



Submitted to CCAP Project Partners

Policy Analysis in relation to climate change adaptation, mitigation, agriculture and REDD

Final Report

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List of acronyms

AGG	Agriculture Green Growth
AR4	Fourth Assessment Report of IPCC
ASDP	Agricultural Sector Development Programme
ASDS	Agriculture Sector Development Strategy
ASMDP	Agricultural Marketing Systems Development Programme
CBFM	Community Based Forest Management
CDM	Clean Development Mechanism of the UNFCCC
CEEST	Centre for Energy, Environment, Science and Technology
CERs	Certified Emission Reductions
CFM	Community Forest Management
COP	Conference of the Parties to the UNFCCC
CSA	Climate Smart Agriculture
DADPs	District Agricultural Development Plans
DANIDA	Danish Development Agency
EMA	Environmental Management Act (2004) of Tanzania
FAO	Food and Agriculture Organization of the United Nations
GEF	Global Environmental Facility of the World Bank
GHG	Green House Gas
HAKIARDHI	Land Rights
IPCC	Intergovernmental Panel on Climate Change
JFM	Joint Forest Management
KILIMO KWANZA	Agriculture First
LAMP	Land Management Programme
MAFC	Ministry of Agriculture, Food Security and Cooperatives
MDGs	Millennium Development Goals

MJUMITA	Community Forest Conservation Network
MVIWATA	Farmer's Network of Tanzania
NAPA	National Adaptation Programme of Action
NGOs	Non Government Organisations
NSGRP	National Strategy for Growth and Reduction of Poverty (commonly known in Kiswahili as MKUKUTA)
NT	No tillage
PASS	Private Agricultural Sector Support
REDD	Reduced Emission in Deforestation and forest Degradation
RELMA	Regional Land Management Unit
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SCAPA	Soil Conservation and Agroforestry Programme
SEA	Strategic Environmental Assessment
TAR	Technical Assessment Report
TFCG	Tanzania Forest Conservation Group
TNBC	Tanzania National Business Council
TOAM	Tanzania Organic Agriculture Movement
TPSF	Tanzania Private Sector Foundation
UNCBD	United Nation Convention on Biological Diversity
UNCCD	United Nations Convention to Combat Desertification
UNEP	United Nation Environmental Programme
UNFCCC	United Nation Framework Convention on Climate Change
USAID	United States Aid Agency
WMAs	Wildlife Management Areas

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Executive summary

This policy analysis in relation to climate change adaptation, mitigation, agriculture and Reduced Emission in Deforestation and forest Degradation (REDD) has been conducted within the framework of the project "climate change, agriculture and poverty alleviation: putting small-scale farmers at the heart of policy and practice". The project is implemented in Kilosa and Chamwino districts by ActionAid in collaboration with the Tanzanian Community Forest Conservation Network (MJUMITA), the Farmer's Network of Tanzania (MVIWATA), the Tanzania Forest Conservation Group (TFCG) and the Tanzania Organic Agriculture Movement (TOAM)

The overall aim of the assignment was to analyse policies and policy practices and agriculture development programmes in relation to climate change mitigation, adaptation, agriculture and REDD in Tanzania and provide recommendations on the changes needed to achieve climate smart small-scale agriculture and community oriented REDD+. Specific objectives of the assignment were to review climate sector policies, programmes and strategies (agriculture, investment, natural resource policies) on the way the policies, programmes and strategies address issues of climate change mitigation, adaptation, and REDD and provide relevant recommendations on how the policies and development plans could support climate change adaptation and mitigation in a pro poor, gender sensitive way for small scale farmers.

Documents for the Policies, strategies and programmes required for review and analysis were collected from different sources and reviewed. The main review criteria was the explicit and implicit consideration of elements related to climate change adaptation, mitigation, small-scale climate smart agriculture and community oriented REDD in the policies, strategies and programmes. A climate smart landscape approach was used to analyse consideration of climate smart small scale agriculture in the policies and programmes by considering elements of climate smart practices at field and farm scale, diversity of land use across the landscape and the management of land use interactions at the landscape scale. Elements related to tenure rights, co-benefit sharing, capacity building and institutional strengthening, harmonization of conflicting sectoral polices and land use planning were considered in the analysis on community oriented REDD+.

Climate change, adaptation and mitigation feature in general terms in the draft agriculture policy 2012. Climate change mitigation and adaptation elements which appear as policy issues or

statements are not linked to any identified climate risks or threats. The policy identifies existing land tenure as un-conducive for long term investment which may imply as well investment in climate smart agriculture components. It also includes policy objectives that generally may support small scale climate smart agriculture such as promotion of sustainable agricultural land use plans but those objectives are not targeting to respond to any specific identified small scale climate smart problem. Further, aspects of community oriented REDD are less covered by the draft policy apart from support on gender-equitable land tenure governance and establishment of public awareness on the opportunities of agriculture as potential carbon sink and mechanism to benefit from carbon market.

Although the national forest policy includes policy statements which relate in general terms to conservation agriculture and community oriented REDD such as provision of extension on gender sensitive agro-forestry practices with consideration of women's preferences on species selection, climate change was not among the concerns for the forest sector when the policy was prepared. As a result direct climate change adaptive and mitigative elements do not directly feature in the policy and issues relating to tenure, harmonization of sectoral policies and land use planning which are very important for the implementation of community oriented REDD are scantily presented.

A similar pattern of inconsistency regarding climate change inconsideration features in the national water and land policies. For example while the water policy addresses a good number of adaptation elements for the water sector, some of the climate change adaptive elements are contained in the policy as part of water resources development and disaster management strategies which do not directly respond to any projected or predicted climate change impacts. Issues of community oriented REDD and climate smart agriculture are only scantily and generally reflected by the policy's recognition of the role of forest for conservation of water resources, rainwater harvesting and improvement of efficiency of water abstraction.

Secure land tenure and protecting land resources from degradation for sustainable development are the main elements, although not linked to any climate change risk in the policy, which reflect climate smart agriculture and community oriented REDD in the national land policy. However, experiences shows that the ambiguity on definition of general land in the Land Act No. 4 and Village Land Act No. 5 of 1999 is a major constraint to tenure insecurity of rural land and contributes to land alienation. The same definition may act as a disincentive for community's investment under climate smart small-scale agriculture and community oriented REDD.

The national climate change strategy provides a framework for climate change adaptation and mitigation of climate sectors in Tanzania while REDD aims at addressing mitigation of climate change effects in the forest and forest related sectors. In the climate change strategy, elements on climate smart agriculture are extensively covered under the agriculture, water, livestock, forest, wildlife and land use issues. However, issues on land tenure, harmonization of sectoral policies and benefit sharing under community oriented REDD are not clearly reflected in the strategy. Within the REDD strategy, elements on climate smart small scale agriculture features minimally while elements that relate to community oriented REDD are adequately considered as expected.

The major gaps which have been identified in ASDP, KILIMO KWANZA and the Southern Agricultural Growth Corridor of Tanzania (SAGCOT) in terms of achieving climate smart small scale agriculture and community oriented REDD+ include:

- ASDP aims to achieve NSGRP as well as vision 2025 and it was linked to MKUKUTA I. MKUKUTA I which ended in 2010 was silent about climate change apart from the general indication of mainstreaming environment in the plan. As a result the word climate does not appear anywhere in the Agriculture Sector Development Programme (ASDP) document. This implies that in the long run programme activities which relate to climate change adaptation such as irrigation development might be seriously affected by climate change and variability with significant consequences to programme outcomes and long term sustainability of programme activities.
- Despite of the 80% budgetary allocation for irrigation development under ASDP, irrigation programme component focuses on infrastructure provision and it has neglected activities on managing soil-water continuum that would have been ideal in period of climate change and variability influenced water shortages or scarcity.
- Lack of capacity at district level commensurate to the requirement of ASDP to plan and implement district agricultural development plans in participatory way is another serious gap under ASDP. This implies that even if there could be activities that target at achieving climate smart small scale agriculture and community oriented REDD+ their success would be constrained by lack of capacity at District level.

Identified gaps for KILIMO KWANZA include

- The strategy duplicates efforts of Agriculture Sector Development Strategy (ASDS) and ASDP because majority of what it attempts to implement is being implemented under ASDP.

- The strategy is not realistic and fails to prioritize key issues in agriculture sector including the negative effects of climate change even though current climate projections shows that agriculture is one among the sectors which will be negatively impacted by climate change.
- There is completely lack of mention of climate change in the strategy and adaptive elements can only be implicitly associated with few among the listed activities such as patenting results of seed research to protect locally developed seed varieties, intensification of training for professionals in soil and water conservation and establishment of weather centres at ward level.
- the strategy is blind to mitigation measures for the likely emissions and associated carbon footprint resulting from implementation of KILIMO KWANZA
- The strategy is too business-oriented and not inclusive of small scale farmers. There is also some evidence that its formulation process was spearheaded by business organizations such as Tanzania National Business Council (TNBC) and Tanzania Private Sector Foundation (TPSF) who represent interest of middle and large scale commercial farmers.

Identified gaps in the Agriculture Green Growth (AGG) of SAGCOT include

- likelihood of land alienation from subsistence smallholder farmers by its foreign and domestic oriented investment approach that is going to be adopted by SAGCOT in the absence of appropriate measures to guide land allocation for investment. Experience has proved that existing land allocation process have been flawed in favour of foreign investors as has been the case in the land acquisition for biofuel investment and other commercial agriculture in the country.
- There are no strategies proposed in the AGG of SAGCOT on how to meet the resource requirement of non conventional agriculture which is the main approach adopted by AGG under SAGCOT. Lack of such strategies at its outset is likely to open market to foreign producers of the requirement inputs under SAGCOT with significant external carbon footprint in the corridor.

