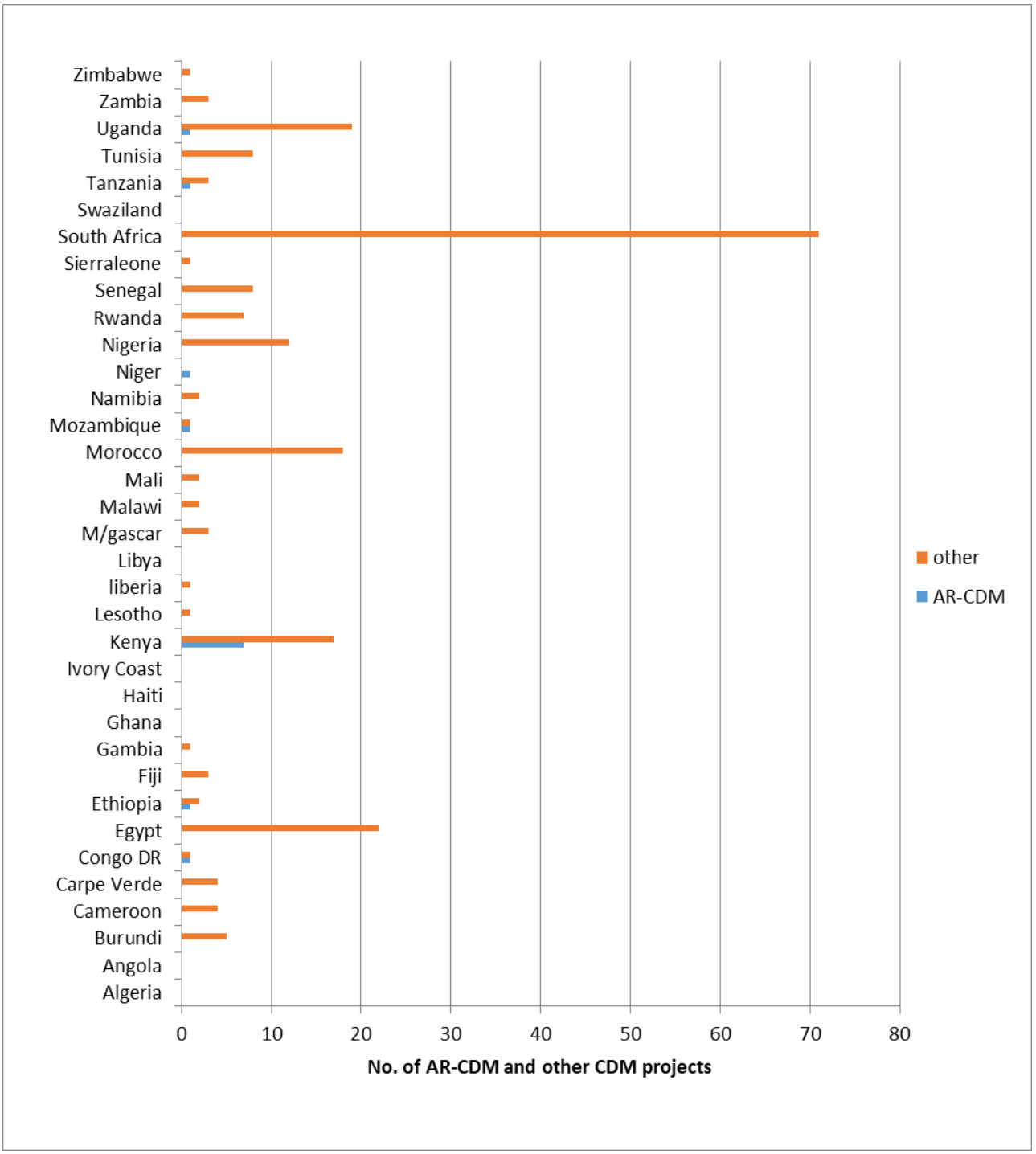

Figure 7. CDM projects among African countries
Source: Constructed with data from UNEP/DTU (2016)

Table 1. CDM Projects in Sampled African Countries

Project	Ethiopia	Ghana	Kenya	Tanzania	Zambia	Total
EE-Household	0	0	0	0	1	1
Biomass	0	0	1	1	0	2
Cement	0	0	1	0	0	1
EE-Industry	0	0	1	0	0	1
EE-Supply	0	1	0	0	0	1
Fossil F/switch	0	1	0	0	0	1
Geothermal	0	0	5	0	0	5
Hydro	0	0	2	1	2	5
Landfill	1	0	0	1	0	2
Methane Avoidance	1	1	1	0	0	3
Reforestation	1	0	5	1	0	7
Solar	0	0	3	0	0	3
Tidal	0	0	0	0	0	0
Transport	0	0	2	0	0	2
Wind	0	0	3	0	0	3
Total projects	3	3	24	4	3	37

Source : Constructed with data from Fenhann, (2016)

New Market Mechanism (NMM)

Basic principles of the NMMs were laid down in paragraph 79 of Decision 2/CP.17 of the United Nations Framework Convention on Climate Change (UNFCCC, 2012 a). These

conditions had set out to meet standards that delivered real, permanent, additional and verified mitigation outcomes and avoided double accounting of efforts and to achieve a net decrease and or /avoidance of GHG emissions (Michaelowa, 2012). African countries, which were not performing well in the compliance market stood to benefit from demand and supply of forest carbon credits from New Market Mechanisms. The New Market Mechanisms promised to break challenges of CDM, which had failed to stimulate demand and supply of forest-based credits. Two key drivers of demand for GHG units were identified as: (i) the level of ambition of mitigation targets in developed countries; and (ii) the rules that were to be agreed regarding carryover of GHG units from the first commitment period of the Kyoto Protocol (KP). Furthermore, qualitative domestic restrictions in the EU-ETS which was one of the largest markets for carbon credits also affected demand for carbon credits (Prag and Briner, 2012). The New Market Mechanisms made African countries keenly look to it as a carbon credit market that demanded credits with minimum restrictions.

The New Market Mechanisms promised to increase demand for forest carbon than the Clean Development Mechanism. IETA (2014) identified several opportunities the New Market Mechanism offered in carbon trade: (i) as an alternative market that permitted all carbon credits from Parties, a New Market Mechanism was expected to stimulate global demand for carbon credits especially from African countries. In permitting all carbon credits, it would remove the restrictions imposed on forest carbon by the European Union Emissions Trading System and the Chicago Climate Exchange (CCX) and hence open up markets for developing and least developed countries to trade their carbon; (ii) through its simplicity of accounting and reporting for credits by parties, the New Market Mechanism was expected to accelerate economic development and environmental integrity; (iii) it was also expected to enable parties to contribute to GHG emissions reductions without distortions brought by competition among parties; (iv) the New Market Mechanism's proposed operational framework, the Framework for Various Approaches (FVA), was broad and included GHG emission reductions from Nationally Appropriate Mitigation Measures (NAMAs), as well as the Nationally Determined Contributions (NDCs) in the New Market Mechanism.

However, the New Market Mechanisms also faced a number of challenges which included: (i) Free-rider problems, which considered that lack of leakage controls would reduce assurance that emission reductions by efforts of some emitters would not be invalidated by other emitters that might increase their emissions above the baseline level; (ii) the elusive counterfactual: setting baselines and determining additionality involved divergent interests. Policymakers that supported introduction of NMM pursued different aims for instance, the reduced transaction cost in setting baselines was a major weakness of the NMM, because of its potential to reduce credibility of the credits, which was possible in the absence of a UNFCCC-level oversight on baseline setting; (iii) Cut-throat competition; during the first commitment period, there had been strong competition between the different Kyoto Mechanisms, which developed political connotations. Governments in countries in transition

tried to sell surplus emissions units from their Kyoto emissions budgets at prices below the price of credits from CDM and Joint Implementation (JI), where JI developers competed with CDM developers for buyers. The introduction of the NMM would further increase this competition unless buyers limited their acquisition to a specific kind of credit. The EU-ETS had excluded tCERs and lCERs from the AR-CDM projects. There was a genuine need to stimulate the level of ambition of mitigation targets in developed countries in order to increase in demand for carbon credits offsets projects in developing countries. Though faced with challenges, the new market mechanisms would provide options for financing forest carbon projects especially in African countries. Thirdly, the NMMs would potentially lead to development of emissions trading systems or improve access to the existing markets, which in the past, had been restricting some of CERs from CDM projects (Prag and Briner, 2012).

NATIONALLY APPROPRIATE MITIGATION ACTIONS (NAMAS)

NAMAs were promoted under the UNFCCC to engender low carbon emission economies (UNDAF, 2012). They were voluntary mitigation actions; and were designed to enhance reductions in GHG emissions in developing countries using existing national development policies (UNDAF, 2012). NAMAs were also related to INDCs in several ways; for instance: (i) NAMAs were amenable actions to implement the INDCs (ii) NAMAs could be used as the starting point for countries to define their INDCs (iii) NAMAs might be put forward as contributions (iv) countries that had previously submitted targets as NAMAs might convert these into INDCs (Roser & Tilburg, 2014). NAMAs were ushered into the UN- policy dialogue through the Bali Action Plan (BAP) (UNFCCC, 2007). At Cancun Conference, voluntary activities of NAMAs were agreed and industrialized countries pledged to support them through financing, technology transfer, or capacity building. NAMAs evolved to include unilateral actions that developing countries undertook to realize low carbon climate resilient development pathways that were eligible for support.

Globally, 103 **NAMAs** were submitted from 2012 to 2015 (Figure 8). During the same period, Africa had submitted a total of 35 NAMAs with East Africa having submitted the highest number of NAMAs followed by Southern Africa while West Africa was behind Southern Africa. North Africa had submitted only one (1) NAMA from Sudan (Figure 9). Leading African countries in NAMA submissions were: Uganda (9), Rwanda (7), Ghana (6), Ethiopia (5), Kenya (4) and Zimbabwe (4). Mali, Gambia and Sierra Leone submitted the least number of NAMAs while Zambia and Tanzania did not submit their NAMAs (Fenhann, 2016). Of the 35 NAMAs, 17 had referenced agriculture, forests and renewable energy as main mitigation contributions. It was also found that across the countries, Mexico, Pakistan and Jordan had submitted highest number of NAMAs, 10, 8 and 6, respectively (UNEP/DTU, 2016). Due to their broader implications in GHG mitigation and co benefits

from adaptation contributions of projects of NAMAs, countries continued to submit them every month for consideration and support (Fenhann, 2016; Cameron et al., 2015).

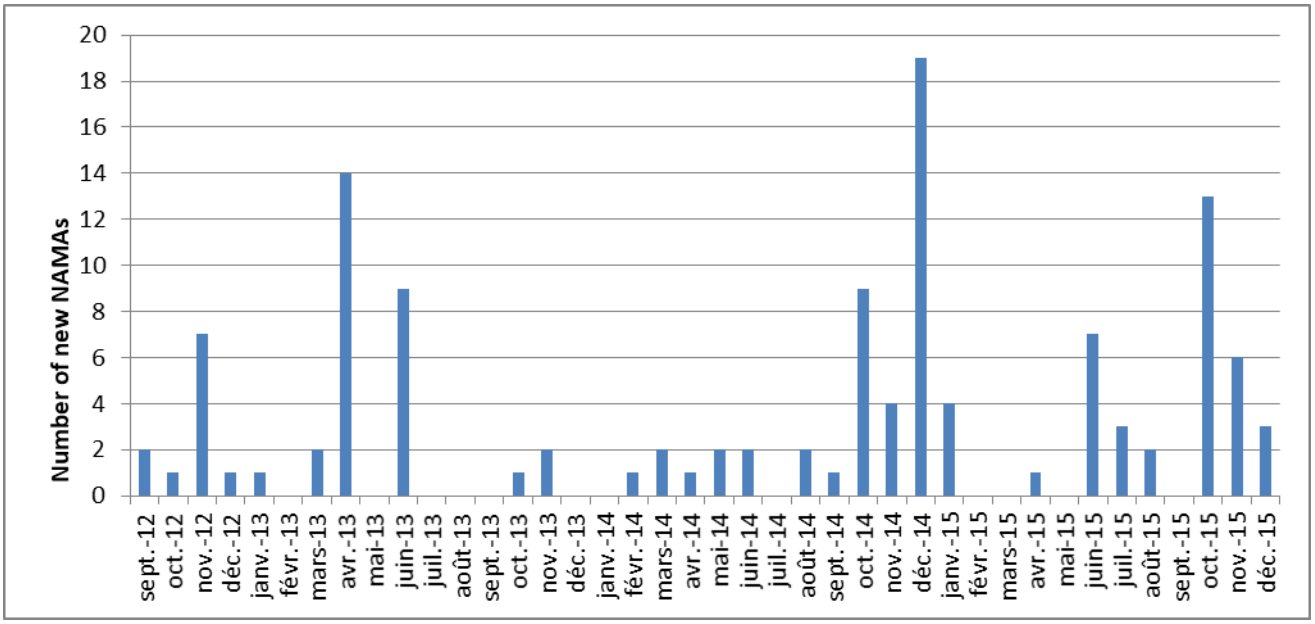

Figure 8. NAMAs submitted each month (World)
Source: Fenhann (2016)

Africa has submitted a number of NAMAs since 2012 (Figure 9). Evidently, East Africa has had more NAMAs compared to the other regions simply because they have built capacity to prepare and follow up their applications of not only NAMAs but other CDM projects. Southern Africa had (6) NAMAs and 4 of these NAMAs were in Zimbabwe. Tanzania and Zambia had concentrated on CDM and REDD+ projects and had not succeeded to submit their NAMAs while West Africa had (5) NAMAs. North Africa had only (1) NAMA submission for consideration. There was no particular reason given for the low number of NAMAs submitted across the globe. One speculation was that NAMAs did not have dedicated financing mechanisms and this deterred developing countries from exhausting energy on their preparation. For instance, Khachatryan et al., (2014) highlighted that Organization for Economic Co-operation and Development countries have pledged to provide US$100 billion per year for developing countries by 2020. Yet it is estimated that mitigation efforts in developing countries will require up to US$300 billion per year by 2020. In light of potentially insufficient public funding, the private sector has played an increasingly important role in global climate finance. This paper discusses various aspects of NAMA funding, including the challenges and opportunities that developing countries may face in securing sufficient and sustainable finance, case studies of successful interactions with private funders, and recommendations to NAMA developers and their international partners to help attract private investment to NAMAs.

There were and continued to be issues with developed countries failing to fully finance NAMAs while the Private sector also withheld their finances because of lack of seeing profits from some of the investments in NAMAs, which slowed private sector participation in NAMA financing.

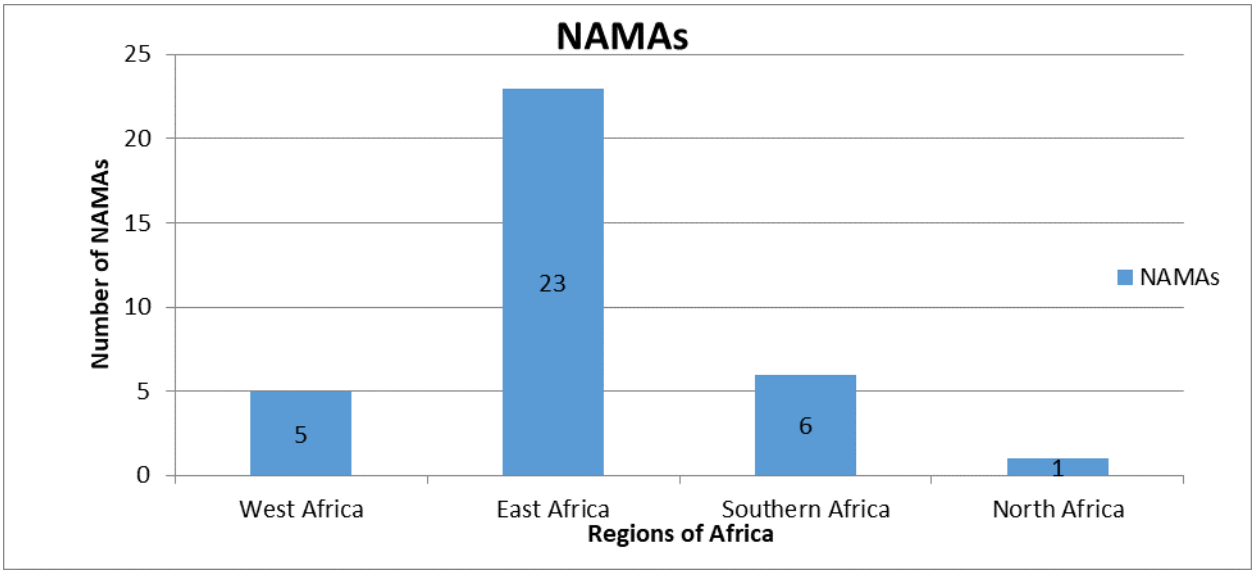

Figure 9. NAMAs submitted by Africa since 2012
Source: Constructed with data from Fenhann (2016)

INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDCS)

INDCs were policies and measures (PAMs) countries' were prepared to undertake towards reduction of GHG emissions, which countries had been asked to publish in the lead up to the 2015 COP21 (Wikipedia free encyclopedia)[4]. The INDCs were communicated by Parties in response to the invitation made by the Conference of the Parties (COP) in decisions 1/CP.19 and 1/CP.20. They covered both adaptation and mitigation measures of climate change and were determined without prejudice to the legal nature of the contributions[5] (AUC, 2014). Overall INDCs were a compromise between "Quantified Emissions Limitation and Reduction Objective" (QUELROs) and "Nationally Appropriate Mitigation Actions" (NAMAs) that the Kyoto Protocol used to describe the different legal obligations of developed and developing countries. Under the Paris Agreement, the INDC would become the first Nationally Determined Contribution (NDC) when a country ratified the agreement,

[4] https://en.wikipedia.org/wiki/Intended_Nationally_Determined_Contributions

[5] https://en.wikipedia.org/wiki/Intended_Nationally_Determined_Contributions

unless they decided to submit a new NDC at the same time. It is in this context that majority of the African countries had submitted their INDCs. For example, Ethiopia, Kenya, Ghana, Tanzania and Zambia were among Parties that had submitted their INDCs prior to start of COP 21 in Paris, (Gaviño, 2016 in UNEP/TDU, 2016). This was evidenced as 182 countries had ratified the Paris Agreement, which came into Force just prior to the Marrakesh COP22 held in 2016 (UNEP/TDU, 2017). The ratification of Paris Agreement has led to NDC had become the first greenhouse gas targets under the UNFCCC that applied equally to both developed and developing countries. The NDCs would be reported under the UNFCCC in intervals of five years (UNFCCC, 2015).

CHAPTER 3 Progress made on implementation of REDD+ based activities and other related AFOLU initiatives in Africa

READINESS PHASE

REDD+ Readiness has three phases: (i) development of a REDD+ Strategy; (ii) building national platforms to enhance dialogue; (iii) strengthening institutional collaboration and demonstration activities supported by voluntary contributions that would be immediately available, such as those administered through the World Bank's Forest Carbon Partnership Facility (FCPF), UN-REDD, and other bilateral arrangements (UN-REDD+, 2012). Sampled countries had all successfully carried out activities related to phase 1 REDD+ and were at different preparatory levels of getting into the investment phase. Some of the African countries had moved into phases II and III of the REDD+ processes, and these are discussed in appropriate sections below.

IMPLEMENTATION AND INVESTMENT PHASES

REDD+ Investment phase constitutes the implementation phase of the UN-REDD+ Programme. In this phase national policies and measures (PAMs) and national strategies involved with further capacity-building, technology development and transfer and results-based demonstration activities, supported by an internationally binding finance instrument with enforceable commitments would be undertaken (UN-REDD, 2010). African countries were undertaking policies and measures to prepare for investment phase of their REDD+ mechanism. For instance, Nigeria was using maps to explore the potential of REDD+ for achieving additional benefits. An initial map-based analysis at the national scale provided insights on the relationship between carbon stocks and priority areas for biodiversity conservation, as well as potential pressures on these important resources. More detailed spatial analyses were being carried out on the potential for multiple benefits from REDD+ in Cross River State, where many of the country's REDD+ activities were being initiated in high-carbon forest, natural forest or important areas for biodiversity and ecosystem services. In DR Congo, similar REDD+ options to test multiple forest benefits were being implemented. These included non-carbon forest ecosystem services like water and soil conservation. African countries were also applying complex analytical scenarios for

determining best REDD+ options in order to obtain the multiple benefits of forests. PAMs included schemes such as low impact logging, reforming land tenure, forest law enforcement and institutional reforms to redefine existing information, Incentive and power structures were needed to ensure successful REDD+ implementation (Angelsen, A.(eds). 2008; Angelsen et al., 2012). Thus African countries were undertaking broad-based policy, legal and institutional (PLI) reforms to lay the ground for implementation of REDD+, which was a platform for influencing wider transformational change for multilevel governance (Angelsen et al.2012). Although the pace for REDD+ investment was slow, initially globally, four countries (Cameroon, Guyana, Cambodia and Honduras) out of more than 100 had been selected to start the investment phase of UN-REDD+ among, which Africa had only Cameroon pre-selected for support in the investment phase (Blaser, J. & Gardi, O, 2015). But the list had grown to include DR Congo and Ghana that had been selected for support by the Forest Carbon Support Partnership (GoK, 2015).

Among the sampled countries, Kenya was implementing REDD+ activities in Tsavo East and west National Parks that had rich Montane and coastal forests to valley shrubs (Korchinsky et al, 2010). Particularly at Kasigau, REDD+ projects' overlaps were evident in Kenya's Tsavo west where Kenya had invested in an echo charcoal production and marketing REDD+ project. The project aimed at testing the efficiency, effectiveness and equity of benefits sharing mechanism (Korchinsky, et al. 2010). Kenya was also implementing REDD+ projects in Montane forests to enhance their provision of multiple environment services and products (UNEP, 2012). Kenya had established REDD+ activities in the Taita hills to protect forests from indiscreet illegal charcoal production (ibid.). Local famers were motivated to conserve forests through public private partnership arrangements. The Kenyan government and Wildlife Works had engaged farmers in wood-energy, tree nursery seedling production, distribution and planting. Principally, planting of trees in depleted areas was a carbon stock restoration action that REDD+ promoted. Tree planting also tended to increase forest cover that enhanced forest growth and development. In Zambia; the dry Miombo woodlands of eastern province and the Montane as well as valley forests of lower Zambezi were used by BioCarbon fund to implement REDD+ projects. In these sites, wildlife was being protected within the forests habitats. Prior to start of REDD+ initiative, both the forest and wildlife had been seriously threatened by illegal poaching and charcoal production respectively (UN-REDD, 2015).

In West Africa, Ghana has dry savanna woodlands in the north and rich tropical high forests in the south that include scattered mangrove forests. These forests resources provided suitable sites for REDD+ projects in which Ghana was implementing eleven 11 REDD+ projects including 39 REDD+ related activities using the different forest ecosystems. There were unique REDD+ project options where Cocoa shelter belts were selected for REDD+ projects aimed at protecting once destroyed forest areas in the wake of large scale Cocoa plantations (Nsowah, 2016). Tanzania's woodlands covered 90% of the country with large

swaths of Montane forests that marked the Eastern Arc Mountains with the Usambara (Maliondo, 1997), Tsavo east and Tsavo west were prominent ecosystems in which REDD+ activities were implemented. Acacia forests and semi dry savanna woodlands in Shinyanga, with Montane forests of Morogoro and the drier parts of Dodoma provided suitable REDD+ sites for Tanzania (URT, 1998). Ethiopia had Montane forests around the Bale Mountains in Oromia, woodlands around sodo and Abote areas in which REDD+ activities were being implemented (Moges et al., 2010). In promoting REDD+ implementation, African countries were mainly targeting the voluntary carbon markets, which were already accepting REDD+ credits (ITTO, 2015). Some countries also looked forward to trading REDD+ credits in the Clean Development Mechanism upon the Paris Agreement making available appropriate working modalities to accommodate REDD+. Motivated by prospects to bring REDD+ processes to full cycle, Kenya and Tanzania had to undertake REDD+ bridging activities from phase I to phase III of REDD+ activities while other countries like Zambia and Ghana were also beginning to trade their REDD+ credits in the voluntary carbon markets (UN-REDD, 2012).

RESULTS-BASED PAYMENT

The Democratic Republic of Congo (DRC), Kenya and Tanzania, were already making bridges towards results-based payment phase (investment phase), although not yet fully developed. These countries were already receiving payments for REDD+ credits through the voluntary market (UN-REDD, 2012; Moul, 2016). Zambia's lower Zambezi REDD+ project had also sold its first carbon credits to Microsoft under the Verified Carbon Standard (http://www.carbonneutral.com/). This demonstrated that in the absence of a CDM for REDD+, countries were utilizing the voluntary carbon markets as an option. It also showed that REDD+ process was being bridged by countries as they implemented its various options and, some were already receiving financial benefits through partnerships with the private sector. In this phase of the UN-REDD+ programme, measurement of anthropogenic forest-related emissions by sources and removals by sinks were being done. Forest carbon stocks and changes in forest carbon stocks and area resulting from the implementation of REDD+ activities as well as monitoring and reporting on emissions displacement (leakage) at national levels were attainable at this stage (Blaser & Gardi, 2015). In this phase, countries demonstrating REDD+ performance through VERs from deforestation and forest degradation (REDD+) and were receiving financial benefits as well as realizing other multiple benefits of conserving forests (UN-REDD, 2010).

Overall, much work remains to be done for many African countries to fully realize the benefits of implementing REDD+ in their forests.

CONDITIONS AND DETERMINANTS FOR IMPLEMENTATION OF REDD+ APPROACHES AND OTHER AFOLU ACTIVITIES

The following were found as major conditions and determinants that influence implementation of REDD+ and other AFOLU activities.

