UNITED REPUBLIC OF TANZANIA


TANZANIA CLIMATE SMART AGRICULTURE PROGRAMME

COORDINATED BY

MINISTRY OF AGRICULTURE, FOOD SECURITY AND COOPERATIVES

AND

VICE PRESIDENT'S OFFICE

2015 – 2025

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FOREWORD

In Sub-Saharan Africa, heavy reliance on rain-fed agriculture renders farming communities more vulnerable to effect of climate change and variability resulting in widespread food insecurity and poverty. Climate change and variability present new challenges particularly for smallholder farmers whose main stay is agriculture. Providing food for the future will require a holistic approach in order to produce on less land and by using appropriate methods. Farming communities and researchers are obliged to re-evaluate mainstreaming of farming practices and techniques and look for ways of securing food through adoption of conservation agriculture, integrated livestock keeping, fish farming and agro-forestry.

High dependence on rain-fed agriculture and poor soil health increases vulnerability of farming systems and predisposes rural households to food insecurity and poverty thus eroding their productive assets and weakening their coping strategies and resilience to external shocks. Increasingly, the onset, duration and intensity of rains vary considerably from year to year, while the frequency and intensity of extreme weather events such as drought and floods are on the increase with devastating impacts on the national economy and the livelihoods of the people. Moreover agricultural seasons in some areas of the country are expected to shift. Drastic and innovative measures are therefore needed to help farmers and consumers cope with the changes in emerging and projected weather patterns.

The most affected will be the rural poor, who are dependent on farming as a livelihood. Because of their poverty status, they have less ability to accumulate and protect assets and have the least adaptive capacity to respond to climatic shocks occasioned through extreme events as well as variability in weather during the cropping seasons. Changes in climate may be faster and more intense than in the past and existing knowledge on approaches and practices in agriculture may not be sufficient to address the adaptation needs.

To ensure that the country is food secure and for food producers to improve their livelihoods, climate smart agriculture (CSA) is the most appropriate approach. The CSA approach would ensure sustainable increase in agricultural productivity; build resilience in food systems and adapt to climate change;

reduce food losses and waste; and contribute to the reduction and removal of greenhouse gas emissions, where possible.

I believe that this CSA Programme, which is the result of a collective, sector-wide consultation effort, places Tanzania firmly on a new and ambitious growth trajectory for the future. We recognise the vital role that agriculture must play in growing the economy and creating decent jobs. In this respect, the agriculture sector as a whole is determined to optimise its contribution.

The successful implementation of this programme will require multi-level partnerships between the public and private sector, civil society and citizens. I acknowledge with appreciation the constructive and cooperative relationships we have already built in this regard with all parties involved.

I believe that agriculture in this country will grow from strength to strength. This, however, will require a shift in the way we do things, in line with the new strategic approach.

Finally, I would like to thank the many people who have contributed to the development of this programme. Our thanks to the panel of 10 experts from across all stakeholder groups in the sector, chaired by Ms. Shakwaanande Natai, for the pivotal role they played in guiding the development of the Programme, and for their commitment to the process. I would also like to express our appreciation for those who submitted comments and made inputs that tmade the document better. We are grateful for your commitment and dedication to walk this path with our Ministry.

Steven Masatu Wassira (MP)

MINISTER FOR AGRICULTURE FOOD SECURITY AND COOPERATIVES

ACKNOWLEDGEMENT

The preparation of the Tanzania Climate Smart Agriculture (CSA) Program has been spearheaded by a multi-disciplinary and multi-stakeholders National Expert Team from relevant Ministries, Departments, Agencies, Researchers and Academia, Civil Society Organization (CSOs) and Private Sector under the auspices of the Ministry of Agriculture Food Security and Cooperatives (MAFC) and the Vice President's Office (VPO). Following the development of National Adaptation Program of Action (NAPA), adoption of the National Climate Change Strategy (NCCC) and Agriculture Climate Resilience Plan (ACRP), it was found necessary to prepare the Tanzania Climate Smart Agriculture (CSA) Program to guide implementation of the identified interventions. Preparation of the Tanzania CSA Program would not have been possible without the financial and technical support from the New Partnership for Africa's Development Agency (NEPAD), Southern African Development Cooperation (SADC), Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC) and the Consultative Group for International Agricultural Research Program on Climate Change, Agriculture and Food Security (CCAFS).

Special thanks are due to National Team of Experts led by Shakwaanande Natai (Chairperson, National CSA Program Task Force), Eng. Isaria Mwende, Ombaeli Lemweli, Elirehema Swai, Mary Majule, Tereza Massoy, (MAFC), Joseph Kihaule (VPO), Dr. Lucy Ssendi (PMO-RALG), Lucia Chacha (MLFD), Nassor Mkarafuu (MANR - Zanzibar), Dr. Fadhila Hemed (NEMC), Mathew Ndaki (TMA) Prof. Salim Maliondo (SUA) and Mary Swai (TaTEDO) for their expertise and valuable inputs in the development of the program. Special gratitude is extended to the Tanzania government officials in relevant ministries, Development Partners, NGOs, Private Sector and other stakeholders who went through the draft and shared their ideas and opinions. We would also like to acknowledge tireless support of Dr. George Wamukoya (Climate Advisor, COMESA Secretariat) and Dr. James Kinyangi (Regional Program Leader - CCAFS) during the process of developing the CSA program. Finally, we appreciate the constructive contributions received from National Stakeholder's Validation Workshop participants.

Sophia Elias Kaduma
PERMANENT SECRETARY
MINISTRY OF AGRICULTURE FOOD SECURITY AND COOPERATIVES

ACRONYMS AND ABBREVIATIONS

ACRP	Agriculture Climate Resilience Plan
AEZ	Agro-ecological zone
AfDB	African Development Bank
AGOA	Africa Growth Opportunity Act
ANSAF	Agricultural Non State Actors Forum
ARI	Agricultural Research Institutes
AR5	Fifth Assessment Report
ASDP	Agriculture Sector Development Programme
ASDP-2	Second Agriculture Sector Development Programme
ASLM	Agriculture Sector Lead Ministries
AU	African Union
BFSC	Basket Fund Steering Committee
BRN	Big Results Now
CA	Conservation Agriculture
CAADP	Comprehensive Africa Agriculture Development Programme
CBF	Community Based Forest Management
CARE	CARE International
CBO	Community Based Organization
CCAFS	Climate Change, Agriculture and Food Security
CGIAR	Consultative Group for International Agricultural Research
COMESA	Common Market for Eastern and Southern Africa (COMESA)
CSA	Climate Smart Agriculture
CSO	Civil Society Organization
DALDO	District Agricultural and Livestock Officer
DADP	District Agriculture Development Plan
DPP	Department of Policy and Planning
DRD	Department of Research and Development
DRTE	Department of Research, Training and Extension
DRM	Disaster Risk Management
EAC	East African Community
EEZ	Exclusive Economic Zone
EMU	Environment Management Unit
FANR	Food, Agriculture and Natural Resources Division
FAO	Food and Agriculture Organization
FSDP	Fishery Sector Development Program
GDP	Gross Domestic Product
HEMU	Head, Environment Management Unit
ICRAF	International Center for Research in Agroforestry
ICT	Information and Communication Technology
IFAD	International Fund for Agricultural Development
IPCC	Intergovernmental Panel on Climate Change
KR	Key result area
LDCs	Least Developed Countries
LGA	Local Government Authority
LSDS	Livestock Sector Development Strategy

MAFC	Ministry of Agriculture Food Security and Cooperatives
MANR	Ministry of Agriculture and Natural Resources - Zanzibar
MDAs	Ministries/Departments/Agencies
MDGs	Millennium Development Goals
MEM	Ministry of Energy and Minerals
MICCA	Mitigation of Climate Change in Agriculture Programme
MITM	Ministry of Industries, Trade and Marketing
MIVARF	Marketing, Infrastructure, Value Addition and Rural Finance
MJUMITA	Mtandao wa Jamii wa Usimamizi wa Misitu Tanzania
MKUKUTA	National Strategy for Growth and Reduction of Poverty
MLDF	Ministry of Livestock Development and Fisheries MLHHS
MNRT	Ministry of Natural Resources and Tourism
MoFEP	Ministry of Finance and Economic Planning
MNRT	Ministry of Natural Resource and Tourism
MoW	Ministry of Water
MT	Metric Tones
MTEF	Medium Term Expenditure Framework
NAFORMA	National Forest Resource Monitoring and Assessment
NAPA	National Adaptation Plan of Action
NARS	National Agricultural Research System
NCCFP	National Climate Change Focal Point
NCCS	National Climate Change Strategy
NCCSC	National Climate Change Steering Committee
NCCTC	National Climate Change Technical Committee
NCSATF	National Climate Smart Agriculture Task Force
NEMC	National Environmental Management Council
NEPAD	New Partnership for Africa's Development (NEPAD)
NGOs	Non-Governmental Organizations
NPS	National Panel Survey
NSGRP	National Strategy for Growth and Reduction of Poverty
PMORALG	Prime Minister's Office Regional Administration and Local Government
PPP	Public Private Partnership
PPVA	Postharvest Process and Value Addition
REDD	Reduced Emissions from Deforestation and Degradation
RCP	Representative Concentration Pathways
SACCOs	Savings and Credit Cooperative Societies
SADC	Southern African Development Community (SADC)
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SECAP	Soil Erosion Control and Agro forestry Project
SRI	Sustainable Rice Intensification
SUA	Sokoine University of Agriculture
TaCRI	Tanzania Coffee Research Institute
TADB	Tanzania Agricultural Development Bank
TDV	Tanzania Development Vision
TAFIRI	Tanzania Fisheries Research Institute
TAFORI	Tanzania Forest Research Institute

TAFSIP	Tanzania Agriculture and Food Security Investment Plan
TASAF	Tanzania Social Action Fund
TaTEDO	Tanzania Traditional Energy Development and Environment Organisation
TCCIA	Tanzania Chamber of Commerce, Industry and Agriculture
TFCG	Tanzania Forest Conservation Group
TIB	Tanzania Investment Bank
TMA	Tanzania Meteorological Agency
TNA	Training Needs Assessment
TORITA	Tobacco Research Institute of Tanzania
TPRI	Tropical Pesticide Research Institute
TRIT	Tea Research Institute of Tanzania
TV	Television
TWG	Technical Working Group
UDSM	University of Dar es Salaam
UN	United Nations
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNEP	United Nations Environmental Programme
URT	United Republic of Tanzania
USAID	United States Agency for International Development
VPO-DoE	Vice President's Office - Division of Environment
WARC	Ward Agricultural Resource Centre
WB	World Bank
WG I	Working Group I
WG II	Working Group I
WUE	Water Use Efficiency

EXECUTIVE SUMMARY

Tanzania, an East African country, is endowed with important land and water resources that have a high agricultural potential. Agriculture is a key sector of Tanzania's economy, as it accounts for 24.1 percent of GDP and is the source of livelihoods for more than three-quarters of the population. Majority of the population still live in rural areas although urbanization has increased in the last three decades to reach 38 percent. The population is very young, as the youth (18-35 years) accounts for 65 percent.

High dependence on rain-fed agriculture and poor soil health increases vulnerability of farming systems and predisposes rural households to food insecurity and poverty thus eroding their productive assets and weakening their coping strategies and resilience to external shocks. Increasingly, the onset, duration and intensity of rains vary considerably from year to year, while the frequency and intensity of extreme weather events such as drought and floods are on the increase with devastating impacts on the national economy and the livelihoods of the people. Moreover agricultural seasons in some areas of the country are expected to shift. Drastic and innovative measures are therefore needed to help farmers and consumers cope with the changes in emerging and projected weather patterns.

Given that over 90.4 percent of active women in Tanzania are engaged in agricultural activities, producing about 70 percent of the country's food requirements, and that youth who constitute about 65 percent of the total labor force in Tanzania are less engaged in agricultural activities and emerging opportunities, it is imperative that transformation and growth in the agriculture sector target both women and the youth.

To address these challenges and to harmonize and enhance CSA initiatives being undertaken by different stakeholders throughout the country, the Government of Tanzania through the CSA programme, has identified six strategic priorities as sources of Tanzania's agricultural development and growth in a changing climate. The six strategic priorities are as follows:

Improved Productivity and incomes – a pro-growth and pro-poor development agenda that supports agricultural sustainability and includes better targeting to climate change impacts will improve resilience and climate change adaptation. Because climate change has a negative impact on agricultural production, achieving any given food and nutrition security target will require greater investments in agricultural productivity. It is important that Agricultural growth

does not jeopardize soil quality or groundwater resources. Public and private sectors as well as public-private partnerships will play a critical role.

Building resilience and associated mitigation co-benefits **-** CSA practices that will help reduce vulnerability of Tanzania's agriculture sector by increasing productivity, enhancing adaptation and resilience of the farming systems and reducing emissions intensity in the context of achieving food and nutrition security, sustainable development and poverty reduction.

Value Chain Integration **-** This approach is holistic in that considers input supply, production, agricultural services, traceability, marketing and business support services as necessary building blocks. Under the approach, both public and private sectors are seen as critical actors in the value chain. Knowledge and capacity building are critical strategic priorities to leverage innovations and increase efficiencies. The approach also provides enabling framework for integrating gender and the needs of the youth.

Research for Development and Innovations - Although Tanzania has a well-developed agricultural research system, use of modern science and climate smart technologies in agricultural production is still limited. Inadequate research–extension–farmer linkages to facilitate demand-driven research and increased use of improved technologies continue to constrain efforts to increase agricultural productivity as farmers continue to use outdated and ineffective technologies. The role of research will be reoriented to support innovations that facilitate the transition to climate-smart agriculture by smallholder farmers. New and emerging agricultural research partnerships will identify technological advances that respond to the impacts of climate change and climate variability. A major thrust will be on the use of climate-smart agricultural practices, promoting improved land management and sustainable crop-livestock and aquaculture intensification, in order to bolster farmers' adaptive capacity and support the national vision of achieving food security.