Identified opportunities in the strategies include i) decentralized nature of the programme activities that may facilitate or allow communities to integrate issues of climate smart agriculture and community oriented REDD+ in their priority activities if they are aware of them; ii) The strategies and programmes emphasize public private partnership which can provide an opportunity for joint ventures and attract private sector investment especially on REDD+ if

communities are facilitated; iii) capacity building and institutionalization which provide structures at local level for investment promotion on climate smart small scale agriculture and community oriented REDD+; iv) there is potential to increase food output, food security and household income of smallholder farmers if they will be integrated in the implementation of SAGCOT's AGG. This will reduce pressure for agricultural expansion and thus avoid deforestation and carbon dioxide emissions; and v) opportunities for additional benefits and incomes to communities by investing in conservation agriculture and natural resource conservation.

Major gaps in the policies and policy implementation relates to inconsideration of climate change risks in the policies which is also reflected in the implementation strategies and programmes; lack of harmonization and coordination of cross-cutting issues resulting into duplication or conflicting efforts during implementation; inexistence of statement of support for piloted mechanisms for benefit sharing between communities, local authorities and central government from mitigation activities in the agriculture and forest sectors; and insecurity of land tenure among small scale farmers which may defeat any effort on climate smart agriculture and community oriented REDD+.

There are three main pathways for integrating climate change adaptation and mitigation in sectoral policies, programmes and plans. The first one requires ministries, departments and agencies for climate change sectors, donors and key stakeholders at sector level to take actions to ensure climate change adaptation, mitigation and REDD+ priorities established at national level are mainstreamed in the respective policies, strategies, programmes and plans. Mainstreaming process should be done by reflecting upon and further deepening action on climate change priorities that have already been established at national level, recognizing climate change and the need for adaptation and mitigation within sectoral policies and strategies and applying climate focus in the formulation of sectoral policies and strategies. The second entry point would be for the climate change sectors to develop climate change adaptation and mitigation strategies. The framework for sectoral climate change strategies is provided by the national climate change strategy which was developed by the Vice Presidents Office in 2012. The third entry point would be to apply SEA and SEA Audit for policies, strategies, and plans under preparation and policies, strategies and plans which already exist respectively. Although SEA is rarely applied, it is provided under the legal framework for environmental management in Tanzania and it can offer useful tools for integrating climate change adaptation into the formulation of policies, plans and programmes at the sectoral level.

1. Introduction

1.1. Background information

ActionAid Tanzania in collaboration with Community Forest Conservation Network (MJUMITA), the Farmer's Network of Tanzania (MVIWATA), the Tanzania Forest Conservation Group (TFCG) and the Tanzania Organic Agriculture Movement (TOAM) received funding in 2012 to implement a project on " climate change, agriculture and poverty alleviation: putting small-scale farmers at the heart of policy and practice". The project is being implemented in two districts of Kilosa and Chamwino. The rationale of this project is the fact that small scale farmers who depend on agriculture for their livelihoods form the majority of people in Tanzania. When it comes to climate change, it is smallholder farmers who are hit first and hardest. However, the farmers have a role to play in climate change mitigations and adaptation. Agriculture is one among the land use change activities which contribute about 20% of greenhouse gas emissions globally. Land use changes, particularly deforestation due to shifting agriculture are the largest source of greenhouse gas emissions in Tanzania. The current trend is that investment in agriculture and the agricultural policies and practices are prioritizing a shift to more mechanised and fossil fuel depend large scale agriculture with the aim of increasing productivity and commercializing smallholder production. Although this approach may increase short term yields, it risks smallholder farmers become poorer and more vulnerable to climate change impacts.

While it is believed that alternative approaches to land use and food production that would bring wins in terms of climate change adaptation and mitigation do exists, the major problem has been the lack of awareness to small-scale farmers and policy makers on adaptation and mitigation to climate change.

1.2. Goal and objectives of the assignment

1.2.1. Aim of the assignment

The overall aim of the assignment is to analyse policies and policy practices and agriculture development programmes in relation to climate change mitigation, adaptation, agriculture and REDD in Tanzania and provide recommendations on the changes needed to achieve climate smart, small-scale agriculture and community oriented REDD+

1.2.2. Objectives of the assignment

1. Review Agriculture Policy (draft agriculture policy of 2012), investment policy and natural resource policy, policy practices and programmes and national climate change strategy and the way these policies, programmes and strategies address issues of climate change mitigation, adaptation, agriculture and REDD
2. Provide relevant recommendations on how agriculture policies and development plans (ASDP, Kilimo Kwanza, SAGCOT) and the national REDD strategy could more directly support climate change adaptation and mitigation in a pro poor, gender sensitive way for small-scale farmers.

1.2.3. Scope of the assignment

The scope of the assignment involves analysis of the Agriculture Policy, Investment Policy and natural resource policy, agriculture programmes, and national climate change strategy and policy implementation in Tanzania. Among others the following issues were considered in the analysis:-

- Desk review of the above policies on how they address issues of climate change adaptation, mitigation, agriculture development and REDD
- Prepare a policy note / recommendations on the national agricultural policy on the basis of the findings of the review of the policies
- Highlight any existing or potential conflicts, contradictions or gaps between different policies and programmes in relation to agriculture, investment and climate change adaptation and mitigation
- Review of the agricultural related programmes (including but not limited to the ASDP, Kilimo kwanza initiative, SAGCOT) and the national REDD strategy on how they address issues of climate change adaptation, mitigation and REDD with an emphasis on the degree to which they provide a coordinated approach to these issues
- Analyse existing national agriculture programmes such as Kilimo Kwanza, SAGCOT and the national REDD strategy to identify risks and opportunities associated with these programmes in terms of achieving climate smart, small-scale agriculture and community oriented REDD+. This should include an analysis of the degree to which these are coordinated and synchronised.

- Assess existing interventions that are being carried out by central and local government in addressing climate change in-terms of adaptation, mitigation and REDD
- Provide practical recommendations on how to integrate climate change adaptation, mitigation and REDD in the national development programmes
- Recommend the best, appropriate and workable changes in the policies and or national programmes and national REDD strategy that are needed for achieving climate smart, small-scale agriculture and community oriented REDD+ in project areas and Tanzania at large.
- Provide recommendations on how agriculture policies and development plans could more directly support adaptation responses and mitigation co-benefits, how can adaptation and mitigation co-benefits can be better mainstreamed into policies, and any necessary policy revisions to support the objectives of the National Climate Change Strategy and sector action plan. This should include recommendations specific to Kilimo Kwanza and SAGCOT

In addressing the objectives of this assignment and the proposed policy recommendations for achieving climate smart, small-scale agriculture and community oriented REDD+, the following key questions were taken into account:

- How policies address issues of climate change adaption, mitigation and REDD
- How national programmes address or integrate issues of climate change adaption, mitigation and REDD for achieving climate smart, small-scale agriculture and community oriented REDD+
- What are the gaps in the agriculture policy and agriculture development plans in terms of climate change adaptation, mitigation and REDD
- What are the opportunities available in the agriculture development plans that smallholders farmers can use in achieving climate smart, small-scale agriculture and community oriented REDD+

The expected output of this assignment was one overall policy analysis in relation to climate change mitigation, adaptation, agriculture and REDD with focus for smallholder farmers produced

2. Study methodology

Documents for the policies, strategies and programmes required for review and analysis were collected from different sources and reviewed. The main review criteria was the explicit and implicit consideration of elements related to climate change adaptation, mitigation, small-scale climate smart agriculture and community oriented REDD in the policies, strategies and

programmes. A climate smart landscape approach (Scherr et al., 2012) was used to analyse consideration of climate smart small scale agriculture in the policies and programmes by considering elements of climate smart practices at field and farm scale, diversity of land use across the landscape and the management of land use interactions at the landscape scale (Table 1). Elements related to tenure rights, co-benefit sharing, capacity building and institutional strengthening, harmonization of conflicting sectoral policies and land use planning were considered in the analysis on community oriented REDD+.

Table 1: Climate change adaptation, mitigation, climate smart agriculture and community oriented REDD+ elements considered in the analysis of policies, strategies and programmes

Climate change adaptation, mitigation, agriculture and REDD components	Elements considered in the analysis of policies, strategies and programmes
Climate change Adaptation	<ul style="list-style-type: none"> – Change of crop varieties – Change of planting dates – Crop and livestock diversification – Erosion control – Technology innovations, capacity building in climate change adaptation (e.g., Breeding water stress/drought tolerant crop varieties)
Climate change Mitigation	<ul style="list-style-type: none"> – Energy use in agriculture – Land preparation – Agricultural inputs (high versus low carbon food print) – Land use change
Climate smart small scale agriculture	
Climate smart practices at field and farm scale	<ul style="list-style-type: none"> – Soil, water and nutrient management along with agroforestry, livestock, husbandry and forestry and grassland management techniques
Diversity of land use across landscape	<ul style="list-style-type: none"> – Land cover – land use – species and varietal diversity of plant and animals
Management of land use interaction at landscape scale	<ul style="list-style-type: none"> – Management of impacts of different land uses – management of impacts on other land uses and users in the landscape
Community oriented REDD+	<ul style="list-style-type: none"> – Tenure issues – Benefit sharing of mitigation activities – Capacity building and institutional strengthening for local forest resource management – Harmonization of conflicting climate sectoral policies and strategies – Land use planning

3. Climate change, climate smart small-scale agriculture and community oriented REDD+

3.1. *Global context*

3.1.1. Climate change

That Global climate change is occurring is beyond argument, as shown by observations on increases in global average air and ocean temperatures, the widespread melting of snow and ice and rising global average sea levels (UNEP, 2009). According to IPCC AR4, if Green House Gas (GHG) levels in the atmosphere double compared with pre-industrial levels, it is very unlikely that average global temperatures will increase less than 1.5⁰C compared with the pre-industrial period (IPCC, 2007). As a result, global responses to the situation (e.g., UNFCCC) aim to hold the increase in global temperature below 2⁰C and take action to meet this objective consistent with science and on the basis of equity (Anderson, 2013). According to Anderson (2012) the 2⁰C has become established as guard rail between acceptable and dangerous levels of climate change. In the Third IPCC Assessment Report (TAR3), impacts resulting from temperature rises below 2 degrees were not, on average, considered desirable either, it was widely, and often tacitly, assumed that they are somehow manageable and tolerable. However, when the impacts were revisited in time for Copenhagen climate summit in 2009 it was revealed that there were greater impacts for any given increase in temperature and that the impacts of 2⁰C are more serious than previously thought (Anderson, 2012). Since most of the planetary surface consists of oceans, and water has high capacity for absorbing heat, an average global rise of 2⁰C may correspond to an average land-based temperature rise of 3⁰C that would trigger marked changes in temperature and precipitation patterns (Anderson, 2012).