Capacity building

Capacity building was part of the required support in the implementation of REDD+ and other AFOLU activities. African countries had sought capacity building to achieve mitigation and adaptation for climate change. AFOLU activities were complex with respect to accounting for GHG emissions. With regard to determining carbon emissions, AFOLU was the most complex among the three schemes. This complexity was compounded by lack of data from soil carbon pools, in crops and livestock agriculture. Lack of national databases on cropping patterns and emissions, fertilizers used and contributions to carbon emissions were further complicated by absence of data on ruminal fermentations emissions from livestock types. Capacity to collect and analyze the data posed challenges in development and implementation of AFOLU initiatives. These challenges compromised quality of AFOLU projects. Fundamental challenges surrounding data gaps often affected developing countries project planning (Mayo & Sessa, 2012). These authors had noted that due to the lack of national data, "The IPCC category Agriculture, Forestry and Other Land Use (AFOLU) presented a unique challenge to the inventory compilers, especially from developing countries. In order to implement AFOLU activities, capacity building was essential and inevitable. Mainly technical capacity was required for data collection, analysis and application in planning AFOLU projects of the studied countries (Op.cit). REDD+ implementation was facilitated by capacity building. The aspects of knowledge and skills were rapidly absorbed and the mechanism had remarkable growth compared to other AFOLU initiatives. Furthermore, African countries completed phase I of REDD+ Readiness and, with financial support some countries had moved to other REDD+ phases where they were testing various REDD+ options.

Transfer of technology

Technology is acquired through research and development (R& D), which is expensive undertaking for developing countries. Under the Paris Agreement, developed countries had committed to transfer technology to enable developing countries implement NDCs. Part of the technology to be transferred included: Information communication technology (ICT); Geographical Information Systems /Remote Sensing (GIS/RS) licenses and soft/hardware used to collect data more accurately and also plan and determine AFOLU carbon pools in Africa. At operations level; farmer level skills to undertake Climate Smart Agriculture

activities such as; permaculture, agro-forestry, conservation farming, no tillage practices were essential for land preparation that reduced GHG emissions and contributed to increased productivity (Kokwe, 2016). R&D required technical data and information for development and implementation technologies of AFOLU projects. R & D faced many challenges that reduced capacity of African countries to do substantive research (Ishengoma et al., 2010; Ishengoma et al, 2011). Amidst these challenges, Kenya, Ghana, Tanzania, Ethiopia and Zambia, were engaged in different types of research. Kenya is actively undertaking research through different institutions and agencies such as: Kenya Forestry Research Institute (KEFRI), International Center for Research in Agroforestry (ICRAF) and other national universities as well as other environmental based organizations, which were centres of knowledge that informed AFOLU initiatives. Zambia's Agriculture Research institute (ZARI), General Agriculture Research Trust (GART) and the Center for International Forest Research (CIFOR) were also actively undertaking research activities relevant to AFOLU, while Forest Research Division of the Forest Department was dormant. Similarly, Ghana's Agriculture Research Institute, the Environmental Protection Agency; Tanzania (TAFORI) and Ethiopia's Agriculture Research Institutes were carrying out different types of research work. In addition, universities, polytechnics and colleges in these countries were also involved in research for academic purposes. Overall, information and data of different quality and types were being provided to stakeholders in respective countries. For REDD+, a lot of effort had been expended to transfer technology that was handy in implementing REDD+ activities in Africa. REDD+ had been heavily and rapidly supported with modern equipment and tools that were still functional. Even under studies to determine soil carbon pools that were required in the establishment of Forest Reference Emission Levels (FRELs) and Reference Emissions Levels (REL), REDD+ had received and equipped Soil Science laboratories in African countries to enable them provide implementation support facilities for REDD+ Readiness activities. National REDD+ Strategies were prepared due to consistent efforts that had been expended to train and educate personnel that were involved with REDD+ projects implementation.

REDD+ financing

Financing is a major factor for REDD+ uptake in African countries. It influenced all other processes that required investment (Silva-Chávez et al., 2015). In fact, REDD+ financing was so crucial that it determined how far REDD+ uptake and subsequent activities could go (Kasaro, 2016). The most relevant type of financing for uptake of REDD+ was public financing. This had a non-profit seeking character with potential to support REDD+ when carbon credits were fetching low prices (UN-REDD+, 2013). In case of market based financing, project developers would abandon REDD+ projects if carbon prices dropped (op.cit). Thus availability of public financing was a condition that supported uptake of REDD+ in African countries. For sampled countries financing for REDD+ processes had come from different sources and funds were utilized in unique ways. Countries like Ghana

and Tanzania had been financed for REDD+ up to US$134million and US$90million respectively (Figure 10), which were spent on development of REDD+ institutions, systems and strategies that directly influenced uptake of REDD+ mechanism (reddesk.org/countries/Ghana; reddesk.org/countries/Tanzania). The influence of financing noticeable in the record of REDD+ pilot projects in sampled countries were: Tanzania (9), Ghana (11 REDD+ projects with 39 REDD+ related initiatives (redddesk.org/countries/; Sills et al, 2014; NORAD, 2009). Kenya and Ethiopia had received US$14million each; from which each developed four REDD+ projects. Zambia, which had been financed with US$4.49 million, had the lowest REDD+ uptake. The country had one REDD+ project. This indicated that financing was an irrefutable factor that influenced uptake of REDD+ mechanism. Beyond financing, other factors were equally vital for uptake of REDD+; these were discussed in subsequent chapters.

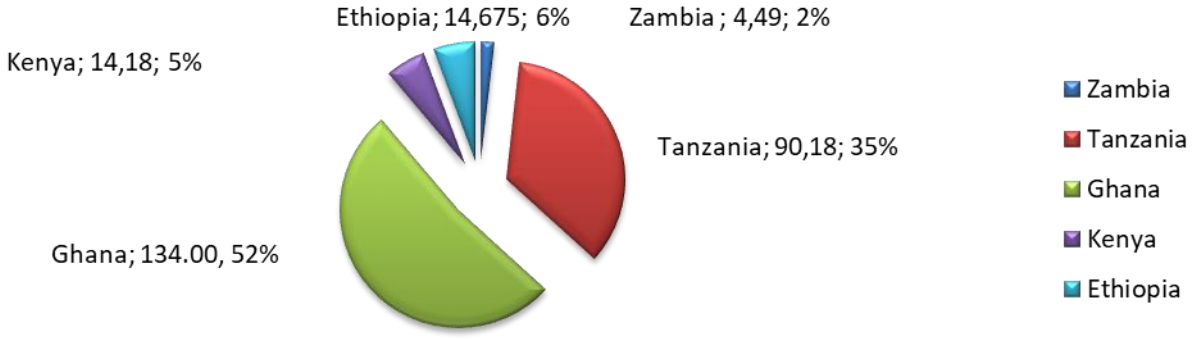

Figure 10. Financing of REDD+ and related initiatives in sampled countries in Africa
Source: Constructed with data from theredddesk.org/countries accessed on 5th May 2016 and Tenkir (2015)

Results/performance based payments

Results Based Payment (RBP) system is based on a country's achievement of specific deliverables, agreed with a benefactor country. This system was pre-conditioned on measuring, reporting and verification (MRV) of results before payments could be made. Therefore, results based payments amplified conditions for uptake of REDD+ and simultaneously acted as Quality control (QC) measure. QC was achieved when beneficiaries adhered to standard deliverables. In Africa, Liberia, Zambia and Ethiopia had been selected to try out this policy and measure (Silva-Chávez et al, 2015). Liberia had received US$150 million from Norway to, inter alia, support a REDD+ results based payment system. Liberia was required to build systems for promoting GHG emissions reduction before using a broad sector approach that addressed AFOLU. Further to this, Liberia was to ensure that programmes for GHG emissions reductions touched on improving livelihoods of forest periphery communities. REDD+ was one of the support areas

in Liberia results based payment system. Once the Liberia Forest Sector Project implementation had succeeded, it was anticipated to trigger: results-based carbon payment operation that would pay for Verified Emission Reductions (VERs) and carbon sequestered in target landscapes.

In a similar approach, the BioCarbon Fund had pledged US$68 million for Ethiopia and US$ 35 million for Zambia. Under this REDD+ financing mode, Norway had provided performance-based financial support for the development and implementation of Ethiopia's REDD+ strategy, which identified a set of deliverables for three phases (Preparatory Phase, 2013–14; Transformation Phase, 2015–16; and Payments for verified emissions, 2017–20) that must be met as a precondition to any financial support from Norway. Financial support in the first phase was based on achievements of proxies (Bekele et al, 2015). These funds were meant to assist the two countries along the same principles that were used in developing Liberia's forest landscapes. Zambia had just recently, received the BioCarbon Fund for preparation of a Zambia Integrated Forest Landscape –Programme (ZIFL-P) in readiness to launch the integrated forest landscape projects in the Eastern province (Masinja, 2017). Zambia's (ZIFL-P) draft vision document had three important components: (i) reduce deforestation and forest degradation; (ii) receive payments based on milestones achieved in reducing deforestation and forest degradation; and (iii) avoid deforestation and forest degradation through improved livelihoods of local communities'. BioCarbon Funds were a catalytic incentive based financing that targeted sustainable forest landscape management. Results based payment innately factored reduction of deforestation and forest degradation, sustainable forest management, enhanced and restocked carbon stocks in forest landscapes combined with reduced DD which directly espoused principles of REDD+. In essence, results based payments promoted uptake of REDD+ since these payments identified forest landscapes that were required to be restored, in which DD were to be avoided. In Liberia, results based payments also addressed livelihoods improvement and agriculture production to counteract agriculture ill-fame as a driver of DD. By addressing these components early, it signalled to farmers that REDD+ was not an agriculture land-grab scheme, but would support their farming and farmlands. In this regard, results based payments enhanced uptake of REDD+.

Safeguards

REDD+ safeguards were included in the Cancun Agreements to ensure that REDD+ actions did not cause negative social or environmental impacts (Matakala, et al., 2015). For many African countries, REDD+ Safeguards were suspected to be an elite land capture ploy. Countries like Zambia, Zimbabwe had resisted to accept REDD+ because of fears of losing land to speculators (MTENR, 2007; Cotula et al., 2009 in Mbow et al., 2012). Zimbabwe's belated acceptance of UN-REDD partnership partially came from these fears (UN-REDD, 2013). REDD+ safeguards bore tenets of democratic governance that would ensure

fairness, transparency and equity in REDD+ projects. Furthermore, safeguards would lead to irreversible actions in SFM. Once understood, safeguards were streamlined into the National REDD+ Strategies of African countries, and hence influenced the uptake of REDD+. Sampled countries experienced different levels of influence of REDD+ safeguards. In Tanzania, women took more active roles in REDD+ depending on the resource types they were extracting from a forest compared to men REDD+. For instance, Kweka et al., (2014 in Sills et al., 2014) reported that in Lindi and Kilosa households collected a range of forest products. While women mainly collected fuelwood and NTFPs, men harvested poles and trees, made charcoal and hunted animals. While in Zanzibar women were given access to land for a period of 40 years in order to comply with REDD+ safeguards, which increased uptake of REDD+ (Sills et al., 2014). This gender based act attracted women to accept REDD+ project, without which uptake of REDD+ was going to suffer. In Ethiopia, all land was state owned (EPAE, 2011), which counteracted REDD+ safeguards. Government of Ethiopia was compelled to issue land ownership certificates to over one million people to own land to adhere to REDD+ safeguards. Although, these isolated incidents failed to meet land ownership rights to more than 100 million Ethiopians, in areas where land had been alienated and given to local communities, safeguards had enhanced uptake of REDD+. For instance, people in (i) Oromia, Bale Mountains, and (ii) Hawassa areas had benefitted this way (Bekele et al., 2015). Kenya legally supported REDD+ safeguards. But land tenure frameworks still left women unrecognized, implying, in practice, that women were alienated from participating in REDD+ against constitutional provisions. Gender equality was secured constitutionally, in practice contra indication were that women and their status in land management and ownership was ineffectual (Al Jazeera, 2016; Kiguatha et al. 2014). In Kenya, some REDD+ safeguards insignificantly influenced REDD+ uptake, resulting in four REDD+ projects for the country (ibid.). Zambia respected REDD+ safeguards in its laws. However, the appropriate laws came too late to have significantly impacted uptake of REDD+ projects. In Ghana, REDD+ safeguards were not respected by constitutional provisions, yet uptake of REDD+ was significantly higher than in other sampled countries and Africa in general. Safeguards led to uptake of REDD+ because they were premised on a paradigm shift from Ghana's rigid legal pluralistic constitution and institution framework that was struggling to deliver on gender equality, equitable benefits sharing among other impediments to democratic governance system. REDD+ was accepted by its Ghanaian pundits because it had inherent traits for changing the game of forest sector management (Angelsen et al., 2008). Tanzania had adequately provided for safeguards implementation in their laws. Only subsidiary legislations were required to ensure that safeguards were respected by governments at grassroots level of governance. Otherwise, Tanzania was well positioned for Uptake of REDD+ as a result of legal preparedness to handle safeguards with little hindrance (Mbwambo, 2015).

Non-carbon benefits

Non-carbon benefits enhanced uptake of REDD+ in low value carbon forests of Zambia's vast savannas and Miombo woodlands, Tanzania's Semi-Arid Regions of Shinyanga as well as those areas around Tsavo national parks of Kenya and Ghana's savanna woodlands. These areas possessing large swaths of low carbon value forests included Zanzibar's coral forests that did not have the potential to generate enough revenue from REDD+ credits to support community needs and manage project costs. Thus, Zanzibaris accepted REDD+ in order to continue access to non-carbon benefits such as firewood, charcoal, fruits and medicines. On mainland Tanzania, uptake of REDD+ in Shinyanga, a semi-arid dry savanna region, was influenced by a traditional livestock keeping system known as Ngitilis, which ensured provision of fodder for livestock that suffered from grazing pressure due to increased livestock and human populations (Sills et al eds., 2014). Prior to integrating REDD+ into Ngitilis, overgrazing had reached un-manageable proportions and was contributing to deforestation and degradation (DD). Access to fodder, fuelwood and other Non-Timber Forest Products in Ngitilis, which REDD+ projects restored, was the main driver for uptake of REDD+ in Shinyanga. In Kenya, the Kasigau REDD+ Community Ranches mainly focused on access to non-carbon benefits. This area had low value carbon forests that supplied charcoal, fuel-wood, small rodents, mushrooms and fodder for wildlife. Kasigau area was a migratory corridor for wildlife between Tsavo east and west Game Management Areas. Uptake of REDD+ was influenced by perception that REDD+ would ensure continuous provision of NCBs which were important in the livelihoods and economies of local people. Previously, illegal charcoal production among local communities had caused severe deforestation and forest degradation in the area (UN-REDD+, 2013). Among NCBs accessed at the Kasigau REDD+ projects were: (i) production of commercial agriculture crops; (ii) production and marketing of eco-charcoal; (iii) provision of education and training scholarships; and (iv) employment in community based tourism facilities (Korchinsky et al., 2010). Ghanaians had different reasons for uptake of REDD+. High dependence of Ghanaian people on forests for supply of bush meat, snails, mushrooms and other non-timber forest products were some of the reasons that enhanced uptake of REDD+ in Ghana. Ghana consumed a lot of NTFPs, which supported livelihoods and economies of local people. The need to sustainably manage NTFP in REDD+ forests was one of the prime reasons for uptake of REDD+ projects (Nsowah, 2016). Some saw a possibility of accessing premium cocoa prices for cocoa grown in sustainably managed plantations that combined REDD+ managed indigenous trees as cocoa shelterbelts (Nsowah, 2016). Discussions held with different Experts indicated that Ghanaians had considered many facets of REDD+ beyond carbon and had designed suitable REDD+ options to test plausibility of those options in response to contributions to SFM, livelihoods and resilience in ecosystems (Pers. Com, 2016).

Knowledge base

Knowledge, skills, education and information were human assets that formed important determinants of adaptive capacity for forest dependent communities (Chia et al, 2016). The relevance of knowledge base to uptake of REDD+ projects is in the ease of understanding and articulating development issues. As reported already, high levels of education in Zanzibar was the main driver of uptake of REDD+ than on mainland Tanzania (Sills et al., 2014). This was true for sampled countries where, respectively; Ghana, Kenya, Tanzania, Ethiopia and Zambia on a continuum had the highest to lowest education per capita (Ishengoma et al, 2010). On a graduated scale, low quality of education reflected in reports, plans and in-depth knowledge about REDD+ generated from these countries. There are less forestry professionals in Zambia relative to Zimbabwe, Kenya and Tanzania forestry sector and that the quality of education in Zambia was among the lowest in Southern Africa (Ishengoma et al., 2010; ZHDR, 2011). No, doubt these studies reflected in the country's low uptake of REDD+. Although knowledge was not the only factor that influenced uptake of REDD+ in African countries, other factors depended on its foundations (Shames et al., 2017). In studied African countries, REDD+ measurement, reporting and verification (MRV), development of reference emissions levels (RELs), selecting of appropriate 'forest definitions' were some of the grey areas that had sought knowledge and skills from consultants to carry-out (UNREDD, 2013). Where knowledge abounded, uptake of REDD+ was significantly higher and such regions continued to dominate.

CHALLENGES TO DEVELOPMENT AND IMPLEMENTATION OF REDD+

There is a wide range of countable factors that were found to affect implementation of REDD+ in different Africa forest types. The factors were grouped into seven thematic areas, namely, (i) legal/policy/institutional framework; (ii) financing; (iii) administration (iv) capacity; (v) environmental/ecological; (vi) cross-cutting; and (vii) national/local context. Each of these factors/thematic areas is explained below.

Legal, policy and institutional frameworks

African countries as Parties to the UNFCCC, its Kyoto Protocol and the Paris Agreement needed to reform their laws, policies and institutions to adhere to endorsed agreements. This requirement compelled parties to undertake necessary legal/policy and institutional reforms. Some of the sampled countries like Zambia, Kenya and Tanzania undertook rigorous legal/policy and institutional reforms while others like Ghana and Ethiopia merely patched up their laws and reformed their institutions (CRC, 2015; Gichu & Chapman, 2014; Complete PLI reforms were needed in these countries to provide ambits in which REDD+

implementation would go on smoothly. Ghana and Ethiopia had not addressed their old national constitutions, which were inconsistent with REDD+ implementation while all sampled countries had inadequate principal and subsidiary legislations that failed to provide for clear forest carbon rights, rebates, taxation of REDD+ (Hedges, 2010; Bekele et al, 2015; Agyeis, 2016). These PLI lacunas hindered smooth implementation of REDD+ projects (Kasaro, 2016; UNEP, 2012; Mgoo, 2016). In additions to PLI arrangement challenges and antagonistic tendencies among stakeholder institutions ultimately reduced the momentum for REDD+ implementation in African countries (NORAD, 2010; Kokwe, 2016; Shula, 2016). In Ghana, the timber concessionaires formed a powerful constituency with near-veto powers to usurp decisions on REDD+ projects (Yinka, 2011). The same applied to the traditional Stool and Skin leadership, which was even more powerful over forest and land management (op. cit.). The traditional authority often worked at cross-purpose with REDD+ safeguards; especially on gender equality, ownership of carbon and reversibility of REDD+ actions. Some of these institutional arrangements had to a great extent placed limits on REDD+ implementation. Country policies either helped or hindered implementation. For instance, agriculture policies in Tanzania, Zambia, Ghana, Ethiopia and Kenya were often favoured above forestry (Mayaki & Tumusiime, 2015). For countries like Zambia, mining policies were highly regarded above other policies, which made forests vulnerable following discovery of mineral deposits in forest reserves, which led to loss of forest biodiversity and prospects for REDD+ implementation (Nkhata, 2011). Extreme pressure for agriculture land had very strong influence on REDD+ implementation in Africa; especially with regard to importance attached to food security and the determined efforts to reduce poverty through agriculture production. These seemingly positive agriculture policies were push-factors that made agriculture the major driver of deforestation and degradation (Robinson, 2016). Pushed blindly, agriculture policies were a threat to REDD+ implementation because they worked against it.

Financing

The SWOT analysis showed financing to be the most limiting factor for REDD+ implementation. It appeared (135 times) in the SWOT tables hence was the second priority (Table 2).

Due to domestic budget constraints, African countries required financial support to implement REDD+ mechanism (http://redd.ffpri.affrc.go.jp/events/seminars/2016/20160128_en.html). Donor financing constituted the largest component of REDD+ budgets (Figure 9). External financing from bilateral, multi-lateral and private sector sources mainly supported: (i) formulation of Forest Reference Emission Levels (FRELs), Measurement, Reporting and Verification (MRV) systems, REDD+ Safeguards Information Systems (SIS), National REDD+ Strategies (NRS) or REDD+ Preparation Proposals (R-PP). Data collection and processing purchase of tools

Table 2. Summary of SWOT Analysis of Factors Affecting REDD+ implementation in Sampled African Countries

Themes	Occurrence in SWOT tables	P- list	Narrations
Forest/ environmental/ ecological	348	1	Denominator/ Most important and target for REDD+, Mitigation & Adaptation/Resilience. Presence of forests is the foundation for implementing the REDD+ mechanism. 5 countries were *inter lia* selected for this study on basis of having rich forest resource base.
Financing	135	2	Most limiting factor that can unlock other factors
Capacity building	99	3	Very important in terms of starting, running, sustaining REDD+
Legal / Law / Constitution/ Policy	54	4	Enhances or limits REDD+ implementation (Architecture)
Technical skills/ Knowledge	38	5	Limits/enhances REDD+ design options and subsequent implementation
Cross-cutting issues	32	6	Gender, poverty, wealth creation
Administration/ DNA/ UNFCCC Focal point/ Proxy structures	28	7	Presence of administrative structures brings efficiency/effectiveness - implementation modalities
National/ Local context	18	8	State of preparedness/ preparations to meet international CC requirements – (Gender & REDD+, Land ownership, Carbon ownership) etc.

and equipment as well as hire of consultancy services were also supported by donor budget component (FAO, 2009; GoF, 2009; UNDP, 2009). African countries provided REDD+ budgets support on: (i) salaries for staff attached to REDD+ projects; (ii) staff allowances for field data collection; and (iii) in-kind contribution on office space/ rentals and administration costs (NRS, 2014; URT, 2010; RG, 2014). The snag with counterpart funds provided by domestic budgets for REDD+ implementation was its non-continuity in the absence of donor supported financing (FD, 2015). There was marked evidence among sampled countries that financing levels was a major factor for REDD+ implementation. Ethiopia and Kenya had received nearly the same amounts of finances (about US14.million) to finance their R-PPs (Figure 9). Some of Ethiopia's R-PP activities were supported with bilateral financing from the DFID-UK, which provided 5million British Pounds; out of which 3.2 million Pounds were to be channelled through the World Bank/Bio-Carbon Fund to finance REDD+ readiness and GBP1.5 million was targeted for Oromia REDD+ Pilot programme (De Aquino & Griffin, 2014). The major sources of financing for Ethiopia were Forest Carbon Partnership Fund, Multi-Donor Trust Funds managed by the UN-REDD+ and bilateral financing from French and Nordic Climate facility as well as the British DFID. US$1.175 million had come from domestic budget support for staff allowances, in-kind payments. Both Kenya and Ethiopia had implemented four REDD+ projects each while Ghana and Tanzania that had received, respectively, US14.4mllion and US$90million from multiple sources had respectively implemented 11 and 12 REDD+ projects. Ghana had received about the same amount of financing as Kenya and Ethiopia, but implemented nearly as many projects as Tanzania which had six times more money for REDD+ activities. Ghana had used financing in the 39 REDD+ related initiatives to implement the eleven REDD+ projects (Agyeis, 2016; NORAD, 2012) while Zambia's US$4.49 million was insufficient to implement a single sub-national REDD+ project (UN-REDD, 2009). Poor coordination; possibly due to varying interests among donors and government agencies resulted in failure to successfully harness and focus projects synergies.

Administration

Administration refers to organizing, planning, implementing, controlling and evaluating activities in an organization (Hornby et al, 2014). REDD+ implementation was greatly affected by inept administration functions found in some African countries. Initially, administrators had misunderstood principles of REDD+; were suspicious and antagonistic about its introduction (Mbow et al, 2014). Many viewed REDD+ as a ploy by multinational organizations to grab land in developing countries. This mindset seriously hindered initial REDD+ uptake and affected implementation. For countries like **Zimbabwe**, which were still struggling with colonial land alienation issues, introduction of REDD+ was an enigma and strong opposing force to government plans (Mugabe, 1999). On the other hand, Zambia was in limbo; had no systems to domesticate and fully integrate REDD+ mechanism in their administrative structures.

In Tanzania, REDD+ projects suffered a slow start because donors' mistrusted government administrative structures to facilitate implementation of REDD+ processes (URT, 2010). Administration was an important factor in REDD+ implementation because REDD+ was aimed at reformation of policies, laws and regulations in beneficiary countries (Angelsen et al., 2009). Most African countries were resistant to transformative changes proposed in REDD+ mechanism safeguards. It took fair minded administrators to reform policies/laws and institutions to accommodate REDD+ (Gichu & Chapman, 2014).

Ethiopia had established a forest department charged with forest management mandates. This was a strength that enhanced REDD+ implementation (Moges et al., 2010). The establishment of the Ministry of Environment and Forest (MEF) beefed up FD and increased Ethiopia's capacity to undertake forest administration functions on which REDD+ was dependent. Notwithstanding the new institutional setup, Ethiopia's administrative capacity was still inadequate to meet with sustainable management of its huge land and forests assets. Ethiopia lacked bureaucratic structures to manage land and forest assets; this was an internal weakness that needed urgent redress. Kenya's forest and land administrative arrangement was uniquely statutory with national and county level governments responsible for forests and land management (Gichu & Chapman, 2014). Kenya had no traditional/customary land tenure that existed in countries like Ghana and Zambia. Without the traditional hegemony, Kenya was efficient in the manner it administered forest and land assets because it was not encumbered with traditional impediments. Kenya should have reduced transaction costs in REDD+ implementation associated with traditional barriers to land and forests. However, Kenya had very serious land administration based conflicts and had been experiencing sporadic fatal land based violence. It was absolutely essential that REDD+ options, advocated for clear land and forest ownership and allocated carbon rights to individuals in identified communities. Kenya's forest and land administration structures allowed for instance the land owners in Kasigau Community Ranches to enter into agreements with Wildlife Works for REDD+ implementation. REDD+ options for Kenya should be more innovative and integrative so that REDD+ implementation would promote established land and forest administration systems. Thus Kenyan forest and land administration relentlessly reviewed laws, reformed institutions and policies that supported REDD+ implementation.