Improving and Sustaining Agricultural Advisory Services - Agro-advisory services that include climate applications for agriculture will help farmers to better make informed decisions in the face of risks and uncertainties, in addition to the integrated management of present and emerging pests and disease challenges. Climate knowledge applications include seasonal weather forecasts, monitoring and early warning products for drought, floods and pests and disease surveillance. These products and services would increase the preparedness of the farmers, well in advance, to cope with risks and

uncertainties. In this regard, dissemination of agro-weather advisories and other climate-smart agricultural practices will be enhanced through Public Private Partnerships. Furthermore, robust agro-advisory services are expected to catalyze private sector investment in priority areas such as weather-based index insurance and associated infrastructure. Further, insurance instruments shall be linked to incentives for adaptation (or risk prevention and reduction, e.g. by introducing drought resistant crops, drip irrigation, or similar measures).

Improved Institutional Coordination – Improved institutional coordination is crucial for achievement of horizontal and vertical integration required for effective discharge of the CSA Programme. The achievement of horizontal integration requires a framework that provides for high-level guidance while vertical integration is instrumental in determining the roles of various sector institutions and devolved governments in performing CSA mandates. The proposed coordination framework will improve Inter-Ministerial and Local Government coordination, enhance partnerships with private sector and civil society organizations, and strengthen coordination with development partners.

1.0 INTRODUCTION

1.1 Background

The agriculture sector is key to overall economic growth and development of Tanzania. It provides livelihoods to over 80 per cent of the population, generates about 24.1 percent of GDP, contributes 30 percent of export earnings and employs 75 percent of the total labor force (URT, 2013). In the national development agenda, agriculture is expected to lead the growth and structural transformation of the economy and maximize the benefits of accelerated growth. Significant improvements in the productivity of the agriculture sector are required to raise the average real incomes of Tanzanians. The food and agriculture sector also has direct impact on the attainment of at least five of the Millennium Development Goals (MDGs) and the emerging sustainable development goals (SDGs) that include poverty reduction. Agricultural growth is a proven driver of poverty reduction. When agriculture stimulates growth in Africa, the growth is twice as effective in reducing poverty as growth based in other sectors. Thus, agricultural growth also means more production, improved food security and economic growth.

Tanzania depends largely on agriculture, which is strongly dependent on natural resources such as land, forests, air, and water. Sustainable utilization of these resources is vital for the growth and sustainability of the sector. However, agriculture is vulnerable to the effects of climate change associated with global warming. Smallholder farmers dominate the agricultural sector with average farm sizes of between 0.2 and 2.0 hectares, depending on the location. Yields have been mostly stagnant for the last ten years and agricultural productivity gains have been based more on the expansion of cultivated land, which is one of the major drivers of deforestation and land degradation in the country. Studies by the Tanzania Meteorological Agency (TMA) have shown that some of the previously known highly productive areas such as the Southern and Northern Highlands will continue to be affected by declining rainfall, frequent droughts and significant increase in spatial and temporal variability of rainfall with long term implications in the agricultural sector planning and resources allocation, such as improved seeds -, pesticides and even the shifts in types of agricultural produce (URT, 2009).

Tanzania's National Adaptation Program of Action (NAPA, 2007) ranked agriculture and food security as the most vulnerable and important sector that is severely impacted by climate change and advocated that studies on the impact of climate change in the sector and on food security be a priority activity.

Despite the uncertainty and recognizing the potential risks, climate challenges for agriculture are reflected in Tanzania's development plans at the highest levels. For example, the Five-Year Development Plan (FYDP 2011/12 –

2015/16), MKUKUTA-II, National Climate Change Strategy (NCCS, 2012) and Agriculture Climate Resilience Plan (ACRP, 2014-2019) include climate change as a threat to economic growth and an "underlying pre-requisite" which must be addressed to ensure success of agriculture as a core growth priority. The NCCS highlights agriculture as a key climate-sensitive sector where impacts of climate variability are already experienced by farmers, including declines in agricultural productivity, shifting Agro Ecological Zones (AEZ), increased incidents of pests and diseases, and increasingly unreliable rainfall. This CSA Program will support climate change adaptation and mitigation initiatives in the agricultural sector.

Climate-smart agriculture, forestry and fisheries (CSA), as defined by FAO 2010, - contributes to the achievement of sustainable development goals and integrates the three dimensions of sustainable development (economic, social and environmental) by jointly addressing food security and climate challenges. CSA has three main pillars:

- Sustainably increasing agricultural productivity and incomes.
- Adapting and building resilience to climate change.
- Reducing and/or removing greenhouse gases emissions, where possible.

CSA is an approach to developing the technical, policy and investment conditions to achieve sustainable agricultural development for food security under climate change. In this context, the CSA approach in Tanzania is designed to identify and operationalize sustainable agricultural development within the explicit parameters of climate change and variability

1.2 Alignment with the continental, regional and national agriculture and climate change policies, strategies and plans

This CSA Programme is aligned with the national economic blue print – Tanzania Vision 2025 and the National Development Plan. The Programme is also in line with the broad national objectives of the agricultural sector of contributing towards attainment and maintenance of domestic supply of main food items, production of raw materials for industries and creation of gainful employment of men, women and the youth. Similarly, the CSA Programme is aligned with the Water Resources Management Strategic Interventions and Action Plan for Climate Change Adaptation. The programme is further aligned with National REDD+ Strategy and Action Plan as it addresses the main drivers of deforestation and forest degradation. At the regional level, the CSA Program enhances the implementation of the Comprehensive African Agriculture Development Programme (CAADP) and responds to the 23rd Ordinary African Union Assembly – Decisions and Declaration (Malabo Declaration), in particular: Assembly/AU/Dec. 538 (XXIII) on Climate Change and agriculture; Assembly/AU/Decl.1 (XXIII) on Accelerated agricultural growth and transformation; and Assembly/AU/Decl.4 (XXIII) on Nutrition security for Inclusive economic Growth and Sustainable Development. At the national level,

the CSA Program will contribute to Tanzania's efforts to adapt and build resilience in - agriculture under the National Adaptation plan of Action (NAPA), The National Climate Change Strategy (NCCS), Agriculture Climate Resilient Plan (ACRP) and The National REDD+ Strategy and Action Plan. The CSA Program is intended to harmonize and enhance CSA initiatives being undertaken by different stakeholders.

1.3 Preparation Process

In preparation of this CSA Program, the Ministry of Agriculture Food Security and Cooperatives and the Vice President's Office pursued a consultative approach under the guidance of a Multi-disciplinary Team of Experts drawn from relevant Ministries and Departments, Agencies, Civil Society Organization (CSOs), Private Sectors, Researchers and Academia. The Program was developed through a four-step procedure as follows:

1. conducting technical working sessions that took stock of the sector's programmes, strategies and performance from a historical perspective, as well as an analysis of options for agricultural sector growth in a changing climate;

2. consultative sessions were carried out with interested groups, particularly the National Designated Authority (NDA) for Green Climate Fund (GCF), Global Environment Facility (GEF) Focal Point, Planning Commission, Revolutionary Government of Zanzibar, CSOs, umbrella private sector organizations such as the Tanzania private sector association and farmer organizations, Local Government Authority and Development Partners;

3. National stakeholder validation workshop where comments from stakeholders were discussed and incorporated; and

4. Resource mobilization to support implementation of Tanzania CSA Programme.

2.0 SITUATION ANALYSIS

2.1 General Trends

The agriculture sector in Tanzania provides livelihoods to over 80 percent of the population, generates about 24.1 percent of GDP (*Table 1*), contributes 30 percent of export earnings and employs 75 percent of the total labor force (URT, 2013). Tanzania is endowed with 44 million hectares (46 percent of total land) suitable for agriculture. However, part of this arable land is only marginally suitable for agricultural production due to a combination of factors including infertile soils, soil erosion, degradation and likelihood of drought. Moreover, about 28% of the land area is inaccessible to agriculture as it is under protection as Forest reserves and Wildlife protected areas. Currently, only 32 percent of the available arable land is cultivated. Tanzania also has significant potential for irrigated agriculture, with the area suitable for irrigation estimated to be about 29.4 million ha. Yet only 1.5 percent (441,000 ha) of potential irrigated areas is currently under irrigation. Smallholder agriculture is predominantly rain fed especially in arid and semi-arid regions that depend entirely on subsistence livestock and food crop production for their livelihoods.

Table 1: Share of Agriculture in the National Gross Domestic Product: 2005 - 2013

YEAR	SECTOR (percent)			
	Agriculture	Industry	Services	Other (Net Indirect Taxes)
2005	26.9	20.8	42.5	9.8
2006	25.3	20.8	43.3	10.6
2007	25.0	21.2	43.3	10.5
2008	24.9	21	43.8	10.3
2009	23.8	22	43.6	10.6
2010	24.1	21	49.5	5.4
2011	24.7	21	50	4.3
2012	24.8	21	50	4.2
2013	24.7	25	47.7	24.7

Source: URT (2013). The Economic Survey, Ministry of Finance.

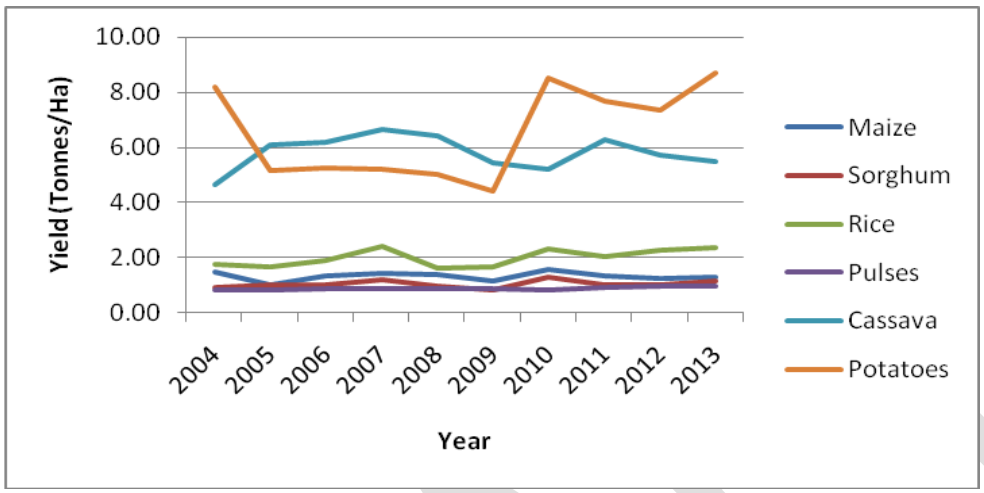
2.2 Agricultural Production Trends

2.2.1 Crop Production

Smallholder farmers dominate the agricultural sector with average farm sizes of between 0.2 and 2.0 hectares, depending on the location. Yields have been

mostly stagnant for the last ten years and agricultural productivity gains have been based more on the expansion of cultivated land, which is one of the major drivers of deforestation and land degradation in the country. The major food crops include maize, sorghum, rice, pulses, cassava and potatoes (*Figure 1*).

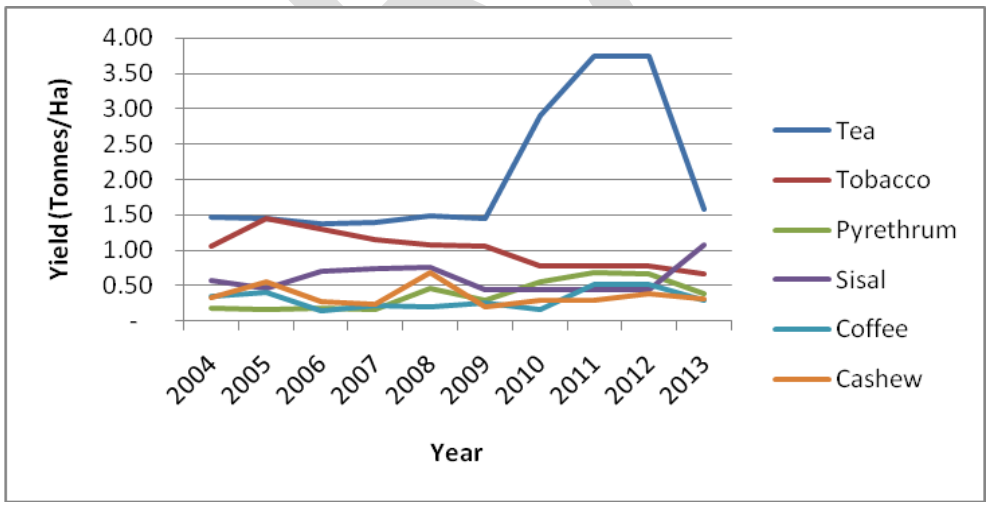
Figure 1: Food Crop Yield 2004 – 2013



Source: FAOSTAT 28/03/2015

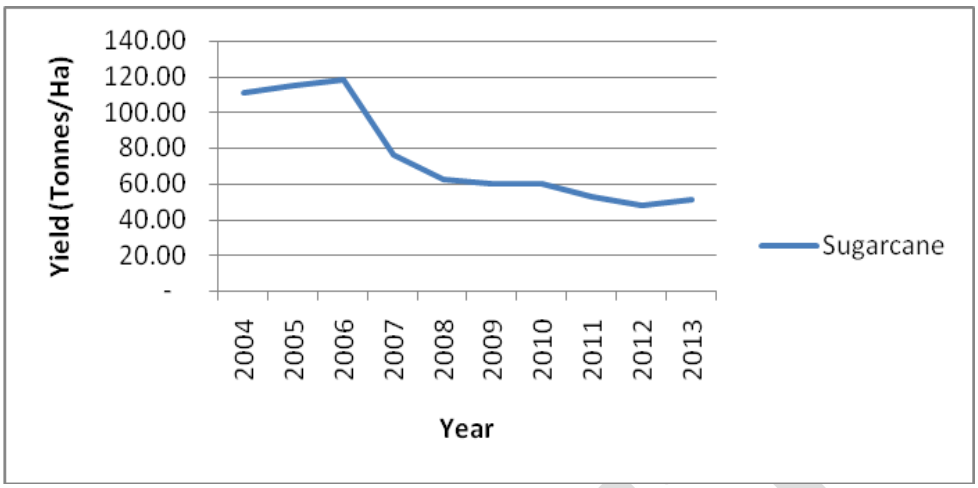
Industrial crops (*Figures 2 & 3*), commonly referred to as cash crops, are mainly grown as a source of income. These include tea, coffee, pyrethrum, tobacco, sisal, cashew and sugarcane among others.