Agriculture will therefore have to cope with increased climate variability, more extreme weather events and unequivocal rising temperatures. In the IPCC Fourth Assessment Report (AR4), it is projected that crop productivity will increase slightly at mid to high latitudes for local mean temperature increases of up to 1-3⁰C (Easterling, et al., 2007). Crop productivity is projected to decrease even for small local temperature increases (1-2⁰C) at lower latitudes especially in the seasonally dry and tropical regions. According to AR4 (IPCC, 2007b) in some African countries, yields from rain-fed agriculture which is important for the poorest farmers could be reduced up to 50 per cent by 2020. A recent study by Stanford University suggest that production losses across the continent of Africa in 2050, consistent with global warming of around 1.5⁰C are likely to be in the range of 18-22 percent for maize, sorghum, millet and groundnut with worst-case of

up to 27-32 percent (Schlenker and Lobell, 2010). Existing assessment indicate that, overall, climate change will affect food security in all its dimensions (FAO, 2009).

Although the current experienced climate changes are largely due to anthropogenic activities in the Global North, its impacts will fall disproportionately on developing countries (Stabinsky and Li Ching, 2012). The majority of the world's rural poor who live in areas that are resource-poor, highly heterogeneous and risk prone will be hardest hit by climate change. Smallholder and subsistence farmers are among the vulnerable groups in developing countries who will suffer complex, localised impacts of climate change and will be disproportionately affected by extreme climate events (Easterling et al. 2007).

3.1.2. Climate smart small scale agriculture

The term “Climate Smart Agriculture (CSA)” was introduced by FAO for the first time in 2010. Since then, it has been extensively promoted particularly by FAO and the World Bank as a tool for improving food security by adapting to climate change impacts while at the same time mitigating climate change.

According to Braimoh (2012)¹, CSA addresses the challenges of food security, and climate mitigation and adaptation together, rather than in isolation. The rationale of the concept is the fact that agricultural production will need to increase by 70% by 2050 to meet global demand for food. However, on one hand impacts of climate change will reduce productivity and lead to greater instability in production in the agricultural sector in areas that already have high levels of food insecurity, environmental degradation and limited options for coping with adverse weather conditions. On the other hand, agriculture is also directly responsible for 14% of global greenhouse gas emissions and the sector is a key driver of deforestation and land degradation which account for about 17% of greenhouse gas emission. Therefore, climate smart agriculture is an important part of agricultural sector solution to climate change by capturing synergies that exists among activities to develop more productive food systems and improve natural resource management.

Climate-smart agriculture includes many of the field-based and farm based sustainable agricultural land management practices already in wide use, such as conservation tillage/farming practices, agro-forestry, residue management etc. However, as defined in the first paragraph of

¹ The World Bank, Washington, DC

this section, CSA requires actions beyond the farm scale (Scherr et al., 2012)². For example FAO's definition of CSA include adopting an ecosystem approach, working at landscape scale and ensuring intersectoral coordination and cooperation' (FAO, 2010)³. In the World Bank's definition, climate smart agriculture includes 'integrated planning of land, agriculture, fisheries, and water at multiple scales (local, watershed, regional)' (World Bank, 2011)⁴. According to FAO (2012), CSA is a combined policy, technology and financing approach to enable countries to achieve sustainable agricultural development under climate change. However, the CSA approach involves site-specific assessments of the adaptation, mitigation and food security benefits of a range of agricultural production technologies and practices, and identifies those which are most suitable for a given agro-ecological and socio-economic situation.

3.1.3. Community oriented REDD+

Global response to climate change problem focuses on climate change mitigation and adaptation. Mitigation refers to reducing factors including GHG that contribute to climate change. Adaptation refers to improving or putting in place systems for minimizing the impacts of climate change. Both, mitigation and adaptation are necessary strategies to reduce the risks of climate change. The more successful the first strategy is, the less the second one is required (Kropp and Scholze 2009).

In the international climate change negotiation under UNFCCC, mitigation strategies are implemented through the Kyoto Protocol which was adopted in Kyoto, Japan on 11 December 1997 and came into force in 2005. Under the Kyoto Protocol, developed countries are required to reduce their emissions of greenhouse gases by about 5% of their 1990 levels by the years 2008 – 2012. These countries can meet their reduction targets for CO₂ emissions in a variety of ways such as: through improved energy efficiency, by substituting fuels that produce less CO₂, and by using renewable energy sources. Developed countries can also meet reduction emission through the Clean Development Mechanism (CDM) Program. The CDM essentially provides a market mechanism for the sale of carbon credits or Certified Emission Reductions (CERs), from developing countries (Mdemu and Burra, 2011).

² Sara J Scherr, Seth Shames and Rachel Friedman 2012 From climate-smart agriculture to climate-smart landscapes, Agriculture & Food Security, Vol 1:12, <http://www.agricultureandfoodsecurity.com/content/1/1/12>

³ Food and Agriculture Organization of the United Nations (FAO): "Climate-Smart" Agriculture: Policies, Practices and Financing for Food Security, Adaptation and Mitigation. Rome, Italy: FAO; 2010.

⁴ Bank W: Climate-Smart Agriculture: A Call to Action. Washington, DC: World Bank; 2011

The idea of REDD became formal at the UNFCCC 13th Conference of the parties (COP 13) in Bali in 2007 (Mdemu et al., 2012). This came after the REDD Policy negotiations which started during COP 11 in Montreal, Canada in 2005 and continued at COP 12 in Nairobi in 2006 (URT, 2009). However, it is believed that the seeds for REDD were planted in the Kyoto Protocol as clearly illustrated by Articles 2 and 3 of the protocol (Kyoto Protocol, 1997). Since that time, REDD issues crossed a number of timelines in the UN Climate Change Negotiations to the current state including its removal from Land Use, Land Use Change and Forest (LULUCF) discussions by the Marrakesh Accords in 2001 during COP 7 (Holloway and Giandomenico, 2009). The idea behind was that developing countries with tropical forests implement activities that can reduce emissions from deforestation in exchange for receiving tradable carbon abatement credits that will be financed by developed countries (Karsenty, 2008; Dutschke and Pistorius, 2008). The general consensus was that REDD is potentially a low cost and a win-win option for climate change mitigation (Viana et al. 2009; Angelsen, 2008). That is, the option creates incentives for developing countries to reduce deforestation and forest degradation, while at the same time conserving biodiversity and reducing poverty (Karsenty, 2008). REDD explicitly recognizes that the needs of local and indigenous communities should be addressed.

Community oriented REDD as a concept can be interpreted as REDD initiatives in which incentives from carbon trade and additional forest related products due to conservation targets to benefit the communities. It implies that communities have the authority in management and tenure rights of the forest. Decentralization of natural resource management has been one of most significant and successful shift of national environmental management policies in developing world. According to Phelps et al., (2010), REDD+ may reverse decentralization trends due to generous and long term funding which may reduce past financial burdens that motivated decentralization. In addition, new demands placed by REDD+ implementation may impose prohibitive costs to small scale initiatives while centralized system would benefit from economies of scale, coordination and standardization (Phelps, et al., 2010). However, according to Springer and Larsen (2012); issues on community tenure have received substantial attention in REDD+ discussions for a number of reasons including i) tenure security safeguards against risks of involuntary resettlement; ii) tenure status may affect communities' eligibility to participate in REDD+ activities; iii) tenure security supports more effective forest stewardship and therefore REDD+; iv) tenure supports the exercise of traditional knowledge and practices contributing to REDD+; v) tenure will substantially influence the distribution of potential benefits from REDD+; vi) carbon rights will also be shaped by underlying forest tenure; and vii) tenure is itself a benefit. A recent analysis of case studies by USAID (2011) found that communities with secure and unambiguous ownership rights in Mexico have more bargaining power and receive a higher

share of the benefits from natural resources management. In other countries where rights are shared between communities and the state, community share of revenues were found to be closely linked to the strength of their rights to land and forests.

Therefore, for effective community oriented REDD+, communities should have control over local REDD+ design and implementation (Chretien 2013, Phelps et al., 2010). Local users should be given authority, information, and support to determine whether they engage with REDD+, to align their management, monitoring and enforcement with low-emissions objective and to negotiate revenue sharing (Phelps et al., 2010).

3.2. National Context

3.2.1. Climate change

Tanzania ratified the United Nation Framework Convention for Climate Change (UNFCCC) in April 1996 (Mwandosya *et al.*, 1998). As a member of the parties to UNFCCC, the country formally ratified the Kyoto protocol in 2002 and other multilateral environmental agreement such as UNCCD, UNCBD, and Hyogo Framework. The UNFCCC requires member countries to communicate to the Conference of the parties (CoP) on different issues regarding climate change and mitigation efforts. Since joining the UNFCCC, the country regularly submits a climate change communication report to UNFCCC through the Vice-President's Office which is the contact point on climate in the country. Also the UNFCCC commits Parties of the Convention to develop national programmes and measures to respond to climate change. One such programmes in Tanzania is the National Adaptation Plan of Action (NAPA) which was developed in 2007.

Early stages of climate activities in the country included studies on sources of sinks of greenhouse gases in 1993 under the funding from GEF through UNEP. The study established an inventory of sources of emissions and removal by sinks of GHGs in Tanzania. In 1998 another study on climate change mitigation was conducted by the Centre for Energy, Environment, Science and Technology (CEEST). The study aimed at analysing the role of land use sectors in mitigating greenhouse gases and it was conducted within the framework of the DANIDA project "Climate Change Mitigation in Southern Africa: Phase 2" under the coordination of UNEP Collaborating Centre on energy and environment at Riso National Laboratory. Since then, a number of programmes and activities on climate change have taken place in the country through the National climate focal point (Vice President's Office-Environment), training and research institutions and Non Government Organisations (NGOs).