In Tanzania, forest administration was essential in REDD+ implementation, but had suffered challenges to implement REDD+ programmes. Its initial reluctance to provide guidance on the framework of developing UN-REDD+ programme had caused delays in initiating REDD+-Readiness-Quick start activities (NORAD, 2010). Amidst the government-donor tug of war, Civil Society Organizations progressed in implementing REDD+ activities albeit without full government involvement. Furthermore, a top heavy consortium of three UN-Organization administrative structures for REDD+ implementation (UNDP, FAO & UNEP) led to consumptive spending of donor.

In Ghana the institutions that had been set up to ensure REDD+ implementation included: (i) the Forestry Commission; (ii) the Environmental Protection Agency (EPA), (iii) the Ministry of Environment, Science and Technology (MEST), (iv) the Stool and Skin, and (v) Village Assemblies, among others (Agbosu et al. 2007 in www.reddesk/Ghana). While these institutions had been in existence since colonial times, their authority over management of land and forests had been slowly usurped by government. FERN (2006) had lamented that "The main driver of deforestation was the timber industry, which was able to suborn national policy processes to protect its profits and systematically violate permit regulations with complete impunity." It had been revealed that Ghana's institutional and administrative challenges undermined development goals and policies especially in the Agriculture and Mining Sectors where development interests were at variance with the Forestry's interest on REDD+ (Mbow et al, 2012).

Capacity

African countries' major outcry was lack of capacity to initiate and sustain operations of their strategies, programmes and plans due to inadequate technical and financial capacity (de Aquino et al. 2014). Ethiopia suffered from various forms of inadequate capacity, which significantly reduced its efforts to reach national development aspirations (CREG, 2011; Arrigawal, 2016). Ethiopia lacked political will to reform its PLI framework and build social capital to spearhead the nation's development plans. It also lacked capacity to administer its vast land and forest resources, hence it was only able to implement four REDD+ projects. The country had ambiguous Ethiopian governance structures and that made REDD+ processes difficult to implement (Walter, 2015) in the region[6]. Ethiopia institutions had mandates that conflicted with decision making processes and competencies that contradicted the main policies implemented by the same institutions. Kenya's capacity to implement REDD+ and other CDM projects was based on the country's pool of highly competent development based NGOs and Private sector players. NGO/Private sector participation in REDD+ was relatively high for Kenya. There was a pooled technical, financial and technology resource that resulted in Kenya's high capacity to implement REDD+. For instance, Wildlife Works and Green Belt Movement were two strong civil society organizations that promoted climate mitigation and adaptation efforts in Kenya (Mwakima, 2016). Among government institutions were also technically competent officials that had skills and knowledge to plan and implement REDD+ projects (Nyatichi, 2016). Local community participation in REDD+ projects had further built legacy and interest profile in areas where REDD+ projects were being implemented, thereby strengthening the case for REDD+ implementation. Kenya's capacity to build REDD+ options which catalyzed

[6] The study was carried out in the pilot region of Benishangul---Gumuz, Asossa in Ethiopia by a Governance Assessment Specialist on behalf of the UNDP.

REDD+ carbon and non-carbon benefits sharing had heightened the importance of REDD+ projects in food security, support to education and conservation of environment. Evidence of REDD+ projects implementation showed up clearly in community schools, agriculture crop production, forestry field nurseries and eco-charcoal production and sales in Maungu – Kasigau REDD+ projects sites (Nyatichi, 2016).

Ghana's approach to REDD+ projects implementation lay in its highly professional pool of skilled and knowledgeable personnel, presence of NGOs that had technocrats and research institutions that worked in tandem to provide data and information for projects design, formulation and development (Agyeis, 2016). Ghana's immense capacity composed of human technical, technological, systems, and endowments availed a rich pool of human resource base that conditioned and determined REDD+ uptake and implementation (ibid.). Availability of active research institutions, NGOs, government ministries and departments that coordinated REDD+ activities provided administrative arrangement that enhanced REDD+ implementation. Ghana is also endowed with a rich forest resource base; this biophysical infrastructure composed of mangrove, tropical rain and savanna forests, was robust enough to support REDD+ implementation (www.climatedatahubgh.com). Thorough preparation of REDD+ projects, attention to details, facts and figures supported by science and accounts, attracted bilateral and multilateral financing of Ghana's REDD+ investment plan. Without doubt, technical capacity played a pivotal role in Ghana's REDD+ implementation, which (Sills et al, 2012) had also noted in Zanzibar's case where high level of education among Zanzibar's population led to adoption of REDD+ more rapidly than in main land Tanzania. Ghana had prepared 10 REDD+ projects in addition to 12 related initiatives, thereby exhibiting its national capacity to carry out complex planning. This recognized feature of Ghanaians was a result of investment in the education and training sector that Ghana had carried out.

Tanzania also exhibited a highly educated and trained human resource base that possessed skills and knowledge required in planning and implementing REDD+ projects. Like Ghana and Kenya, Tanzania possessed active research infrastructure that produced data and information, which supported REDD+ projects planning. There were still specific skills inadequacies in new areas of development such as REDD+ that needed capacity building (Edwards et al., 2012). For instance, developing and implementing REDD+ monitoring, reporting and verification systems, determination of Forest Reference Emission Levels (FRELs) and establishing Reference Emission Levels (RELs) required hiring of independent experts to deal with these aspects. Technical capacity was inadequate when it came to undertaking complex work in REDD+ implementation.

Zambia's inadequate capacity status was worse than in the other countries sampled. For instance, the highest trained professional in the Forestry Department possessed a Master's degree (Ishengoma et al. 2010). The other countries boasted of having many professionals at Doctorate level in their Forestry Departments (op. cit.). The disparities in academic and

professional qualifications disadvantaged Zambia in terms of intellectual capacity to undertake complex analytical work involved in REDD+ uptake and implementation. Zambia's Forestry Research infrastructure was dilapidated, lacked research development direction and was seriously understaffed to make significant contributions to REDD+ implementation. Out of this dire situation, Zambia had to rely more on high institutions of academic learning, which were also struggling to understand REDD+ mechanism, to provide inputs into REDD+ processes. Zambia had only one REDD+ project registered with the VCS, which sold REDD+ carbon credits to Microsoft in the year 2015 (http://biocarbonpartners.com/lower-zambezi-redd-project-sells-redd-offsets-to-microsoft-supporting-africa).

Environmental/ecological factors

Reportedly, Ethiopia had a forest cover of 10-30% (FAO, 2010). The country had high and low forest cover with bamboos classified as part of the forests (Moges et al. 2010). The largest store of carbon in the country was found in the woodlands (45.7%) and the shrublands (34.4%). However, these forests were fast disappearing as a result of unwise conversion through different drivers of DD. DD had been linked to climate change mitigation in national development aspirations; hence Ethiopia placed forests among its four pillars of its low carbon development path (Tenkir, 2015). Ethiopia was clear it would use forests particularly REDD+ to reduce 85% of its GHG emissions. This fact put forests square in Ethiopia's development agenda and openly referred REDD+ to underpin the country's development vision. Suffice it to state was that environmental factors were an important factor in REDD+ implementation of Ethiopia.

Ghana is facing ecological problems in its zones with temperature rising while rainfall intensity and patterns were reducing and becoming erratic. The national economy stood to suffer from the impacts of climate change because it was dependent on climate sensitive sectors such as agriculture, energy and forestry, among others. Mangrove forests along the sea coast are part of Ghana's rich tropical forests endowment, along with savanna in the north. Climate variability and negative environmental impacts prompted the implementation of REDD+ projects, to reduce GHG emission and improve resilience of forest ecosystems. According to their NAPA, (2007), Tanzania's economic base was dependent on the use of natural resources such as fish, wood, plant biomass, rain-fed agriculture and biomass for household energy. Evidence of climate change effects attracted government to intervene through mitigation efforts found in the REDD+ mechanism. Therefore, climate change effects on the environment were push-factors important in Tanzania's REDD+ implementation. Montane forests around the Kilimanjaro, Usambara and Uluguru were threatened with DD and disappearance of biodiversity, while mangroves, riparian forests and the marine ecosystem faced increased pressure from overutilization. These forest and

other natural resources made Tanzania determined to implement REDD+ projects in order to restore and enhance forest functions.

Zambia had a very rich forest resource base that covered 60% of the total land area. Forest was composed of Miombo tree species as well as a variety of other species that gave many options for REDD+ implementation in the country. Adaptation measures identified seven key economic sectors (agriculture, water, forestry, energy, wildlife, infrastructure and health) that comprised three goals/programs with strong synergies with mitigation. These were: adaptation of strategic productive systems (agriculture, forests, wildlife and water); adaptation of strategic infrastructure and health systems; and Enhanced capacity building, research, technology transfer and finance. REDD+ fitted well in the forestry sector, although it had synergies with agriculture, wildlife and water. The BioCarbon Partnership Fund had taken lower Zambezi animal sanctuary to implement Zambia's only REDD+ project and was further investing over US$ 400 million in the Eastern province REDD+ projects that would cover part of the Muchinga province (Kasaro, 2016).

Cross cutting issues

In Ethiopia gender was an important factor that was weakly addressed in REDD+ implementation, while in Tanzania, Zambia, Kenya and Ghana tremendous efforts were being pursued to include women, men and vulnerable groups in REDD+ activities. To understand how gender issues were ignored in REDD+ processes in Ethiopia, a number of REDD+ documents were sampled (Tekir, 2015; Watson et al. 2013; R-PP, 2011). With an exception of a single statement in the final R-PP (FDRE, 2011), the other documents did not even mention the term gender, which gave evidence that REDD+ implementation in this country was mere rhetoric. Gender in REDD+ implementation had not been given the prominence Ethiopian pundits attached to it. Compared with Kenya and Zambia, Ethiopia was far from integrating gender as a major factor in its REDD+ processes. The other countries had included gender in their constitutions to ensure that women received a fair deal under all circumstances. Although, gender was not a common word in the Ethiopian REDD+ processes, the four other countries studied discussed it as a critical issue in their REDD+ documents. Ethiopia was composed of highly traditional –closed society with most women's roles restricted to household chores. Even in cases of asset ownership, most Ethiopian women did not directly own land, houses or businesses, which appeared to be a reserve of men (Eshete, 2016; Woldemalek, 2016; Arrigawal, 2016). Ethiopia needed to include gender more deeply into its REDD+ implementation processes. Ethiopia had a real opportunity to change the country's traditional views regarding women; especially in REDD+ implementation. This could reduce political cronyism and religious bigotry so these did not stifle participation of men and women in REDD+ implementation. For the time being, women had taken silent roles in forest sector management and were likely to assume similar roles in REDD+ implementation if nothing was done to change the status quo. Lessons learned

from the Bale Mountain REDD+ Eco-Region pilot project should be rolled out to cover other areas where REDD+ implementation was likely to be part of environment and natural resources management options.

Cross-cutting issues in Ghana concerned land tenure and tenure rights and how these affected land administration. REDD+ projects were land based; as such they directly touched on statutory and customary land tenure systems (FERN, 2006). Stool and Skin system had more power over land than statutory authority, and these traditional leadership positions were a reserve for men clearly biased towards male domination. The problem of hegemony over land by the Stool and Skin was not in land tenure per se, but the corruption among traditional leaders and government officials that led to elite land capture. There was evidence of depriving old men and women of their land; accusing them of witchcraft and in certain cases even murder was cited (FERN, 2006). Ethnic clashes between illegal chain saw operators were a form of discriminatory violent acts that profiled people on the basis of gender and vulnerability (FERN, 2006). In other words, forest governance left much to be desired, even though from the outside, all seemed organized and well-functioning. The simmering tensions over land use, natural resources management and utilization were important aspects to consider in Ghana's REDD+ implementation. While it was necessary to implement REDD+ that respected gender equality safeguard, there was even a greater need to consider broadly other systems; such as functional relationships between REDD+, agriculture, energy and fiber in livelihoods of different gender. With uncertainties of REDD+ incomes, it was practically impossible to promote REDD+ in a gender disaggregated community without considering food security first.

Gender was a cross cutting issue in Kenya's development stratagems. The national constitution had recognized gender and emphasized that women should own land and other properties (Kiguatha et al. 2014). Nevertheless, volatile land issues experienced in Kenya often barred women from taking front-row in owning land and property (Al Jazeera, 2016). In REDD+ implementation, gender equality criterion was a measure of how safeguards were being adhered to. Gender safeguards went beyond identifying male and female dispositions but also tackled vulnerable groups: such as the; the physically challenged, children and the aged. Gender inclusive policies were advocated and formulated to cater for marginalized or segregated groups in Kenya's REDD+ projects. Inclusive gender based policies strengthened REDD+ implementation because they appealed to realities of life among forest dependent communities. Kenya still faced challenges concerning gender at highest law making level. In 2016, the Kenyan Parliament failed to pass a Bill on gender equality (Al Jazeera, 2016). Nevertheless, Kenya was still advanced in its progress towards mainstreaming gender into REDD+ implementation (reddesk.org/countries/Kenya). Actions to promote gender were positive factors in support of REDD+ implementation.

Tanzania, the fourth largest country in Africa covered has a land area of 88 million hectares that supported 51,045,882 people (CIA, 2016). Gender and poverty levels among rural and

some urban dwellers were issues that cut across Tanzania's national development agenda (Kyessi, 2010). Agriculture, the main driver of deforestation and forest degradation supported eighty (80) percent of the Tanzanian population (Karumbidza & Menne, 2011). Tanzania was also a gender disaggregated society, in which men had undue advantage over assets such as land and other properties. Other authors had observed discrepancies related to gender and property ownership in Tanzania where most of the land was owned by men (UNICEF, 2007; Rossi & Lambrou, 2008).

Benefits sharing was at the root of poverty reduction strategies of Zambia. Poverty was a cross-cutting issue that affected all sectors of Zambian society. Zambia had an average poverty level of 70 % (CSO, 2010), which was often described as a time bomb that could destabilize social, economic and environmental gains the country had made (GRZ, 2015). Although REDD+ benefits sharing mechanism was motivating, Zambians did not consider that it would make any difference from previous flopped benefits sharing in Zambia Wildlife Authority (Mupemo, 2016). Zambia had developed and used centrally controlled revenues sharing mechanisms from natural resources that had lamentably failed to deliver benefits (PFAP, 2012; ZAWA, 2015). Zambia's Wildlife Authority (ZAWA) had been empowered by law to collect revenue and share it in proportionate ratios with Community Resource Board (CRBs). Zambia showed palpable failure to share benefits equitably, efficiently and effectively. It breached the responsibility of remitting revenues to stakeholders and failed to deliver intended benefits to the local communities. The dismal performance of ZAWA benefits sharing model presented a real challenge on REDD+ benefits sharing mechanism, which would likely fail and hence derail REDD+ implementation. Gender and HIV/AIDS was another important cross-cutting issue in Zambia REDD+ implementation. HIV driven poverty levels remained high, implementation of REDD+ would be compromised because local community members would revert to illegal harvesting of forests to meet their short term ethno-botanical derived medicines, food and financial needs (THPAZ, 2001). REDD+ implementation should deal with more livelihood options (non-cash) part of benefits sharing to resolve broad demands people anticipated from REDD+ implementation. Noting that disparities in income distribution between men and women existed in Zambia (CSO, 2010), REDD+ benefits distribution would not be equitable between the poor and elite in Zambia.

National/local context

National context is discussed as a factor for REDD+ implementation in relation to the inalienable rights of countries, which included the fundamental right to choose any development path a nation deemed fit. Due to variations in the paths countries took to develop, the UNFCCC recognized the principle of 'Common But Differentiated Responsibilities – with Respective Capabilities' (IISD, 2015). This principle underpinned REDD+ development processes (Readiness, Investment and Results based payments).

Each sampled country had unique development path based on inherent endowments that affected REDD+ implementation.

For **Ghana**, its national development context was that the country had joined oil producing countries' (Würtenberger et al. 2011). Discovery of oil had made Ghana to review and realign its national growth and development plan based on oil revenues. With oil discovery, Ghana's traditional sources of Gross Domestic Product (agriculture, forests, and minerals) lost high profile as focus shifted onto oil revenues to drive the vision of becoming a middle income nation by 2025. However, the discovery of oil meant that Ghana would increase its GHG emissions from fossil fuel production and consumption. Increased GHG emissions had potential to lead to REDD+ projects development in order to maintain a carbon neutral economy. In contrast to expected growth, Ghana's economy had slumped with inflation soaring to 24% (Robinson, 2016). China which had loaned substantial oil investment funds to Ghana had its economic downturn that affected Ghana's loan repayment ability. Inevitably, Ghana was forced to increase prices for petroleum products including liquefied petroleum products (LPG) and kerosene. Forests that supplied alternative energy (wood biomass) became vulnerable to deforestation and degradation, and this threatened REDD+ implementation. With regard to national policy situation, Ghana had not sufficiently reformed its laws, policies and institutions to promote total transformational changes for REDD+ to proliferate. Instead Ghana had emphasis on agriculture development; which ironically, was a source of GHGs emissions (Smith, 2014). Furthermore, Ghana's intention to maintain food security high on its development agenda meant agriculture expansion and agro-based export earnings from Cocoa plantation would replace natural forests hence increased DD as a source of increased GHG emissions. However, Cocoa fields had natural shelterbelts and shade trees that provided, a unique environment in which Ghana had proposed REDD+ projects (SNV, 2016)[7]. Furthermore, Mangrove forests were an ecosystem in which Ghana was implementing REDD+ options for achievement of multiple benefits like; sedimentation control as well as fish and mollusks production. The challenge faced by Ghana included continued exclusion of forest farm owners from ownership of forest carbon rights. Nevertheless, Ghana had a unique biophysical environment for implementation of REDD+ projects options.

Ethiopia's rich natural resources included its vast lands, forests, wildlife and people. But the country also suffered from a myriad of environmental problems that included: (i) deforestation and degradation; (ii) loss of biodiversity; (iii) wildlife poaching; (iv) high poverty levels in urban and rural areas (FDRE, 2015). These problems were exacerbated by an increasing population of about 100 million people (Arrigawal, 2016). Three key issues Ethiopia faced which also had influenced REDD+ implementation were: (i) high poverty

[7] SNV-Ghana, Field officer for REDD projects in telephone interview with Author during field data collection in Accra Ghana

levels; (ii) very high population; and (iii) environmental and natural resources degradation. Ethiopia poverty levels stood at an average of 38% (World Bank, 2015). At this poverty level, rural people engaged in many forest-based activities to earn a living. Most of the country's 100 million people lived in rural areas and were exerting pressure on land, forests and other natural resources to meet their food, fiber and fuel requirements. Naturally, Ethiopia's population needs were rising; with each mouth to feed agriculture expansion into protected forests, including wildlife sanctuaries, became inevitable. Ultimately, deforestation and forest degradation increased Ethiopia's environmental hazards, reduced ecosystem resilience with attending negative economic impacts on the country. While Ethiopia desired to pursue a low carbon economic growth path, the realities were opposite to this desire. It was to address the problems of land and tree tenure insecurity, gender biases and inconsistent policies that REDD+ implementation became an attractive challenge to Ethiopia.

Tanzania had about 33.5 million hectares of forests and woodlands. Out of this total area, almost two thirds consisted of woodlands on public lands, which lacked proper management due to enormous pressure from expansion of agricultural activities, livestock grazing, fires and other anthropogenic activities. About 13 million hectares of this total forest area had been gazzeted as forest reserves. Tanzania had been able to implement subnational REDD+ initiatives due its extensive forest estate covering 33.5million hectares of Montane, Mangrove, Miombo forests and dry savanna woodlands as well as expansive grasslands (URT, 1998). The country has had a long history of decentralized planning as well as participatory forest management (PFM). This rendered possible Tanzania's early reformation of its national forest law that allowed community forest ownership (Angelsen et al., 2009; Zahabu, 2008). Together with favourable bilateral financing, Forest carbon Partnership Funding and additional financial support from UN-REDD+ Multi-Trust Development Fund propped Tanzania's REDD+ programme (Cisneros, 2012). As a result of financial support, Tanzania made tremendous progress on the implementation of sub-national REDD+ initiatives compared to other African countries (FAO, 1992; URT, 1998). Its various pieces of legislation supported REDD+ implementation although the country required subsidiary legislation and in some cases administration was lacking.

REDD+ implementation in Tanzania was established on the strength of laws, institutions, finance and decentralized governance system. There were still issues to harmonize, but these issues such as gender equality on access and ownership of assets noted by (UNICEF, 2007; Rossi & Lambrou, 2008) as well as finalizing village boundary demarcations and issuance of village certificates were relatively small and easy to be dealt with.

Zambia had both the forest resources and laws and policies that supported REDD+ implementation. At the policy level, Zambia's (1996) Lands Policy recognized customary land as eligible for state registration and thus amenable to issuance of leasehold title. This

provision, though empowering to peasant farmers and women with security of tenure to land, was not used to their advantage. The elite had been acquiring customary land, alienating it as private property, which potentially changed ownership rights from community to private land ownership; this disadvantaged REDD+ implementation. It had a stalling effect on REDD+ implementation because REDD+ never had a model for its implementation on private land. National Forestry Policy of 2014 was up to date and relevant to REDD+ implementation and was among other policies that supported REDD+ implementation like: (i) the Decentralization policy of 2002, which aimed at improving service delivery to lowest subnational structures of governance (i.e. district, ward, and Area Development Committee-ADC). Gender equality was a key area of national development, which was espoused in the National Gender Policy of 2000 and its strategic plan of action (2004 to 2008). Furthermore, a new vision of 'Gender equity and equality in the development process by 2030' was launched in the Fifth National Development Plan. Highlights of the National Gender Policy of Zambia showed it contained measures to develop Guidelines and a Checklist for mainstreaming Gender into the Public Sector. Therefore, availability of forest assets, legal/policy and institutional arrangements in Zambia were potential enablers for REDD+ implementation. These factors strengthened the national resolve to tackle climate change through the REDD+ mechanism. Furthermore, the international community had well supported financing of the REDD+ mechanism through the Paris Agreement whose financing and technical instruments and modalities were being developed to deliver pledged support under this Agreement (UNFCCC, 2015). It had also developed priority options contained in the National REDD+ Strategy that linked up with INDCs and NAMA in which the AFOLU sector was high prioritized.

HOW TO MAKE REDD+ SUSTAINABLE IN AFRICA

REDD+ is a forest-based mechanism, which is designed to ensure SFM. Although implementation of REDD+ had recently acquired various options and new dimensions, its origin was simply to reduce emissions from deforestation (RED) (GCP, 2008)[8]. An examination of factors that promoted REDD+ development and implementation under the SWOT analysis had revealed more information regarding how to make REDD+ sustainable in Africa. Among the factors that were found to limit REDD+ implementation were the following: (i) inadequate financing; (ii) inadequate technical capacity; (iii) lack of technology; (iv) development and implementation REDD+ with sectorial approach; (v) lack of private sector involvement in REDD+ projects; and (vi) equitable REDD+ BSM. The process of making REDD+ sustainable in Africa would involve tackling limiting factors so as to unlock the potential of REDD+ and maximize its benefits. In this regard, limited financing of REDD+ would be tackled through involvement of private sector investments in REDD+ projects

[8] GCP. 2009. The Little REDD Book

(UNEP, 2010)[9]. Most African entrepreneurs had not fully understood functions of carbon markets and took investments to be high risk in these markets. Lack of private sector investment in the REDD+ projects was a major stumbling block that hindered REDD+ sustainability. It was a challenge that once overcome, would potentially avail REDD+ financing from private sector. Inadequate technical capacity and lack of technology partly depended on availability of financing that could be placed under human resources development and support infrastructure (technology). One of the approaches to make REDD+ sustainable would be to carry out capacity needs assessment for African REDD+ participating nations. Intended programmes of education and training would follow training needs assessments and skills gaps identified. Such an approach has the potential of building capacity among African experts and, through knowledge and skills tracking, networks of experts would be built as reserve pools ready to be used. The African Forest Forum is one such organization that is contributing to sustainability of REDD+ in Africa by building capacity in African experts to deal with this mechanism in various aspects. Sector based developments prematurely precluded REDD+ processes from being integrated into multi-sectorial level, hence it reduced REDD+ to a single sector. Several REDD+ options required to be tested, especially where REDD+ would be articulated into AFOLU, INDCs, NAMAs and other Voluntary related initiatives to ensure that it found appropriate niches in the sectors. This way, REDD+ would be more valued across many sectors instead of forestry alone.

REDD+ BSM is an important tool that draws local communities to participate in this mechanism. However, if the BSM is not properly developed, it would not sustain gains made in forest conservation but contribute to (leakage) i.e. reversible actions in REDD+ managed and surrounding forests. Good benefits sharing mechanisms needed to be crafted around efficiency, effectiveness and equity, the three Es, as well as legitimacy criteria.

There were two REDD+ approaches[10] that impacted implementation of this mechanism that might affect its sustainability in Africa. If governments insisted on using a National Approach to implement REDD+, this mechanism might be rendered redundant due to procrastination of decisions, and lengthy policy, legal and institutional reforms (UNEP, 2013; Attafuah et al, n.d). By adopting REDD+ implementation through a Nested Approach, there could be significant cuts in bureaucratic procedures because subnational structures would be responsible to implement REDD+ and directly receive revenues at project level. The role of government would be to authorize such entities to implement REDD+ within the ambit of an approved MRV and monitor them to adhere to REDD+ safeguards. With experience from

[9] UNEP. 2010. Pathways for implementing REDD+ Experiences from Carbon Markets and Communities. Systems Analysis Division, Denmark.