Figure 2: Industrial Crop Yield 2004 – 2014



Source: FAOSTAT 28/03/2015

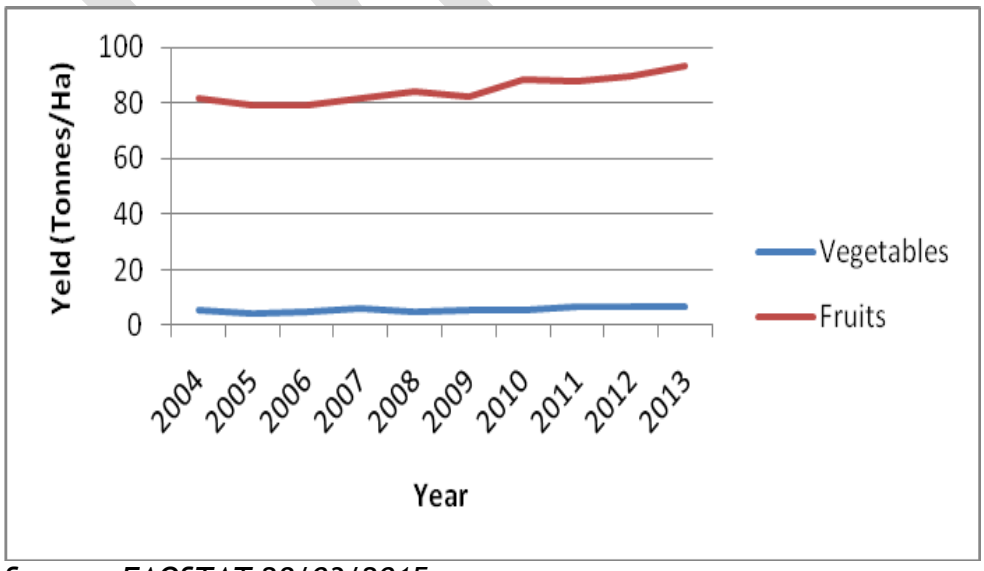
Figure 3: Sugarcane Yield 2004 – 2013.



Source: FAOSTAT 28/03/2015

The horticulture sub-sector is one of the fastest growing sectors contributing to food security, nutrition improvements and economic growth (*Figure 4*). It has been identified as one of the priority sub-sectors in the *National Export Strategy* (2008), the *Kilimo Kwanza* Resolution and a key component in the diversification of the agricultural sector from over dependence on traditional primary agricultural products. The sub-sector has a potential to become one of the main sources of foreign exchange earnings and a significant driver of economic growth. For instance, indigenous fruits, vegetables, spices and flowers have been cultivated in Tanzania for generations and traded throughout the region and internationally (e.g. the country is thought to have started exporting bean seed to Europe in the 1950s). Horticulture is mainly practised by small-scale farmers with a few large-scale operators. Local and foreign investors endow the floriculture and export vegetables sub-sector.

Figure 4: Horticultural Crops Yield 2004 – 2013

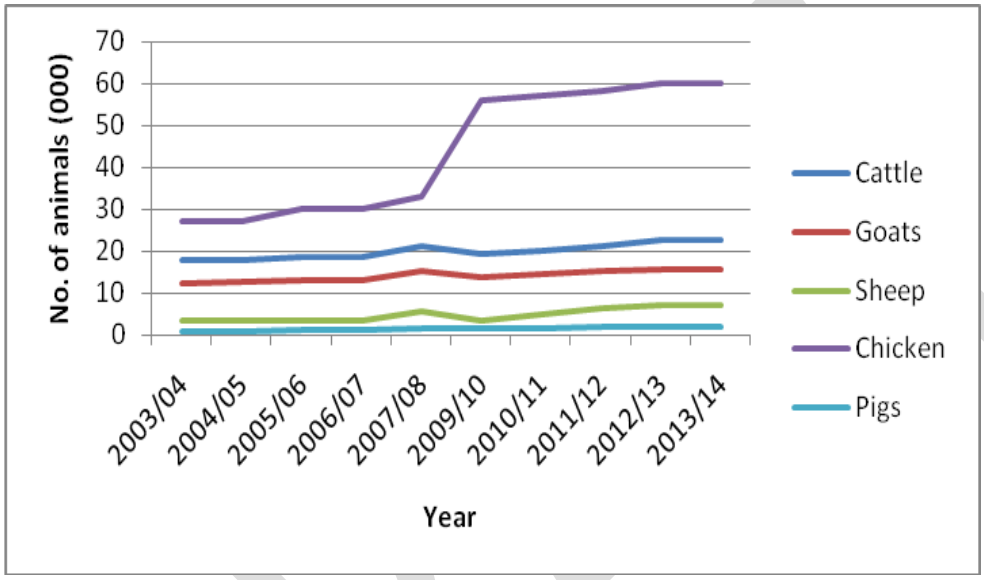


Source: FAOSTAT 28/03/2015

2.2.2 Livestock Production

The country has an estimated population of 22.8 million cattle, 15.6 million goats, 7 million sheep, 35.5 million local chickens; 24.5 million improved chicken breed and 2.1 million pigs1. However, 97 percent of all livestock are indigenous breeds which are kept by rural farmers and are grazed under natural pasture, while only 3 percent are improved breeds either grazed and or fed in cut and carry systems with minimal supplements.

Figure 5: Livestock Population Trend.



Source: Ministry of Livestock and Fisheries Development, 2014

Table 2: Production of livestock products 2008/2009 to 2013/2014

Product	2008/09	2009/10	2010/11	2011/12	2012/13	2013/2014
Meat Production (Tonnes)						
Cattle	225,178	243,943	262,606	289,835	299,581	309,353
Goats/sheep	82,884	86,634	103,709	111,106	115,652	120,199
Pig	36,000	38,180	43,647	47,246	50,814	79,174
Chicken	78,168	80,916	93,534	84,524	87,408	54,360
Total	**422,230**	**449,673**	**503,496**	**532,711**	**553,455**	**563,086**
Milk Production ('000' litres)						
Local Cattle	1,012,436	997,261	1,135,422	1,255,938	1,297,775	1,339,613
Modern Cattle	591,690	652,596	577,962	597,161	623,865	650,570
Total	**1,604,126**	**1,649,857**	**1,713,384**	**1,853,098**	**1,921,640**	**1,990,183**
Egg Production ('000')						
Eggs	**2,806,350**	**2,917,875**	**3,339,566**	**3,494,584**	**3,725,200**	**3,899,568,750**

Source: Ministry of Livestock and Fisheries Development (2014)

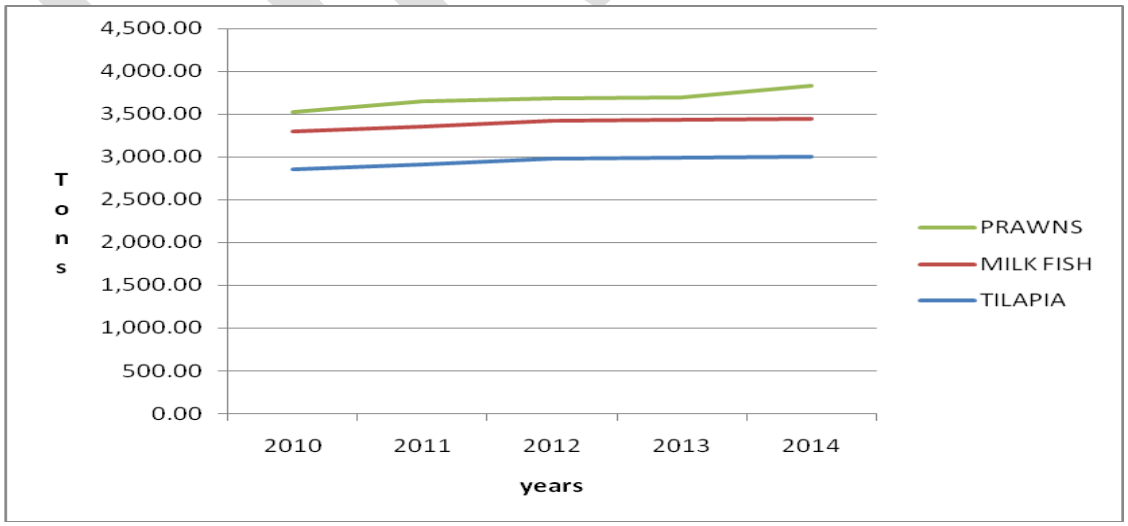
1 Budget Speech 2014/2015

Despite the large livestock population size, its contribution to the national economy (GDP) has persistently been declining from 18 percent in 2001 to 4.4 percent (TBS, 2013). Major challenges include recurring droughts which reduce pasture productivity and water availability; alien invasive species, pests and diseases. Furthermore, uncontrolled livestock mobility brings about conflicts between crop farmers and livestock keepers.

2.2.3 Fisheries Production

Tanzania has total water area of 62,000 km^2 potential currently employing more than 4 million people. In Zanzibar, the fisheries sector is largely artisanal currently employing about 20 percent of the island population with mariculture activities such as seaweed and prawn farming also supplementing the incomes of - island households. Climate change impacts on fisheries are mainly associated with degradation of fish areas and fish stock. For instance, sea level rise, which is associated with global warming, may cause sea water to rise above optimal levels, and increased sea water acidification bleaching corals, causing degradation of fish nursery grounds, breeding and feeding areas. Moreover, drought and frequent floods increases sedimentation in freshwaters, negatively affecting fisheries in fresh water bodies. Aquaculture in Tanzania has a huge potential but yet untapped for widespread household and commercial use. The high potential for development of aquaculture is due to availability of water resources and diversified species in the wild potentially suitable for aquaculture. Currently, the total number of people involved in the aquaculture is about 17,100 (with 14,100 involved in freshwater fish farming and about 3,000 in seaweed farming). Youths play an important role in aquaculture in pond construction, management and distribution of fish.

Figure 6: Aquaculture Production Trend in Tanzania (2010-2014)



Source: Ministry of Livestock and Fisheries Development

2.2.4 Forest Resources

The total forest area in Tanzania is 48 million ha, of which 93 percent of this is woodlands and only 7 percent are classified as forest reserves (mangroves, coastal forests, humid montane forests and plantations). Forest ecosystems in Tanzania are major sources of various ecosystem goods and services. They cover and protect most of the water catchments in the country and serve as a link in the agriculture-water-energy nexus. Besides timber and other non-timberforest products, the most important use of wood in Tanzania is provision biomass energy (fuel wood and charcoal) used by over 90% of the population. Some forest areas also support agriculture and livestock keeping.

2.3 Food Consumption and Nutrition Trends

2.3.1 Levels of food consumption

Cereals and roots and tubers serve as staples for the majority of the population in rural as well as in urban areas. Maize is consumed in all regions, especially in rural areas while rice is mostly consumed in urban and coastal regions. Other staples include plantain, potatoes, rice, cassava and sorghum. Other cereals such as sorghum and millet; roots and tubers such as yams and sweet potatoes are known but contribute less to the diet, as they are less preferred. The main dish is a stiff porridge (known in Kiswahili as *ugali*) made from maize flour, sorghum or cassava. The staple is eaten with a relish either made of vegetables, sardines, pulses or meat. The diet is often monotonous with a limited diversity of foods; it is based on starchy foods with high fibre content. Frequency of vegetable consumption is high, especially among rural communities where they are included in every meal, but generally quantities are small. Therefore, vegetables do not contribute substantially to nutrient intake.

Table 3: Trends in per capita supply of major foods groups (in g/per day)

Major food groups	Supply for human consumption in g/day					
	1966-68	1973-75	1980-82	1987-89	1994-96	2001-2003
Starchy roots	742	755	691	494	592	518
Cereals (excl. beer)	181	245	318	328	283	307
Fruit and vegetables	283	257	262	228	173	158
Other	149	152	280	211	203	191
Milk and eggs	87	75	71	67	62	72
Pulses, nuts, oil crops	54	51	52	55	44	42
Meat and offals	32	30	30	33	31	30
Fish, seafood	28	33	32	42	26	19
Sweeteners	20	23	18	13	18	21
Vegetable oils	7	9	10	11	11	14
Animal fats	3	3	2	2	2	2

Source: FAOSTAT

In rural areas and among the low-income section of the urban population, the quantity of food consumed can be limited and meal frequency varies with the season. It is limited to one meal per day during the wet season (lean months) and to two meals during the dry or harvest season. Frequency of meat and milk consumption is extremely low, on average once a week or even less. Among certain communities these products are consumed very rarely, for example once a month or less.

2.3.2 Nutrition trends

Under-nutrition and malnutrition are still highly prevalent in Tanzania. More than a third of children under five years are affected by chronic malnutrition (stunting). In the Southern zone prevalence surpasses 50 percent. Stunting is due to a combination of factors including maternal malnutrition, inadequate infant feeding practices, low quality of health care and poor hygiene. Breastfeeding is widely practiced but exclusive breastfeeding is not widespread and complementary feeding practices are inadequate. At the same time, the country is undergoing a nutrition transition due to changes in dietary habits, especially among middle and high-income groups living in urban areas who consume energy dense and processed foods. The prevalence of overweight and obesity is noticeable among women (almost one woman out of five).