The climate change predictions for Tanzania indicate that by 2050 mean daily temperatures will rise by 3-5°C throughout the country and mean annual temperature is likely to increase by 2-4°C (Chambwera and Macgregor, 2009). Further, prediction of global climate models show that areas with bimodal rainfall pattern will experience increased rainfall of 5%-45%, while those with uni-modal rainfall pattern will experience decreased rainfall of 5%-15% (Chambwera and Macgregor, 2009; Paavola, 2003; Agrawala *et al.*, 2003). Unfortunately, majority of areas with uni-modal rainfall pattern are the semi-arid regions. In addition to decreased rainfall, semi-arid areas will experience significant reduction in the length of growing periods. The percentage of failing seasons is likely to be in the range of 20-50% by 2050 for large parts of the country (Thornton *et al.*, 2006). The problem, however, is not only the resulting drought itself but also the fact that predictability of rainfall events and amounts will considerably decrease with significant consequences to farmers and pastoralists.

Impacts associated with projected climate change are severe to the population and natural ecosystems in Tanzania. For example, a sea level rise of 0.5 m in Tanzania would inundate over 2,000 km² of land, costing around US\$51 million (UNEP, 2002). Food security is likely to be affected by increased frequency and intensity of droughts or floods. Climate change will also contribute to desertification by changing the spatial and temporal patterns of temperature, rainfall and winds. Already there are indications that high temperatures and less rainfall during dry months would lead to a reduction of annual river flows for the Pangani and the Ruvu river basins by 9% and 10% respectively, resulting in serious water shortages, lowered agricultural production, increased fungal and insect infestations, decreased biodiversity and less reliable hydropower production (Mwandosya *et al.*, 1998; Orindi and Murray, 2005). These and other climate change impacts add a critical dimension to Tanzania and therefore climate change mitigation and adaptation strategies will be necessary in order reduce poverty, hunger, diseases, and environmental degradation and contribute to MDGs (Clausen and Bjerg, 2010).

3.2.2. Climate smart small scale agriculture

In Tanzania, sustainable land management practices that are within the general definition of climate smart agriculture have been practiced in different parts of the country by small scale farmers for many years. The varying range of the land management practices experienced in different parts the country were developed by local farmers or introduced by the government to

respond to specific land management related problems under specific agro ecological , land forms and socio-cultural conditions.

Conservation tillage, soil and water management, agroforestry and soil fertility management are some of conservation agriculture commonly practiced in Tanzania. Ridging especially for cassava and sweet potato is one of the conservation tillage practices which is practiced at farm scale countrywide. Different forms of ridging such as tied ridging and contour ridges have shown to be effective in controlling soil erosion, maintaining soil moisture and improving soil fertility in sloping agricultural lands that are prone to soil erosion (Tumbo, et al., 2012). The Ngoro pits, commonly known as Fanya Juu Fanya chini is one of the successful traditional conservation tillage practices in the Matengo Hills in Southern Tanzania (Nindi, 2007).

Other conservation tillage practices such as no tillage (NT) or zero tillage, minimum tillage and stubble-mulch tillage have been practiced in central and eastern zone of Tanzania. These conservation tillage practices were introduced in semi-arid districts of Babati, Kiteto and Simanjiro in Arusha Region and Singida Rural District in 1991 by a Swedish supported Land Management Programme (LAMP) (Johnsson et al., 2000). No tillage practice was introduced in the 1980's in Arumeru District by the Soil Conservation and Agroforestry Programme (SCAPA) in collaboration with the Regional Land Management Programme (RELMA). Although NT practices are reported to improve soil moisture storage in semi arid areas of Tanzania when crop residues are used to cover the soil surfaces, shallow and deep tied ridges conservation tillage have shown to result into higher soil moisture storage capacity than NT practices (Swai and Rwehumbiza, 1998). In Karatu and Arumeru Districts, about 61% of farmers are reported to combine ripping and cover crop over NT with direct planting by jab planter (Mkomwa et al., 2011 as cited in Lengale 2013). For example, ripping in combination with lablab or pigeon pea as cover crop gave higher maize yield (1.9 to 2.0 t/ha) than NT and conventional tillage with ox-ploughing which gave 1.7t/ha and 1.3t/ha respectively (Mkomwa et al., 2011 as cited in Lengale, 2013). In Dodoma, terracing, large pits and ridges conservation practices were reported to contribute to increased crop yields per hectare compared to cover crop, minimum tillage and terraces in combination with minimum tillage and cover crops (Tumbo et al., 2011)

Although existing information show that adoption rates of conservation agriculture in Arusha, Manyara and Dodoma are on the increase, in the past adoption rates have been hindered by factors such as labour intensiveness, lack of training and lack of capital to invest in new technologies, lack of immediate returns to investment in CA and insecure land tenure which limit long term investment on land (Tumbo et al., 2011). Probably, what might downgrade sustainable

land management practices in Tanzania to qualify for CSA would be the failure to adopt an ecosystem approach, focusing on farm scale instead of landscape scale and lack of intersectoral coordination or integrated planning at various scales (FAO, 2010; World Bank, 2011).

3.2.3. Community oriented REDD+

Tanzania is one of the countries in Africa which is piloting REDD+ implementation under the UN-REDD programme with funding support from the Royal Norwegian Government. To effectively participate in REDD+ programme, the country developed the National REDD strategy by 2012 in anticipation of a post-2012 climate change agreement that will include a new global facility for Reduced Emissions from forest Degradation and Deforestation. As part of REDD+ piloting, there are currently 7 REDD+ projects which are being implemented by NGOs in collaboration with local communities and local district authorities. The forest under REDD pilot projects falls under two main forest management arrangements, i.e. Community Forest Management (CFM) and Joint forest management (JFM). Where forests are under CFM, securing tenure rights of the forest management areas by participating villages is one of the pre-condition for their participation in different types of carbon markets. Most of the REDD pilot projects intend to channel the carbon market revenue directly to communities on a result based-basis in order to maximize incentives to maintain forest cover and reduce deforestation. Part of the REDD+ pilot project funds is used by the implementing organizations to develop and pilot carbon payment/compensation mechanisms to participating villages.

Community oriented REDD+ in Tanzania builds on the already well established Participatory Forestry Management (PFM) programme. For over a decade, Tanzania has adopted participatory forest and wildlife management approaches such as Community Based Forest Management (CBFM), Joint Forest Management (JFM) and Wildlife Management Areas (WMAs) having realised that law enforcement for conservation were ineffective (Richards et al., 2009). There is already a wide recognition that local communities who control forest uses, formally or informally, must be key beneficiaries of funds under REDD if these new global payment schemes are to be successful in reversing existing rates of deforestation and forest degradation.

In spite of the overall success of PFM in Tanzania, a number of challenges including channeling local benefits to communities from forest under local management and enforcing rights over forests. It is believed that these challenges (*if not addressed*) may also become constraints to

REDD implementation by undermining objectives of REDD and weakening community's capacity to adapt to climate changes (*Tanzania National REDD Readiness Programme*).

4. Results of Policy Analysis

4.1. How do the policies, programmes and strategies address issues of climate change adaptation, mitigation, climate smart small-scale agriculture and community oriented REDD

4.1.1. Draft Agriculture Policy, 2012

Climate change elements features in general terms under the issues of irrigation development, biofuel crop production and utilization and environment as cross-cutting issues. Similarly climate change adaptation and mitigation words appear in anecdotal fashion in the draft policy document. For example, the word adaptation to climate change appears explicitly only once under the cross-cutting issue of environment *"The Government in collaboration with other stakeholders shall strive to improve adaptation measures to climate change effects and deal with all the risks involved"*. The word mitigation also appears in the opening paragraph under the cross-cutting issue of environment in relation to the role of agriculture in climate change mitigation *"Increasing the agriculture contribution to climate change mitigation should entail efficient crop systems"*. Mitigation word is also used in relation to risk management in crop production and not in relation to climate change, one of such identified risks being reduced crop production as a result of weather changes.

However, the policy recognizes the opportunity of agriculture to contribute to natural carbon pool through agriculture intensification. *"Although, the intensification of agriculture exerts pressure on natural resources it also contributes to natural carbon pool"*. Intensification referred in the policy may be translated to imply intensive agricultural land use through increased crop seasons and crop rotation. The policy does not state the risks of increasing GHG emissions as result of intensification but it recognises that concentration of greenhouse gases, human-driven emissions of carbon dioxide and land-use changes are the processes primarily responsible for climate change in the region. *"Climate change is also an attribute of unsustainable farming methods and systems including deforestation, land clearing and bush fires"* The policy underscores the unavailability of reliable methodologies for measuring and monitoring carbon sequestration in agriculture sector.

With regards to climate change mitigation issues, the policy identifies the potential of biofuel to

provide energy for use in Tanzania and it recognize the challenges posed with biofuel investment when its development is not properly managed and becomes a threat to food security, habitat and environmental destruction. The proper management in relation to biofuel investment is however not further elaborated by the policy what it entails. Loss of biodiversity resulting from conversion of large swathes of natural habitats into monoculture bio-fuels crops production areas is one of the policy issues under biofuel crop production and utilization.

There are climate change adaptation and mitigation elements which appear as policy issues or statements, although not in definite terms. Climate change adaptation elements which appears in the policy include i) participation in funding and management of crop research; ii) integration of indigenous knowledge into scientific research; iii) promotion of research on irrigation and development of appropriate technologies for small holder agriculture; iv) sustainable conservation of productive germ plasm and its biodiversity in existing agro-ecosystems; v) strengthening early warning systems for provision of timely warning signals on climatic variability and change; promotion of public and private financing in irrigation development; vi) development of water harvesting technologies and promotion of utilization of harvested rain water. These climate change adaptation elements are very generic and they are not directed to specific climate change impacts or stimuli. Further, the policy does not state anywhere on support to small-scale farmers to adapt to climate change or become more resilient to climate change.

The policy identifies in generic terms about "efficient crop systems" as a way of contributing to climate change mitigation by agriculture *"Increasing the agriculture contribution to climate change mitigation should entail efficient crop systems"*. However, there is no mention of the "crop systems" in focus under varying agro-ecological zones. Similarly, promotion and regulation of risk mitigation in agriculture is presented in general terms. Although one of the policy statement include facilitating availability and accessibility to rural electrification, issues relating to energy use in agriculture which could contribute to mitigating climate change effects are missing in the draft policy document.