[10] REDD+ approaches were mainly two: (i) national approach, and (ii) nested approach.

managing REDD+ in a nested approach, it would be easier to roll it out to National Level, and hence take full advantage of the REDD+ continuum. Although many other areas could be tackled to make REDD+ sustainable in Africa, the fore-going discussion revealed that adopting appropriate policy measures and actions could ensure REDD+ remains sustainable in Africa.

CHAPTER 4 Progress made on implementation of forest-based CDM activities, voluntary carbon markets and other AFOLU related initiatives

FOREST-BASED CDM PROCESSES IN AFRICA

Development of forest-based CDM has been slow and was declining in Africa and elsewhere (CDM-EB, 2015). Since 2006, only few African countries had initiated and implemented AR-CDM projects. At the time of this study, there were three registered afforestation projects in: Senegal, Uganda and DR Congo. What could have become Tanzania's only afforestation project had its validation terminated (UNEP/TDU, 2016). There were (5) registered Reforestation projects in Africa as summarized below (Table 3). At global level there were 70 AR- CDM projects broken down as follows: 11 Afforestation and 59 Reforestation (UNEP/TDU, 2016).

Table 3. Africa's Afforestation/Reforestation-CDM projects

Country		No. of projects	Project type		Status		
Series			A	R	Registered	At Validation	Validation terminated
1	DR Congo	2	1	-1		-	-1
2	Kenya	10	-	R	5	-	-5
3	Niger	1	-	R	1	-	-
4	Mozambique	1	-	R	1	-	-
5	Uganda	6	-	R	6	-	-
		-	1	-	-	-	-
6	Tanzania	1	-	R	1	-	1
7	Senegal	1	1	-	-	-	-
8	Ethiopia	1	-	R	1	-	-
Total		23	3		15	0	6

Source: Constructed with data from UNEP/TDU (2016)

Kenya and Uganda had implemented more AR-CDM projects than the other countries studied (Table 3). The two East African countries were encouraged to take up AR-CDM projects by the Nairobi Framework that had enhanced capacity building efforts, especially for Africa and Small Island States, to identify, plan and develop AR-CDM projects (Haupt & Lüpke, 2007).

Kenya had proposed and developed 10 AR-CDM projects out of which only five were registered while the other five had their validations terminated. Among the 10 AR-CDM projects only the following were registered (Table 4) and five had validations terminated (Table 5).

Table 4. List of Registered Afforestation-Reforestation CDM projects with those whose validation was terminated

Series	Name	Area	Country
1	Small scale reforestation Initiative	Kapipiri Small scale AR project	Kenya
2	Kirimara Small Scale AR project	Kirimara-Kithithina	Kenya
3	Kibari-Nyeki Small scale AR	Kibari-Nyeki	Kenya
4	Reforestation of degraded land through reforestation	Aberdare Forest Complex and National Park	Kenya

Table 5. Projects whose validation were terminated

Series	Name	Area	Country
1	Small Scale Reforestation Initiative	Kirimari-Kiriti Small Scale AR	Kenya
2	Small Scale Reforestation Initiative	Gathiuru –Kiamathege Small Scale AR	Kenya
3	Small Scale Reforestation Initiative	Kabaru-thigu- Mugunda Small Scale AR	Kenya
4	Small Scale Reforestation Initiative	Karuri Small Small Scale AR	Kenya
5	Reforestation, Sustainable Development and Carbon sequestration project in Kenyan degraded lands	Various places	Kenya

Source. UNEP/DTU (2016).

Furthermore, there were 39 on-going initiatives in Kenya among which some had relevance to afforestation/reforestation. Among the most prominent initiatives were; The International small Groups and Trees Planting (TIST)[11] community based projects that targeted forest preservation in Kenya, Restoration of the Mau forest (Mikoko Pamoja mangrove restoration) in Gazi bay. Others were; promoting conservation for carbon sequestration and livelihoods in Madunguri forest reserve, Mount Elgon Regional Ecosystem Conservation programme. Kenya had unique AR projects that included: The Tree-Flights-Kenya planting project was supported by the Welsh Government. It was meant to generate credits for meeting regulatory caps in the flying community in the United Kingdom. A variety of financiers found in Kenya's AR and voluntary related initiatives included, governments of Annex I countries, Companies, Northern NGOs, Foundations/Trusts, Regional groupings (European Union) and United Nations Agencies (UNEP/TDU, 2016).

Zambia had one REDD+ project registered by the Voluntary Carbon Standard (BioCarbon Partners, 2016). However, there were 30 forest management initiatives relevant to AR projects, which were not developed according to the IPCC standards in Zambia (Kokwe & Kokwe, 2013). The newest forest regeneration project, Central Province Miombo Regeneration that covered more than 100,000 hectares of land was being implemented in Zambia, funded by the Global Environment Facility (Biston Mbewe, pers. com, 2016).

Ethiopia had one AR project on CDM registry. However other sources showed Ethiopia had five AR related initiatives: (i) Climate and Preservation of primary forest; (ii) The Great Green Wall for Sahara and Sahel (Ethiopia); (iii) Scaling up participatory forest management (PFM); (iv) Sustainable land use management programme (Ethiopia) and (v) Strengthening Sustainable Livelihood and Forest Management Programme (Ethiopia). Although these initiatives were linked with AR efforts in Ethiopia, they were not recorded under the CDM registry.

Ghana had unimpressive record of implementing AR-CDM projects in its rain forests due to an earlier study, which had led to abandonment of the idea of developing AR-CDM projects in Ghana (Vallejo, 2013). The country had two AR related programmes: (i) Natural Resources and Environmental Governance Programme (ii) Forest, Climate and Communities Alliance (Ghana). Component (i) was split into six (6) sub-components according to the benefactors that had provided financing, namely, for Natural Resources and Environmental Governance Programme (a) French Development Agency), (b) Department for International Development (DFID). Programme (ii) The Forest, Climate and Communities Alliance (Ghana) had been supported by (a) European Union (b) Dutch royal government and (c) Achr International Development Association).

[11] The International Small Groups and Tree Planting Programme has at least 97 groups in Kenya alone (UNEP/DTU, 2017).

Reportedly, **Tanzania**, had implemented two AR related initiatives in the AFOLU sector: (i) the Uchindile Mapanda Reforestation project was globally the first AFOLU project to be registered and issued credits, and (ii) the Mjumita Community Forest Project (Lindi), which had Multiple Project Proponents and was registered in the Voluntary Carbon Standard (http://www.v-c-s.org/).

There were more Afforestation/Reforestation projects implemented in the voluntary carbon markets than the compliant carbon markets because buyers found it easier to reduce small caps through Verified Emission Reduction (VERs). The AFOLU sector projects were markedly responsive to people's livelihoods and conservation of environment, which made them more attractive in the voluntary carbon market (Hamrick & Goldstein, 2016).

CHALLENGES ON DEVELOPMENT AND IMPLEMENTATION OF FOREST-BASED CDM PROJECTS AS WELL AS INTRODUCTION OF VOLUNTARY, IN THE CONTEXT OF COMPLIANT, CARBON MARKET

The challenges were broadly categorized into four levels, namely; technical, market based, legal/policy frameworks and tax regimes. Each of these challenges is presented in the following sub sections.

Technical challenges

Technical challenges hindered development and implementation of forest-based CDM projects. Experts indicated that even though the CDM-Executive Board had removed some technical restrictions on AR-CDM projects, the forest-based projects were not favoured in Africa due to complex methodologies for their development (Kasaro, 2016; Agyeis, 2016). Two important impediments had been removed from small AR-CDM projects: (i) need to demonstrate additionality in small scale AR-CDM projects and also, (ii) the need to demonstrate that land was not forested by 31st December 1989. The latter restriction had been a major technical challenge for most African countries, but was waived in small AR-CDM projects. Small Scale AR-CDM project are afforestation or reforestation measures, operations or actions (a) where the average projected Small-scale A/R project activities must fulfill the following conditions: (1) Net anthropogenic GHG removals by sinks must be less than 16,000 tons of CO_2 per year; and (2) The project activities must be developed or implemented by low-income communities and individuals as determined by the host Party. If an A/R CDM project activity does not meet these criteria an A/R large-scale methodology has to be applied (CDM-EB, 2007). These criteria remained for large scale AR-CDM projects, and posed real challenges because historical data and information could not be

reconstructed. This criterion made African countries fail to develop and implement more and large Afforestation projects. These criteria can be found in CDM methodology booklet (CDM, 2016).

Market challenges

This report already discussed in Chapter 2, CDM afforestation and reforestation projects developed in Africa. Although these projects were insignificant in the compliant market, the Voluntary carbon markets had more AFOLU sector projects. A major challenge for AR-CDM marketing of credits was the competition they were facing from better priced voluntary markets. Another challenge concerned the forest-based CDM projects were mainly concerned with offsetting carbon emissions to meet legal obligations. Buyers of CERs were interested in how people perceived their projects social and environmental benefits, as they dealt with people's livelihoods and the protection of important ecosystems. Since CDM could not offer credits that were attached with Climate, Community and Biodiversity standards, buyers preferred to buy Verified Emission Reduction (VERs) credits from Voluntary Carbon Markets where prices were better and small scale buyers voluntarily bought credits that addressed their carbon foot-prints. Prices of forest carbon were also affected by the non-permanence of certified emissions reductions of forest-based carbon. Furthermore, development and implementation context under CDM and Verified Carbon Standards led private sector developers to favour the latter. There was competition between forest-based CDM projects and VCM supplied Verified Emission Reductions. It had become increasingly easier to develop and implement AFOLU sector projects like REDD+ under the Verified Carbon Standards (Guigon et al., 2009). Complicated methodologies of developing forest-based CDM projects and the complete absence of modalities for some of the AFOLU sector projects in CDM resulted in serious challenges implementing these projects. CDM was initially larger than Voluntary Carbon Markets. It enjoyed a monopoly in the trade of CERs from mainstream CDM projects and later (year 2006) added AR- CDM projects (ibid.). In the meantime, Verified Carbon Standard was developing modalities that were flexible to uptake large AFOLU sector projects which had been restricted in the Compliant Markets (Shishlov et al., 2012). In 2008, the CDM had traded US$119billion dollars while the Voluntary Carbon Market trade was around US$704million (Hamilton et al., 2008). The Voluntary Carbon Market had grown to a formidable status where it commanded billions in United States dollars while the CDM market was constricted as it waited for regulations for more AFOLU projects to be formulated. The Voluntary Carbon Markets were accepting AFOLU based projects, whereas the CDM had only been accepting AR- CDM projects for which they had been offering very low prices. It was clear that Compliant markets had disincentivised AFOLU based projects by offering unattractive prices and through its failure to prepare modalities for absorbing credits produced from this sector.

Legal/policy and institutional frameworks

Experts view the low response of African countries to development and implementation of AR-CDM projects as a result of host countries archaic legal frameworks. For instance, Ghana and Ethiopia had conspicuously failed to recognize GHG emission reductions (ERs) and Certified Emissions Reductions (CERs) in their relevant laws. Under the International law, CDM host governments were allowed broad discretion in regulating trade and possession of CERs. However, host countries needed to provide for these regulations in their laws so that exact apportionment of carbon rights the private sector developers should own were defined. Sampled countries had not out rightly made legal provisions for this aspect. GHG emissions and CERs were important in forest-based CDM projects because of the international law presumption on Sovereign Rights over them. This had created uncertainty about the circumstances in which project developers' rights to CERs would be expropriated. It also had high propensity to hinder investment in CDM project development (MoJ, 2009). In Zambia, requests to develop and implement AR-CDM projects were being turned down partly due to officialdom that thought to own 100% Rights over GHG emissions and CERs. Proponents of AR-CDM projects were scared away because they anticipated encumbrances would increase transaction costs of developing and implementing forest-based CDM.

Tax regimes

African tax laws were acrimonious and not well thought out to provide relief to those incurring environmental abatement costs. The polluter and environmental steward were taxed equally. In Zambia, for instance, carbon tax was collected on motor vehicles, but government did not provide tax rebates to on-farm tree-owners and private sector developers. Government did not fund councils that kept environments to motivate them to ensure more cleanliness in waste dumpsites, kempt parks and homesteads were maintained. The country did not even invest carbon taxes to promote forest-based CDM to prosper. Such uncoordinated financial instruments, hindered development and implementation of AR-CDM projects because project developers saw these taxes as disincentives, unsupportive to forest-based carbon projects (Kokwe, 2016). Forest-based CDM projects were very rare in rain forests, dry forests and woodlands of Africa. Nearly fifty percent of challenges encountered in developing AR-CDM projects emanated from inadequate technical capacity, market failure caused by Annex I parties that had reduced demand for forest-based carbon and thirdly, Annex I Parties were undecided on whether to continue or discontinue offsetting carbon through this mechanism (CDM-EB, 2015). Even among the world's registered forest-based CDM projects, only 0.8% of the CDM projects were forest-based (Fenhann, 2016).

IMPACTS OF BENEFIT SHARING MECHANISMS ON IMPLEMENTATION OF FOREST-BASED CDM AND REDD+ PROJECTS

Impacts of benefits sharing mechanisms on implementation of AR-CDM and REDD+ were evaluated based on (i) equity; (ii) efficiency; and (iii) effectiveness as well as (iv) legitimacy (Figure 11). These criteria comprised outcomes of a good BSM, which Lutrell et al. (2016) ad also used to evaluate impacts of similar projects. Simply defined, Equity was the stakeholders' perception of the fairness of a BSM applied in an AR-CDM and REDD+ project, Effectiveness of BSM was its ability to contribute to emissions reductions in AR-CDM and REDD+ project; Efficiency of BSM was its ability to minimize transaction costs associated with benefit generation and delivery, while Legitimacy of a BSM was the representativeness and transparency of system that developed a BSM and how this system complemented governance system that practiced it.

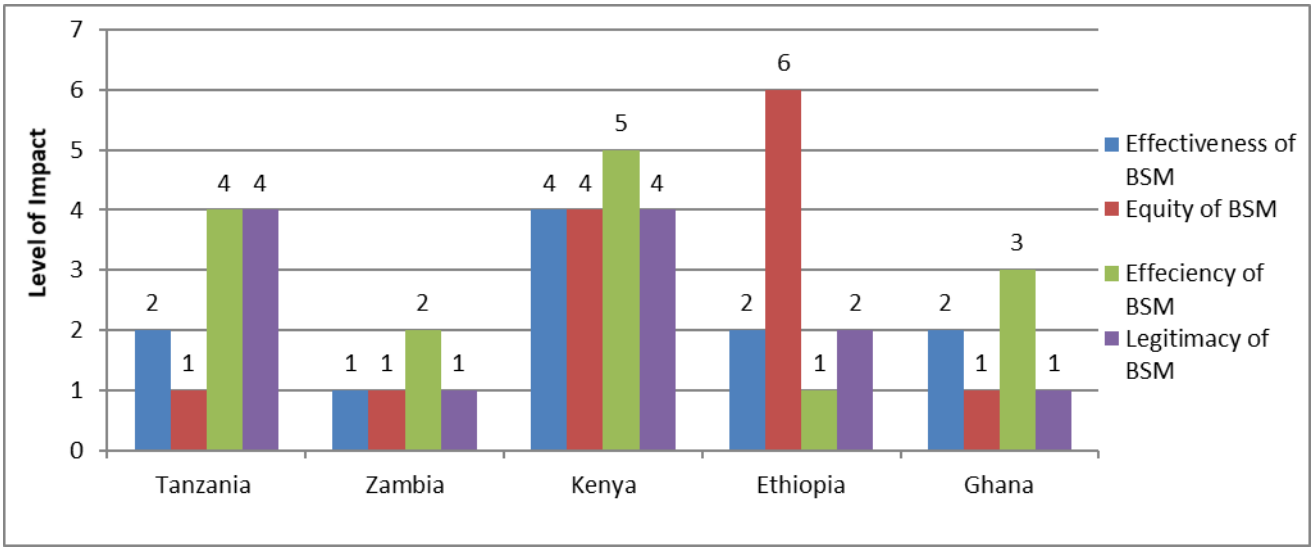

Figure 11. Impacts of Benefits Sharing Mechanism on implementation of AR-CDM and REDD+

African countries had piloted and practiced different types of BSM to attract stakeholders' participation in REDD+ and AR-CDM mechanisms, and as an obligation to international legal provisions and standards (UN-REDD, 2013). Some of the BSMs tried in African countries were mere shadows that produced diverse, but low impacts on implementation of AR-CDM and REDD+ projects. Efforts to develop REDD+ BSM in sampled countries had failed to meet the 3 Es (equity, effectiveness and efficiency) to deliver benefits (Figure 11). The mechanisms were also narrow, and in some instances had been developed without support evidence on their long term implications on sustainability of AR-CDM and REDD+ in

forest management (UN-REDD, 2013; Sills et al., 2014). The fact that some REDD+ projects were abandoned in Ethiopia, due to lack of government support to share benefits with local people and other stakeholders was failure to engender equity (Bekele et al., 2015). However, there were some merits in a few of the BSMs; but, overall, the tried benefits sharing mechanisms produced low impacts on implementation of AR-CDM and REDD+ projects. Common thinking pointed a good finger at BSM as a valuable support tool in the implementation of AR-CDM and REDD+ projects. However, the impacts of BSM revealed they were weakly correlated with implementation of both AR-CDM and REDD+ projects in five African countries studied (Figure 11).

Benefit sharing mechanisms were not new in Africa. They were rooted in Participatory Forest Management (PFM) practices from where they got adopted into AR-CDM and REDD+ projects (Costenbader, 2011 in UN-REDD, 2013). Usually their adoption was not accompanied with in-depth studies of their correlation with impacts on implementation of market based mechanism in which they were applied. In participatory forest management, benefits sharing was designed to draw stakeholders to participate in forest protection without much consideration to issues of how effective, efficient and equitable or how legitimate was the benefit sharing mechanism. In a typical case, the Zambian benefits sharing model was prepared by government officials and later imposed on locals (PFAP I, 2005). The model was never accepted because it was illegitimate. In Tanzania, the Uchindile Mapanda and Idete reforestation projects benefits sharing mechanisms were condemned for their frivolity to address real needs of local community livelihoods systems (Karumbidza & Menne, 2011). This made benefits sharing mechanisms inequitable among advocacy groups. In REDD+ projects, safeguards, were designed to ensure equity; but did not guide on how this would be achieved. Thus, even in many proclaimed equitable REDD+ benefits sharing mechanisms, it was difficult to appreciate this claim against available evidence. For instance, Ethiopia and Kenya had demonstrated relatively high equity in some of their REDD+ projects in Bale Mountains and Oromia; Kasigau Corridors and Community Ranches. However, evidence showed that these countries failed to control leakage in surrounding project areas where illegal charcoal production went on unabated (UN-REDD, 2013; Mcharo, 2016. Kenya's REDD+ project performance with respect to three criteria revealed mixed results. Except for efficiency which was higher at level 5 of impact, the other criteria were equal at level 4, which was just above average on the scale of 7 (Figure 11, Box 1).

Evidently, Kasigau REDD+ Community ranches projects were effective and efficient but not equitable. The Kasigau REDD+ projects were also highly acclaimed to be cast in a legitimate system, but others had found this claim to be porous (UN-REDD, 2013). This implied that the leakage parameter remained a real problem, which was also confirmed through in-depth discussion held with project staff at Maungu (Mulenga 2016). Compared to Ethiopia's high score on legitimacy, which was based on two models: (i) an AR-CDM with

70%:30% (local communities: government) ratio of revenue sharing, and (ii) a proposed REDD+ benefits sharing mechanism that had not been tested (Table 6), it gave an impression that Ethiopia BSM impacted AR-CDM and REDD+ projects implementation well because the models were based on consultative process and final agreement. Ethiopia had only one AR-CDM and three REDD+ projects since 2006 and 2010, respectively; these numbers did not indicate that BSM had highly impacted implementation of these market based mechanisms.

Box 1: Kenya's project Benefits Sharing Mechanisms (3E criteria) impacts on REDD+ implementation

Effectiveness: with roughly 1.3 $MteCO_2$/yr of avoided emissions compared to a projected scenario, the project was *effective*.

Efficiency: using Wildlife Works estimates (1.3 $MteCO_2$/yr in 2012, with $2.5 million of operating costs, the abatement cost appeared low (2 USD/$teCO_2$). Part of this net carbon revenue was re-invested in field operations.

Equity: one of the main deforestation agents were the adjacent communities with no legal title to the ranches (charcoal production, slash- and-burn) and they were facing high project risks over which they had no control.

Source: UN-REDD (2013)

Table 6. Distribution of Benefits in Ethiopia's REDD+ Proposed Benefits Sharing Mechanism

Stakeholders	Percentage
Kebeles	30%
PFM/JFM Cooperatives	15%
PFM/JFM Union/Federation	5%
Forest Management/Protection	35%
Research and monitoring	5%
REDD+ Secretariat	2%
Transaction cost	8%
Taxation	0%

Source. Oeba (2016)

Ethiopia's proposed REDD+ benefits sharing model embodied some elements of the equity criterion. This model was not widely used. It was based on the Plan Vivo system which was

unique. Plan Vivo maintained financial benefits throughout the project cycle, which made it highly attractive on equity. Uniqueness of this system was that it provided upfront payments and sustained financial flows up to project end. However, Ethiopia had multiple challenges to support a fair benefits sharing mechanism (Walter, 2015). One report indicated that the Ethiopian government did not keenly support revenue sharing (Bekele, et al., 2015). It was also clear that in Ethiopia, the Oromia eco-region REDD+ projects were the largest REDD+ project implemented that covered 500,000 ha. But this dwindled in comparison with Ethiopia's forest cover of 13,480,026 ha. When rolled out, REDD+ would cover large swaths of land whose tenure is 100% statutory. The proposed REDD+ benefits sharing model could face implementation failure as a result of acknowledged challenges: (i) lack of clarity of the national forest proclamations regarding customary rights and responsibilities of stakeholders in the use of natural resources; (ii) lack of clear tenure security over natural resources by local community; (iii) lack of clarity in benefit sharing arrangement in natural resource management in legitimacy (http://wwwforestcarbonpartnership.org/sites/fcp/files/Documents/tagged/Ethiopia-REDD%20Benefit%20Sharingfinal310512.pdf).

While Ghana and Ethiopia policy and institutional arrangements were being reformed, there remained challenges in REDD+ implementation, which could not be supported even by good benefits sharing mechanisms (Yinka, 2011; Angelsen et al., 2012). Challenges identified in this report would scarcely lead to transformative changes that befitted high impact BSM on REDD+ implementation in these two countries. On the other hand, Kenya, Tanzania and Zambia, legal, policy and institutional arrangements had been reformed significantly to operationalize BSM's three (3) Es criteria. Yet, in practice even these three countries lacked benefits sharing mechanisms that solidly impacted AR-CDM and REDD+ projects. Main challenges of BSMs failure to achieve high impacts on AR-CDM implementation identified were as follows:

(i) distribution of AR-CDM benefits was not always dependent on stewardship role of beneficiary communities;

(ii) irregular financial flows were not sufficient to secure irreversibility of drivers of deforestation and forest degradation;

(iii) top-heavy administration structure allowed facilitators to access vertical financial benefits than grassroots that were more responsible for driving deforestation and forest degradation;

(iv) REDD+ was able to partially achieve efficiency and effectiveness, but failed on equity criteria in some projects;

(v) REDD+ also posed new dilemma in terms achieving equity, efficiency, effectiveness as well as legitimacy when applied in large swaths of land that had different variety of ownership claims (state, traditional/de facto and de jure);

(vi) benefits sharing mechanisms depended on projects' price/mtCO_2, which impacted negatively on the project developers' decisions to invest in AR-CDM and REDD+ projects that attracted low carbon credit prices;

(vii) low prices/mtCO_2 chased away investments and negatively affected benefits flow to stakeholder communities, subsequently caused reversal activities in some of the AR-CDM and REDD+ managed forests;

(viii) AR-CDM suffered from lack of: (i) upfront payments; (ii) unstable/intermittent payment periods;

(ix) REDD+ benefits sharing mechanisms initially catered for relatively small land parcels in which, land ownership issues, for instance, in Tanzania had already constrained REDD+ implementation; these would be magnified across large land areas; and

(x) on a grand-scale, REDD+ projects would cause dilemmas in benefits sharing due to conflicts in land ownership.

In conclusion, impacts of benefits sharing mechanisms among African countries were not significant enough to influence implementation of REDD+ mechanisms. However, they raised stakeholders' hopes that once fully implemented REDD+ projects BSM held promises of future cash and non-cash benefits receipts than were currently being demonstrated.