Table 4: The prevalence of various forms of nutrient deficiencies in Tanzania according to population groups

Category of population affected	Type of deficiency and percent affected			
	PED	Anaemia	IDD	VAD
Children under-five years	52.0	45.0	13.0	30.0
Pregnant and lactating women	13.0	80.0	52.0	0.7
Remaining groups	20.0	20.0	40.0	0.1
General population	28.0	32.0	25.0	6.1

Source: Kavishe F.P (1987), TFNC Report no. 1215

2.4 Enabling Policy Environment

Policy reforms are cited as one of the drivers of productivity gains experienced in the agriculture sector. These policy reforms substantially improve the economic environment for agriculture through improvements in better policies on pricing -, trade, exchange rates, institutions and markets. The Government of the United Republic of Tanzania has over the years developed policies and strategies to enhance agricultural growth, natural resource management and climate change interventions. The Table 5 below summarizes the key policies and strategies that the GoT ratified and implemented in the country, and which, through their objectives and action plans, have an impact on CSA

implementation (Table 3). The summary of the enabling and (potentially) obstructing policies are provided in Table 5.

Table 5: Key policies relevant for CSA implementation and scale out in Tanzania

Regional	
Comprehensive Africa Agriculture Development Programme (CAADP)	Based on four reinforcing pillars for investment in agriculture to improve performance through strengthening country presence, focused lending program based on coordinated sector plans, enhanced capacity for policy, analytical work, and knowledge/partnership management: 1. Expanding the areas under sustainable land management and reliable water control systems. 2. Improving rural infrastructure and trade related capacities for market access 3. Increasing food supply and reducing hunger 4. Expanding agricultural research and technology transfer and dissemination
East Africa Community Food Security Action Plan	Developed to address food insecurity in the region. It forms the initial step of implementing the provisions of the EAC Treaty as set out in Chapter 18 Articles 105 -110. One of the main objectives of the EAC as set out in the Treaty is the achievement of food security and rational agricultural production. The EAC- Food Security Action Plan will guide coordination and implementation of the joint programmes and projects emanating from this plan.
East Africa Community Climate Change Policy	The purpose is to guide EAC Partner States and other stakeholders on the implementation of collective measures to address climate change impacts and causes in the region through adaptation and mitigation actions while assuring sustainable social and economic development.
Macro economics	
Tanzania Development Vision (TDV) 2025	Developed with the intention of coordinating and directing national's efforts and resources towards economic and social development by 2025. 1. Achieving quality life for all, 2. Good governance and the rule of law, and 3. Building a strong and resilient economy that can effectively withstand global competition.

The National Strategy for Growth and Reduction of Poverty II	Sets targets and goals on accelerating economic growth, reducing poverty and improving living standards and social welfare of Tanzanians.
Agricultural Sector	
National Agricultural Policy	Aims at setting instruments for the development of an efficient, competitive and profitable agricultural industry that contributes to nation's economic growth and wellbeing of Tanzanians.
Tanzania Agriculture and Food Security Investment Plan (TAFSIP)	Ten-year investment plan, which maps the investments, needed to achieve the CAADP target of six percent annual growth in agricultural sector GDP. It aims to contribute to the national economic growth, household income and food security in line with national and sectoral development aspirations.
Agricultural Sector Development Programme (ASDP)	Main objectives are to enable farmers to have better access to and use of agricultural knowledge, technologies, marketing systems and infrastructures for higher productivity and profitability; and to promote involvement of the private sector in agricultural transformation under improved regulatory and policy frameworks.
Livestock Sector Development Strategy (LSDS)	Aims at developing a competitive and more efficient livestock industry that contributes to the improvement of the livelihoods of all livestock keepers and the national economy.
Fisheries Sector Development Programme (FSDP)	Designed to develop a sustainable, competitive and more efficient fisheries and aquaculture industry that contribute to the sustainable livelihood improvement and the national economy.
Tanzania Agriculture Climate Resilience Plan (ACRP)	Developed to implement strategic adaptation and mitigation actions in the crops sub-sector. It presents a wide range of adaptation options including, but not limited to: improving agricultural land and water management, accelerating uptake of CSA, reducing impacts of climate-related shocks through risk management, and strengthening knowledge and systems to targeted climate action.
Southern Agricultural Growth Corridor of Tanzania (SAGCOT)	The goal is to expand investment in agribusiness leading to income growth among smallholders and employment generation across agribusiness value chains in the Southern Corridor

Big Result Now (BRN)	The objective is to address critical sector constraints and challenges and to speed-up agriculture GDP, improve smallholder incomes and ensure food security by 2015, mainly through smallholder aggregation models for main cereals and high potential crops contributing to import substitution, farm income and food security.
Environment and Climate Change	
National Environmental Policy (NEP)	Aims at ensuring sustainable and equitable use of resources for meeting basic needs, preventing and controlling degradation of land, water, vegetation and air, and improving the condition and productivity of degraded rural and urban areas
National Climate Change Strategy (NCCS)	Sets out strategic interventions for climate change adaptation measures and greenhouse gas emissions reductions. It has outlined objectives for all sectors and proposed strategic interventions in those sectors and themes that are highly vulnerable to climate change such as agriculture.
Land, Land use and Forestry	
The National Strategy (and Action Plan) for Reduced Emissions from Deforestation and Forest Degradation (REDD+)	The strategy (and plan) aims to facilitate effective and coordinated framework for reducing deforestation and forest degradation. It guides the implementation and coordination of mechanisms required for Tanzania to benefit from a post-2012 internationally approved system for forest carbon trading, based on demonstrated emission reductions from deforestation and forest degradation and other aspects of REDD+

2.5 Constraints to Agriculture Development and Growth

2.5.1 Land Degradation and Soil Health

Demands on the land for economic development and pressures from a growing population are leading to unprecedented land use change. In turn, unsustainable land use is driving land degradation. The result is - loss of land productivity with impacts on livelihoods and the economy. The impacts of land degradation and desertification include a reduction in crop and pasture productivity and fuel-wood and non-timber forest products, which are closely linked to poverty and food insecurity. The damage to soil, loss of habitat, water shortages, and siltation reduce biodiversity and ecosystem services and has wider economic consequences. Land degradation manifests itself in many forms; among them are soil erosion, increased sediment loading of water bodies, loss of soil fertility, increased salinity, reduced ground cover, and the reduced carrying capacity of pastures. To address this challenge, the

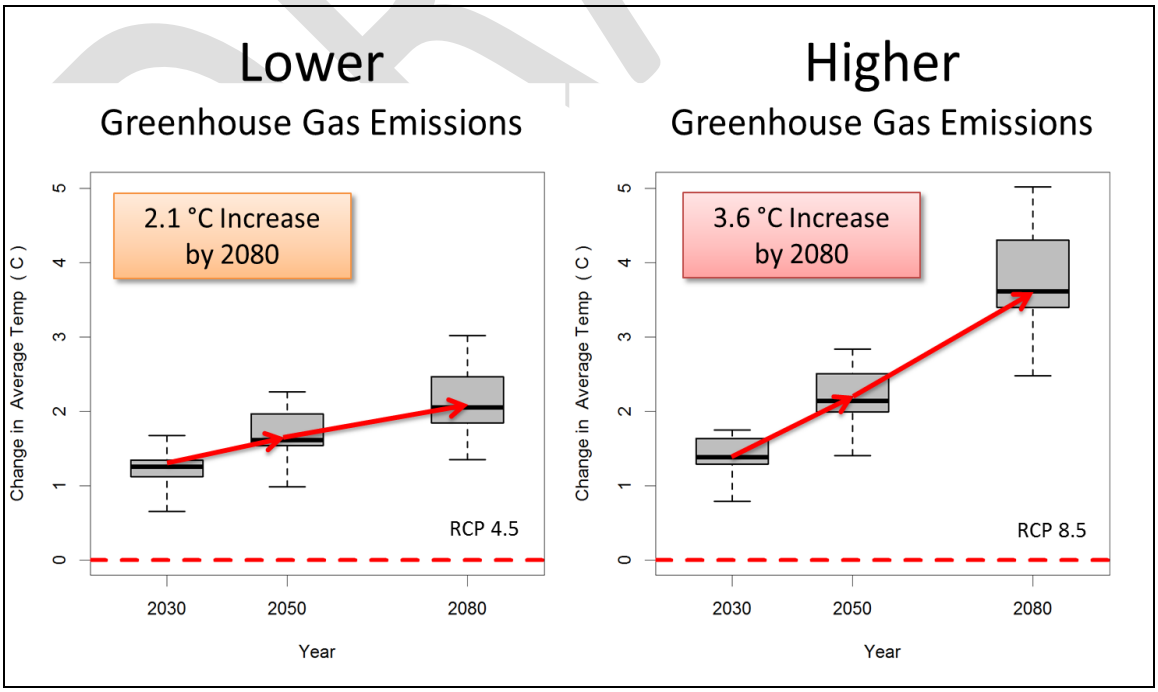
government launched the National Strategy on Urgent Actions to Combat the Degradation of Land and Water Catchment Areas in Tanzania (URT, 2006) that has not yet been fully implemented.

2.5.2 Climate Change and Variability

Agriculture in Tanzania is acutely vulnerable to the impacts of climate change due to dependency on climate. Unreliable rainfall, extreme weather events and poor rainfall distribution are the most damaging risks of production among smallholder farmers and fisher-folks. Drought and floods are the major natural disasters in Tanzania accounting for up to 70 percent of all recorded natural calamities causing large-scale famine, diseases and deaths for human beings, plants and animals.

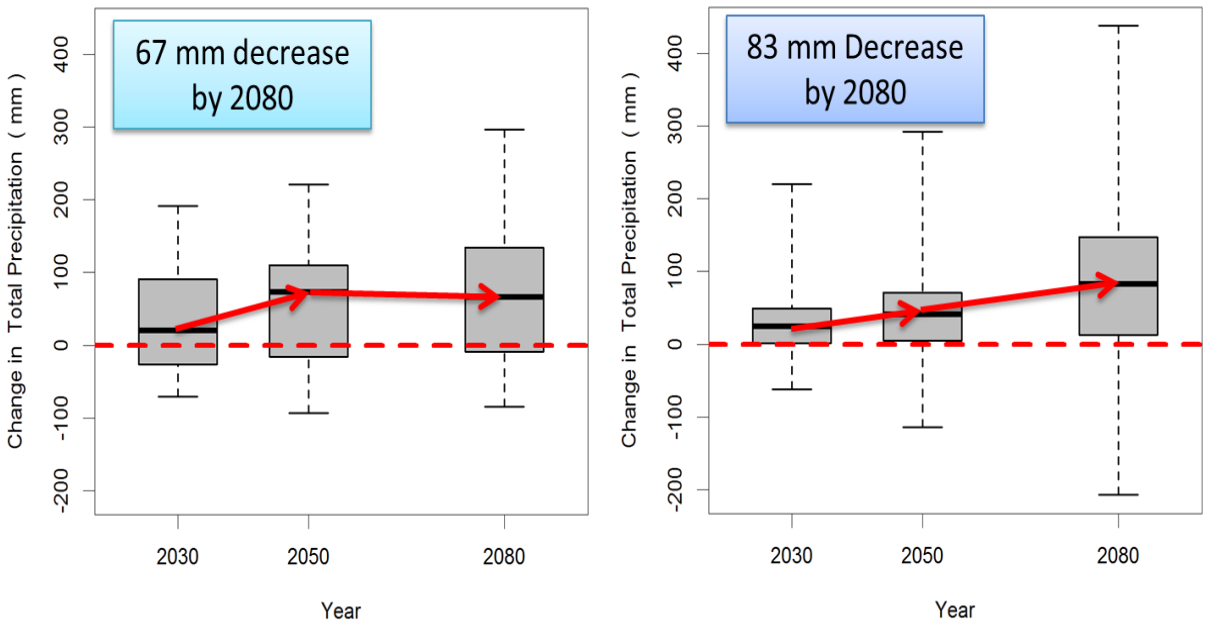
A range of Global Circulation Models (GCM) and emission scenarios projections indicate future changes in rainfall and increases in average annual temperatures of 1°C to 3°C above the baseline period (1961-1999) by the 2050s, with the latest projections indicating a high certainty of a 1 °C rise across the country. Figures 7 and 8 show Climate change impacts in Tanzania with respect to temperature and rainfall respectively under lower (RCP 4.5) and higher (RCP 8.5) greenhouse gas emissions scenarios.