Regarding climate smart small scale agriculture, the draft policy recognizes the constraint of the existing land tenure systems as an un-conducive for long term investment. It emphasizes that insecurity of land tenure has lead to decline in productive capacity of agricultural land due to unsustainable land use practices resulting to land degradation with negative consequences to the hydrology, biological, chemical and physical properties of soils. Organic agriculture can be identified as one of climate smart agriculture which is explicitly covered although its policy

objective is to increase foreign earning and household income.

Regarding the diversity of land use across the landscape and management of land use interactions as key components of climate smart agriculture, three policy objectives are identified under the issues of research and development, urban agriculture and agricultural land use to support climate smart small scale agriculture. They include the support of initiatives aimed at arresting agro-biodiversity deterioration, promotion of sustainable agricultural land use plans and development and promotion of urban agriculture. Although the policy objective for urban agriculture is to increase production, productivity and profitability, urban agriculture can be considered as one form of diversifying land uses.

"Initiatives aimed at arresting agro-biodiversity deterioration shall be supported"

"The Government shall ensure agricultural lands are protected against encroachment as well as promote sustainable agricultural land use plans"

"Supportive mechanisms for undertaking urban and peri-urban agriculture shall be developed"

Under its cross-cutting issues on environment, up-scaling of agricultural activities that enhance carbon storage capacity and public awareness creation on the opportunities of agriculture as potential carbon sink are included in its policy statements.

"Activities that enhance the carbon storage capacity such as conservation agriculture and agro-forest shall be up-scaled"

"Public awareness on the opportunities of agriculture as potential carbon sink and mechanism to benefit from carbon market shall be established"

With the exception of the policy support on gender-equitable land tenure governance establishment of public awareness on the opportunities of agriculture as potential carbon sink and mechanism to benefit from carbon market, other aspects of community oriented REDD are less covered by the draft policy. However, linkages of the policy with REDD are not mentioned anywhere in the policy document and no evident efforts is seen in the policy to align climate change adaptation with climate change mitigation. The draft agriculture policy identifies the Ministry of Natural Resources and Tourism as an essential partner to the sector. It states the natural resource management activities that have direct interaction with many different aspects of agriculture. The activities include Participatory Forestry Management, production of fuel wood for agricultural processing in rural areas, catchment management, beekeeping, biodiversity, germ

plasm conservation, wildlife management and management and protection of wetlands.

As reflected by the policy's vision and mission, the policy intends to facilitate the transformation of agricultural sector into modern, commercial and competitive sector in order to ensure food security and poverty alleviation. Modernization and commercialisation of the sector will target both small scale and large scale farmers and is in line with MKUKUTA and the Vision 2025. In the draft policy there are a number of policy statements that target small scale farmers under irrigation development, agricultural mechanisation, development of agriculture commodities, employment and decent work in agriculture.

Irrigation development: “Private sector investment in small-scale irrigation and formation of irrigators Associations for participatory management of irrigation schemes shall be promoted”

Agricultural mechanization: “Efficient utilization of agricultural machinery implements, equipments and tools shall be promoted, particularly among small scale farmers, women and men”

Development of agriculture commodities: “The Government shall promote commodity supply chains and regulate contract farming while ensuring that the rights of farmers, particularly small scale farmers women and men, are duly respected”

“Transformation of small scale production to modern and commercial farming shall be enhanced”

Employment and Decent Work in Agriculture: “Business models that provide opportunities for small-scale producers towards aggregation of produce and developing backward and forward linkages shall be promoted, targeting in particular rural women and youth”

However, it is yet not clear how those policy statements focusing on small scale farmers will be implemented and achieved.

4.1.2. Forest Policy, 1998

The policy identifies sectoral problems related to the management of forest land resources, forest activities and conservation of forest ecosystems and its biodiversity which are threatened from human activities such as conversion of forest land into agriculture, forest fires and illegal logging. Climate change at the time of the policy preparation (1998) was not among the concerns for the forest sector. However, there some of the policy statements which relate in very general terms to conservation agriculture and community oriented REDD for forests in public lands.

Community oriented REDD elements in the policy is also reflected from additional benefits such as promotion of beekeeping in the areas of conserved forests. The policy statements include:-

- provision of extension on gender sensitive agro-forestry practices with consideration of women's preferences on species selection
- establishment of new catchment forest reserves for watershed management and soil conservation in critical watershed areas-
- inclusion of watershed management and soil conservation in management plans for protection and production forests
- strengthening research and information dissemination to improve watershed management and soil conservation
- Promote allocation of forests and their management responsibility to villages, private individuals or to the government-grant village appropriate user rights as incentives for sustainable forest management
- incorporation of beekeeping component in the management plans of forest
- reserves and encouraging eco-tourism development by the communities and private sector as potential source of income for communities in rural areas adjacent to natural forests
- Encouraging local communities to participate in local activities. Instituting clearly defined forest land and tree tenure rights for local communities including both men and women

As highlighted above, climate change elements (adaptation & mitigation) do not directly feature in the policy. Further, issues relating to tenure, harmonization of conflicting sectoral policies and land use planning which are very important in the implementation of community oriented REDD are scantily presented. Although the policy at one point declares to involve local communities and other stakeholders in conservation and management of high bio-diverse forest reserves, experiences has proved difficulties in benefit sharing from protected forest under joint management arrangements.

The policy under its watershed management and soil conservation, state to strengthen coordination between forest authorities and other institutions involved in watershed protection. Promotion of cross-sectoral coordination is also mentioned in the policy as a means to achieve efficient and effective forestry extension services.

The National Forest Program (NFP) (2001-2010) was developed in 2001 to implement the National Forest Policy. Four implementation programmes were developed for the NFP. The programmes included i) Forest Resources Conservation and Management programme which aims at promoting gender balanced stakeholders participation in the management of natural and plantation forests, giving priority to ecosystems conservation, catchment areas and sustainable utilization of forest resources; (ii) Institutions and Human Resources Development programme which aimed at strengthening institutional set up, coordination of forest management, establishing sustainable forest sector funding and improvement in research, extension services and capacity building through strengthening human resources; (iii) Legal and Regulatory Framework programme which focuses on the development of regulatory issues including the Forest Act, rules, regulations and guidelines to facilitate operations of the private sector and participatory management, and iv) Forestry Based Industries and Sustainable Livelihoods programme which is intended to enhance forest industry development by promoting private sector investment, improving productivity and efficiency and to tap the income generation opportunities provided by non wood forest products. Joint Forest Management (JFM) and Community Based Forest Management (CBFM) were key implementation modalities for protected forest reserves and community managed forests under the forest resources and conservation programme. Key lessons under JFM to inform REDD+ implementation has been on developing effective modalities for benefit sharing between Local Government Authorities (LGA) and village communities under joint forest management arrangements. The NFP phased out in 2010 and the second phase of NFP is being developed by the Tanzania Forest Services (TFS) in collaboration with Development Partners.

4.1.3. National Water Policy, 2002

As key adaptive elements to water resources, the policy underscores the need to provide water for environment and ecosystems. Other climate change adaptive elements that features in the policy include: i) improvement of efficiency of water abstraction and distribution by different water use entities (urban and rural water supply, hydropower producers, irrigators, industries and mining operators) in order to avoid undue wasteful use of the resource; ii) rainwater harvesting and waste water recycling and desalination of seawater (where necessary) to increase availability of water resources; iii) employing demand management principles to manage water resources; and iv) research and technology development. Although the policy addresses a considerable number of adaptation elements, some climate change impact related adaptive elements such as

construction of large dams in the river basins, large rainfall harvesting schemes, floods and droughts monitoring are contained in the policy as part of water resources development and disaster management strategies and therefore are not directly in response to any projected or predicted climate change impacts. The policy in its overview of water resources potential states that extreme temporal variability in rainfall and river flows are caused by the monsoon type of climate prevailing in the country. However, the policy does not make any explicit reference to the projected disruption to rainfall patterns as result of climate change. Furthermore, issues on community oriented REDD are implicitly and slightly reflected on the policy's recognition of forest for conservation of water resources. "*The forests offer habitat for wildlife, bee keeping, unique natural ecosystem and genetic resources, and have an important effect on the conservation of water resources*" Apart from rainwater harvesting, there is no other climate smart small scale agriculture which is reflected in the policy. The policy does not mention anything about the particular needs of small scale farmers. Similarly there are no any commitments in the policy on supporting small-scale farmers with small scale irrigation schemes.

In 2005, a National Water Sector Development Strategy (2005-2015) was developed by the Government in order to implement the water policy and contribute to MDGs on access to water and poverty reduction, MKUKUTA and 2025 National Development Vision. Consequently a Water sector Development Plan/Programme (WSDP) (2005-2025) was developed in 2006. The WSDP is implemented through basket funding from EU, the World Bank and other country development partners. The first phase of programme implementation ended in 2012 and the second phase of the programme is being developed.

The climate change adaptation elements that features in the WSDS are the same as in the National Water Policy simply because the WSDS attempt to operationalise the water policy. Sectoral development plans including the ASDS, National Irrigation Master Plan (NIMP) and more recently Kilimo Kwanza promotes significant expansion of irrigated land in Tanzania to unlock rural and national development. Plans are based on analysis in the NIMP of 2002 which suggests that Tanzania has 29.4 million hectares suitable for irrigation. Whilst expansion of irrigation is undoubtedly a major strategy for enhancing Tanzania's resilience to climate change, there is sparse consideration of future climate change within these planning documents.