LEGAL, POLICIES, INSTITUTIONAL AND GOVERNANCE ARRANGEMENTS

A major driving force for PLI reforms in African countries was the existence of gaps in policies, legal and institutional frameworks to accommodate REDD+, CDM and AFOLU related initiatives. Many of the studied African countries had not fully provided for legal, policy and institutional arrangements to accommodate these market-based mechanisms. Up until 2014, Kenya and Zambia had not included carbon rights in their statutes (IDLO, 2011; Gichu & Chapman, 2015). Prompted by gaps, ambiguities and incoherencies regarding carbon rights in **Zambia**, the Institute for International Development Law Organization (IDLO) undertook studies on legal preparedness of Zambia for implementation of REDD+ (IDLO, 2011). Findings from that study were applied in subsequent legal reforms that ushered in the Forests Act No.4 of 2015. Furthermore, Zambia established a Zambia National Climate Change Network while a number of academic institutions that were

informed by similar studies; for instance, the Capacity Self-Assessment (CSA, 2009) undertaken by Zambia led to review of college curricula to include climate change lessons in their taught courses (Matakala, et al, 2010; ZFC, 2012). Over the years, **Kenya** had developed an extensive and comprehensive legal policy and legislative framework for the conservation of natural resources, some of which had specific provisions on rights of access and benefit-sharing in their exploitation (UN-REDD 2013a). Climate change policy, institutional and legal framework review included relevant laws related to carbon rights and benefit-sharing in REDD (UN-REDD, 2013). **Kenya** is one of Africa's iconic African countries that boasted a good number of functional CDM projects (Cisneros, 2012; Carbon Africa, 2012). These projects had been formulated and implemented in an enabling PLI framework made possible through reforms the country had carried out to support the market based mechanisms. Some of the specific contributions of legal reviews Kenya had undertaken concerned gender equality in Kenya's constitution, which partially addressed REDD+ safeguards; on ownership of land and gender equality in general. The impact of the Kenyan legal reviews, which responded to REDD+ was the inclusion of gender equality in the Kenyan Constitution (Kiguatha et al, 2014). Just as Zambia had reformed its institutions, Kenya also established several oversight institutions among which the National Environmental Management Authority of Kenya the REDD+ secretariat in the Kenya Forestry Commission were prominent. A number of NGOs evolved after the institutional reforms, which included Wildlife Works, Green Belt Movement among others.

Tanzania had undertaken review of its legal framework to harmonize laws so as to uptake climate change policies and measures. Thereafter, it made appropriate reforms to institutions in order to engender the implementation of climate change policies and measures it had articulated in its national policies and plans. For instance, REDD development and implementation required particular laws on benefits sharing, clear land ownership and carbon rights of local communities or individuals. Comprehensive land tenure and tree tenure security legal reforms needed to be carried out in order to address legal lacunas that existed. Tanzania reviewed and came up with the following laws: (i) Land Registration Act, Cap. 334 (revised edition. 2002); Forest Act, Cap 323 (revised edition 2002); National Lands Act No. 4 of 1999; Village Land Act No. 5 of 1999; Environmental Management Act, Cap. 191(revised edition 2002). In Zanzibar where previously women were not allowed to own land, a moratorium was issued for women to own land for 40 years to undertake REDD initiatives (Sills et al., 2012). In terms of institutional arrangements that influenced CDM, AFOLU and REDD+, the study found that REDD+ was coordinated in the Office of the Vice President (OVP) where the DNA was also located. An apex institution for coordinating climate change was established in Tanzania - the National Climate Change Steering Committee (NCCSC). At subnational level, many institutions were formed to facilitate benefits sharing; others acted as companies or caretaker NGOs of carbon credits (Sills et al., 2012) while Technical NGOs were established to monitor emissions reductions and market REDD+ carbon credits (REDD+ Fact sheet, 2012; URT, 2009b).

While the aforenamed countries undertook Policy, Legal and Institutional reforms, Ghana and Ethiopia did not consider reviewing their constitutions (Agyeis, 2016; Arrigawal, 2016). Instead, these two countries reformed their institutions, which included establishing a new ministry responsible for Environment and Forests in Ethiopia and a REDD+ Coordination division (Agyeis 2016; Arrigawal, 2016). Meantime, Ghana separated REDD+ Unit from Agriculture division, revamped and placed it in the Ghanaian Forestry Commission (ibid.). It was inevitable that African countries introduced new institutions to absorb REDD+, CDM, AFOLU because old ones were functionally different. A good example of institutions that came as a result of CDM was the call by the UNFCCC for Parties to create Ministries responsible for environment, which also hosted the Designated National Authorities (DNAs) and UNFCCC National focal points. Ethiopia and Ghana had formulated robust institutions; such as the Ministry of Environment and Forests in Ethiopia, Ministry of Environment Science and Technology with respective statutory bodies in Ghana to take care of climate change in which REDD+ mechanism was prominent. The desire of the international climate change dialogue negotiators had been to ensure good governance in the implementation of market-based instruments (Blaser & Gardi, 2015; IISD, 2015). It was anticipated that transparency and accountability would impact implementation of REDD+, CDM and AFOLU related initiatives by reducing corruption and ensuring effectiveness, efficiency, equity and legitimacy in these market-based mechanisms. Sampled countries had not fully achieved good governance in implementing the market-based mechanisms, hence they remained amenable to PLI reforms. Among forest-based rights that still remained unclear were: (i) community rights, resource use rights, management rights, and carbon rights. Carbon rights were of high interest among studied countries because to date they had not been clearly defined (Abaidoo, D.Y. 2005; Mbwambo, 2015; FERN, 2006; Hedge, 2010). African countries faced challenges to develop their national benefits sharing mechanisms because of these outstanding legal problems of defining rights. REDD+ pilot schemes developed to date had made payments to individuals with secure land tenure. On a wider scale, REDD+ would need to cover large land areas where issues of tenure were inescapable. Given that some 80% of tropical forests were officially owned by *de facto* claims against *de jure* land ownership, which REDD+ did not recognize (ibid.).

VOLUNTARY CARBON MARKETS

In the absence of clear guidelines for carbon projects development in the compliant market, the Voluntary Carbon Standards encouraged projects development including the AFOLU sector projects where REDD+ was resident. African countries had steadily continued to develop and participate in Voluntary Carbon Markets. For instance, in 2015 African offset sales remained stable at 6.7 $MtCO_2e$ the majority of this volume originated from forestry or cook-stoves projects as buyers sought to support emissions reductions that contributed to low-deforestation and sustainable development on the continent (Hamrick & Goldstein,

2016). Five African countries (Kenya, Uganda, Zambia, Malawi, and Madagascar) had supplied carbon in the Voluntary market among these Kenya was a key player in carbon trade. Kenya actually supplied the same quantity of carbon into the Voluntary Carbon Market as Brazil (3.1 $MtCO_2e$) while Uganda supplied (1.5 $MtCO_2e$). Madagascar and Malawi had also recorded at least three transactions with different organizations. Africa was not hindered by protracted negotiations in the compliant carbon markets but had engaged the voluntary carbon markets where its share of traded carbon was (2%) of the total volume.

A snapshot of global voluntary carbon markets showed price volatility with lowest price/metric ton of carbon costing as low as $0.1 while the highest was $44.8 /tonne. Carbon equal to 1.1 $MtCO_2e$ of credits were cancelled from the CDM registry and transferred to the voluntary carbon markets where prices were higher. Offsets from wind were preferred to Reducing Emissions from Deforestation and forest Degradation (REDD+). Credits from wind based projects transacted 12.7 $MtCO_2e$ with an average price of $1.9/tonne. However, REDD+ credits retained high average prices and received more value than wind at $37.5 Million. Verified Carbon Standard offsets remained the most transacted of all standards, holding 49% of the market share. USA had the highest supply and demand for voluntary carbon (15.4 $MtCO_2e$). Buyers also demanded significant volumes of emissions reductions from India (6.6 $MtCO_2e$), Indonesia (4.6 $MtCO_2e$), Turkey (3.1 $MtCO_2e$), Kenya (3.1 $MtCO_2e$) and Brazil (3.1 $MtCO_2e$). Kenya was a prominent supplier of carbon to the voluntary market (Table 7).

Table 7. Trade in the Voluntary Carbon Markets

Country	Volume transacted in 2015	Average price ($/tonne)	Amount of million US$
Kenya	3.1 $MtCO_2e$	5.5	17.0
Ghana	0.104 tCO_2e	4.1	0.4
Tanzania	-	-	-
Ethiopia	-	-	-
Zambia	0.647 tCO_2	5.2	3.4
Uganda	1.5 $MtCO_2$	4.7	7.1
Madagascar	0.526 $MtCO_2e$	3.5	1.9
Malawi	0.291 $MtCO_2e$	6.7	1.9
South Africa	0.155 $MtCO_2e$	6.0	0.9
Total	7.259		32.6

Source: http://www.vcsprojectdatabase.org/#/home accessed on 7th February 2017

IMPACTS OF BENEFIT SHARING MECHANISMS ON IMPLEMENTATION OF REDD+ AND FOREST-BASED CDM PROJECTS

Benefits sharing mechanisms did not significantly impact implementation of forest-based CDM and REDD+ projects in studied countries (Figure 12).

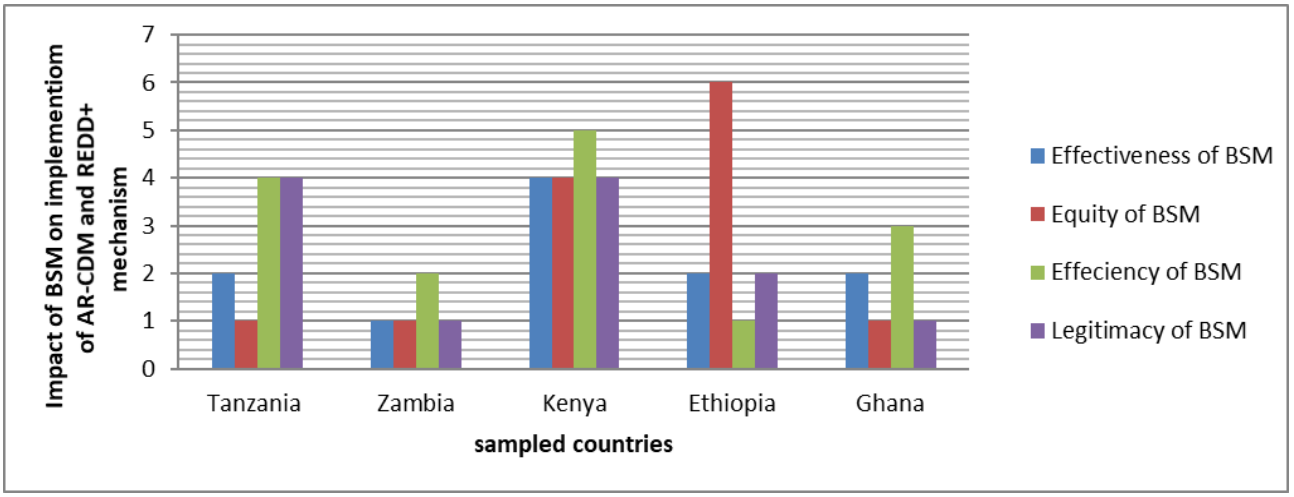

Figure 12. Impacts of Benefits Sharing Mechanisms on AR-CDM and REDD+ projects

In sampled countries, benefits sharing mechanisms did not satisfy all the criteria, hence didn't significantly impact AR-CDM and REDD+ implementation in these countries (Figure 12) and (Lutrell, et al, 2016). While Kenya and Tanzania had more effective and efficient benefits sharing mechanisms; it was Ethiopia's benefits sharing mechanisms that had a higher stakeholder perception. Legitimacy and equity in Benefits Sharing Mechanisms negatively impacted implementation of REDD+ in Zambia and Ghana (Figure 12). Tanzania, Zambia and Ghana had very low scores on equity criteria in their benefits sharing mechanisms, and this was a very important point of interest. Equity directly involved people's perception on how fair, transparent and inclusive a benefits-sharing mechanism was to them. Generally, these results indicated that benefits sharing mechanisms had insignificantly impacted the beneficiaries whom they were designed to serve. Even in Ethiopia where equity in both the AR-CDM and REDD+ projects was relatively higher, these observations were based on one project and a proposed REDD+ mechanism that had not been broadly tested (Bekele et al., 2015; Agyeis, 2016). Legitimacy and equity were difficult criteria to report by project developers because peoples' perceptions were outside the control of project developers and there were many actors that looked beyond paltry incomes that were being distributed in AR-CDM and REDD+ projects, some of which were not open to public scrutiny. Countries like Ghana and Ethiopia, which had severe legal constraints could hardly formulate legitimate benefits sharing mechanisms unless they were based on

pilot projects. The claims of equity and legitimacy would serve as lessons for roll out phase of such projects; and these were the conditions under which Oromia, Bale Mountain REDD+ projects were implemented.

Three criteria: (i) equity, (ii) efficiency (iii) effectiveness were important in testing impacts of REDD+ benefits sharing mechanism on their implementation. These criteria were also applicable to AR-CDM projects' although benefits sharing mechanisms in AR-CDM operated on Community Social Responsibility (egalitarian) approaches rather than, efficiency and effectiveness. But in assessing impacts these criteria were applied in both mechanisms because African REDD+ projects had simply modified AR-CDM benefits sharing mechanisms and used them in REDD+ projects. REDD+ mechanism itself had not provided sufficient guidelines for carbon and non-carbon benefits sharing in different forests ecosystems and across different biophysical and social strata. Each of the nineteen African REDD+ partner countries applied different approaches to implement benefits sharing and were working towards developing their national REDD+ Benefits Sharing Mechanisms.

AR-CDM benefits sharing mechanism projects in Tanzania, Ethiopia and Kenya mainly provided health, education, jobs and infrastructure packages, which only satisfied few eligible beneficiaries. Beneficiaries from AR-CDM and REDD+ projects perceived them indifferently especially where project developers often withheld information on operational costs, and revenues realized from sale of carbon. In cases where REDD+ projects were being subsidized by developers, it was perceived such projects would be inefficient in the long run (Costenbader, 2011 in UN-REDD, 2013). Carbon rights had not been clarified in nearly all the studied and sampled countries; hence posing a dilemma on how much carbon would be owned by those with opportunity costs and those legally entitled to own carbon. While countries like Zambia had one REDD+ project implemented; hence a limited variety of projects to assess impacts of benefits sharing on implementation of REDD+, Tanzania, Kenya, Ethiopia and Ghana had together implemented a total of 30 REDD+ projects which were analyzed for impacts of benefits sharing on implementation of REDD+. These projects were still synthesizing reports to get lessons learned that will be used as inputs in developing their National REDD+ Benefits Sharing Mechanisms.

Impacts of benefits sharing on implementation of AR-CDM and REDD+ mechanisms revealed very complex, unresolved issues, which made different stakeholders perceive these projects differently. Issues like: (i) unclear carbon ownership rights in studied African countries; (ii) inadequate capacities to determine communities' opportunity costs emanating from implementing REDD+ as basis for compensation; (iii) inadequate competences to accurately determine environmental costs in monetary form as basis for Payment for Ecosystem Services (PES); (iv) censure emanating from failure to meet equity criterion when dealing with distribution of fixed benefits to very large stakeholder populations; (v) high transactional costs that reduced per capita value of benefits; (vi) failure to increase positive impacts of benefits at household level; (vii) tenure and exclusivity were critical

dilemma in both AR-CDM and REDD+ projects. Payment for ecosystem services and REDD+ schemes were made to individuals with secure land tenure. In Tanzania, villages without survey certificates were considered to be squatter and migratory communities, hence not recognized under REDD+ projects benefits sharing model (Costenbader, 2011 in UN-REDD, 2013; Mbwambo, 2015). Furthermore, inter alia; (i) failure to disclose financial details of project operations costs, (ii) inadequate services delivery to fulfil pledged community social responsibilities, and (iii) undertaking activities detrimental to sustainable environment, were intensely criticized by development activists (Karumbidza and Wenne, 2011). So called benefits sharing, ignored the greater, more broadly accessed social, economic and environmental benefits that majority of local people obtained from their land prior to AR-CDM and REDD+ projects implementation. Much parity in AR-CDM and REDD+ benefits sharing mechanisms had drawn condemnation to these projects types in Africa (GBM, 2011). Other authors had shown benefits sharing was being made by subsidies provided by project developers, which was a sign of inefficiency to self-sustain project operations and meet gregarious needs (Costenbader, 2011 in UN-REDD, 2013). Many AR-CDM and REDD+ projects BSMs encouraged Free-Rider attitude among some stakeholders. Local communities that did nothing to reduce GHG emissions but expected to receive benefits were not good environmental stewards. It was noted, Free-Rider problems made redundant the efficiency criterion, which was experienced in Mikoko and Idete AR-CDM as well as Ngitilis REDD+ projects in Kenya and Tanzania (Costenbader, 2011 in UN-REDD, 2013; Monela, 2009). Ghana and Zambia had not directly implemented AR-CDM benefits sharing models since the two countries had not developed and implemented AR-CDM projects. At its behest, Forestry Department (FD) of Zambia developed benefits sharing guidelines for Joint Forest Management (FD, 2006). However, due to lack of transparency in the manner the Joint Forestry Management BSM was developed, the model was rejected on account of illegitimacy. Nevertheless, a functional model was developed in Zambia's Wildlife sector (ZAWA, 1998). The ZAWA benefits sharing model apportioned trophy hunting revenues as follows: 50% to ZAWA: 50% to Community Resources Boards (CRBs). The 50% apportioned to CRBs was further sub-divided into: (i) 5% to the Patron; often the local Chief, (ii) 45% to village Committees that paid salaries to Village Scouts ranging between (US$50-100) in poor-rich CRBs respectively. ZAWA administration assisted CRBs to plan, budget and control Accounts. Local community projects were decided and implemented by Village Committees. Furthermore, individual community members received cash support (Mupemo, 2016). Whereas Zambia and Ghana had tried to develop and implement AR-CDM models for benefits sharing, albeit outside forestry sector, Ethiopia had integrated participatory forest management benefits sharing mechanisms into AR-CDM mechanism. It also used lessons learned to develop an appealing REDD+ benefits sharing mechanism. Ethiopia's experience in sharing revenues with the Humbo AR-CDM project had been applauded to be equitable benefits sharing model whose ratios were: (70% : 30%) to local communities and government respectively (Bekele et al., 2015). It was

a replica of the participatory forest management benefits sharing mechanism, in which Ethiopia had applied both cash and non-cash-based benefits that was borrowed and fed in the Humbo AR-CDM projects.

POLICY IMPLICATIONS ON CDM, REDD+, AFOLU, NDCS AND WAY FORWARD

African countries had intended well to participate in REDD+, CDM, INDCs, AFOLU and other carbon related initiatives. However, they met several challenges in the uptake and implementation of these mechanisms, some of which bordered on lack of preparedness (inadequacies in legal/policy and institutional arrangements). Countries also faced multiple challenges in the areas of (i) financing, (ii) technical and (iii) technological capacities, which donors alleviated through capacity building. Conditions and determinants for uptake of REDD+ mechanism; were especially closely tied with financial, technical and technological support to African countries. These market-based mechanisms had potential to enhance sustainable forest management, contribute to mitigation and adaptation measures as well as improvements in people's livelihood. Major policy implications were that African countries needed to increase their mitigation and adaptation efforts to counter impacts of climate change and global warming. As they did this, their strategic approaches should include reduction of over reliance on external support for finances, technology and capacity building.

AR-CDM projects were not growing mainly due to depressed carbon prices and lack of investment by Annex I countries (ibid.). African countries depended on Annex I countries to offset their carbon emissions in Africa. Carbon offsetting did not in reality contribute to reduction of carbon emissions. It only allowed Annex I countries to emit carbon with the assumption that African project (s) would sequester it. The policy implication on forest-based CDM projects was that in view of low prices, lack of avoided deforestation and indecision to increase demand for forest-based credits by Annex I countries, African countries should reduce on efforts to implement these projects until the demand for forest-based CDM credits improved.

High policy implication points included REDD+ projects. So far, all REDD+ projects Africa had implemented targeted Voluntary Carbon Markets. This was in response to delayed conclusions of the international climate change negotiators, which procrastinated preparation of modalities to enable REDD+ operate in the regulatory markets. The CDM market was the largest, most influential and capable of creating large demand for AFOLU sector carbon projects in which REDD+ projects were located. Trends in growth and development of REDD+ projects indicated this mechanism had already surpassed AR-CDM and was bound to grow faster after the Paris Agreement.

REDD+ processes have not reached the final stage, yet this mechanism is robust and growing fast among African and developing countries. REDD+ has useful mitigation contributions in INDCs and was linked with NAMAs, hence is a mechanism well positioned to realize synergies in climate mitigation and associated adaptation co-benefits from different forest ecosystems.

The success of REDD+ BSMs will largely depend on target resource base (high value forests/greater C-sequestration) and potentially good for Carbon credits revenue generation and sharing. If low value forests, hence potentially low c-sequestration, REDD+ sustainability will depend on access to NCBs with Carbon credits providing alternative, but not main streams of income.

In developing National REDD+ Benefits Sharing Mechanisms, countries should be aware of past failure to deliver revenues to local level structures equitably and hence incline towards developing nested benefits sharing models where local Trust Funds would be given fiduciary responsibilities. Government agencies together with NGOs and local people should work together while sharing roles and responsibilities aimed at good governance. Lastly, future REDD+ benefits sharing should provide transparent grievance recourse mechanism with appropriate structure.

The implications are that African countries would do well to intensify REDD+ processes for them to realize its multiple benefits that include, *inter alia* (a) sustainable forest management, (b) ecosystem resilience, and (c) response to food-security, energy and fiber needs of the majority of its forest dependent communities. REDD+ is a pro-poor based mechanism (Bond et al, 2010). It is premised on delivering carbon and non-carbon benefits Effectively, Equitably and Efficiently. These 3Es were a prelude to sustainability of REDD+ in Africa. Furthermore, besides the legitimacy criterion, building national REDD+ Benefits Sharing Mechanisms should include the 3Es (Angelsen, et al. 2009).

Policy implications are that countries without adequately reformed PLI risked losing out benefits of the market-based mechanisms. Democratic governance systems needed to be transformed sufficiently to ensure people's rights espoused in these mechanisms got to work among them. The way forward was that these countries affected required to enact laws that clarified rights to own carbon and other rights that were fundamental to securing participation of stakeholders in market-based mechanisms.

AFOLU is relevant to people's livelihoods and environmental sustainability. However, this sector faced most technical challenges that made their uptake in CDM very minimal. The policy implication was that African countries had difficulties of formulating CDM- AFOLU sector projects that met material standards of CDM and its compliant market. The way forward is to concentrate on projects in the Voluntary Carbon Market which accepted AFOLU projects.

Most benefits sharing mechanisms reviewed were project based and addressed carbon revenue rather than non-carbon benefits. Carbon revenue sharing was clouded in information asymmetries between project managers and stakeholders. Costs incurred by projects and revenues realized from carbon were not openly shared with stakeholders. These issues touched on transparency and accountability that had remained grey areas of these mechanisms. The way forward is that African countries needed to build capacity in systems to track marketing of carbon in order to understand its trade-offs and gains.

Lack of knowledge and understanding of market-based mechanisms and projects developed from them were part of the issues that reduced uptake, development and implementation of these mechanisms. Policy implication is that Africans should constantly review their knowledge and skills gaps on market based mechanisms, and undertake necessary remedial measures through training and education to produce skilled and competent personnel within African countries. On compositions, attitude of African DNAs, so called DNAs in Africa were under capacitated, which compromised their ability to evaluate the integrity of projects. The project evaluation procedures of DNAs did not include field verification; hence they took documents at face value. DNAs viewed projects in isolation and failed to take a landscape view which would give insights on developer's broad record of emissions and possibly defaults in terms of benefits sharing with communities, information asymmetries in their doctored websites that concealed project failures. Moreover, DNAs were subject to conflicts of interest; with their primary task usually being to promote the CDM, and their secondary task to regulate it (ISS, 2011).

CHAPTER 5 AFOLU/INDC: trends, options and outlook for Africa

AFOLU COMPONENTS OF INDC

AFOLU components of the INDCs considered included (i) Forest Management (FM); (ii) Agriculture Management (AM); (iii) Bio-Energy (BE); (iv) Wetland Resources Conservation (WRC); (v) Afforestation/Reforestation (AR); and (vi) Avoided deforestation and degradation (DD). Depending on activities undertaken, these components would contribute to either mitigation (M) or adaptation aspects. Implementing the six AFOLU categories' activities either in space or time also achieved co-benefits of mitigation and adaptation. For instance, land-use conversions to cropland from forest land, grassland and wetlands usually resulted in a net loss of carbon from biomass and soils to the atmosphere. However, cropland established on previously sparsely vegetated or highly disturbed lands (e.g. mined lands) can result in a net gain in both biomass and soil carbon. According to (GP-LULUCF, 2003) report, beyond the five African countries sampled for AFOLU, a total of thirty-four (34) out of fifty-two (52) African countries had referenced AFOLU in their INDCs. AFOLU was referenced 77% to 100% in African INDCs, which signified the AFOLU sector was very important in both FM and AM contributions to GHG emission reduction and climate resilience. AFOLU was also well embedded and accepted part of the terrestrial carbon projects in Verified Carbon Standards (VCS)[12] INDCs, (FAO, 2013).

Thirty-four out of fifty-two (52) representing 65% of African countries INDCs were analyzed for AFOLU components. Agriculture adaptation component was referenced above 80% followed by Wetlands Restoration Conservation-adaptation (75%). Afforestation/Reforestation – adaptation (58%). Bioenergy was least referenced AFOLU category (24%). Afforestation/Reforestation was the most referenced AFOLU-Mitigation category (76%) followed by Bioenergy at 61% Forest Management –adaptation and mitigation were referenced 56% each (Figure 13). AFOLU categories in African INDCs were averaged and presented to reveal regional characteristics.

The indication was that AFOLU categories were well articulated in all African INDCs, but the degrees of integration varied according to regional circumstances. When grouped regionally AFOLU categories emerged with interesting perspectives among which West Africa's score

[12] Voluntary Carbon Standard such as the Verified Carbon Standard, AFOLU related activities are accepted

of 100 % in referencing Agriculture Management as most preferred adaptation action is most significant (Figure 14).