Figure 7: Climate change impacts in Tanzania with respect to temperature under lower (RCP 4.5) and higher (RCP 8.5) greenhouse gas emissions scenarios



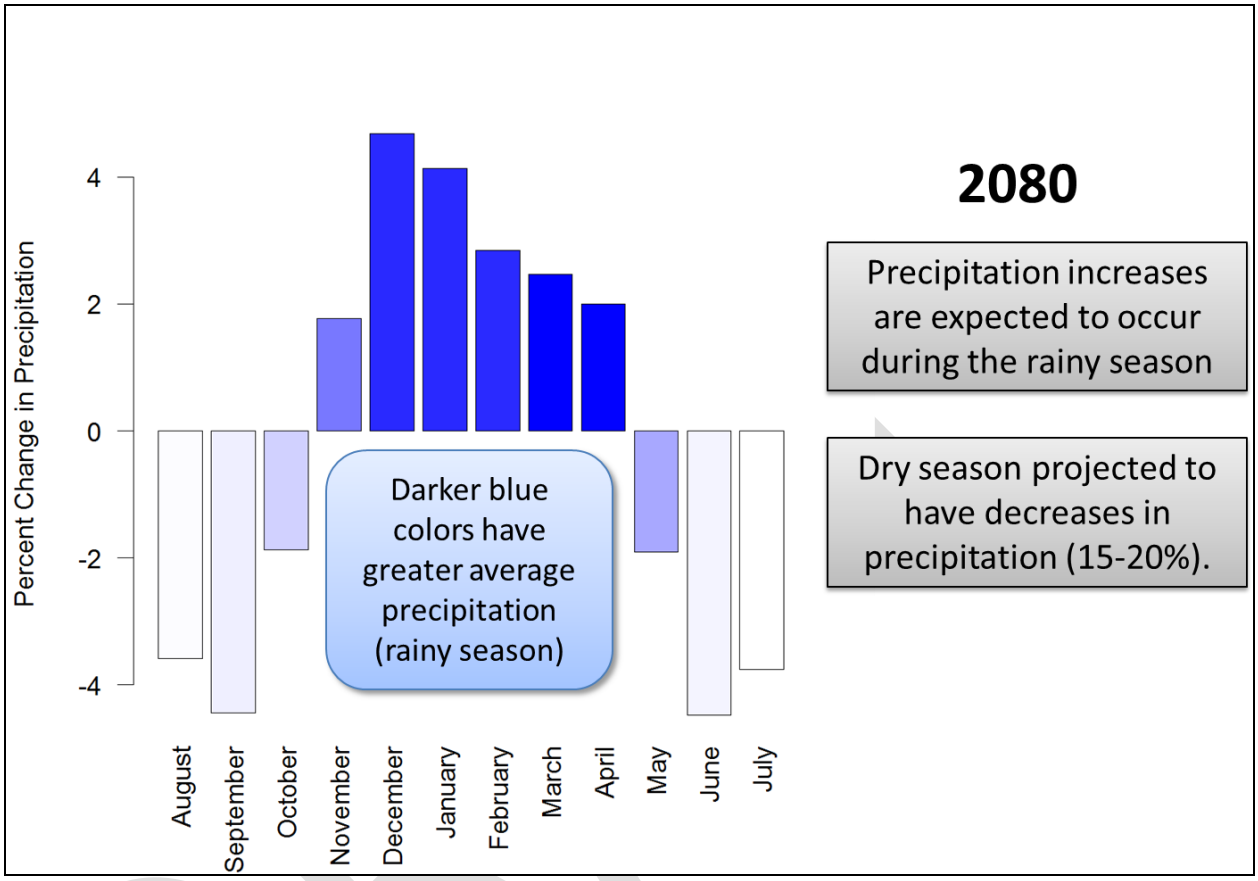
The thick black lines represent the average of 29 different climate models, whereas the grey box and dashed lines represent the range of climate models. Although precipitation is projected to increase by most climate models, the timing of precipitation is also changing with some months projected to decrease.

Figure 8: Climate change impacts in Tanzania with respect to precipitation in Tanzania under lower (RCP 4.5) and higher (RCP 8.5) greenhouse gas emissions scenarios



Although climate change is projected to bring more rain to Tanzania in some areas, models show that this increase in rainfall is only during the middle of the rainy season (November-April rain season) with all other months projected to decrease in precipitation (see Figure 9). This would result in the rainy season becoming shorter but more intense, and the dry season becoming drier. Increased intensity in frequency of storms, drought, flooding, may alter the hydrological cycles while variable precipitation may have implications for food, pasture and water availability.

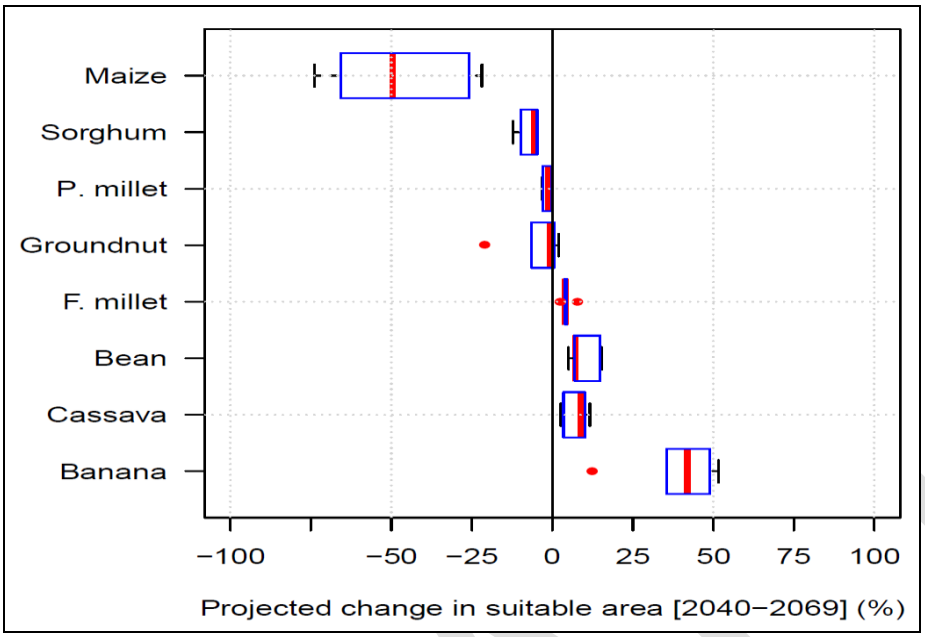
Figure 9: Percent change in precipitation in 2080 under the higher RCP 8.5 greenhouse gas emissions scenario based on an ensemble of 19 climate models from the IPCC Fifth Assessment Report.



The darker bars represent months with greater average precipitation (from Climate Wizard, CIAT, 2015). Climate Impacts to Crops

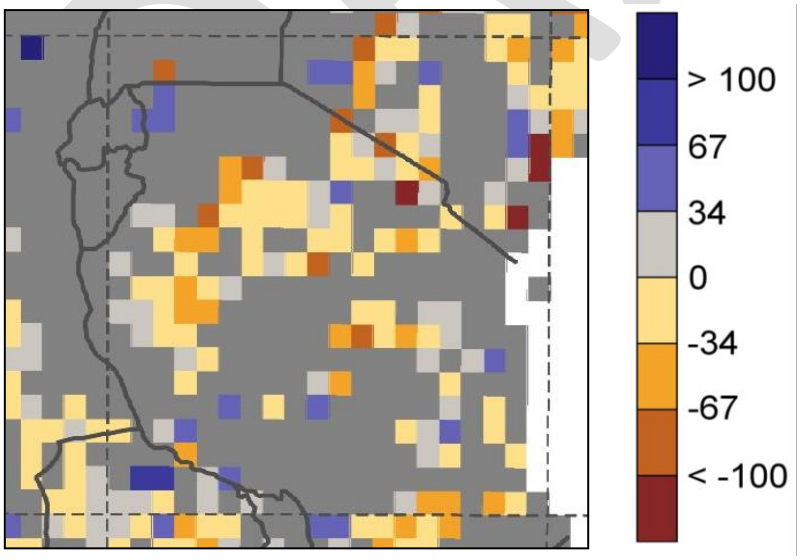
Agricultural crop modeling shows that climate change has impacts depending on the crop. Maize is expected to have 25 to 75 percent decreases in area suitable for cultivation (Figure 10). Likewise, sorghum is expected to have a moderate decrease in area suitable for cultivation. However other crops such as beans, cassava and banana are expected to increase in area suitable. While forage for livestock grazing is very important to Tanzania, climate change is projected to decrease rangeland productivity (Figure 11 below).

Figure 10: Percent change in suitable area for major crops in Tanzania due to climate change.



The red line represents the average projected change and the blue box and dashed lines represent uncertainty associated with the crop modeling. Analysis provide by J. Vargas, CIAT

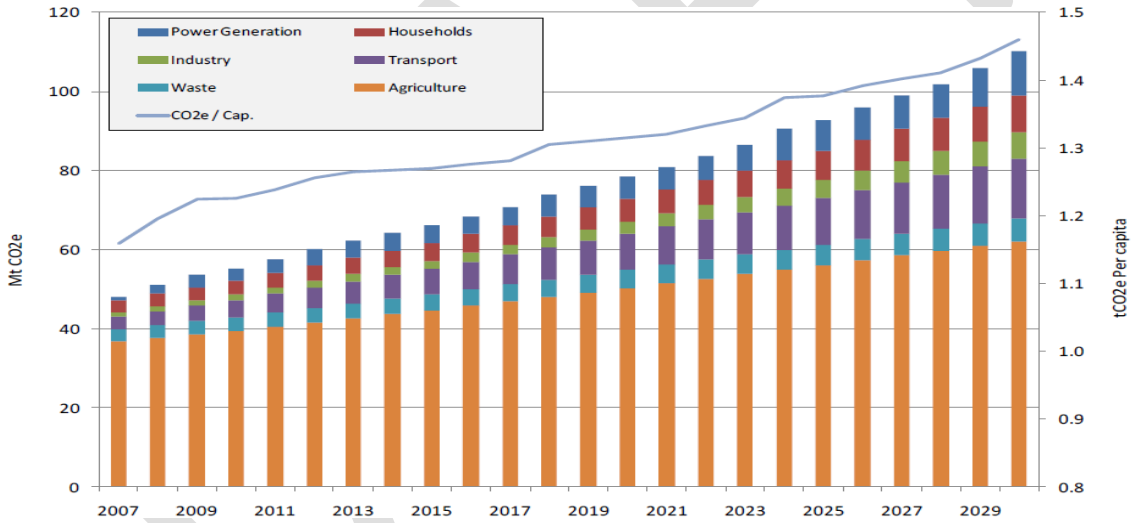
Figure 11: Projected changes Above ground Net Primary Productivity (ANPP) in Tanzania's rangelands ANPP by 2050s and RCP8.5 (high-end emissions) in relation to the mean value of 1971-1980.



This provides a good proxy for climate change impacts to livestock productivity.

Tanzania currently has very low emissions of Greenhouse Gases (GHG), in total and per capita. The published inventory for 1994 puts per capita emissions at 1.3 tones of CO_2e (all GHGs) and 0.1 tCO_2 (CO_2 only). However, if land use changes and forestry (including deforestation) are included, the per capita emission estimates rise to 2.67 (all GHGs) and 1.65 (CO_2 only). The key emitting sectors are forestry, due to deforestation, and agriculture, primarily from livestock (CH_4 from enteric fermentation) and soils (N_2O from fertilizers, animal manure, etc.). These two sectors accounted for 93percent of emissions in 1994 (forests 70percent, agriculture 23percent). In the future, it is inevitable that GHG emissions in Tanzania will increase under the planned current development baseline. For example, between 2005 and 2030 under the current projected baseline, per capita emissions are set to increase to 1.5 tCO_2e and 0.5 tCO_2 (CO_2 only). The future emission projections (excluding LUCF sector) are shown in Figure below

Figure 12: Future emission projections 2007 – 2030 Source: The Economics of Climate Change in Tanzania



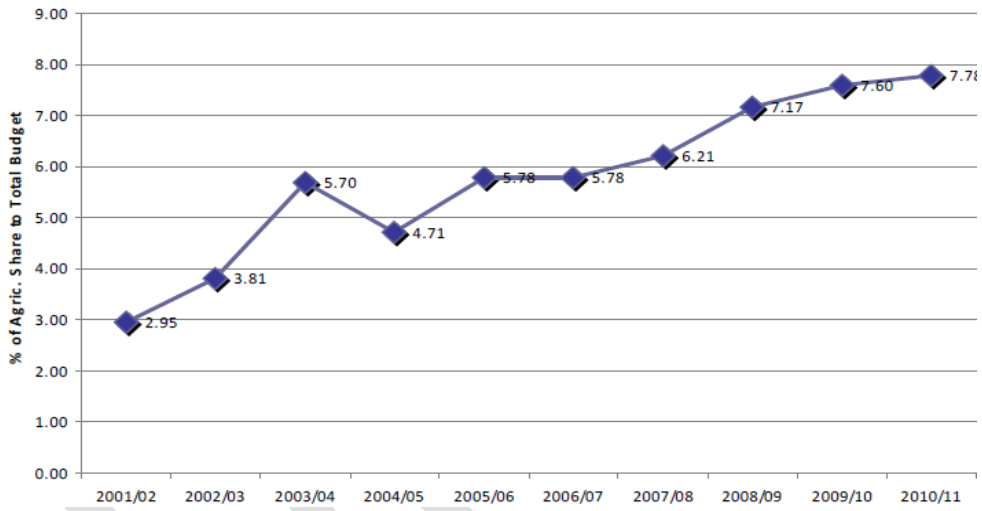
Building resilience and adaptation in the agriculture sector is very crucial due to the vulnerability and the observed impacts of climate change in the country. With a vulnerable rainfed agricultural sector, a well-functioning early warning system is a key factor in risk reduction and enhancing productivity. The institution responsible for provision of early warning information in Tanzania include Tanzania Meteorological Agency (TMA), in collaboration with international partners and national partners such as Ministry of Agriculture Food Security and Cooperatives (MAFC), Ministry of Livestock and Fisheries Development - and Ministry of Natural Resources and Tourism. However, these early warning systems are inefficient in terms of the means of communicating the intended information. The common means of communicating the information is via radio and Television broadcasting, newspapers, websites and

emails. With this method, the information is not delivered on time, and thus difficult to integrate it into farming decisions.

2.5.3 Agricultural Finance and Investments

The Government through the national budget is the main funder of the agricultural sector, supplemented by Development Partners (DPs), private sector and civil society organizations thus making significant contributions to the sector. According to the *Maputo Declaration* of the African Union in 2003, it was agreed that all African countries, including Tanzania strive to commit at least 10 percent of the national budgets to agriculture. Although Tanzania has not attained the annual target of 10 percent, over the years, there has been a remarkable increase in investments in agriculture currently standing at about 8 percent.

Figure 13: Trend in Agricultural Financing (2001/02 - 2010/11).



In addition, the Government in collaboration with DPs and private sector have put in place measures aimed at improving the flow of finance and investment to the agriculture sector such as: the Export Credit Guarantee Scheme, USAID Guarantee for Input Scheme, Private Agriculture Sector Support (PASS), the Agro-Dealers Scheme and the Agriculture Input Trust Fund (AGIFT). Other initiatives that enhance Public Private Partnerships include the Southern Agricultural Growth Corridor of Tanzania (SAGCOT) and Big Results Now (BRN). One of the main constraints to private sector investment in agriculture is lack of appropriate financing arrangement, particularly considering the high risks associated with investments in the agriculture as compounded by the impacts of climate change and climate variability.