4.1.4. Land Policy, 1997

The national land policy (1997), displays similar context to National Forest Policy and other policies which have existed for more than a decade in terms climate change consideration. The land policy is very important and may play key role in climate change adaptation and mitigation because all economic activities which can mitigate or contribute to climate change takes place on land. Climate change related elements do not feature among the key policy issues. However, there are a number of policy specific objectives and policy statements which can be deduced to reflect elements of climate change mitigation, climate smart agriculture and community oriented REDD. One of such objectives is the recognition, clarification and securing of existing rights in lands, especially the customary rights of smallholders and protecting land resources from degradation for sustainable development. Secure land tenure is key and one of the pre-conditions for investments under climate smart small scale agriculture and community oriented REDD. Similarly protection of land resources may involve conservation agriculture for example and protection of forest resource for sustainable development of the communities managing the natural resources. Other policy statements that implicitly reflect climate smart agriculture and community oriented REDD elements include: i) Protection of sensitive areas (among others include water catchments, forests, rivers, river basins and banks, areas of biodiversity); ii) urban land use and development plans that aim at more intensive use of urban land; iii) recognition of existing land tenure rights before consideration of other user rights; iv) encourage multiple land use techniques in areas of conflicting land use, an element of diversity of land use across the land scape under climate smart agriculture; v) community involvement in resource management, land use planning and conflict resolution; vi) prohibit shifting agriculture and nomadism; and vii) provision of education to pastoralists and agriculturalists on good land management and utilization. However, there is no mention in the policy of the relationship between land tenure and trees and carbon tenure.

The Land Policy is implemented by the Land Act No. 4 and Village Land Act, both of 1999. The Land Act No. 4 of 1999 aims to facilitate equitable distribution and access to land, in particular by recognising equal land rights to men and women, to regulate the land market to ensure that smallholders and pastoralists are not disadvantaged, and to establish an independent, expeditious, and just adjudication of land disputes. The enforcement of the LA is under the responsibility of the Ministry of Lands and Human Settlements and land is centrally managed by the Commissioner of Lands exercising full control on behalf of the President. The Village Land Act **No. 5** regulates the management and administration of village land. It provides a process for village councils to issue certificates of customary rights of occupancy and for a devolved system of registration, titling and dispute settlement at village level. It equal rights on access to land for men and women rendering as invalid customary discriminatory practices against women.

In 2005 a Strategic Plan for the Implementation of Land Laws (SPILL) was developed to implement the two land laws in ten years (2005-2015). Implementation of SPILL required about USD 300 million. However, due to lack of sufficient funding, SPILL was piloted in 15 focusing on access to land information system, overhauling mapping infrastructures and improving security of village land tenure through village land titling. However, insecurity of village land tenure and ambiguous definition of general land have continued to perpetuate land alienation from small-scale farmers in the pretext of land allocation to investors

4.1.5. National Investment Policy, 1996

The National Investment Policy (1996) sets out the objectives and the investment strategies that aim at achieving the national investment objectives. The policy also sets specific sectoral objectives for agriculture, mineral sector, industry, tourism, transport, communications, energy and social services to contribute towards achieving investment transformation. Among the agriculture sector objectives, include i) Encouraging livestock production in smallholder and commercial farming sector, including processing and marketing of livestock products; ii) Encouraging expansion in irrigation agriculture which uses sound environmental technologies; and iii) Promoting a secure land tenure system that encourages the maximum use of land resources and facilitates broad based socio and economic development. The policy establishes an Investment Promotion Authority (IPA) which is the focal point for promotion, coordination and monitoring of local and foreign investment in Tanzania. One of the functions of IPA is to identify and acquire land for investment use. However, the policy does not state clearly where and from whom such land may be acquired. In appropriate land acquisition may result into land alienation from communities and limit their ability to cope against climate induced shocks such as droughts. Further, when village land or general land that communities have been using for years is acquired by investors, it means a lost opportunity from communities to invest on REDD under community forests. Experiences on land acquisition for investment have shown that guidelines for land acquisition by Tanzania Investment Centre are flawed and in most cases in favour of foreign investors. Large parcels of land that have been acquired in the country for agrofuels production in the past 10 years were not transparent and were exploitative of communities ignorance on land policies and laws. The policy investment policy is completely silent on the risks associated with such land acquisition from communities in the face of increasing environmental change. The policy is also not inclusive of small-scale farmers who are

the majority users of the land which is targeted for investment under the National Investment Policy.

4.1.6. National Climate Change Strategy, 2012

The National Climate Change Strategy presents Tanzania's current and future efforts to address climate change adaptation, as well as participation in the global efforts to reduce greenhouse gas emissions in the context of sustainable development. *"The broader goal of the strategy is to enable Tanzania to effectively adapt to climate change and participate in global efforts to mitigate climate change with a view to achieving sustainable development in the context of the Tanzania Development Vision 2025, Five Years National Development plan, as well as national cross sectoral and sectoral policies in line with agreed international frameworks"*. It provides possible measures for adaptation to the adverse effects of climate change impacts that need to be implemented on critical resource-based sectors which include water resources, coastal and marine environment, forestry, wildlife, agriculture and food security, human health, tourism, energy, industry, livestock, fisheries, infrastructure, human settlement and land use. The strategy also has earmarked climate change mitigation strategies in a number of key sectors including energy, industry, livestock, transport, mining, wetland, waste management, forestry, agriculture as well as other cross-cutting issues. However, there is no mention in the strategy on commitment to ensure coordination between mitigation and adaptation measures.

Some of the strategic interventions for climate change adaptation and mitigation address key elements of climate smart (small scale) agriculture and community oriented REDD. Climate smart practices at field and farm scale are extensively covered under the agriculture, water and livestock sectors while the climate smart agriculture elements that relates to diversity of land use across the landscape and management of land use interactions at landscape scale features narrowly under the forest, wildlife and land use issues. Also most of elements for community oriented REDD in the strategy appears under forestry sector. However, issues on land tenure, harmonization of sectoral policies and benefit sharing under community oriented REDD do not feature clearly in the National Climate Change Strategy. The strategy recognizes the vulnerability of the agriculture sector to climate change but it does not mention the risks of agriculture intensification in terms of increasing GHG emission from increased use of agricultural inputs such as fertilizer. Agriculture is generally included as one of the potential sources of emission under the mitigation strategies section of the strategy. Other listed potential sources of mitigation include energy sources, transport and waste management.

4.1.7. National REDD Strategy, 2012

The National REDD Strategy (2012) has been developed in order to facilitate well coordinated and effective implementation of REDD+ related policies, processes and activities so as to contribute to climate change agenda and overall sustainable human development. The whole essence of REDD strategy is mitigation of climate change effects in the forest and forest related sectors. Any adaptation elements that feature in the strategy would therefore be regarded as additional benefits of REDD activities implementation. Climate change adaptation and mitigation, climate smart agriculture and community oriented REDD are addressed by the strategy through the proposed strategic actions to address drivers of deforestation and forest degradation. While climate change adaptation and climate smart small scale agriculture features minimally as expected (REDD is about mitigation), elements that relates to community oriented REDD are adequately presented. However, the strategy does not provide clear guidance on a number of issues but rather it presents options without concluding which option Tanzania is taking. Addressing this ambiguity will be necessary before the strategy can effectively guide REDD actions in Tanzania.

4.2. What are the gaps and or risks in the national development programmes (ASDP, KILIMO KWANZA, SAGCOT in terms of achieving climate smart, small-scale agriculture and community oriented REDD+

4.2.1. Agriculture Sector Development Programme

The Agricultural sector development programme (ASDP) was developed in 2006 for seven years (2006-2013) by the agricultural sector lead ministries in Tanzania for implementing the ASDS which was approved by the Government in 2001. Implementation of ASDP I ended in June 2013 and final evaluation for the extension and irrigation components of the programme has been conducted. Evaluation for infrastructure component (irrigation warehouse/storage infrastructure) was launched in July 2013 by JICA. Preparation of the second phase (ASDP II) is being done by the Government in collaboration with Development Partners. The ASDS and ASDP are linked to the national strategy for Growth and reduction of poverty (NSGRP) commonly known as MKUKUTA and the Tanzania Development Vision 2025 which aims to raise the standard of living of Tanzanians to the level of the middle income country through ensuring food security, improved incomes and increased export earnings. The objectives of ASDP are two folds, one is to improve farmer's access to and use of agricultural knowledge, technologies, marketing

systems and infrastructure and the second is to promote private investment by exploiting the improved regulatory and policy environment. The programme provides a number of complementary interventions in order to achieve these objectives. The programme is further, divided into two components. The first component on local level support focuses on supporting sectoral activities at village, ward and district levels. Target support under this component was improvement of small scale traditional irrigation schemes and construction of new irrigation schemes for small scale farmers, improving market access through provision of markets, storage infrastructures and improvement of feeder roads. The component also targeted to supporting the development of private agricultural markets and small and medium enterprises and linkages (including commodity supply chains and creating market linkages between small farmers and private markets or intermediaries) and improving access of private farms and agribusinesses to better technologies, advisory and financial services. Although the word smallholder farmers and in some cases small scale is reflected in the ASDP document, there is no deliberate breakdown of the word farmers into small-scale, medium-scale and large-scale farmers. The programme's commercialization drive and its attempt to link small scale farmers to processors clearly illustrate to support different kinds of farmers. The second component on national level support among others focuses on reform of agricultural research and extension and investing in strategic national level irrigation infrastructure and technical support for local level irrigation investment. Although ASDP has been reported to be successful (Wolter, 2008) through its various programme components such as PASS, AMSDP and DADPs, the implementation review which was conducted by donors and the government revealed major challenges including capacity deficiencies. Doing business as "un-usual" as foreseen by the ASDP Framework and process document was proving to be untenable due to the public sector driven top down approach and limited capacities at district level for programme implementation (Wolter, 2008). Identified gaps or risks by the consultant in the ASDP in terms of achieving climate smart, small-scale agriculture and community oriented REDD+ include the following:

- i) The first MKUKUTA which ended in 2010 to which the ASDS and ASDP are linked was silent about climate change apart from indication of mainstreaming environment in the plan. By correlation, climate change issues are completely missing in the ASDP I (2006-2013). The word climate does not appear anywhere in the programme document. Further the word mitigation appears only twice in the document in relation to mitigation of potential environmental and social impacts resulting from programme implementation and external risks that may affect success of the programme. Out of the eleven listed external risks, there is none which relates to climate change impacts. Similarly the word adaptation appears three times and in relation to new technology

for agriculture production. The implications for this is that planned programme activities especially those related to irrigation development might be seriously affected by climate change and variability in the long-run and affect the indented programme outcomes and the farmers. Although MKUKUTA II which was developed in 2010 considers extensively issues of climate change and include strategies to adapt and mitigate to climate change (*e.g. Goal 4-ensuring Food and Nutrition Security, Environmental Sustainability and Climate change Adaptation and Mitigation etc*) (URT, 2010), it is not clear whether and how these will be incorporated into the ASDP II.