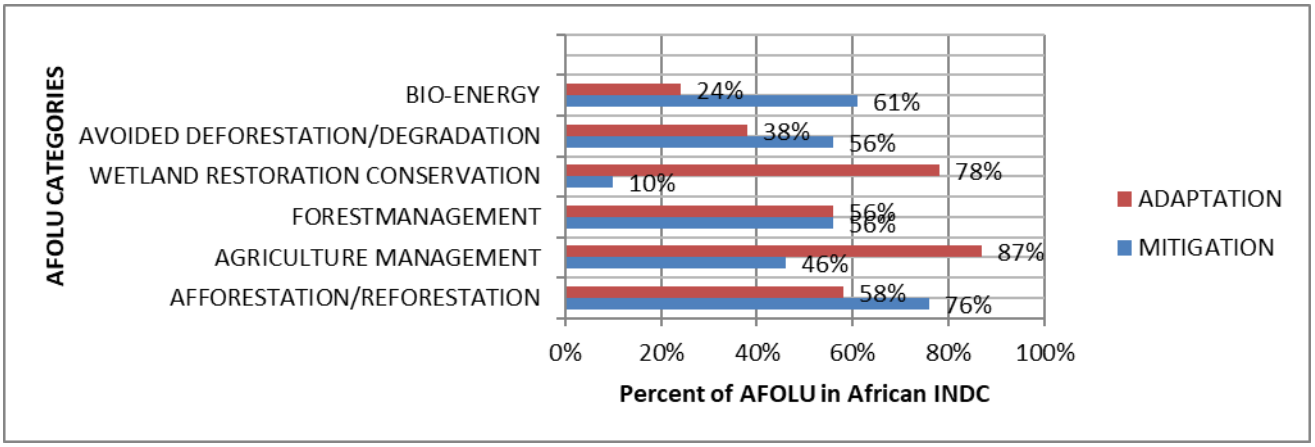

Figure 13. AFOLU in INDCS

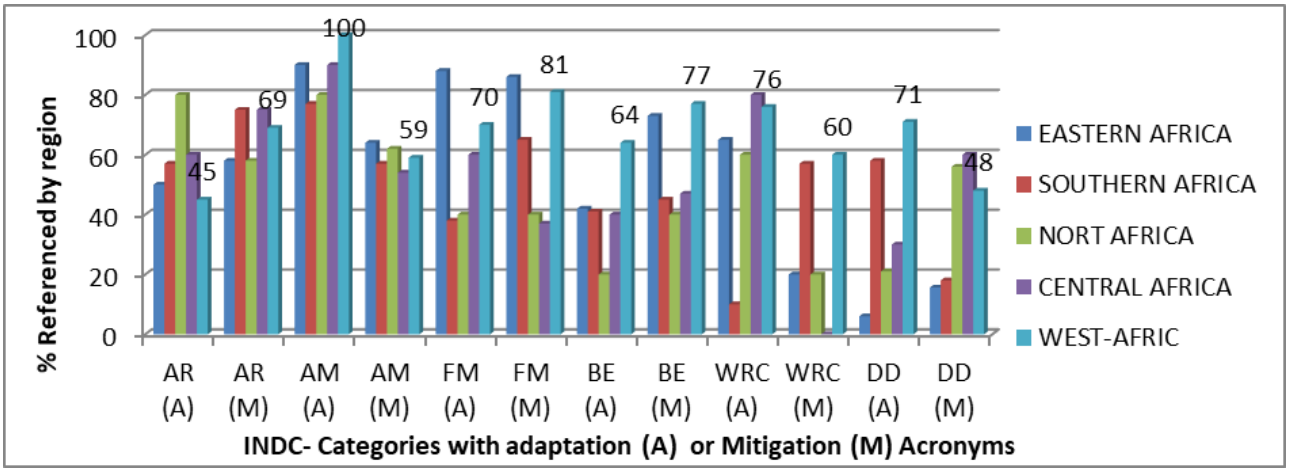

Figure 14. Analysis of AFOLU in African INDCs

Furthermore, AFOLU in African INDCs showed some inter-region similarities and variations as well as intra-region similarities and variations between Mitigation and Adaptation components in the five African regions (Table 8)[13].

[13] Table 8 columns contains ranges of figures for AFOLU (M+A) actions while the Unique Column shows what is extra-ordinary about regional position in terms of AFOLU category (M+A) action.

Table 8. Perspectives of AFOLU in African INDCs

Analysis	Regional aspect with average % of INDC category referenced					
	East Africa	Southern Africa	North Africa	Central Africa	West Africa	Unique feature
AR-A	<60	<60	≤80	<60	<60	80 North
ARM	>50	>50	>50	>50	>50	Equal all regions
AM-A	>70	>70	>70	>70	100	100 West
AM-M	>50	>50	>50	>50	>50	90 East/Central
FM-A	>80	<40	<40	60	70	80 East
FM-M	>80	>60	>40	>40	>80	80 East/West
BE-A	>40	>40	<20	>40	>60	20 North
BE-M	>70	<50	<40	<50	>70	40 North
WRC-A	<50	<10	<50	<50	<50	10 South
WRC-M	<20	<50	<20	0	<50	0 West
DD-A	<10	<50	<20	<30	<70	71 West
DD-M	<20	<20	<50	<50	<50	East/South

Details of the presentation of the individual AFOLU categories are given below.

(i) Agriculture Management

Agriculture Management –Adaptation part of the INDCs was highly referenced in all the African regions (Figures 13 & 14; Table 8). This AFOLU category was recognized in African INDCs (70%-100%) due to the important role agriculture plays in improving people's livelihoods, in creating employment and in ensuring food security. Agriculture adaptation went beyond removal of GHGs from the atmosphere and sinks. Adaptation measures involved formulation and implementation of policies, strategies and implementing activities that answered broad needs of the people, the environment and the economy. However, review of the adaptation actions mainly showed that much attention was placed on conventional agriculture practices not on the systems that support agriculture, such as finance, insurance, and information on climate related environmental risks. Agriculture mitigation was equally important across Africa. This part addressed reducing GHG emissions from livestock (especially enteric fermentation), agriculture fertilizers, agronomic practices of paddy rice growing, irrigation and Climate Smart Agriculture practices (Richards et al., 2015). Without disputation, mitigation drive served more the interests of Annex I

countries than Non- Annex I countries whose focus was on ensuring food security, poverty reduction/wealth creation based on convention of natural resources into tangible products and services.

(ii) Afforestation/Reforestation

AR-component was referenced below 60% in the East, South, Central and West African regions. AR-adaptation was important in these regions because it addressed developmental issues. African people depended on forests for many services and products (Marunda, 2016). Many economic activities were contingent on extraction , conversion and marketing of forest products such as saw logs, charcoal, wildlife and food condiments, reducing social inequalities and achieving food security through undertaking AR-actions that included: (i) increased land productivity for forest periphery communities through Climate Smart Agriculture practices; (ii) crop insurance against floods and drought; (iii) micro-credit finance to farmers surrounding forests; (iv) addressing policies and measures that promote sustainable income generation from forests; and (v) adopting approaches such as Forest Farm Facility which encouraged growing trees in agriculture landscapes. North Africa which had serious challenges from expanding Sahara Desert had referenced AR-adaptation 80% to signify the level at which the region intended to tackle desertification via a range of strategic measures. Central, Eastern, Western and Southern African countries referenced AR-adaptation (60%) in their INDCs with a focus to repair lost ecosystems integrity. AR-adaptation was also important to secure dwindling forest resources that provided a large portion of wood-based fuels for domestic and semi-processing industries. African countries had visions to become mid-income nations by 2030, which had put pressure on forests to supply building/construction materials. They needed to restore forest resilience through policies and measures that had broken down (Tangem, 2016). The AR- mitigation component was above 50% in all the five regions, which also indicated the importance of AR-actions placed on planting, vegetating and restocking depleted forest areas the regions would be undertaking to increase carbon sinks and stores. A notable feature of African INDCs was the emphasis they placed on adaptation as evidenced in this AR category of INDC.

(iii) Forest Management

East Africa referenced Forest Management adaptation and mitigation above 80%. Equal emphasis was placed on FM and AM in East Africa due to this region's high dependence on forest ecosystem provisions. The region's focus was to address policies and measures that affected forest management on equal terms with forest mitigation measures signified interest to obtain FM and AM co-benefits. Similarly, West Africa had referenced forest management FM and AM above 70% due to the importance attached to co-benefits from the two AFOLU strategic measures. Southern African region considered Forest

Management mitigation aspects to be more important compared to the adaptation part. This region intended to access donor financing for REDD+ implementation.

(iv) Bioenergy

West Africa's high reference of Bio-energy (60% to 70%) to both FM and AM in their INDCs arose out of growing interest to switch energy uses from wood based to biofuel crops like; Palm, cassava, jatropha, and soya-beans. Some of the bioenergy crops had targeted markets in Europe (Chia, et al., 2016). The mitigation component of bio-energy was referenced 70% in Eastern African countries, which had also intended to meet demand for export markets. The basic assumption being that mitigation gains would come out of reduced wood energy and charcoal consumption. The rest of the continent referenced Bioenergy – Adaptation below 40% while Central Africa referenced bio-energy (FM and AM) below 50%. Both FM and AM categories were least referenced in North Africa between (40% and 20%) respectively, which signified the bioenergy was not important. This AFOLU category in the INDCs was varied in the five regions because of controversial issues surrounding large scale production of bioenergy crops. Many thought expanding bioenergy crop farming would reduce forest cover, increase DD and also reduce land conflicts (op. cit.). On average, bioenergy was referenced low in Africa because of lack of policies to address social and economic development challenges that were likely to follow massive bioenergy agronomic activities. It was not clear how production of bioenergy crops on a massive scale for industrial purposes would not lead to reduced forest cover and deny communities without formal land rights access to land for food production. More emphasis was placed on bioenergy mitigation for its roles.

(v) Avoided deforestation and forest degradation

Avoided deforestation and forest degradation (Adaptation) was referenced more than 50% in Southern Africa while Central Africa referenced its adaptation less than (30%). Interestingly, West Africa referenced adaptation part of avoided deforestation and degradation around 71 %. West Africa was among African regions with rich forest biodiversity that was species rich, and hence provided multiple environmental and social economic benefits. There was very high community dependence on provisions from forests, which were also threatened with climate change problems. Therefore, adoption of DD was meant to maintain people's access to products and services useful in their economies and livelihoods (Tientcheu-Marie, 2016). East, North and Central Africa had referenced avoided DD adaptation less than 30% in their INDCs. These regions had deemphasized avoided deforestation and forest degradation out of Eastern and Central African national circumstances regarding this AFOLU category of their INDCs. These regions had forests that were threatened with DD from charcoal production, building raw material supplies and expansion of agriculture activities. Depending on the policy preferences, these regions were at liberty to undertake, for example, agriculture expansion in forested areas in order to

increase area under cultivation of agriculture crops. Food security was a paramount issue among African countries and many were in a dilemma when it came to firmly decide how much forest to conserve against increasing demand for agriculture expansion. North Africa had no reason to cite avoided deforestation since the region did not have forests in which DD would be avoided. Southern and Western African countries still possessed large forest estates, which they required to protect through application of appropriate policies, strategies and measures intended to enhance SFM. Forests of Southern and West African countries were highly vulnerable to climate variability. They were sensitive to drought and floods, but these forests also protected water resources, agriculture lands as well as other economic infrastructures like power generation plants.

(vi) Wetlands restoration conservation

Wetlands Restoration Conservation-mitigation was the least referenced AFOLU category in Central Africa (0%), while adaptation was cited 79% in Central Africa. WRC-Adaptation was referenced less than 50% in three Africa regions (East, North, & West), while Southern Africa referenced the adaptation part of WRC below 10%. Only Southern and Western African countries referenced WRC-Mitigation above 50%, while the rest of Africa referenced WRC-Mitigation below 20%. Conventional wisdom indicated that Central Africa, which faced yearly reductions in the size of Lake Chad would reference highly FM and AM measures in their INDC. Part of Central Africa was also threatened by the southward expansions of the Sahara Desert.

ADAPTATION CONTRIBUTIONS IN INDCS

Adaptation activities in African INDCs included, *inter alia*, broad policies and measures that targeted building systems for enhanced productivity of land, crop diversification, creating food value chains that reduced waste and integrated pest management. Adaptation measures were: crop and pests protection against floods and drought. For instance, early warning measures were cited by Uganda as important in disaster and risk management. Uganda intended to expand provision of climate information and early warning systems. Meantime, Rwanda's adaptation measures had included development of irrigation systems or technologies through which Rwanda intended to develop water resource models, improved meteorological services, water quality testing, and improved hydro-related information management, and develop a National Water Security Plan to employ water storage and rain water harvesting, water conservation practices, efficient irrigation, and other water efficient technologies. On the other hand, diversification of agricultural crops, animals, or income sources were cited adaptation measures in Liberia's INDC. The activities referenced included enhancing resilience to increasing rainfall variability through the diversification of crop cultivation and small ruminants rearing. Like Liberia, Mozambique's INDC had referenced livestock and agriculture production that increased

resilience of agriculture, livestock and fisheries, guaranteeing the adequate levels of food security and nutrition in the country. Zimbabwe had targeted indigenous knowledge (IK) and scientific knowledge to promote productivity of drought tolerant crop types and varieties and indigenous livestock that were resilient to changes in temperatures and rainfall. Climate Smart Agriculture activities in INDCs included permaculture, agroforestry, zero tillage, conservation farming, and manure application practices. Tanzania had nine sectors[14] under its adaptation policy action framework. The AFOLU sector (agriculture, livestock, forestry) was distinct and priority nexus in the adaptation framework. While Zambia had eight sectors referenced in its INDC under its adaptation plan, other African countries prioritized similar measures in the AFOLU sector especially touching on the following: (i) adaptation of productive strategic systems (Agriculture, forestry, wildlife and water), development of a National Wildlife Adaptation Strategy and ensuring its implementation through supportive policies, local community, civil society and private sector participation; (ii) protection and conservation of water catchment areas and enhanced investment in water capture, storage and transfer, linked to agriculture, energy, ecological, industrial and domestic use purposes in selected watersheds; (iii) adaptation of strategic infrastructure and health systems, institutionalizing integrated land use planning compatible with sustainable management of natural resources and infrastructure development, and mainstreaming climate change in the National Health Policy, Environmental Health (EH) Policy, and Water and Sanitation Policy, and enhancing decentralized climate information services for early warning and long-term projections on the effects of climate change to support sustainable management of the production systems, infrastructure development and public health, and (iv) enhanced capacity building, research, technology transfer and finance for adaptation, capacity building in Climate Smart Agriculture (CSA), Sustainable Forest Management (SFM), Sustainable Fisheries and Aquaculture (SFA), Renewable Energy Technologies (RET), and Early Warning Systems (EWS), Change management and climate change planning. Proposed actions included diversification and promotion of Climate Smart Agricultural (CSA) practices for crop, livestock and fisheries production including conservation of germ-plasm for land races and their wild relatives.

The commonalities in adapted measures revealed that African countries had very similar development problems which they noted to block their advancement towards proposed new development visions vis-à-vis middle income and prosperous nations by future dates. It can be discerned that most African countries did not believe mitigation of GHGs would lead them to achieve their development aspirations if they left behind adaptation measures.

[14] Agriculture, livestock, forestry, energy, Coastal, Marine Environment and Fisheries, water, tourism, human settlements and health.

MITIGATION CONTRIBUTIONS IN INDCS

Broadly, African INDCs mitigation contributions had targeted GHGs emissions reduction from three gases: Carbon dioxide, Methane and Nitrous Oxide. In sampled countries, Ethiopia's INDC had indicated that agriculture and forestry sector had the greatest potential (85%) for emission reduction (FDRE, 2011. In preparation of the Ethiopian INDCs two important pillars of the national strategy held significant importance in relation to AFOLU (CRGE, 2010). These two pillars were:(i) improving crop and livestock production practices for greater food security and higher farmer incomes; and (ii) reducing emissions and protecting and re-establishing forests for their economic and ecosystem services, while sequestering significant and storing large amounts of carbon dioxide in landscapes. These pillars had firmly established AFOLU in the INDCs of Ethiopia, which would reduce GHG emissions by 85%. Ghana's INDCs were also underpinned by employing agriculture for food security and sustainable forest resources management to ensure ecosystems resilience and GHG emissions reductions (Gh_INDC, 2015). Ghana had emphasized building agriculture resilience in climate vulnerable landscapes. It had also recognized value added forest resources utilization in its INDCs, which invariably indicated that two major AFOLU components (Agriculture and Forestry) would steer the country to achieve 45% GHG emissions reduction. AFOLU sector (FM and AM) co-benefits were preferred policy actions. Ghana's mitigation actions were contingent on implementation of REDD+ and other forestry related actions. Ghana had already developed and was implementing 11 REDD+ projects under the Voluntary Carbon Markets prior to implementation of its Nationally Determined Contributions. Kenya had proposed to follow a low carbon energy development path (NCCAP, 2013). Kenya's INDCs also strongly enunciated AFOLU to be the main vehicle for mitigating causes of climate change. For instance, through AFOLU sector, Kenya's INDC had articulated Climate Smart Agriculture and increased tree cover to at least 10% of Kenya's total land area as AFOLU activities for mitigation of GHGs (GoK, 2015). Tanzania, in her mitigation framework, had the following sectors: Energy, Transport, Waste management and Forestry: that had appeared on both sides of its INDCs contributions. Double reference to forestry is meant to embrace co-benefits in (FM and AM) that came from implementing forestry activities. In its mitigation contributions, Zambia had indicated that GHG emission reductions would be pursued through implementing three programs: (i) sustainable forest management, (ii) sustainable agriculture, and (iii) Renewable energy and, Energy efficiency (op. cit.). These programmes were driven by the country's Climate Response Strategy, which was supported by national development policies, including policies for energy, forestry, agriculture, water, Town and Country Planning, sanitation, and transport (ibid.).

FINANCE

Finance is important in the implementation of AFOLU projects. Every stage of AFOLU projects required financing and this was most limiting. Financing activities were a key component which underpinned implementation of AFOLU/INDC activities (Figure 15).

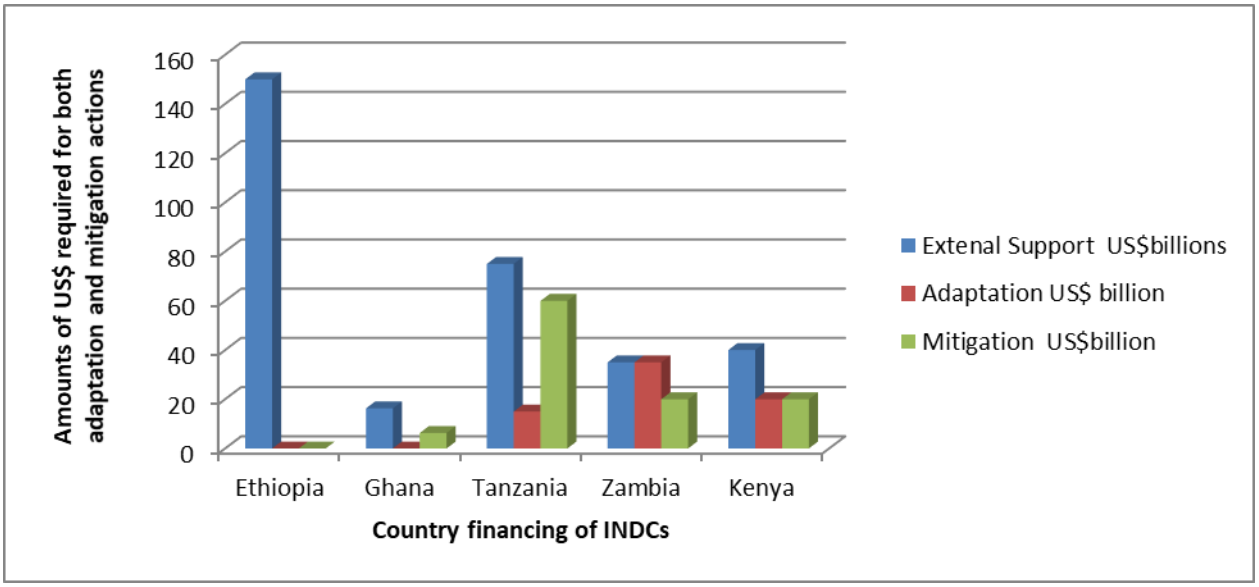

Figure 15. Financing (FM and AM) actions in sampled countries

All the countries studied had proposed to provide domestic financing to support (FM and AM) actions as commitment towards achieving INDC contributions in the Forest Management and Agriculture Management (Adaptation and Mitigation) categories. However, the manner countries proposed to fulfil their domestic contributions towards INDCs left a lot of variations. For instance, all the sampled countries had proposed to provide domestic financing unconditionally towards implementation of their INDCs yet the time frames and specifications of how these commitments were to be done remained obscure (Richards et al, 2015). Ethiopia had the highest financing request under external support for its (FM and AM) adaptation and mitigation actions which totalled (S150 billion). However, Ethiopia postponed its domestic contributions to the future. The same was true for, *Kenya* and *Tanzania*, which had proposed future dates to supply domestic support to their INDCs while *Zambia* and *Ghana* had committed to provide domestic financing to support implementation of their INDCs (Figure 15). This implied several things; (i) African countries were willing to finance (FM and AM) actions together with external support from cooperating partners as evidenced from all examined INDCs, which indicated domestic budget support pledges in the sections that addressed means of implementation. (ii) African countries that did not commit their domestic contributions to support INDCs implementation were being cautious and waited for external support before they could move in with local resources (iii) it also meant that there was doubt whether, external financing would actually

flow to support the adaptation and mitigation actions, since external financing architecture had not even elaborated the sources and amounts of support (Richards et al, 2015). For REDD+, there were smaller amounts of finances pledged compared to AFOLU activities whose budgets were in billions of dollars. Noticeably, REDD+ implementation revealed actual funds pledged and delivered whereas, AFOLU activities financing were still in form of unsupported pledges. AFOLU activities were yet to be financed especially under the INDCs and this has posed a dilemma in that international financing was not matched with estimates made in country INDCs (Richards et al., 2015). The sources of financing, which African INDCs targeted, fail short needs expressed in INDCs. Furthermore, there was mistiming in which these funds were required to implement INDCs. The year 2015 was long gone and negotiations, funding arrangements were still on-going, which meant time was fast running out to meet targets for INDCs implementation.

AFOLU AND INDCS IMPLICATIONS FOR AFRICA

Agriculture

Agriculture is a major occupation on which large populations in Africa depend for livelihoods and food security. For many African economies, agriculture underpins their social and economic activities. Nearly 70% of employment in Africa is directly related to agriculture and two thirds of the nearly 1 billion people live on small-scale low productivity farms (Kalipeni et al. 2009). Although agriculture was highly prioritized among the African countries studied, it is a sector that is vulnerable to climate change and climate variability. African countries require to build resilience in agriculture production systems to ensure food security. The multiplier effects of agriculture cover every sector of life, among which nutrition and health, labour productivity, income generation/livelihood improvement are salient. Agriculture is a major driver of deforestation and forest degradation in Africa. Lack of its transformation from subsistence to competitive industrial growth has tended to hinder application of technologies that promote its productivity and sustainability (Kalipeni et al., 2009). African governments need to free agricultural growth and development from heavily subsidized consumption. For success in both mitigation and adaptation, as proposed in the contributions of the countries studied, agriculture requires a balanced development approach in which both FM and AM measures would be equally pursued. Government attempts to micro-manage the agriculture sector has facilitated food insecurity in Sub-Saharan Africa, which would become worse as climate change effects deepened. Food security or access to sufficient food by all people for active health remained a major challenge in Africa. Vulnerability to climate change requires enhanced adaptation actions, policies and programmes that reduce environmental risks and ensure food security against droughts, floods, pest and diseases. Government policies and laws require to be reformed to support smallholder farmers, including by application of financial and market instruments

to restart their lives after disasters. Promotion of both Indigenous and R&D based knowledge systems to support smallholder farmers should be scaled up in order to create resilience in ecosystems, livelihoods, and sustainable land production.

In this study, agroforestry (AF) practices found naturally among smallholder farmers, provided a strong link between agriculture and forestry. Smallholder farmers who were in the majority practiced AF because they derived multiple benefits from such systems like food, fiber and energy. Beyond provision of tangible benefits, these systems contributed to ecosystem functions and environmental resilience. These were sufficient reasons for promoting AFOLU activities among smallholder farmers. Participation of local communities in REDD+ mechanism and AFOLU initiatives was pre-requisite for accessing forest products and services and revenue from carbon. Furthermore, African countries needed to intensify agricultural practices that integrated AFOLU (e.g. multiple plant species grown in spatial or temporal arrangements), which amplified removal of GHGs and increased C-storage in agroforestry systems (Kaonga & Bayliss-Smith, 2009). In discussing implications of AFOLU and INDC on agriculture, Africa Experts on Agriculture (Kokwe, 2016; Shula, 2016; Eshete, 2016; & Robinson, 2016) had stressed that unless investments and returns in the forest-based mechanisms surpassed benefits obtained from agriculture, the forest-based mechanisms would be disrupted. Some of the disincentives to forest conservation were the assumption of higher returns/hectare of investment in agriculture production compared to developing an AR-CDM project, which took between 3-13 years to yield returns.

Forests

Africa's forest resources were increasingly becoming vulnerable to effects of climate change and global warming due to their depletion from overutilization. Although SFM was the main reason behind development and implementation of forest-based mechanisms and also the emphasis of AFOLU in INDCs, competing demands for agricultural land, wood-based energy and fiber continued to undermine SFM. In spite of high investment to restore forests, African countries continued to face rapid forest losses and degradation (DD). Trees, forests, people and environment were intricately related through food chains, life support systems, and maintenance of the hydrological cycle and provision of natural pharmaceuticals. They are increasingly being recognized for their mitigation role played as carbon sinks and stores. Furthermore, forests are conserved as gene-pools that are sources of genetic materials for plant breeding programmes to improve food crops and produce herbal remedies and generic drugs. Forest biomes support flora and fauna that service agronomic purposes such as pollination services by insects and bats. Climate change effects have made forests vulnerable to fires, diseases, and insect pest attacks.