2.6 Agricultural Growth Potential and Sources of Growth

Agriculture in Tanzania has a huge potential and opportunities for development. About 44 million hectares are suitable for agricultural production and only 10.8 million hectares (25%) are cultivated mostly under subsistence agriculture (i.e., smallholders operating between 0.2 and 2 hectares with low productivity). The potential therefore exists for expansion and intensification. In addition, the area with irrigation potential is 29.4 million hectares, but only 1.5 % (440,000 ha) so far utilized.

Tanzania has a dual agricultural economy: smallholder farmers on one side dominate the agricultural sector, carrying out rainfed agriculture, producing a variety of subsistence crops, such as maize, sorghum, millet, cassava, sweet potatoes, pulses, paddy, wheat, fruits and vegetables. On the other side, cash crops like sisal, sugarcane and tea are grown on large-scale commercial farms and cashew nut, coffee, cotton and tobacco are grown on small-scale farms. Peri-urban agriculture (mainly horticultural crops) for household food consumption is rapidly increasing.

High dependence on rainfed agriculture and poor soil health largely due to land mismanagement increases vulnerability of farming systems and predisposes rural households to food insecurity and poverty thus eroding their productive assets and weakening their coping strategies and resilience. Increasingly, the onset, duration and intensity of rains vary considerably from year to year, while the frequency and intensity of extreme weather events such as drought and floods are on the increase with devastating impacts on the national economy and the livelihoods of the people. Moreover agricultural seasons in some areas of the country are expected to shift. Drastic and innovative measures are needed to help farmers and consumers cope with the changes in emerging and projected weather patterns.

Over 90.4 percent of active women in Tanzania are engaged in agricultural activities, producing about 70 percent of the country's food requirements. Moreover, youth who constitute about 65 percent of the total labor force in Tanzania, are less engaged in agricultural activities and emerging opportunities. It is imperative that transformation and growth in the agriculture sector target both women and the youth.

3.0 VISION AND OBJECTIVES

3.1 Vision

The Vision for the CSA Program is to have an **"Agricultural sector that sustainably increases productivity, enhances climate resilience and food security for the national economic development in line with Tanzania National Development Vision 2025."**

3.2 Objectives

The five core objectives of the Country CSA Programme are:

1. Increase productivity of the agricultural sector through (appropriate) climate smart agriculture practices that consider gender.
2. Enhance climate resilience of agricultural and food systems.
3. Strengthen policy, legal and institutional framework to increase efficiency and effective implementation of climate smart agriculture.
4. Improve infrastructure to support value addition, marketing, trade and postharvest management.
5. Develop financing mechanisms to solicit resources through national, international and public private partnerships to support climate smart agriculture.

The Programme, therefore, aims to build resilience of agricultural farming systems for enhanced food and nutrition security through six Programmatic Result Areas, namely:

Improved Productivity and incomes – a pro-growth and pro-poor development agenda that supports agricultural sustainability and includes better targeting to climate change impacts will improve resilience and climate change adaptation. Because climate change has a negative impact on agricultural production, achieving any given food and nutrition security target will require greater investments in agricultural productivity. It is important that Agricultural growth does not jeopardize soil quality or groundwater resources. Public and private sectors as well as public-private partnerships will play a critical role.

Building resilience and associated mitigation co-benefits **-** CSA will help reduce vulnerability of Tanzania's agriculture sector by increasing productivity, enhancing adaptation and resilience of the farming systems and reducing emissions intensity in the context of achieving food and nutrition security, sustainable development and poverty reduction.

Value Chain Integration **-** This approach is holistic in that it considers input supply, production, agricultural services, traceability, marketing and business support services as necessary building blocks. Under the approach, both public and private sectors are seen as critical actors in the value chain. Knowledge

and capacity building are critical strategic priorities to leverage innovations and increase efficiencies. The approach also provides enabling framework for integrating gender and the needs of the youth.

Research for Development and Innovations - Although Tanzania has a well-developed agricultural research system, use of modern science and climate smart technologies in agricultural production is still limited. Inadequate research–extension–farmer linkages to facilitate demand-driven research and increased use of improved technologies continue to constrain efforts to increase agricultural productivity as farmers continue to use outdated and ineffective technologies. The role of research will be reoriented to support innovations that facilitate the transition to climate-smart agriculture by smallholder farmers. New and emerging agricultural research partnerships will identify technological advances that respond to the impacts of climate change and climate variability. A major thrust will be on the use of climate-smart agricultural practices, promoting improved land management and sustainable crop-livestock and fisheries intensification, in order to bolster farmers' adaptive capacity and support the national vision of achieving food security.

Improving and Sustaining Agricultural Advisory Services - Agro-advisory services that include climate applications for agriculture will help farmers to better make informed decisions in the face of risks and uncertainties, in addition to the integrated management of present and emerging pests and disease challenges. Climate applications include seasonal weather forecasts, monitoring and early warning products for drought, floods and pests and disease surveillance. These products and services would increase the preparedness of the farmers, well in advance, to cope with risks and uncertainties. In this regard, dissemination of agro-weather advisories and other climate-smart agricultural practices will be enhanced through Public Private Partnerships. Furthermore, robust agro-advisory services would catalyze private sector investment in priority areas such as weather-based index insurance and associated infrastructure.

Improved Institutional Coordination – Improved institutional coordination is crucial for achievement of horizontal and vertical integration required for effective discharge of the CSA Programme. The achievement of horizontal integration requires a framework that provides for high-level guidance while vertical integration is instrumental in determining the roles of various sector institutions and devolved governments in performing CSA mandates. The proposed coordination framework will improve Inter-Ministerial and Local Government coordination; enhance partnerships with private sector and civil society organizations; and strengthen coordination with development partners.

4.0 PROGRAMATIC RESULT AREAS

4.1 Result Area 1: Improved Productivity and Incomes

4.1.1 Component 1: Improved productivity and nutrition

Development issues:

- Low use of CSA technologies and practices in crops, livestock and fisheries by men and women farmers/fisher-folk.
- Low use of inputs by smallholder men and women farmers.
- High levels of stunting and high mineral deficiency levels.
- High poverty levels.
- Low capacity for adaptation to climate change and variability
- Poor knowledge on CSA technologies

4.1.1.1 Output 1: Sustainable CSA technologies adopted by smallholder farmers and yields of staple crops (such as maize, rice, sorghum, cassava, potatoes and beans) increased by 50 percent by 2025.

Actions:

1. Identify, upgrade, disseminate and practice climate smart technological packages.
2. Introduce improved crop varieties (high yielding, early maturing, disease and pest resistant and nutrient fortified).
3. Increase access to farm inputs (fertilizers/pesticides/seeds/vet drugs) and its wise application/use
4. Strengthen surveillance of agricultural input trade and use.
5. Identification of best indigenous knowledge and its interaction with scientific knowledge to enhance climate change adaptation
6. Train farmers on CSA agronomic practices

4.1.1.2 Output 2: Production of poultry, cattle, small ruminants and pigs increased by 30 percent through adoption of sustainable CSA technologies

Actions:

1. Introduce improved livestock breeds (increased productivity, disease resistant and drought tolerant).
2. Undertake genetic characterization and improvement of local livestock breeds.
3. Identify, upgrade, disseminate and practice livestock technological packages.
4. Train farmers on livestock husbandry and disease management.

4.1.1.3 Output 3: Productivity of aquaculture increased by 50 percent by 2025.

Actions:

1. Develop and disseminate best management practices of aquaculture throughout the country.
2. Train fisher folks in good fishing practices.
3. Strengthen fish health and disease surveillance.
4. Strengthen and increase fingerlings breeding and multiplication centers
5. Strengthen integrated fish farming (e.g. in paddy farms)
6. Sensitize and support private sector involvement in fingerling and feed production and distribution

4.1.1.4 Output 4: Stunting and underweight in children as well as micronutrient deficiencies in children and women of reproductive age reduced by 50 percent by 2025.

Actions:

1. Promote production and consumption of high quality protein cereals, orange fleshed sweet potatoes (for vitamin A) and leafy vegetables.
2. Develop other high quality staples through breeding – cassava, rice, potatoes etc.
3. Promote fortification of staples during processing (micronutrient fortification and blending products).
4. Educate and train consumers on appropriate food combination

4.1.2 Component 2: Irrigation and agricultural water management

Development issues:

- Overdependence of agriculture on inadequate and erratic rainfall (rain-fed agriculture).
- Inadequate infrastructure development for irrigation, drainage and water storage
- Inefficient water use of existing irrigation systems.
- Low productivity on existing irrigation schemes.
- Inadequate and un-coordinated information in irrigation research, science and technology.
- Inadequate operation and maintenance practices of existing irrigation schemes.
- Limited knowledge on the role of in-situ rainwater harvesting technologies through tillage and Conservation Agriculture.

4.1.2.1 Output 1: Irrigation schemes productivity increased by 25 percent and integrated farming systems increased by 50 percent by 2025.

Actions:

1. Promote development and diffusion of appropriate efficient small-scale irrigation technological packages.
2. Train extension workers on irrigation and water management technologies and skills.
3. Build the capacity of Irrigators Organizations in agricultural water management and their obligations
4. Undertake comprehensive management needs assessment of existing large scale irrigation schemes.

4.1.2.2 Output 2: 1.5 million ha of irrigation developed by 2025 to benefit 2.3 million households.

Actions:

1. Review of the National Irrigation Master Plan (2002) and update irrigation potential areas for small scale irrigation systems.
2. Train farmers in the installation, operation and maintenance of recommended irrigation technologies.
3. Establish links to input and output markets and service providers (strengthen value chain and technical backstopping).

4.1.2.3 Output 3: 500,000 ha of integrated farming systems with sustainable water harvesting and management systems developed by 2025 to benefit 700,000 households.

Actions:

1. Identify suitable areas for rainwater harvesting and agricultural water management systems.
2. Train farmers/household members in water harvesting and agricultural water management technologies.
3. Facilitate the construction of water harvesting structures at household and community levels.
4. Introduce and promote in-situ rainwater harvesting technologies (e.g. Conservation agriculture)

4.1.3 Component 3: Improved Food Storage and Distribution

Development issues:

- High post-harvest losses along the value chain.

- Low integration of agricultural commodity markets
- Inadequate cold storage and cool trucks for perishable produce
- Inadequate agro-processing industries

4.1.3.1 Output 1: Post harvest losses for staple food crops (such as maize, rice, sorghum, cassava, potatoes and beans), horticultural crops, livestock and fish value chains reduced by 30 percent by 2025.

Actions:

1. Invest in improved appropriate storage facilities and technologies along the value chain.
2. Promote small scale agro-processing industries in rural areas.
3. Train producers, processers and marketers in post-harvest management.
4. Provide regular market information (deficit/surplus areas) to improve distribution of agricultural commodities/food stuffs.
5. Facilitate establishment of market centres in rural areas with the appropriate infrastructure.
6. Link Region and District by feeder roads to various market centres and highways.

4.1.3.2 Output 2: Private sector capacity enhanced to store 5000 Mt of grain annually and to process and package 50 percent of cereals, cassava and sorghum products annually by 2025.

Actions:

1. Strengthen and link the smallholder farmers to the Warehouse Receipt System (WRS) in the grain supply chain.
2. Rehabilitate existing warehouses and silos and establish Public-Private-Partnerships.
3. Support private sector to invest in food processing as well as value addition, including packaging and branding.
4. Facilitate linkages with relevant service providers and markets (inputs and outputs).

4.1.4 Component 4: Increased Growth of Incomes

Development issues:

- Low levels of income from food and cash crop production by smallholder farmers (men, women and youth).
- Low productivity of animal breeds and low production of improved breeds to meet demand.

- High levels of animal diseases and inadequate feed and water for animals.
- Limited market linkages for livestock and livestock products.
- Low production of aquaculture to meet the increasing demand.
- Limited adoption of integrated farming production systems with potential high incomes.
- Limited access to input and output markets.
- Potential for urban and peri-urban agriculture as a source of food and income is under exploited.

4.1.4.1 Output 1: Income from food and cash crop production by men and women increased by 20 percent and 30 percent, respectively by 2025.

Actions

1. Build capacity of nursery operators in all crop growing areas and support them to expand and improve quality of seedlings.
2. Build capacity of Quality Declared Seed producers and support them to expand and improve quality of seed.
3. Build capacity of food and cash crop farmers to improve productivity and produce quality.
4. Facilitate contractual arrangements between food and cash crop producers and market/industry.
5. Develop and promote innovative micro-financing packages to facilitate food and cash crop farmers to access credit.

4.1.4.2 Output 2: Income from livestock production by men and women increased by 20 percent and 25 percent respectively by 2025.

Actions

1. Rehabilitate, restock and build capacity of livestock breeding centres to produce improved breeds of livestock.
2. Facilitate and support the acquisition of improved breeding stocks by men and women farmers.
3. Provide adequate and effective extension knowledge and agro-weather information.
4. Strengthen and/or establish efficient and sustainable animal health and artificial insemination services.
5. Develop and support innovative micro-financing packages to support livestock keepers' access to credit and markets.
6. Identify areas with acute problem of water for livestock and construct water infrastructures.
7. Facilitate improvement of demarcated grazing lands.
8. Promote use of crop residues and agro-industry byproducts.

9. Promote value addition for livestock products.

4.1.4.3 Output 3: Income from aquaculture production by men and women increased by 20 percent by 2025.

Actions

1. Facilitate and support acquisition of fingerlings by men and women fish farmers.
2. Promote value addition for fish products.
3. Facilitate contractual arrangements between fish farmers and market.
4. Establish and support innovative micro-financing packages to support fisherfolks access to credit.

4.1.4.4 Output 4: Output for Urban and peri-urban agriculture increased by 30 percent by 2025.

Actions

1. Support Local Governments to identify and demarcate potential areas within urban and peri-urban areas for agricultural activities.
2. Train urban and peri-urban producers in CSA Practices.
3. Monitor the safety of outputs from urban and peri-urban agriculture.
4. Enforce laws and bylaws related to urban and peri-urban sustainable land use.