- ii) Although 80% of ASDP budget was earmarked for irrigation development (both at district and national level), the target for this programme components focuses more on irrigation infrastructure provision (construction of irrigation intakes, diversion canals and technologies and formation of Irrigation Water Users Association to manage the schemes) but there are no programme activities that focuses on efficient irrigation water use and managing the soil-water continuum especially during water shortages. Certainly, there could be elements of climate smart agriculture under the research activities at national level, but in the programme document the focus of research component at national level is on improving the management of the Zonal Agricultural Research and Development Institutes and providing responses to farmer's needs and national research activities which are of local, national and international importance. One of such research is generally outlined to include long-term land husbandry and natural resource management.
- iii) According to Wolter (2008), a lesson which emerged from the first ASDP external mid-term reviews (2008) was that the ASDP secretariat at MAFC was being seen as a parallel structure similar to a typical project implementation unit. Also many Government and Donor activities that are related to ASDP were continuing outside the ASDP and outside the district plans and budgets. At local level, it was revealed that Districts did not have the capacity commensurate to the requirements of the ASDP to plan and implement District Agricultural Development Plans in a participatory way. This implies that even if there could be activities that targeted at achieving climate smart small scale agriculture and community oriented REDD+, their success would be unlikely due to capacity constraints at District level.

4.2.2. Kilimo Kwanza Strategy

The implementation framework of Kilimo Kwanza commonly referred as "Ten Pillars of Kilimo Kwanza" is so far the main official document of what is known as Kilimo Kwanza Strategy. The document has been widely disseminated countrywide. The framework outlines ten pillars and identifies activities for each of the ten pillars proposes the time frame for activities; and allocates responsibility to institutions, both, public, private and civil society that are responsible for implementing the identified activities. The ten pillars include: i) National Vision on Kilimo Kwanza; ii) Financing Kilimo Kwanza; iii) Institutional reorganization for management of Kilimo Kwanza; iv) Paradigm shift to strategic framework of Kilimo Kwanza; v) Land for Kilimo Kwanza; vi) Incentive for Kilimo Kwanza; vii) Industrialization for Kilimo Kwanza; viii) Science, Technology & Human Resources for Kilimo Kwanza; ix) Infrastructure Development for Kilimo Kwanza; and x) Mobilization of Tanzanians for Kilimo Kwanza. Its national vision as reflected by the tasks on transformation of peasant and small scale farmers to commercial farmers through emphasis on productivity and tradability is no different from ASDS and ASDP. Very unfortunately there is no explanation anywhere for example how such transformation should be approached. Further, responsibilities are given to lumped groups of key collaborating institutions without specifying roles of each institution. Major gaps in the strategy in relation to climate smart small scale agriculture and community oriented REDD+ include:

- There are no identified mitigation measures to likely emissions that would result from implementation of kilimo kwanza (e.g. increase fertilizer production and utilization). This is a risk especially to small scale farmers whose livelihoods depends on ecosystems that would be affected as result of intensive utilization of agrochemicals and machinery promoted by Kilimo Kwanza.
- not realistic-and does not give priorities to key issues in agriculture sector including the negative effects of climate change for which current climate projections shows agriculture is one among the sectors which will be negatively impacted.
- Adaptive elements can only be implicitly associated with few among the listed activities such as patenting results of seed research to protect locally developed seed varieties (assuming they would be adapted to climate change), intensification of training for professionals in soil and water conservation, and establishment of weather centres at ward level. However, climate change and REDD+ is completely absent in all pillars of Kilimo Kwanza including the one on research and development.
- Too business oriented and not inclusive of small scale farmers do not fit (evidence that

small-scale producers were not consulted during preparation of Kilimo kwanza Initiative) HAKIARDHI, 2011. Formulation spearheaded by business organization (TNBC/TPSF) who represent interest of middle and large scale commercial farmers-which threaten security of land for small-scale farmers. The word small scale farmers appears two times in relation to transformation of small scale farmers to commercial farmers and subsidization of high quality and certified seeds to small scale farmers under Pillar 1 and 7 respectively. Medium and large scale farmers appear once in relation to their promotion to realise the vision of Kilimo Kwanza. In the rest of the document, only the word "farmers" is ambiguously used.

4.2.3. Southern Agricultural Growth Corridor of Tanzania

The Southern Agricultural Growth Corridor of Tanzania (SAGCOT) Agriculture Green Growth (AGG) document underscores the vulnerability of farmers to climate change in the Southern Corridor. *“Currently, the region’s farmers are highly vulnerable to climate change, with the vast majority relying on rainfed agriculture, with inadequate access to reliable input supplies or markets”* The interplay between agriculture (unsustainable practices) and other important sectors like forestry, wildlife tourism and water is recognized by SAGCOT Green Growth document. *“Where agriculture has been intensified, it has often had severe environmental impacts, undermining not only long-term productivity, but also the development of other important sectors like forestry, wildlife tourism or water”* Further the document recognizes that modern technologies for farmers to produce more food with fewer inputs, less waste and less pollution (climate change mitigation elements), an approach which recognizes that most sustainable and least risky farming systems will be those that build in resilient agronomic, environmental, and social management practices.

The AGG document identifies actions at individual farms and businesses and the policy level in order to mainstream the AGG through the corridor. Examples of farm level strategies identified include conservation agriculture and system of rice intensification, agro-forestry, integrated crop-livestock systems. Precision agriculture (can greatly increase the amount of food produced per unit water, nutrients, and other inputs) is an example of strategies which are relevant on large commercial farms and block farms while recognizes investment opportunities (public, private and community) such as community forest enterprises, bio energy and improving water use efficient as well as payment for ecosystem services (a new vehicle for compensating communities for their investment in natural resources while maintaining resources of importance

to others such as clean water and carbon stocks) as central premise of Green Growth. Under its climate change mitigation investment, funds for climate change mitigation are included in the financing strategy for Agriculture Green Growth

Among the five priority actions to create fertile ground for AGG (support of key policies and investments at national level) include investment by SAGCOT partners in local organizations and local leadership that include farmers associations, savings and credit cooperatives which act as key catalysts for disseminating best practices and linking small holder farmers to markets. The priority actions also include designing and adopting a new approach to planning and allocating land and water. The new approach according to the AGG document aims at reconciling the objectives of optimizing economic returns from available land and water resources, ensuring equitable land allocation and land rights and creating a transparent and streamlined process for identifying new sites for investment. Both these two priority actions are in line with the requirements of climate smart practices at field and farm scales as well as community oriented REDD+ where land tenure, capacity building and local institutional creation and strengthening for local resource management are central.

The AGG document identified specific action to be taken by SAGCOT Centre and its partners to generate the momentum and lay foundation for scaling up AGG investment in the region. The actions include: i) engaging key national and local stakeholders in refining and grounding the AGG vision; ii) strengthening and demonstrating integrated planning in selected clusters; iii) catalysing investment in selected ready-to-go projects; iv) marketing the AGG investment program to foreign and domestic investors; and strengthening the analytical and knowledge base for AGG in SAGCOT. while it appears some of the actions (e.g., i & ii) may involve small scale farmers in the context of local stakeholders the target of the AGG in SAGCOT is not for smallholder farmers as reflected by AGG action three on catalyzing investment in selected ready to go projects. In Tanzania, 80% of the country's population depend on agriculture and majority of them are smallholder subsistence farmers. How would the smallholder subsistence farmers would be catalysed to invest in a situation where the investment projects are marketed to foreign and domestic investors? Lack of recognition for providing support and nursing smallholder farmers (who by any means are unable to compete at the moment) within the AGG is the major gap in the SAGCOT Initiative.

Major gaps for SAGCOT include:

- Although the AGG document advocate for equitable land allocation and land rights in one of its priority actions, the foreign and domestic oriented investment approach that is

going to be adopted by SAGCOT in the corridor may alienate local subsistence smallholder farmers from fertile lands if no appropriate measures are put in place to guide land allocation for investment. As such small scale farmer may then be pushed into marginal lands and forested areas thereby undermining REDD related activities. The AGG document suggest that planning and allocating of land and water under SAGCOT will be built on existing planning processes in place with critical new coordination functions. However, experiences shows that in many cases such planning processes have been flawed as clearly evidenced under the investment for biofuels and other commercial agriculture in the country.

Non conventional agriculture which is in line with the principles of sustainable development is the main approach adopted by AGG under SAGCOT. Within this approach there is clear intent to ensure conservation agriculture practices and efficient water management that benefit smallholder farmers and support the ecosystem are developed, disseminated and adopted. However, there are no strategies which are provided on ecological friendly inputs especially fertilizer to meet the demand of the anticipated investment in agriculture both from domestic and foreign investors. This inconsideration implies that SAGCOT initiative may open market to foreign producers of inputs with significant carbon footprint in the corridor. The AGG states on general terms that nucleus farms and small and medium-sized agribusinesses identified in the SAGCOT Blueprint will serve as primary sources for fertilizer and other inputs. However, it does not provide explicit support for increasing access to inorganic fertilisers and pesticides to small-scale farmers who would have benefited from the investments of nucleus farms.