Forests are important for Africa and its people whose dependence on wood-based fuels, natural food condiments, herbal medicines and forest environmental services are innumerable. However, high rates of deforestation and forest degradation has meant that African countries require deliberate measures to address the situation. Therefore, forests should continue to dress landscapes and should be managed for their continued provision of tangible and intangible goods and services. Forests should also be utilized carefully to ensure intergenerational. Africa has biophysical forest environment that requires to be enhanced through afforestation/reforestation, REDD+, AFOLU in INDCs and undertaking AFOLU related initiatives. The heavy dependence on wood-based energy, food and fiber, as well as the need to contribute to forest mitigation and adaptation, implies that Africa needs to re-think its approaches to implementation of market-based mechanisms. In certain circumstances, African countries only required to employ appropriate technologies to grow trees even without linking them to Annex I countries carbon offsetting projects. AR projects provided important pathways for addressing wood energy supplies in a sustainable manner; as such, AR activities require to be intensified. Investment in AFOLU related activities would address multiple benefits such as sustainable land management (SLM), increased food production, GHG emissions reductions, and ecosystem resilience. AFOLU activities are part of Africa's long history of mixed farming, which can be improved through R&D. This calls for focus shift from waiting to implement externally supported AFOLU initiatives to using Indigenous Knowledge based environmentally sound technologies to implement AFOLU. Africa should roll out implementing REDD+ activities that have great potential to contribute to GHG emissions reduction, and potential for strong synergies with adaptation for increased carbon and non-carbon benefits for stakeholder communities.

CHAPTER 6 Conclusions and recommendations

This study of REDD+, AR-CDM, AFOLU/NDCs and Voluntary carbon initiatives in Africa revealed progress made on the implementation of market-based mechanisms as well as challenges faced from participating in international climate change regime.

CONCLUSIONS

The study concludes that REDD+ mechanism is vital in Africa as evidenced through its rapid growth since 2005 when it first came into the UNFCCC debate. Uptake, development and implementation of REDD+ projects, had resulted into 19 African countries partnering with 64 UN-REDD countries at different stages of implementing REDD+ projects. Process-wise, all UN-REDD+ participating countries had completed Phase I of Readiness in Africa, while Kenya, Tanzania and Ghana had advanced to Phases II and III of REDD+ processes. Among sampled countries, Tanzania and Ghana were leaders in REDD+ projects, while Ethiopia, Kenya and Zambia had the least number of REDD+ projects.

REDD+ would not be sustainable in Africa if it depended solely on trade in carbon, without balancing this with non-carbon products and services, because of variations in carbon densities found in different forest types of Africa (Blomey & Tennigkeit, 2012). REDD+ processes would also be delayed if countries insisted on implementing them through a National Approach because this approach naturally demanded long procedures and that took time to develop (Attafuah et al. n.d.).

In all the countries, REDD+ projects had started selling credits in the Voluntary Carbon Markets. In terms of trade, the study concluded that REDD+ credits were highly favoured in Voluntary Carbon Markets compared to AR-CDM generated credits. Although the UNFCCC had not prepared guidelines to enable REDD+ carbon credits to be certified and marketed in compliance markets, the Voluntary Carbon Markets had taken the lead in REDD+ credits trade even up to the close of 2015. Proposals in the Paris Agreement indicated that REDD+ mechanism would be embedded in a New Market Mechanism. With regard to synergies, REDD+ was viewed to have multiple linkages to INDCs and NAMAs, and yielded financial benefits from credits in addition to adaptation contributions; hence, African countries were already developing remaining REDD+ processes to maximize the full potential of this mechanism.

Implementation of INDC/AFOLU related initiatives continued to receive attention and, among six AFOLU categories, agriculture adaptation uptake was very high in all African

regions (above 80%), while Wetland Resources Conservation was the least referenced in West Africa. Region-wise, there were variations in the uptake of AFOLU related activities, which indicated the relative importance attached to each category by African regions. Fifty-two African countries had submitted their INDCs expressing (FM and AM) contributions for reducing global temperatures below 2 degrees centigrade. Implementation of INDCs was conditioned on support (Finance, Technology transfer and Capacity building). Among the six AFOLU categories expressed in African INDCs (Afforestation/Reforestation, Forest Management, Agriculture Management, Avoidance of Deforestation and Degradation (DD), Wetlands Restoration Conservation and Bioenergy), Agriculture adaptation was the most referenced policy action.

On policy and institutional reforms, African countries had undertaken partial reforms of their policies, laws and institutional arrangements as an obligation to international Climate Change agreements, while lack of political will had led some countries to avoid comprehensive reforms. Many incompatible policies and laws were retained that acted as bottlenecks in the uptake, development and implementation of REDD+, AFOLU, AR-CDM in Africa. All studied countries had not reformed their laws sufficiently to allow full implementation of these mechanisms. Even those that had reformed their Policy Legal and Institutional frameworks, still failed to define forest carbon rights creating ambiguity in application carbon rights. They also failed to include articles on carbon taxes hence making their reforms only partial. Due to legal encumbrances, delays in transformation of REDD+ to Phases II and III were going to be experienced in Africa. African countries studied had not prepared subsidiary legislation to smoothen implementation of REDD+ and AFOLU-related initiatives.

Benefits Sharing Mechanisms were not fully developed and implemented in African countries. None of the studied countries had developed a National REDD+ Benefits Sharing Mechanism; they had instead adopted benefits sharing models from Participatory Forest Management (PFM) and applied them in REDD+ projects with varied results. Haphazardly developed BSM led to low uptake of REDD+ because stakeholders viewed these BSMs as unfair. Secondly, BSM only targeted and compensated individuals that legally owned land; hence the BSMs were of limited application in cases where land ownership was not legally defined.

African countries had sufficient biophysical resources and human resource base required to uptake and implement market-based mechanisms. Although several technical and technological as well as financial challenges had impeded implementation of these mechanisms, the opportunities to overcome the challenges far out-weighed bottlenecks.

AFOLU sector was important in its contribution of around 24% GHGs, but also provided opportunities for mitigation through its capacity to sequester and store carbon. To maximize its benefits, African countries require to develop remaining REDD+ mechanism processes

and implement them. Attention should be placed more on developing REDD+ processes instead of AR-CDM projects because of immense challenges the latter faced. It was expedient that African countries began to apportion large portions of their domestic budgets to support market-based mechanisms to reduce overreliance on international support.

RECOMMENDATIONS

This study recommends that:

(i) Non-acceptability of carbon-credits from AR-CDM projects into the EU-ETS should be overcome through developing forest carbon value chains that would ensure long term CERs were accepted into major voluntary carbon trading markets. To reduce rejection of AR-CDM projects by DOEs and EB of the Clean Development Mechanisms, DNAs need to be capacitated in new rules, modalities, procedures and requirements for quick authorization of projects at national level. African countries need more representation at CDM- EB and also need to have upward follow-up mechanisms to check progress on submitted projects. They should increase skills and knowledge among experts to prepare AR-CDM projects that meet with material standards to improve projects acceptability. The fact that Africa had only one (1) DOE, implies that they would be wise to request the CDM- EB for additional African DOEs to facilitate validation of their AR-CDM projects.

(ii) African countries should aggressively develop REDD+, AFOLU/INDCs together with other Voluntary Carbon related initiatives in order to significantly contribute to GHG emissions reduction, SFM and livelihood improvements. They should enhance environmental resilience of the existing forest and natural resource conditions to reduce impacts of climate change on these ecosystems. Africa should roll out REDD+ and other AFOLU initiatives to take advantage of the high demand in REDD+ based credits in the Voluntary Carbon Markets. To make REDD+ sustainable in Africa requires strategic approaches which include implementing REDD+, based on Nested Approach and also drawing private sector investments into REDD+ projects. It is also important to increase trade in REDD+ credits by establishing an African Emissions Trading Scheme based on the New Market Mechanism and its Framework for Various Approaches. There is a need for African countries to formulate policies that would address investment in forest-based mechanisms. Such policies should aim at how African countries could source finances from African Stock Markets, Banking and Non-Banking Financial Institutions and also how forest owners could receive carbon tax rebates and loans.

(iii) African countries should begin to prepare instruments that will render them amenable to access support (capacity building, technology transfer and financing) from the

international community for implementation of their AFOLU / INDC actions. Africa should be proactive in its efforts to implement AFOLU/INDC. Without waiting for externally supported part of INDC, African countries should finance domestic budgets and kick-start planned activities of INDCs.

(iv) Local communities should be engaged in all the mechanisms that advocate for sustainable natural resources and environmental management; if not fully engaged, communities would disrupt processes aimed at SFM and natural resources conservation on which market-based mechanisms were contingent. In engaging local communities, special interest should be placed on building strong gender balanced development with options for gender affirmative action's being taken to leapfrog years of gender biased development. African countries should develop and implement National REDD+ Benefits Sharing Mechanisms with consideration to equity, efficiency and effectiveness as well as legitimacy of the BSM to enhance their impacts on implementation of AR-CDM and REDD+ mechanisms.

(v) Africa's capacity to implement INDCs is inadequate; the study recommends that: (a) financing (b) transfer of technology and (c) capacity building support, should be delivered in full through all sources, to meet INDCs (FM and AM) activity implementation milestones. Africa should strengthen education and training to develop human resources capacity required to plan and implement forest-based mechanisms and to conduct Research & Development (R&D) activities to generate knowledge and develop technologies to ease implementation of the market mechanisms. African countries should scale up internal budget allocation towards development and implementation of forest-based CDM, REDD+, INDCs and AFOLU as well as Voluntary Carbon related initiatives, to wean itself from over dependence on international financial support to implement its programmes.

(vi) REDD+ implementation strategies and REDD+ safeguards should be firmly streamlined into activity plans where progress of its implementation could be monitored and evaluated against achieved milestones in gender equality.

(vii) Gender affirmative actions: in development and implementation of REDD+, NAMAs, AFOLU/ INDCs and Voluntary Carbon related initiatives, gender-based resource utilization should be accorded high priority to secure participation of women, men, youths and vulnerable groups in projects based on these mechanisms.

(viii) To improve marketing of carbon credits, African countries should develop Emissions Trading Schemes that would allow African entities, countries and Private sector companies to supply and buy VERs which will increase carbon trade in Africa. African countries should also develop both carbon and non-carbon services and products from

forests and encourage revenue generation from both because of variations in forest carbon found in African forests.

(ix) To fast track transformational changes in the uptake, development and implementation of the compliance and voluntary carbon market mechanisms, African countries need to (a) reform policies, laws and institutions; (b) improve skills and knowledge through education and training and (c) scale up internal budget support to finance projects to enhance conditions and determinants that have permitted, and overcome those that have hindered, implementation of market based mechanisms in Africa.

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Appendices

Appendix 1. List of people contacted during field data collection

N°	Name of person visited	Contacts
1	Mr. Gathaara Gideon	Conservation Secretary in the Ministry of Environment and Natural Resources
2	Mr. Alfred Gichu	Focal person, REDD+ Assistant Director Kenya Forest Service, P.O Box 30513-00100 Nairobi alfredgichu@yahoo.com; Mobile: +254-722-787403
3	Ms. Rose Akombo	Assistant Director Kenya Forest Service P.O Box 30513-00100 Nairobi
4	Dr. Anne Nyatichi Omambia	Climate Change Coordinator (www.nema.go.ke) DNA for all CDM projects Environment Management Authority Director General's Office
5	Ms. Fatuma Mohamed Hussein	Ministry of Environment Natural Resources and Regional Development Authority (MENRRDA) Coordinator International Climate Change Negotiations
6	Mr. Mwangi Charles	Senior Programme Officer climate change Green Belt Movement (GBM) P.O Box 675 Nairobi cmwangi@greenbeltmovement.org 0720-976405
7	Mr. Joseph Mwakima	Project manager Wildlife Works, Kasigau Phase II REDD+ Project.
8	Mr. Mcharo Wilfred	Echo-Charcoal project supervisor Kasigau Phase II REDD+ Project. +2540723-821-238
9	Senior Engineer VPO. P.O. Box 5380 (official) /71694 (private) DSM	Tanzanie; Expert dans les projets BR-MDP Leoky2009@googlemail.com Cell No:0767450226
10	Director Forestry DSM Department MENR & Tourism	Cell No: 0785483599/ 0784483599
11	Director General National Environmental Management Authority	Tanzanian Expert on REDD+, AR-CDM based in DSM, Cell No: 0758-400800
12	Division of Environment VPOs, IBS Building	Email: tanzania37@hotmail.com C+255-222-11-3856/211

N°	Name of person visited	Contacts
13	Ministry of Agriculture- Wizara ya-Kilimo	Ministry of agriculture DSM Geophrey.kajiru@kilimo.go.tz
14	University of Addis Ababa HOD, Humanities and Social Sciences	Host of the AFF in Ethiopia and Expert in Climate Change
15	University of Addis Ababa, PhD student in Humanities and social Sciences	PhD student
16	Ethiopian Institute of Agriculture & Forestry Research Centre, Addis Ababa	Research Expert in Agroforestry systems email: grimashee13@yahoo.com, Tel: +251911817420
17	Mr. Solomon Chief Advisor to the Minister of Environment	Ministry of Environment & forest. Ethiopia
18	Country Sector Leader-Renewable Energy SNV- Ghana	No 10 Maseru street, East Lagon, P.O. Box KA 30284, airport Accra Ghana. Phone No: T+233-307012440/2441/ C +233-541886406, jrobimson@snvworld.org
19	Assistant Manager; MRV. Gh_REDD+ National REDD+ Secretariat Climate Change Unit	Forestry Commission P.O. Box MB434, Ministry Post Office, Accra, Ghana. West Legon Kisseman-Legon Road near GIMPA Junction Tel: +233-302791003/+233-302401210/ C+233-243623235/+233-207947471
20	Environmental Engineer at EPA, Environmental Protection Agency of Ethiopia	Tel:+233-0233180883/0242836505
21	RTD Climate Change Manager	bamforobert@yahoo.com T +233-289516504 P.O. BOX aib434 Accra Ghana Cel: +233-302 401210
22	Director, FD, Zambia. Kwacha house Annex Building 2nd floor, Cairo Road, Lusaka	Forestry (http://www.ministryoflands.gov.zm/)
23	Principal Extension officer, FDHQ	Forestry (http://www.ministryoflands.gov.zm/)
24	Chief lands Husbandry officer-Ministry of Agriculture & Cooperatives	Agriculture (Mulungushi House, Ridgeway, P.O. Box 25969, Lusaka, Zambia)
25	REDD+ Coordinator- ZNCCS	Climate change Unit Cel :+260-977654130; Email : deutkas@yahoo.com
26	Climate Change Ltd , Plot No: 310, Garden Compound, Lusaka	Private Company engaged in selling climate smart cook stoves

N°	Name of person visited	Contacts
27	ILUA/GIS/RS Expert	Forestry Dept. HQ, Lusaka, Zambia FDHQ,P.O. Box 410500 Lusaka, Zambia
28	Central Province Miombo regeneration project -World Bank. Forestry Department, 2nd Floor Kwacha Annex Building, Cairo Road, Lusaka Zambia.	Manager World Bank Project, supporting Zambia's forest sector in central province
29	UNFCCC national focal point. Ministry of lands natural Resources and Environmental Protection, Mulungushi House, Ridgeway, P.O. Box 34011	GRZ- Ministry of Lands, Env. & NR
30	Director Environment and Natural Resources dept. Ministry of lands natural Resources and Environmental Protection. Mulungushi House, Ridgeway, P.O. Box 34011, Lusaka, Zambia	GRZ- Ministry of Lands, Env. & NR
31	Chief Extension officer – Zambia Wildlife Authority/Mumbwa GEF Project	National Parks and Wildlife

Appendix 2. SWOT Analysis for REDD+ in Tanzania, Ethiopia, Ghana, Zambia and Kenya

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
Tanzania				
	1. Very large forest estate of different bio-physical characteristics (mangrove, Montane, woodland, savanna, dry-savanna (A-C-T).	1. Weak forest management m\systems leading to unsustainability utilization and DD.	1. Improvement of forest mgt systems and sustainable utilization through REDD+, NAMAs and NDCs.	1. Pressure from drivers of deforestation supported by biased political decisions.
	2. Ownership of land supported by constitution.	2. There is absence of specific REDD+ laws, forest carbon rights frameworks are nationally specific, finding a basis in existing "proxies".	2. Opportunities to confer by statute or contract, in either civil or common law; usufruct rights as opposed to the full ownership of forested land.	2. Political acceptance and rigid traditional views and failure to adapt to change may interfere with REDD+.
	3. Good experiences in REDD+ management attained from implementation of REDD+ subnational projects (A-C).	3. Subnational projects driven by project developers that saw large financing as motive for starting REDD+ project- internal capacities severely weak e.g. community involved in REDD+ lack deep understanding.	3. Capacity building opportunities exist for local people to understand REDD+ and own it as well as participate in more than its social aspect- but technical aspects as well.	3. Technical and financial support architecture may reduce drastically.
	4. Financial support – favours of the nation by CPs (F-C).	4. Removes fiduciary responsibility of Tanzania from financing	4. Opportunities to finance REDD+ from national treasury by broadening	4. Corruption and political decisions unfavourable to

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
		REDD+ from the treasury.	tax base in other economic sectors.	REDD+.
	5. Presence of NAFORMA structure[15] (C).	5. The NARFORMA operations are based on foreign funding and this is a weakness.	5. National budget support is possible through allocation of funds from internally generated resources.	5. Limited financial capacity of Tanzania to meet budget fully.
	6. Government structures to implement REDD+ are in place (A).	6. Ownership of REDD+ programme, leadership, capacity, and communications problems within and with government, in particular with MNRT.	6. Improve administrative structure of government that can absorb REDD+ when it is rolled out.	6. Political willingness may be lacking to see REDD+ transformed to final stage.
	7. Three-UN-Agencies (UNEP, UNDP & FAO) working together as UN-REDD Programme (A).	7. Increased administrative costs and irregular work habits.	7. Streamline functions of REDD+ during investment and results-based phases.	7. UN-REDD partners unwilling to separate hence jeopardizing Uptake of REDD+.
	8. Constitution supports state ownership of natural resources (L).	8. Superficial rights over private property is assumed in carbon rights-not well known who owns carbon.	8. Separate carbon rights –where sector laws clarify ownership rights for carbon from REDD+ community forests, private forests.	8. Political will may be lacking
	9. Tanzania has a decentralized	9. Decentralization is along political echelon, there	9. Revitalize traditional authority system	9. Political willingness by government.

[15] National Forestry Resources Monitoring and Assessment of Tanzania

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
	governance system (A).	is a weak traditional leadership system.	alongside political governance.	
	10. Villages established by law and recognized by Forest Act as entities that can own forests (L-A).	10. Enforcement of legal rights over forests due to conflict of interest.	10. Use village governments to implement REDD+ at subnational levels.	10. REDD+ implementation architecture embedded in national approach.
	11. Lands Act also recognizes villages as entities that can own land (L).	11. Land administration requires technical surveys that are costly-it is not known should bear these costs hence registration of villages is cumbersome.	11. Implement REDD+ in villages that covered with well demarcated land use maps if this is part of capacity building.	11. Financial and technical support is not forth-coming.
	12. Institutions that prevent corruption are available (A).	12. Profiling wrong doers-not fair.	12. Transparency through peer reviews.	12. Political interference.
	13. Well educated and trained population (C).	13. Lack of specific REDD+ skills.	13. Capacity building to improve skills, knowledge.	13. Financing skills training and education may not forth coming.
	14. Implementation support infrastructure available (C-A).	14. State of available infrastructure, equipment, tools, quantity and quality and location.	14. Provide REDD+ implementation support infrastructure such as National Remote Sensing Centres, GIS/RS systems and acquisition of high resolution images.	14. Financing for infrastructure not favoured by cooperating partners.

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
	15. FREL/REL/EL estimates is a strength (Capacity-A).	15. Still using basic forest parameters that miss out agriculture based parameters (NOxS, livestock based emissions.	15. To improve on MRV through removing default values and addition of more parameters for measurement.	15. Financing inventories is a serious threat in African countries and project based payments may not be sufficient to support these.
	16. Long established FD with presence in all regions (A).	16. FD is insufficiently funded to fully undertake most of its functions.	16. Re-engineering forest sector operations & management to include REDD+ Mechanism.	16. Political will to fully embrace REDD+.
	17. Ministry of gender (x-cutting).	17. Gender not well mainstreamed.	17. Gender & REDD+ mainstreaming, SESA and ESMP.	17. Costs of financing ESMP too high.
Ethiopia				
	1. Presence of forest estate in extent of 35.3 million ha of high forests, plantations and bamboos, including shrub-land giving a total of 61.13million ha (A-C-T).	1. Forests are poorly managed and highly threatened with DD, which puts at risk REDD+ implementation.	1. Forest mgt can be improved and enhance REDD+ implementation.	1. Inadequate CP support.
	2. Presence of research institutions to conduct climate change /forestry and related research work (C-T).	2. Inadequate human resources, finances to carry out very detailed REDD+ CC research consistently.	2. Sustain operations of Research Institutions.	2. Meager financing of long term research associated with CC is not guaranteed

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
	3. A large population of forest dependent communities can be galvanized to engage in AR/REDD+ projects (A-C).	3. Divergent interests; some conflicting with REDD+ implementation. Inadequate legal provisions to allow communities participate in REDD+.	3. Legal provisions can be made through review and reforms of the law to cover local community participation, land ownership, forest carbon ownership.	3. Resistance to change by bureaucrats
	4. Presence of Forest Department (A-C).	4. Weak implementation capacity, Lack of a strong forest institution, overstretched forestry staff technical and financial capacity is very limited.	4. Improved funding opportunities through REDD+ implementation.	4. Misappropriation of REDD+ funding (diverting it) to other sectors.
	5. Sector policies are present in agriculture, forestry and energy/ resettlement (L-P-I).	5. Discrepancy among sectoral policies (investment/settlement vis-à-vis forestry). Woredas were created along ethnic lines.	5. Harmonization of sector policies, implementation modalities can remove conflicting areas by allowing for collaboration.	5. Sector divisions/tunnel visioned selfishness.
	6. Ministry of Environment and Forest (A-C-L).	6. Still in its infancy, inadequately funded from local resources: 6b). Large donor inflows can make the ministry rely on false hope of continued future funding.	6. Ministry can be capacitated to carry more responsibilities on REDD+ (currently happening in Ethiopia).	6. Financing can fail and this is a real threat.

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
	7. Presence of Environmental Protection Agency (EPA) (L-C-A).	7. Failure to undertake EIAs and embed them in ESIA-ESMPs compromise, future conflict point-which contribute to REDD+ implementation.	7. Capacity building opportunities exist to improve performance of EPA.	7. EPA aloofness.
	8. Presence of other government and NGOs, AU (C).	8. Ambiguity of Ethiopian governance structures.	8. Presence in close proximity of institutions at AU- that deal with CC	8. Failure to collaborate with other institutions.
	9. Policy implementation by one Bureau; Ethiopian government is implementing agriculture and forest policies (L-P-I).	9. Contradictions in main policies implemented by the same institution[16].	9. There are possibilities of harmonizing conflicting policies in agriculture and forestry through sector reviews.	9. Political interference (especially where corruption) with rent seeking
	10. Bureau of Land Administration and environmental protection (BAEP) (L-P-I).	10. Protection of forest land/NR vs. agricultural expansion.	10. Objective agriculture and Forest mgt including undertaking extensive planning using available information that provides best options to implement.	10. Biases, corruption in agriculture and forest use.

[16] i.e. The Growth and Transformation Plan period and target setting affects the localities, in order to achieve the national goal of increased annual production by 40% and agricultural land use by 20%, the target of expanding forest cover by 30% is an contradictory policy goal and an issue In the region while being implemented by the same bureau but two different departments.

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
	11. FD was not a dedicated institution (A).	11. Unclear forestry resources user rights.	11. Can be improved through REDD+ implementation.	11. Resistance against change.
	12. Participatory Forest management (PFM) is a model that has been used to learn lessons for building REDD+ implementation C-T).	12. Low empowerment of local communities. Absence of benefit sharing mechanism.	12. There are chances to use PFM approach to build on REDD+ implementation.	12. Bureaucrats failure to accept BS as part of REDD+
	13. Funding of R-PP from internal resources.	13. Partial funding of R-PP insufficient to cover much REDD+ activities.	13. Treasury can increase REDD+ financing in addition to CP funding.	13. Fiscal policy difficulties caused by shocks.
	14. Gender aggregated society potentiates diversity of gifts towards meeting REDD+ implementation requirements (x-cutting)	14. Gender biased development, favouring men, rich and politically advantaged.	14. Gender mainstreaming into REDD+ implementation is a real opportunity for Ethiopia.	14. Political cronies, religious bigotry.
Zambia				
	1. Appropriate forestry legal-policy framework (L-P-C).	1. Weak institutional framework for implementation of the forests Act No: 4 of 2015.	1. Open collaboration with agriculture, mining, industry.	1. Financing of mitigation and adaptation mechanisms by foreign partners and through bilateral and multilateral.
	2. Preamble statements recognize out rightly the role of the UNFCCC and	2. Insufficient power devolution to other sectors involved	2. Opportunities exist for devolution and broadening stakeholder	2. Financing REDD+ is unclear and financiers have different

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
	what FD has to do to bring various aspects of the 3 Conventions to bear (CCD, FCCC & CBD) (L-P-A).	especially in driving DD.	involvement in forest sector management.	motives.
	3. Presence/existing forest department and its structure as well as personnel that are experienced in forest management (T-A).	3. Presence/existing forest department and its structure as well as personnel that are experienced in forest management (T-A).	3. Creation of National Climate Change Secretariat is an opportunity to improve the operation environment in which REDD+ can proliferate.	3. Political interference and financing limitations.
	4. Revised national constitution supports Climate change mitigation actions- e.g. supports REDD+ safeguard on gender equality Article (74) has provided for establishment of a gender equality Commission that should (a) monitor, investigate, research, educate, lobby, advise and report on issues concerning gender equality; and (b) take steps to secure	4. Inconsistence between customary tenurial rights and constitutional provisions on land tenure and ownership of forests and trees still remains a weak point devolution of land management is very fluid and leaves property rights awkward.	4. Opportunities to revise land laws to suit constitutional provisions in order to be consistent with REDD+ requirements; harmonization and change of attitude by menfolk regarding property rights; enforcement of laws through judicial system/ implementation of Bill rights.	4. Corruption and corrupt practices is a threat to ensuring constitutional rights implementation.