4.2 Result Area 2: Building resilience and associated mitigation co-benefits

4.2.1 Component 1: Improve soil health, and restore degraded lands

Development issues:

- Land degradation
- Soil and water conservation.
- Soil erosion and nutrient depletion
- Loss of biodiversity
- Low capacity at all levels for implementation CSA and SLM practices
- Low adoption of CSA and SLM technologies and practices at community level
- Most CSA and SLM activities are of pilot in nature
- Weak collaboration of relevant ministries and agencies to ensure CSA and SLM up scaling.

4.2.1.1 Output 1: Adoption of sustainable climate smart technologies and sustainable land management practices by 5 million households by 2025.

Actions

1. Promote integrated soil fertility and water management interventions.
2. Establish CSA/SLM knowledge hubs across the country to support adoption of CSA and SLM technologies and practices by men and women that improve soil health and restore degraded lands.
3. Enhance the capacities of private sector service providers and farmer-based organizations to support farmers' adoption of existing/new/improved CSA and SLM technologies and practices.
4. Develop and integrate CSA and SLM principles into farmer-field schools, primary, secondary and tertiary curriculum.
5. Establish mechanisms for joint planning and implementation of CSA and SLM at the local level.

4.2.1.2 Output 2: Technology dissemination and adoption for scaling up of CSA and SLM promoted by 2025.

Actions:

1. Develop and implement sustained awareness creation program on CSA and SLM in addressing soil health and land degradation challenges.
2. Facilitate the development and implementation of at least five (5) small scale CSA Projects annually.
3. Facilitate the dissemination and adoption of CSA and SLM technologies and practices at the farm level across the country through Local Government's CSA Projects.

4.2.1.3 Output 3: CSA and SLM knowledge to support policy and investment decision making generated and adequately managed by 2025

Actions

1. Establish CSA/SLM Knowledge Platform with disaggregated data on men and women.
2. Document and publicize successful CSA/SLM technologies, practices and interventions.

4.2.2 Component 2: Conservation of Natural Resources and Catchments

Development issues:

- High Deforestation and Forest Degradation
- Poor Natural forest management including low adoption of Participatory Forest Management
- Low Forest Plantation area to meet the high wood demand

- Low adoption of Agroforestry/Community Forestry
- Extensive Land degradation, Soil erosion and siltation
- High loss of natural and agro- biodiversity
- Unsustainable Biomass Energy Production and use

4.2.2.1 Output 1: The National REDD+ Strategy implemented in 25 percent of Natural forests in the country by 2025

Actions

1. Upscale Natural Forest Conservation through Participatory Forest Management (PFM)
2. Protect water catchment areas through integrated watershed management.
3. Increase forest cover through natural regeneration, Agroforestry, Reforestation. and Afforestation.
4. Promote best management practices for natural resources management to improve and maximize net benefits for the farmers and other downstream users (e.g. power generation and urban water supply).
5. Promote and support on farm soil conservation activities
6. Promote sustainable production and marketing of charcoal from miombo woodlands
7. Promote sustainable land use management.

4.2.2.2 Output 2: Farm/community forest cover increased by 20 percent by 2025

Actions

1. Develop a business model for ecosystem management in order to facilitate payment for ecosystem services (e.g. tourism revenue used to motivate farmers to conserve wildlife and payment for water in urban areas used to pay farmers for conservation of water catchments).
2. Develop and implement management plans for ecosystems in order to encourage sustainable use
3. Document biodiversity in the ecosystems including below ground biodiversity and develop eco-tourism opportunities in such areas
4. Undertake natural resources accounting for ecosystem services.
5. Identify agroforestry species for different agro-ecological zones and support farmers to increase tree cover
6. Undertake afforestation and reforestation through Public-Private Partnerships.

4.2.3 Component 3: Insurance and Other Safety Nets

Development issues:

- Vulnerability and increasing risks to climate change.
- Shifting spatial distribution of events
- High incidence of poverty making it difficult for small scale farmers to recover after experiencing extreme weather events and climate variability
- Inadequacy of traditional approaches to risk transfer and risk management.

4.2.3.1 Output 1: Crop and livestock weather-indexed insurance increased by 30 percent by 2025.

Actions

1. Develop and implement varied innovative crop and livestock weather-indexed insurance packages.
2. Develop agro-meteorological infrastructure to support weather-indexed insurance and to use them for improved weather and climate information services for farmers.
3. Enhance the capacity of micro-finance institutions to act as agents to deliver innovative crop and livestock weather-indexed insurance packages.
4. Raise awareness within the insurance industry of extreme weather and climate risks and communicate actions and opportunities.
5. Undertake farmer education to address their concerns regarding insurance products with a view to gain their trust
6. Establish livestock insurance schemes and use of insured livestock as collateral
7. Explore ways of using existing and other safety nets such as cash transfers or workfare programmes.

4.2.4 Component 4: Early Warning System and Emergency Preparedness

Development issues:

- Susceptibility of crops, livestock and fisheries to extreme weather events, pests and diseases.
- Fragmented and inefficient early warning systems.
- Inadequate systems, knowledge and capacity at household, LGAs and national levels to respond to emergencies.
- Lack of contingency plans at district level.

4.2.4.1 Output 1: A Comprehensive Early Warning System and Contingency Plan developed and implemented by 2017

Actions:

1. Prepare vulnerability maps for targeting food security and emergency preparedness interventions.
2. Develop tools to support vulnerable households and communities to establish household community systems that can respond to emergencies (with regards to food insecurity)
3. Monitor crops, livestock and fish pests and diseases.
4. Integrate scientific weather forecasting and indigenous knowledge for early warning and to inform farmer decisions.
5. Establish a National Seed Emergency stock.
6. Improve EWS messages (clear, consistent) that include risk information; designed to link threat levels.
7. Capacity development to farmers on early warning systems and emergency preparedness.
8. Improve mass delivery system particularly on content development and communication channels.
9. Establish a feedback and evaluation process of messages delivered.
10. Develop an effective frame-work for collaboration emergency communication centres/stakeholders.
11. The explicit development of contingency plans on district level is not mentioned as an activity.

4.2.5 Component 5: Synergies in adaptation and mitigation enhanced

Development issues:

- Agriculture sector is a source of GHG emissions
- Some adaptation actions have mitigation as co-benefits
- Increased soil carbon has beneficial effects on soil fertility

4.2.5.1 Output 1: Reduction of GHG emissions intensity from the agriculture sector

Actions

1. Promote adoption of low cost climate smart technologies that minimize emission of carbon dioxide and enhance soil carbon sequestration.
2. Develop a national carbon accounting and measurement, reporting and verification system.

4.3 Result Area 3: Value Chain Integration

4.3.1 Component 1: Value addition process for agricultural products

Development issues:

- Most agricultural commodities are sold on the farm as a result the quality is compromised and the farmers obtain low prices.
- Most of agricultural produce are sold raw and thus bulky with short shelf lives.
- Lack of supportive infrastructure for agricultural value chain.
- Disjointed value chains with regards to most agricultural commodities.

4.3.1.1 Output 1: At least two new commercially viable products developed from each of the staple crops, horticultural crops, livestock and fisheries by 2025.

Actions

1. Solicit funds for research and innovation into agricultural value chains.
2. Develop improved infrastructure for agricultural value chains. .
3. Institute competitive grant scheme for agriculture value chains.
4. Identify existing value addition technologies and incentivize the private sector to promote them.

4.3.1.2 Output 2: Efficient pilot value chains developed for two selected commodities in each agro-ecological zone.

Actions

1. Establish regional hubs (a cluster of livelihood zones in the same AEZ) for value chain development and backstopping.
2. Identify and build capacity of actors in value chain processes.
3. Undertake advanced market feasibility studies to promote demand for the selected commodities.
4. Facilitate linkages to markets for the selected commodities.

4.3.2 Component 2: Increased competitiveness and enhanced integration into domestic, regional and international markets

Development issues

- Low levels of local market penetration by smallholder men and women farmers.
- Low capitalization of bulk traders.
- Poor grading and standardization system.

- High consumer preference of imported commodities that have local substitutes.
- Inadequate volumes with the required specifications and quality to supply the international market.
- Limited capacity to fully comply with international sanitary and phytosanitary (SPS) standards.

4.3.2.1 Output 1: Marketed output of food and cash crops, livestock and fish products by smallholders increased by 50 percent by 2025.

Actions:

1. Create agricultural, livestock and fish commodity hubs through participation of private sector especially micro-financiers and apply viable models of linkage with smallholders.
2. Facilitate capacity building of farmers on demand- and market-driven production.
3. Design and launch a market promotion program for import substitution commodities.
4. Work with supermarkets, hotels and restaurants to participate in selected commodity value chains with a smallholder production base.

4.3.2.2 Output 2: Export of non-traditional agricultural commodities by men and women smallholders increased by 50 percent by 2025

Actions:

1. Identify successful lead private sector firms with access to assured markets and apply viable models of linkage with smallholders.
2. Design sustainable programmes to support the certification of smallholders for export markets.
3. Develop branding of Tanzania produce for regional and international markets.

4.3.2.3 Output 3: Grading and standardization systems of agricultural commodities (crops, livestock and fish) developed and improved.

Actions:

1. Develop grading and standardization systems for agricultural commodities that do not have grades and standards
2. Promote the adoption of grading and standardization systems for all agricultural commodities for both domestic and export markets.

4.4 Result Area 4: Research for Development and Innovations

4.4.1 Component 1: Agricultural research funding and Uptake of Agricultural Technologies and Innovations along the Value Chain

Development issues:

- Low public expenditure funding into agricultural research.
- Limited participation of private sector in funding agricultural research and innovations.
- Poor dissemination and management of agricultural research information.
- Poor coordination and collaboration among the institutions involved in research.

4.4.1.1 Output 1: Increased funding in research and development and innovations by 50percent by 2025.

Actions:

1. Increase public expenditure into research and development and innovations through national budget.
2. Incentivize private sector investments in research and development and innovations.

4.4.1.2 Output 2: Adoption of improved CSA technologies and practices by men and women along the value chain increased by 30 percent by 2025.

Actions

1. Conduct participatory research work on improved technologies and practices that is informed by needs of users and agro-ecological zones along the value chain.
2. Conduct on-farm research into low-cost appropriate technologies and practices and deliver them as packages.
3. Build the capacity of extension, producers and other stakeholders in the use of existing/new/improved CSA technologies and practices.
4. Support development of private sector input and appropriate CSA technologies outreach and distribution networks.
5. Intensify field demonstration/field days/study tours to enhance adoption of existing/new/improved CSA technologies and practices.

4.4.2 Component 2: Research Extension Linkage strengthened and made functional by 2018

Development issues:

- Poor management and sharing of agricultural research information.
- Poor packaging of research information for the benefit of farmers.
- Lack of appropriate platforms for researchers and farmers to interact and share knowledge and experiences.

4.4.2.1 Output 1: Research Extension Linkage and made functional by 2018

Actions:

1. Establish a platform through which researchers will have regular contacts with stakeholders and other users at the national, local and farm levels.
2. Prepare CSA information packages and disseminate them to interested stakeholders using ICT.

4.5 Result Area 5: CSA Knowledge, Extension and Agro-weather Services

4.5.1 Component 1: CSA knowledge generation and dissemination

Development issue

- Fragmented CSA knowledge and understanding of what CSA is.
- Lack of CSA knowledge Management System across the country.

4.5.1.1 Output 1: Robust CSA Knowledge Management System (Platform/Hub) across the country

Actions

1. Undertake a CSA knowledge mapping, audit and analysis.
2. Build CSA knowledge Resource Centre.
3. Develop and maintain a robust and functional CSA knowledge management system.
4. Build capacity to different stakeholders in the agricultural value chain at the national and local levels.

4.5.1.2 Output 2: Synthesis reports and case studies on CSA best approaches and guidelines prepared and disseminated

Actions:

1. Undertake analyses and provide tools to support CSA decision-making.
2. Bundle and provide synthesized information on CSA approaches and case studies on CSA best approaches.
3. Develop and test CSA guidelines and decision-making support tools.

4.5.1.3 Output 3: Multimedia CSA knowledge products, training and communications packages produced

Actions:

1. Produce regular CSA information and communication materials for influential stakeholders to support and inform policies, planning and agricultural advisory services.
2. Produce CSA information and communication materials to strengthen capacity of researchers, private sector, CSOs and farmer organizations to influence policy and decision makers.
3. Develop practical guides and applied training materials and packages for training on best practices for CSA.

4.4.5.4 Output 4: CSA knowledge networks and partnerships strengthened

Actions:

1. Strengthen CSA knowledge and information sharing networks/forums.
2. Develop a portfolio of information sharing technology tools to support sharing of CSA information and learning resources.
3. Establish CSA knowledge partnerships on knowledge generation, sharing and mobilization with governments, international organizations, research institutions, farmer organizations, private sector and civil society organizations.

4.5.2 Component 2: Enhance extension, climate information services and agro- weather advisories

Development issues

- Low use of climate information services and agro-weather advisories in agricultural planning and farm management decision making (Highly inadequate agro-climate information services and inappropriate agro-weather products)
- Low reliability and availability of climate information

- Role of climate change and weather variability in the increased post-harvest losses, and increased energy use, along value chains are not clearly known
- Low integration of climate research with agricultural research,
- Poor knowledge on weather data processing, packaging and timely dissemination.

4.5.2.1 Output 1: Agro-climate information services and timely-use of agro-weather products increased by 40 percent by 2025.

Actions:

1. Identify appropriate climate/weather services and products for small scale farmers
2. Apply user friendly software such as INSTAT to generate products for improving smallholder decision making.
3. Promote integrated weather observation for improving availability and reliability of climate information.
4. Digitize historical climate data to enhance availability and accessibility of climate information.
5. Downscaling forecasted weather to various localities to promote the appropriate climate/weather services and products for small scale farmers, and pre-season dissemination of agro weather advisories
6. In-season community agro-weather monitoring and post-season agro-weather review
7. Upscale the mobile phone based early warning system.
8. Strengthen integration of climate research with agricultural research
9. Training of Regional Coordinators on CSA

4.6 Result Area 6: Improved Institutional Coordination

4.6.1 Component 1: Improve Inter-Ministerial and Local Government Coordination

Development issue:

- Inadequate inter-ministerial coordination including collaboration with PMO Disaster Management Department.
- Inadequate coordination between national and local governments on agriculture related issues.
- Low capacity for cross-sectoral planning.
- Ineffective communication within and between ministries.