4.3. What are the opportunities in the national development programmes (ASDP, Kilimo kwanza, SAGCOT) for smallholder farmers to engage in achieving climate smart, small-scale agriculture and community oriented REDD

4.3.1. Agriculture Sector Development Programme

There are a number of opportunities that set a conducive environment for smallholder farmers to engage in achieving climate smart, small-scale agriculture and community oriented REDD. However, the opportunities in this particular case would have been relevant if activities on climate smart small scale agriculture and community oriented REDD were explicitly covered in the ASDP. Key opportunities include:-

- The decentralised nature of ASDP where implementation of programme activities and budgeting allocation focuses at local levels (i.e., focusing at district and villages levels). If climate smart small scale agriculture and community oriented REDD was among the agenda in ASDP, then local communities would have great opportunity in investing part of the resources under ASDP, training and capacity into climate smart small scale agriculture and community oriented REDD.
- In an attempt to commercialise agriculture, ASDP emphasize on the involvement of private sector as well as the public-private sector partnership in investing in agriculture and improving productivity and profitability. This is an opportunity especially if communities would have been facilitated to create joint ventures and attract private sector investment particularly on REDD+. Although this approach is not operational yet under community managed forests, it is being used in the wildlife sector where communities that have WMAs can enter into joint ventures with private investors to invest in the WMAs and agree on how the revenues could be shared.
- Community participation and creation of farmer’s organisation such as farmers groups is one of the major approaches in the ASDP. Farmer’s organisations, if strengthened (capacity) would have provided institutional structures at local levels for investment promotion on climate smart agriculture and community oriented REDD.

4.3.2. Kilimo Kwanza Strategy

As mentioned in section 4.2.2, activities indented under Kilimo Kwanza are very general and majority of them are already being implemented under ASDP. Therefore if Kilimo Kwanza Strategy will really be implemented as an independent programme will lead to duplication of efforts. Most identified activities under Kilimo Kwanza were being implemented under ASDP (e.g. Input Voucher and Power tiller schemes). Since the activities in the strategy have not been narrowed down to key focus areas of concern in agriculture and according to the needs of small scale farmers, opportunities for small farmers to engage in achieving climate smart, small-scale agriculture and community oriented REDD are very limited.

4.3.3. Southern Agricultural Growth Corridor of Tanzania

If implemented in such a way that small-scale farmers become an integral part of the initiative, there is potential to increase food outputs, food security and household income. Also because of likely gains in crop yield from improved agricultural production the pressure for agricultural expansion will be reduced and thus avoiding deforestation and carbon dioxide emissions.

By investing in conservation agriculture and natural resources conservation, there will be opportunities for additional benefits and income to communities from investments in community forest and other natural resources. The inclusion of funds under climate mitigation investment for financing the strategy for agriculture green growth could be another opportunity for smallholder farmers to invest in climate change mitigation.

4.4. What are the gaps in the policies and policy implementation in terms of climate smart, small-scale agriculture and community oriented REDD

Climate smart agriculture includes many of the field-based and farm based sustainable agricultural land management practices already in wide use such as conservation tillage, agro-forestry, residue management etc. According to Scherr et al., (2012) most of the focus of climate smart agriculture has been on the implementation of these field and farm practices and the ways that they can be improved in the context of changing climate. However, FAO and the World Bank illustrate that climate smart agriculture requires actions beyond the farm scale by adopting ecosystem approach, working at landscape scale and ensuring inter-sectoral coordination and cooperation. Similarly, success of community oriented REDD will depend on clear definition of tenure rights, benefit sharing especially where co-management is practiced, institutional building or strengthening, harmonization of sectoral policies and land use planning. Against this background, the following key gaps are identified in the policies and policy implementation.

- Climate change has not been considered as one of the risks in the policies despite the fact that Tanzania's economy is very dependent on the climate, because a large proportion of GDP is associated with climate sensitive activities, particularly agriculture. Inconsideration of climate change in the policies is also reflected in the development strategies and programs (e.g., ASDP, WSDP) where climate change adaptation and mitigation are only implicit in some of the program activities. For example while expansion of irrigation is undoubtedly a major strategy for enhancing Tanzania's

resilience to climate change, there is sparse consideration of future climate change within these sectoral programme documents. The lack of any mention of climate change within Kilimo Kwanza strategy is of particular concern under the existing climate change and variability with significant consequences on availability of water resources for agriculture production.

- A number of climate smart agriculture and community oriented REDD or adaptation and mitigation elements in general appear in several policies. For example catchment conservation is included in the National Water Policy (2002), Draft Agriculture Policy (2012) and the National Forest Policy (1998). Although the draft agriculture policy recognizes that the Ministry of Natural Resources and Tourism is an essential partner because it support PFM that involve the same communities and farmers and its responsibilities that include catchment management, beekeeping, biodiversity, germ plasm conservation and wildlife management interact directly with many different aspects of agriculture. However, the policy does not provide any strategies for harmonization or coordination of such activities within the responsible sectors.
- Although the aspect of additional benefit from mitigation activities in the agriculture and forest sectors slightly surfaces in the two sectoral policies respectively, the policies do not provide mechanisms for benefit sharing between communities, local authorities and central government. For example the national forest policy advocate to promoting joint forest agreement between central government , specialized executive agencies, private sectors as appropriate in each case and organized by local communities or other organizations of people living adjacent to the forests. The promotion is assumed to improve forest conservation and management and to ensure equitable sharing of benefits among all stakeholders. However, the policy does not provide mechanisms for benefit-sharing under joint management agreements. Experiences of PFM implementation for the past ten years show that benefit sharing under joint forest management is one of the major obstacles for successful PFM in Tanzania.
- Land tenure security among small scale farmers and rural villages is also one of the major gaps especially for the land policy. Security of tenure is recognized as one of the precondition for investment in climate smart small scale agriculture and community oriented REDD+. Insecurity of land tenure is reported as one of the constraints for adoption of conservation agriculture (Tumbo et al., 2012, Shetto et al., 2012). The loosely definition of “general land” in the national land policy restrict communities from investing in REDD+ initiatives while at the same time it is used as a loophole for transferring large pieces of lands to the so called investors.

4.5. How climate change adaptation, mitigation and REDD+ can be integrated in the policies and programmes

Ideally climate change adaptation, mitigation and REDD+ should be integrated into climate change related policies during the policy formulation stage. The policy formulation stage sets out the broad objective to be pursued in a given sector over a given time span; the main approaches to be employed and the associated policies to be implemented to facilitate the reaching of these objectives. The policy formulation stage is where national policy direction are translated into sector-specific policy options, which then provide the basis for designing operational plans and the mobilization of resources to implement them. Ministries departments and agencies for climate change related sectors, donors and other relevant stakeholders operating at sector level would need to take action to ensure climate change adaptation, mitigation and REDD+ priorities established at the national level (incl., NAPA, Climate change communications to the UNFCCC, national climate change strategy, national REDD strategy) are operationalized and such priorities is informed by sector specific information and experiences. This can be achieved by reflecting upon and further deepening action on climate change priorities that have already been established at the national level under NAPA, national climate change strategy and national REDD strategy; clearly recognizing climate change and the need for adaptation and mitigation within sectoral policies and strategies; and applying a climate focus in the formulation of sectoral policies and strategies and making the necessary adjustments.

Tanzania has already developed the National Climate Change Strategy (2012) which sets a framework for the development of sectoral climate change adaptation strategies in the country. The strategy provides a unique opportunity for climate change sensitive sectoral policies and their development strategies and programmes (e.g. agriculture, water, natural resources) that did not take into account climate change adaptation and mitigation to correct this gap by developing climate change adaptation strategies. The ministry of water has already embarked on the development of climate change adaptation strategy within the framework of the National Climate Change Strategy (2012).

Strategic Environmental Assessment (SEA) is one of the pre-condition for policies, programmes and plans under the Environmental Management Act (EMA) 2004. Although most of the policies, strategies, programmes and plans at national or sectoral level rarely include SEA during their development, SEA is one of the important tools to integrate climate change adaptation and mitigation in policies and plans. SEA provides a generic framework and sound methodology for integrating environmental considerations into policies, plans, and programmes and building

climate change considerations into an SEA can help to identify whether sectoral strategies are worthwhile and sustainable under different climate change scenarios. Although SEA was conducted for SAGCOT, it has not been published as initially promised to publish in October 2012.

5. Conclusions and recommendations

Climate smart small-scale agriculture and community oriented REDD can play key roles in climate change mitigation and adaptation, enhancing peoples livelihood and contribute to rural sustainable development if recognized and integrated in the policies, programmes and plans of climate sensitive sectors. Climate sensitive sectors include agriculture, water, natural resources (e.g., forestry, land) as well as in national wide development strategies and plans such as MKUKUTA. However, climate change issues are currently implicitly considered in the policies on climate sensitive sectors. For example the analysed policies on agriculture, water, forest and land do not identify climate change as an issue by itself but elaborate situations that could be result or drivers of climate changes. The policies are also silent on who should be responsible for dealing with issues pertinent to climate change. A similar trend of climate change neglect is reflected in the ASDS and ASDP, KILIMO KWANZA and SAGCOT on general terms. However, the recently developed Green Growth Investment Framework for SAGCOT (2012) lay a solid and an inspiring foundation for integrating climate change adaptation, mitigation, climate smart small scale agriculture and community oriented REDD+ for SAGCOT initiative if it will be implemented accordingly. The lack of any mention of climate change within **Kilimo Kwanza** strategy is of particular concern under the existing climate change and variability with significant consequences on availability of water resources for agriculture production.

There are three main pathways for integrating climate change adaptation and mitigation in sectoral policies, programmes and plans. The first one requires ministries departments and agencies for climate change sectors, donors and key stakeholders at sector level to take actions to ensure climate change adaptation, mitigation and REDD+ priorities established at national level are mainstreamed in the respective polices, strategies, programmes and plans. Mainstreaming process should be done by reflecting upon and further deepening action on climate change priorities that have already been established at national level, recognizing climate change and the need for adaptation and mitigation within sectoral policies and strategies and applying climate focus in the formulation of sectoral policies and strategies. The second entry point would be for

the climate change sectors to develop climate change adaptation and mitigation strategies. The framework for sectoral climate change strategies is provided by the national climate change strategy which was developed by the Vice Presidents Office in 2012. The third entry point would be to apply SEA and SEA Audit for policies, strategies, and plans under preparation and policies, strategies and plans which already exist respectively. Although SEA is rarely applied it is provided under the legal framework for environmental management in Tanzania and it can offer useful tools for integrating climate change adaptation into the formulation of policies, plans and programmes at the sectoral level.

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