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
	appropriate redress in complaints relating to gender equality (L-A-C).			
	5. Land alienation and distribution system currently on-going to provide updated land use cover maps and future land audits (A).	5. No formalized management of land in Zambia and neither are systems developed to handle the defacto management embedded in the state. Village headmen and chiefs control land allocation.	5. Current legal revisions provide excellent opportunities to correct inconsistent laws and fit them to the constitution.	5. Political willingness in legal reforms and financing reforms as well as implementation modalities.
	6. Capacity built to some extent in MRV (T-C)	6. Morbidity and mortality levels including staff transfers/retirements.	6. Continuous capacity building and motivation	6. Death of experienced staff sicknesses
	7. Institutions for REDD+ coordination established (climate change facilitation) (C-T).	7. Inadequate capacity in sector institutions to support REDD+ implementation; REDD+, a battle-front for resource.	7. REDD+ projects can be used to integrate, bring sectors especially those responsible for DD to collaborate.	7. Isolationism and silo-style sector management.
	8. Experience from bridged phase 3 REDD+ activities –lower Zambezi (T-F).	8. Single and isolated project in VCS, which has not much impact on rest of the country.	8. Lessons can be learned from Lower Zambezi REDD+ project for application into.	8. REDD+ has no legal structures yet. May take much time to develop and affect implementation especially Results-Based payments.
	9. Fifty (50) million	9. Weak forest	9. Opportunities to	9. Agriculture expansion

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
	hectares of forest estate is a strength for starting SFM via REDD+ (T-C).	management systems leading to a high annual deforestation rate of 300,000hectares; inadequate research in forestry in relation to CC.	improve forest management and conduct relevant CC research studies.	into forests and other Protected Forest Areas (PFA).
	10. Three point six (3.6 billion) Tonnes of carbon stored in AG/BG forest ecosystem (Biophysical –C).	10. Uncontrolled extraction of wood fuel resources	10. Opportunities for building robust REDD+ MRV, NFMS and increasing avoided emissions.	10. Forest fires can easily convert this stored carbon into flames hence lead to c-emissions.
Ghana				
	1. Large forest resource base covering roughly 4,940,000 ha (22%) of total land area.	1. High deforestation rate and of 90% of forest resources.	1. Opportunity to redress improve forest mgt thru AR, revegetation, REDD, NAMAs and NDCs.	1. Severe climate variability and CC.
	2. Capacity to sequester carbon high (C-T).	2. The high deforestation rate and grassland conversion severely reduced capacity of sinks to remove carbon.	2. Enhance sinks capacity to remove, store carbon through REDD+, other mitigation and adaptation measures.	2. Severe climate variability and CC.
	3. Capture of carbon revenue and re-investment (F).	3. Low carbon credit prices inadequate to support sfm practices.	3. Opportunity to diversify income sources to include NCB.	3. Political support to formulate and implement appropriate policies and laws.
	4. Local community	4. Village governments	4. Capacity building to	4. Constitutional

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
	structures devolved up to Stool (A-C).	often lack technical know-how and capacity to understand REDD+ requirements.	enhance skills, knowledge at community level to enable local participation in REDD+ (CSA) processes.	limitations on farm tree ownership.
	5. Agriculture intensification (C-T).	5. Still many farmers practice traditional agriculture; fields for dagga cultivation.	5. Expansion of areas under sustainable land management (AFOLU/Climate Smart-Agriculture.	5. Donor fatigue increasing financing failure.
	6. Mixture of statutory, customary and informal arrangements characterize land tenure in Ghana (L-P-I–A).	6. Great compromises, systems failures and undermining of each other's' efforts.	6. Complicated tenure can be prioritized area for capacity building.	6. Political interference especially campaign; divisive policies.
	7. Complex legal/policy/institutional arrangements (L-P-I–A).	7. Land tenure insecurity creating regulatory risk for REDD+ implementation.	7. Opportunities for harmonization of sector policies, laws and institutional arrangements.	7. Political interference.
	8. Decentralized governance systems is a strength in that power and authority is located at Stool closest to the people (A-C) that are responsible for causing emissions from various	8. Lack of engagement of District Assemblies (DAs) and (Chieftaincies) TAs, noting that both are legally empowered to develop and enforce by-laws around sustainable and legal natural	8. There are opportunities to build capacity and democratic governance structures and systems to ensure that REDD+ is implemented with full participation of the relevant stakeholders.	8. Political willingness to ensure that government relinquishes authority to different levels at lower organs

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
	production activities.	resource extraction (Rose, 2009).		
	9. Decentralized governance arrangements (structures) (A-C).	9. Current lack of capacity of District Assemblies, which could potentially incorporate REDD type actions in their Natural Resource Plans.	9. Capacity building of district Assemblies is possible and open possibility.	9. Willingness of central government to give off power.
	10. Ministry responsible for energy (C-T).	10. In the case of charcoal, the lack of a biomass energy policy of the Ministry of Energy, which is more focused on electricity (a participant mentioned that only 6% of Ghana's energy is from electricity, the rest being biomass and LPG) (Rose, 2009).	10. Opportunity to formulate an Energy policy and implement it to change energy mix and improve supply from different sources.	10. Investment capital.
	11. Benefit sharing mechanism in constitution (F-P).	11. Weak or unclear benefit-sharing arrangements – a key research area for equitable REDD; (Rose, 2009) the REDD opportunities scoping exercise (ROSE) for Ghana: ROSE expert workshop report.	11. National benefit sharing mechanism can be established for REDD+ or nested BSM.	11. Issue of willingness to share financial resources can be a serious threat.

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
	12. Many different stakeholder groups ensuring that the multi-level functionality of REDD+ is used to transform REDD+ and embed it into institutions responsible for DD (C-T).	12. Lack of political will for policy reforms and the inter-sectoral coordination needed to tackle the main DD drivers – REDD+ should form part of an overarching policy framework for a sustainable land-use planning across local, regional and national scales.	12. Opportunities exist to institute significance legal/policy/institutional reforms in areas where there are noted gaps-directly answering/hindering REDD+ implementation in Ghana.	12. Political willingness /resistance to change.
	13. Existence of laws and government institutions to implement the laws L-A).	13. Weak law enforcement will and capacity, partly due to the lack of state institutions on the ground and political interference with law enforcement, as well as weak accountability and transparency.	13. Government reforms are possible and present an opportunity if political will is resuscitated.	13. Willingness to invest in institutions and motivating stakeholders.
	14. Presence of legal framework and institutional arrangements (A_L_I).	14. Laws impinging on land use, ownership, and tenure require careful scrutiny, when considering the design of positive incentives for land users or forest managers.	14. Opportunities to harmonize laws and policies that pause lacunas and administration conflicts.	14. Tunnel visioned - selfishness in institutions.

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
	15. Availability of land resource for different uses, among which REDD+ is included (C).	15. Complex land tenure issues around cocoa farms in forest reserves, including the land ownership situation before the reserves were created.	15. Land audits can be produced with landuse cover maps assigning different uses depending on comparative advantage.	15. Willingness to characterize land and giving it proper use threatens power-hold on land and reduces corruption.
	16. Recognition of carbon as important asset for nations (F-T-P).	16. Uncertainty around carbon property rights which have yet to be addressed by the law.	16. Legal reforms that can assign carbon property rights based on existing laws or new laws.	16. Willingness to undertake reforms.
	17. Presence of large private sector involved in timber harvesting (A-C).	17. Clarification of the right of the Minister of Lands and Natural Resources to abrogate concessions or Timber Utilization Contracts (TUCs) in favour of carbon.	17. Harmonization of Forests Act to remove excess power from Minister to abrogate contracts.	17. Resistance from politicians to remove offending legal provision.
	18. Forest Act provides that trees are owned by the President on behalf of the State (L-A).	18. The potential for CREMAs and/or Dedicated Forests in off-reserve forest areas, including how carbon property rights will be resolved if the state continues to 'own' the trees (noting that continued state ownership of timber rights would not be	18. Ghana intends to take its constitution for a referendum through which people will decide on many issues including land ownership, tree/forest tenure including carbon rights –in REDD+ implementation.	18. Resistance against changing land ownership entrenched in plural land tenure systems of Stool and Skin traditional versus Statutory land ownership systems.

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
		incompatible with landowner or farmer carbon rights).		
	19. Chain saw operators that are experienced in logging that can be useful in REDD+ implementation (T-C).	19. Issues surrounding timber concessions in CREMAs/community forest areas; these issues include high timber poaching activities by chainsaw operators that can even produce planks, battens, beams, and directly sell these.	19. Incorporation of chainsaw operators in REDD+ implementation is possible through BSM from carbon generated revenues.	19. Rejection of incorporation of stakeholders into REDD+ implementation.
	20. Presence of Community Resource management Area that include dedicated forests (A-C).	20. The pros and cons of CREMAs and Dedicated Forests, including the circumstances in which each might be appropriate, levels of political will, and the capacity to influence the legislative processes. (ROSE, 2009).	20. CREMAs are already important in REDD+ implementation; opportunities to ensure there stability and incorporation in REDD+.	20. Political will to include CREMAs in REDD+.
Kenya				
	1. Established and experienced DNA, large and decentralized to 47 counties of Kenya.	1. DNA is small, sits irregularly delays authorization of projects.	1. Increase size of DNA according to sectors responsible for driving DD and other oversight	1. Financing operations dependent on external support which can be

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
			bodies to enhance its operations.	discontinued.
	2. Strong and robust experience in subnational REDD+ projects implementation (FIRST REDD+ project to be registered in the world).	2. Distribution of REDD+ projects not normal in the different forest types. Only in isolated forests such as Tsavo national parks (East &West) we find REDD+ project.	2. Integrate REDD+ into NAMAs. This is important because NAMAs are broader Policies that promote low energy emissions development (Lutken, 2014).	2. Reaching peak of Emission Reductions in REDD+ can result in precarious financial difficulties and reduced investment by developers in REDD+ projects. The quantities of credits too low to support REDD+ (Market failure).
	3. Private sector participation is relatively high.	3. Local private sector companies, NGOs, FBOs lack the financial muscle to engage fruitfully in REDD+ projects.	3. Sale REDD+ credits through NMM.	3. Restrictions on REDD+ credits due to stringent methodologies and other requirements.
	4. Not yet registered as a net polluter.	4. Carbon emissions activities point to country becoming a future polluter.	4. Reduce emissions through REDD+ & INDCs+ NAMAs. Set more ambitious NDCs, develop and implement sector specific NAMAs according to high emission reduction pathways.	4. Lack of commitment and inadequate financial and technical support through bilateral and multi-lateral financial arrangements.
	5. Emphasizing both mitigation & adaptation	5. Inadequate treasury funds to support	5. Capacity building including basic technical	5. Failure of financing [Bilateral and

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
	mechanisms.	implementation of mitigation and adaptation measures.	components.	multilateral funding may not support adaptation measures and only pick some mitigation measures].
	6. Local Community participation in Carbon projects has built legacy and interest profile in areas where REDD+ projects are being implemented.	6. Still some weaknesses exist in local communities' capacities to articulate REDD+ processes and understanding of its broad and multiple response nature. Lack of uptake of REDD+ due to politics (e.g. land grabs)	6. Opportunities exists to have synergies, multi-sector collaborative arrangements and access benefits for sfm, gender equity and broad policy reforms.	6. Failure by international community to finance REDD+ and purchase REDD+ credits at fair prices that would make REDD+ attractive poses as a threat to uptake of REDD+.
	7. Benefits sharing mechanisms tried and working hence setting basis for equitable benefit sharing and giving a sense of forest resource ownership.	7. National REDD+ BSM not yet developed Many subnational models for REDD+ BS.	7. To develop robust national REDD+ benefit sharing model that includes Non-Caron Benefits using lessons learned from e.g. Kasigau and other projects.	7. Low price for REDD+ credits in compliant and non-compliant markets Restrictions on credits from some REDD+ projects.
	8. Constitutional support to gender equality giving equity is a very strong position that sets background to sector laws.	8. Gender equality provision equity to meet safeguard implementation still weak /lacunas in sector legal/policy and institutional framework:	8. Opportunities exist to enact legislation and formulate sector policies that harmonize insistencies and conflicts in sector laws for [e.g. conflicts in	8. Rapid changes in international laws and policies regarding REDD+ and lack of holistic /landscape approach to reformation of sector

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
		high transaction costs in implementation of land law.	policies and laws that lead to DD].	laws and policies in REDD+ implementing countries.
	9. Strong NGO (local & foreign) presence in REDD+.	9. Many lack technical capacity to implement requirements of REDD+.	9. Many lack technical capacity to implement requirements of REDD+.	9. Financing remains a serious threat to REDD+ development of REDD+.
	10. Economy relies on abundant natural resources where forests provides 75% of biomass energy.	10. Population growth & dependence on forest extraction for energy/Food/fiber/fuel nexus and priority of agriculture over forestry/Severe land shortages in Kenya making land as 'war-zones'.	10. Opportunities are there for diversification of economic activities and also energy sources to remove heavy burden of dependence on forests.	10. Depletion of natural resources from overharvesting due to high demand for NR/ due to population and population dynamics.
	11. Verified Carbon Standards projects earing revenue from sale of carbon credits.	11. Modelling MRV based on default parameters of the IPCC.	11. Build database that covers national parameters and more carbon-pools.	11. Rejection of some credits from REDD+ projects with less than high standard methodologies low prices of REDD+ carbon credits in the compliant and non-compliant markets.
	12. Experience in sale of carbon credits in voluntary and compliant	12. Not in full control of prices for credits and often dictated by.	12. Improve parameters and methodologies for REDD+ projects to	12. Less ambitious demand for REDD+ carbon credits by Annex I countries due

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
	markets.		attract premium prices.	to low emissions target set by international community 40 Gt that should lead to 20C.
	13. Research institutions support to technological needs of REDD+.	13. Underfunded and understaffed research institutions.	13. To expand research capacities to include technical, adaptive REDD+ research projects.	13. Lack of Technology transfer from developed world and inadequate funding.
	14. Sale of REDD+ carbon in compliant markets.	14. DNA problems of understanding methodologies for REDD+ CDM projects hence delays in issuing letters of authority.	14. Opportunities to build capacity in the administration of DNA through skills, staffing.	14. Flooding of REDD+ credits into markets from China and India that should have graduated to Annex I country status.
	15. Several AR-CDM projects running providing experiential learning and that can be transferred to REDD+ projects.	15. AR projects that have been designed sometimes been abandoned by developers due to inexperience and underestimation of initial development costs	15. Opportunity to attract financing from AfDB and others sources to support project investment and results based phases.	15. International community failure to honour pledges to support REDD+ and Non-Carbon Benefits (NCB) mitigation and adaptation mechanisms.
	16. Trained and educated population condition and determinant for uptake of REDD+.	16. Inertia by technical & professional staff to thoroughly study methodologies that are relevant to REDD+.	16. Opportunity to work with other professionals	16. Failure to establish common vision among educated stakeholders-different interest and pulls.

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
	17. Presence of different forest types (Miombo, savanna, Montane, mangrove and equatorial) where REDD+ can be implemented.	17. Different forest types have different capacities to sequester and store carbon.	17. Opportunities to improve forests adaptation and resilience to CC also carrying out adaptive research.	17. Preferences for funding REDD+ projects are high carbon forests (HCF).
	18. Constitutional and sectoral legal support for REDD+.	18. Still REDD+ is viewed as a land grab approach implementation support and resistance to change.	18. Opportunities exist for putting M&E of REDD+ implementation.	18. Commitments to pledges on financing, technology transfer and capacity building.
	19. Addition of POAs is a strength that can proliferate base for mitigation mechanisms including REDD+.	19. Knowledge about POAs still limited to few technocrats.	19. Learning how to apply POAs to increase REDD+ projects.	19. Failure to transmit benefits to end-users.
	20. Local communities are interested in afforestation/reforestation projects including REDD+.	20. Lack of upfront funding and long wait periods before communities realizing financial returns from the carbon credits make it impossible for the local communities to initiate and scale up such forestry projects.	20. Opportunities exist to provide NCB to cushion the windows of need and supply of finances from sell of carbon credits. Equally, companies have a chance of investing in local community diversified project portfolios.	20. Lack of technical and financial back up from government, other stakeholders and over-politicization.
	21. Local investors such as	21. Even with upfront	21. There are opportunities	21. Poverty and shocks in

Country	Factors affecting implementation of REDD+			
	Internal factors	Internal factors	External factors	External factors
	Strengths (S)	Weaknesses (W)	Opportunities (O)	Threats (T)
	banks are gearing up to invest in carbon projects.	funding, the experiences from the ground have shown that the investments needed for these projects are more than the financial returns from the carbon credits.	to diversify income sources through use of NCB for instance agro-industries support, eco-tourism among others.	macro-economic factors of the economy can upset conservation efforts 22. Drawn debates and prolonging decision on definitions from subsidiary bodies.
	22. REDD+ will be generating various carbon credits.	22. Lack of international authoritative definition for REDD+ as to various types of carbon credits that could be generated.	22. Opportunities to define REDD+ exist e.g. definitions as they have been given to AR-CDM projects such as tCERs, lCERs, CERs and VCU, etc	22. Drawn debates and prolonging decision on definitions from subsidiary bodies.

Appendix 3. List of people contacted during field data collection

Country	Carbon benefits	Non-carbon benefits	REDD+ Benefits sharing and contemporary[17] mechanisms			Equity , Effectiveness & efficiency of benefits sharing mechanism sound in 3Es√; not sound in 3Es X		
			Present √	National REDD+ mechanism absent X	Benefits sharing Ratios	Equity Perception of Fairness of BSM to stakeholders	Efficiency: Ability to reduce transaction costs of production and delivery	Effectiveness Contribution to reduction of carbon emissions
Ethiopia	Cash transfers	Access to timber and NTFPs	√	X	Kebeles: 30% PFM/JFM Cooperatives: 15% PFM/JFM Union/Federation:5% Forest Management/Protection: 35%; Research and monitoring: 5% REDD+ Secretariat: 2% Transaction cost: 8% Taxation: 0% Total: 100%	√ Fair distribution of benefits among representative groups	X Mechanism was at proposal stage, had not been implemented for it to be tested for efficiency	X At proposal stage. Mechanism had not been implemented to test its effectiveness
Ghana	Cash transfers		√	X	Community Resource Management Areas/CREMA benefits sharing: 5-10% revenues to Executive; 95-90% revenues go to Communities (Katoomba, 2012). Stool system:	X There could be very little equity in Ghana's 2 sampled benefits sharing mechanisms. Narrowness of the CREMA	X It was inefficient as it did not deliver revenues from timber concessionair es that	X The mechanism was ineffective in its exclusion of on tree farm owners in revenue

[17] © contemporary benefits sharing mechanisms are those that had been designed and applied in Joint Forest, Participatory Forest and, or Community Forest management projects/programmes, which were being integrated into REDD+ nested, project based models towards developing national REDD+ benefits sharing mechanisms.(R) mechanisms were those under pilot REDD+ projects, which came as hybrids or innovations.

Country	Carbon benefits	Non-carbon benefits	REDD+ Benefits sharing and contemporary[17] mechanisms			Equity , Effectiveness & efficiency of benefits sharing mechanism sound in 3Es√; not sound in 3Es X		
			Present √	National REDD+ mechanism absent X	Benefits sharing Ratios	Equity Perception of Fairness of BSM to stakeholders	Efficiency: Ability to reduce transaction costs of production and delivery	Effectiveness Contribution to reduction of carbon emissions
					administrative costs to officer for stools: 10%; and 90% revenue disbursed in the following proportions - (a) stool through the traditional authority :25%; (b) traditional authority: 25% to the; and (c) District Assembly: 55%	mechanism robs it of equity factor. The Stool based mechanism was based on political appeasement motives rather than objective rationale	engaged in corrupt practices, ignored to pay full concession amounts to the Ghanaian Forestry Commission	sharing.
Kenya	Cash transfer	Infrastructure , scholarships, agro-inputs, eco- tourism, eco-friendly income generating activities employment	√	X	**Kasigau REDD+ project:** 33% gross revenue for local owners: 20% for LCCs, 50% for local jobs, 33% for project management and validation/verification, rangers (local), tree plot teams (local) -33% other stakeholders (WW, investors)	X This mechanism addressed a number of non-carbon and carbon benefits. It came close to an equitable model, but it was location specific and may not be applied over a large area with different biophysical forest conditions	X -33% for Wildlife Works implied that investors were subsidizing the project	X by virtual of subsidies, the project was ineffective

Country	Carbon benefits	Non-carbon benefits	REDD+ Benefits sharing and contemporary[17] mechanisms			Equity , Effectiveness & efficiency of benefits sharing mechanism sound in 3Es√; not sound in 3Es X		
			Present √	National REDD+ mechanism absent X	Benefits sharing Ratios	Equity Perception of Fairness of BSM to stakeholders	Efficiency: Ability to reduce transaction costs of production and delivery	Effectiveness Contribution to reduction of carbon emissions
Tanzania	Cash transfers, support to projects	Infrastructure development, materials, equipment, access to NTFPs especially by women	√	X	Among six REDD+ projects, there was not a single model satisfied 3Es (equity, efficiency and effectiveness. BSM Ratios were too many , sometimes too altruistic to mean anything for REDD+	X Sharing of revenue in Ngitilis was not equitable and was criticized	X Giving of grants in Zanzibar was also considered inefficient	X Inefficient in the sense that sometimes income was evenly distributed
Zambia	Cash transfer	Controlled access to NTFPs: mushrooms, medicines, condiments, bamboos, rattan, firewood collection	√	X	FD (2006) Joint Forest management areas (JFMAs) involving national forests relegated to JFMA; (b) 60%:40% ZAWA model: Patron (local chief): 5% Community Resource Board (CRB): 50% Zambia Wildlife Authority: 45% Total: 100%	X Not equitable; irresponsive to gender based needs. Was never applied. Communities rejected the model and government guidelines were shelved. ZAWA mode was accepted, but government was inefficient	X Not possible to evaluate a mechanism that was not implemented	X Untested mechanism delivery on what it had proposed was not implemented -tested

Appendix 4. State of AR-CDM project in the Voluntary Carbon Market

Country	Name of AR-project	Size in ha	C-emissions reduction	Period of crediting	Validating Body	Comment
Ghana	FORM Ghana Ltd ARR	15,000		40 years	VCS	The proposed ARR VCS project aims at reforestation of 15,000 ha in degraded forest reserves in Ghana. Currently, 1,506 hectares in the Asubima Forest Reserve in the north of the Ashanti region are realized, forming the first project instance of this grouped project. The project foresees an average expansion of 1000 hectares per year, adding new project areas and instances. This is an Afolu sector scope project and is an ARR-Afforestation/Reforestation/revegetation (category)
Ethiopia	Humbo	2,726	886 296 tCO_2eq	60 years	CDM – EB	1st AR-CDM project to sell tCERs in Africa in 2012.It was validated as an AR-CDM project in 2009 and sold its 73000 credits to the World Bank BioCarbon Fund. The Humbo Community Managed Natural Regeneration Project6 (located in Wolayita Administrative Zone in South Nations, Nationalities and Peoples' Region, southern Ethiopia)
	Bale Mt. REDD+ eco-system project		18 million tCO_2eq	20 years	VCS	Estimated to run for 20 years during which it is expected to reduce emissions by 18 million $MtCO_2eq$

Country	Name of AR-project	Size in ha	C-emissions reduction	Period of crediting	Validating Body	Comment
Tanzania	Uchindile-Mapanda AR	18,379	419,670 tCO_2eq	20 years	VCS	GRL-Uchindile and Mapanda Forest Projects in Tanzania have been validated under the Voluntary Carbon Standard (VCS) following the AFOLU guidelines for Afforestation and Reforestation Projects. The validation was carried out by TÜV Süd. The VCS is largely recognized as the benchmark and most demanding standard for the voluntary carbon market
	Reforestation at the Idete Forest Project	11,500			VCS	GRL- Reforestation in grassland areas of Idete, Mufindi District, Iringa Region, Tanzania. In the Southern Highlands of Tanzania. There was a proposal to register this project under AR-CDM (i.e. CDM-registry). After 13 years of project implementation, GRL was finally able to generate and sell verified carbon credits in 2010. GRL sold 130,000 credits to Carbon Neutral Company (UK) for about USD 835,000. As promised, GRL gave back to the community 10% of the sales.
Zambia	Lower Zambezi REDD+ project	39,000			Triple-Gold VCS & (CCBS)	**Bio-carbon Group** - The project sold its credits to Microsoft Climate Community and Biodiversity Alliance Standard Project works with more than 8000 local community members to improve agri-business, farming practice

Country	Name of AR-project	Size in ha	C-emissions reduction	Period of crediting	Validating Body	Comment
Kenya	KENYA GBM Reforestation BIOCF Project	2,000	400,000 tCO_2e by 2017			Project is located at Aberdares Range and Mt. Kenya; Two of the five water towers in Kenya. Project is to use 20 year crediting period with the option of renewal twice (to a maximum of 60 years. There are 7 sites of small size portfolio AR-CDM projects located at Mt Kenya and Mt Aberdare as follows:
	Mt Kenya					Kibarinyeki
	Mt Kenya					Kititi/Kienini
	Mt Kenya					Mugeria
	Mt Kenya					Kabaru
	Aberdare Mt					Kapipiri
	Aberdare Mt					Kamae
	Aberdare Mt					Tanyai/Ruiri

Appendix 5. African UN-REDD Partner Countries

African Forest Forum



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