4.6.1.1 Output 1: A joint platform for collaboration between ministries responsible agriculture, livestock, fisheries, environment, forestry, water, finance and planning established and strengthened by end of 2015.

Actions:

1. Develop and implement an inter-ministerial communications strategy with respect to inter-ministerial coordination on matters relating to climate smart agriculture.
2. Introduce a biannual joint planning and review session between inter-ministerial team and the country government officials responsible for agriculture.
3. Train national and local government staff in cross-sectoral planning and implementation.
4. Build policy review and analytical capacity at the national and local levels.
5. Strengthen the planning, implementation, monitoring and evaluation at the national and local levels.
6. Establish a framework for disseminating CSA programmatic planning and implementation as well as annual reports and studies and receiving feedback at national and local levels.

4.6.2 Component 2: Partnerships with private sector and civil society organizations

Development issue:

- Lack of structured framework for private sector and CSOs to engage national and local governments on CSA issues.
- Inadequate incentives for private sector to invest in CSA.

4.6.2.1 Output 1: A platform for private sector and CSOs engagement with national and local governments established and strengthened by end of 2017.

Actions:

1. Engage private sector to identify opportunities for increased investments in CSA.
2. Organize regular consultative meetings with private sector and CSOs on the planning and implementation of the CSA Program.
3. Identify appropriate incentives to catalyze private sector and CSO investments in CSA activities.
4. Publicize the Country CSA Program to private sector and CSOs with a view to identifying areas for their participation.

5. Establish communication channels for consultations between private sector and CSOs in the programmatic planning and implementation of CSA activities at the national and local levels

4.6.3 Component 3: Programmatic Coordination with Development Partners strengthened

Development issue:

- Fragmented projects/programmes on CSA or CSA-related initiatives.
- Varied financial management, procurement, monitoring and evaluation systems.
- Weak ownership of intervention at the national and local levels.

4.6.3.1 Output 1: GoT - Development Partner Coordination and Collaboration strengthened and Development Partners fund a common Country CSA Program by end of 2015

Actions:

1. Harmonize GoT and development partners' investments in climate smart agriculture through a common Country (National) CSA Program.
2. Strengthen collaboration between GoT and the Development Partners' Agriculture Coordination Group (with a standing agenda item programmatic planning and implementation of CSA Program).

5.0 COORDINATION FRAMEWORK

5.1 Institutional Arrangements

The National Climate Change Technical Committee (NCCTC) and National Climate Change Steering Committee (NCCSC) will guide the coordination and implementation of the CSA Program. The NCCTC shall provide technical advice to the National Climate Change Focal Point (NCCFP) in the Vice President's Office – Division of Environment, while the NCCSC shall provide policy guidance and ensure coordination of Programmatic Result Areas as well as cross-sectorial participation.

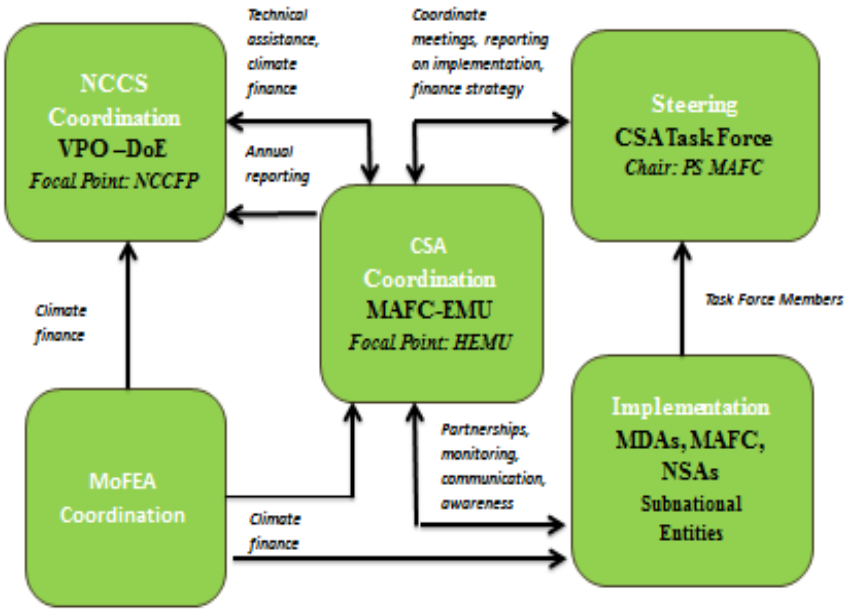
The MAFC Environment Management Unit (EMU) will be the implementation Sector focal point for the Country CSA Program. In that case Head of EMU is responsible and accountable for ensuring the smooth implementation of the Country CSA Program. The main constraint is that EMU does not currently have a budget allocation for climate change activities including CSA.

The National Climate Smart Agriculture Task Force (NCSATF) formed under the EAC directives with a broad range of government and non-governmental stakeholders will have an overall responsibility for coordination and delivery of the expected Programmatic Result Areas outcomes. Hence, NCSATF will monitor implementation of the Country CSA Program, serve as a vital coordination function between MAFC, MDAs, NSAs, and regional entities such as the EAC, SADC, COMESA and issue directives to all relevant MAFC departments and units for implementing Programmatic Result Areas.

5.2 Coordination of Activities

Coordination mechanism of different activities that will be implemented by different sectors involved in the promotion of CSA practices is highlighted in Figure 10.

Figure 14: Coordination mechanism among the different implementers of CSA practices



6.0 ROLES AND RESPONSIBILITIES OF DIFFERENT SECTORS

The implementing partners of the Country CSA Program will have different roles and responsibilities as highlighted in the following table:

6.1 MAFC and MANR Divisions and Units

All MAFC and MANR Divisions/Units will be instrumental in implementing the Country CSA Program as well, and include technical and research units at the national and sub-national levels. Of particular importance is the Department of Policy and Planning (DPP) under MFC– as the entity with responsibility for strategic planning and policy development, will need to assist with ensuring that resources are allocated for the program implementation. The ICT unit will have a key role in managing the developed ACRP website where all the information and communication- on CSA will be done. Technical divisions/departments will have a key role in implementing Programmatic Result Areas. Importantly MAFC will work closely with major agricultural programmes and initiatives related to agriculture as well as climate change, including the ASDP-2 Secretariat, the Big Results Now Presidential Delivery Bureau- and the SAGCOT Centre to promote the implementation of the Programmatic Result Areas. Large agriculture programmes and initiatives are well placed to promote climate resilience, pilot innovations, and reduce the environmental impacts of the sector that can drive climate vulnerability.

6.2 Ministries, Departments and Agencies (MDAs)

Several other MDAs are linked with agricultural activities and necessary for implementation of CSA activities for building resilience in the agriculture sector. MAFC will be responsible for forging links with these MDAs and incentives to coordinate. It will be important for other sectors with linked activities to coordinate with MAFC, as their action plans are developed to identify opportunities to link activities, since climate change is an issue that cuts across sectors.

6.3 Non-State Actors

Non-State Actors, including research institutions, universities, the private sector, NGO and CSOs, and Development Partners include key stakeholders that can contribute to fulfilling research needs, providing financial resources, and technical assistance toward implementation of the Country CSA Program. MAFC will need to coordinate closely especially with NGOs who are working in the field and are on the front line of practices that can be scaled up with additional support.

6.4 Sub-National Entities

Sub-national entities will be key recipients of Programmatic Result Areas, including training, finance, and technical assistance, but much of the Result Areas implementation will rest at the sub-national level as well. Entities such as District-level Local Government Authorities, District Irrigation Development Teams, Zonal Plant Health Centres, regional Agricultural Research Institutes, and River Basin Offices will all play a role in each of the Programmatic Result Areas actions.

Table 6: Roles and Responsibilities of Different Sectors

ORGANIZATION/ STAKEHOLDER	ROLES/ RESPONSIBILITY	COMPARATIVE ADVANTAGE	TARGET	WHAT THEY CAN DO FOR CSA COUNTRY PROGRAMME
VPO / 1st VP (Zanzibar)	✓ Climate Change Focal Point	✓ Climate Change Expertise	✓ Climate Change adaptation and mitigation	✓ Technical support by Climate Change Secretariat
MAFC	✓ Coordination ✓ Monitoring and Evaluation	✓ Technical Expertise	✓ Productivity and food security	✓ Technical and financial support ✓ Monitoring and Evaluation
MANR (Zanzibar)	✓ Co-coordination	✓ Technical Expertise	✓ Productivity and food security	✓ Technical and financial support
National Climate Smart Agriculture Taskforce (NCSATF)	✓ Solicit funds, information sharing	✓ Technical Expertise	✓ Climate Smart Agriculture adoption	✓ Mainstreaming and adoption
MoF	✓ Climate financing	✓ Financial Expertise	✓ Climate finance	✓ Technical and financial support
MNRT, MLFD, PMO-RALG, NEMC, TMA, MITM, MoW, MEM, Planning Commission, MLHHS,	✓ Policy formulation, capacity building, monitoring and evaluation, technical backstopping on CSA	- Technical Expertise - Physical and financial resources	✓ Service provision, CC adaptation and mitigation	✓ Enabling environment
Regional Secretariat	✓ Coordination of LGAs ✓ Linkage between Sector Ministries and LGAs ✓ Monitoring and evaluation	✓ Coordination mechanism	✓ Provide linkage	✓ Coordination and reporting
LGAs	✓ Policies / strategies / programmes	✓ Nationwide coverage in implementation	✓ Adoption of CSA technologies	✓ Dissemination

ORGANIZATION/ STAKEHOLDER	ROLES/ RESPONSIBILITY	COMPARATIVE ADVANTAGE	TARGET	WHAT THEY CAN DO FOR CSA COUNTRY PROGRAMME
	implementers ✓ Formulation of by - laws		and practices	
Research Institutions / Academia	✓ Research and technology development ✓ High tertiary level Training (short and long-term) ✓ Scientific knowledge management	✓ Scientific expertise ✓ Training capacity ✓ Access to new scientific knowledge ✓ Infrastructure ✓ International collaboration	✓ Identification and development of sustainable CSA technologies ✓ Research on improving CSA technologies	✓ Technology evaluation, improvement and validation, ✓ Dissemination of innovative CSA technologies to different to agro-ecological zones
NGOs, CBOs, FBOs	✓ Dissemination of CSA extension packages/ awareness raising	✓ Close to the community, lobbying and advocacy on CSA related matters	✓ Adoption of CSA technologies and practices, awareness creation	✓Dissemination
Private Sector (TCCIA, ANSAF, etc.)	✓ Resource mobilization	✓ Entrepreneurship investment facility, input supply, credit facility	✓ Investment and business opportunities	✓ Financial support
Development Partners	✓ Resource mobilization, technical assistance	✓ Technical expertise ✓ Financial resources	✓ Climate Change adaptation and mitigation	✓ Financial and technical support
Regional initiatives (CCAFS, COMESA, EAC and SADC)	✓ Resource mobilization, technical assistance	✓ Technical expertise ✓ Financial resources	✓ Climate Change adaptation and mitigation	✓ Financial and technical support

7.0 MONITORING AND EVALUATION

Participatory Monitoring and Evaluation (PM&E) framework that ensures the project targets are met and learning achieved will be an emphasis of the proposed investment plan. Capacity building in PM&E and mentoring process for site team and other core members will be done in each target area. The process will include participatory monitoring and tracking of major outcomes for each specific objective. The PM&E will serve several functions such as tracking progress, learning and change as well as collecting data for answering key questions, and for project management. Technical and financial reports will be delivered on an agreed-upon schedule to communicate progress to the different stakeholders. The reporting framework including the content of reports, frequency of submission, responsible parties and target recipients will be developed and agreed between parties involved. As mentioned in the previous sections this is a multi-partner programme involving the central government, local government, private sector and non-governmental organisations. The tools for M&E will include the programme log frame and annual work plan and budget. Audit of project activities constitutes part of M&E system. Activity Based Result framework is attached as annex VII.

8.0 TEN – YEAR PROGRAMME FINANCING FRAMEWORK

The CSA programme document is mainly intended to be a guiding document that will be used to leverage financial support from the Government of Tanzania and various Development Partners. It is in particular anticipated that most of the activities will carried out as separate projects with detailed operationalization narratives and budgets. Prior to, and during the Stakeholders' Validation workshop, different Development Partners have expressed interest in funding various components depending on their priorities. As such the document therefore broadly identify focus areas where funding during the next 10-years should be directed.

The sustainability of CSA programme is mainly based on the premise that activities under different focus areas will be mainstreamed in various plans of the different ministries and other stakeholders.

8.1 Cost Estimates and indicative Financing Plan

Table 7 shows cost estimates of US $32.158 Million projected over ten years in nominal terms. Budget for first three years are higher due the needed investment in terms of infrastructure and equipment. However, this figure is only indicative and does not prescribe a limit.

Table: 7. Summary of CSA Cost Estimates for 10 Years

Summary Cost by Component

	BASE COSTS IN US$										
	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Total
A: Investment	2,250,000	1,110,000	1,610,000	930,000	400,000	250,000	250,000	250,000	0	0	**5,300,000**
B: Components											
1.1 Improved productivity and nutrition	650,000	680,000	680,000	530,000	490,000	450,000	395,000	395,000	395,000	395,000	**5,060,000**
1.2 Irrigation and water management	295,000	295,000	260,000	200,000	200,000	170,000	170,000	170,000	170,000	155,000	**2,085,000**
1.3 Improved Food Storage and Distribution	222,000	222,000	222,000	222,000	222,000	157,000	45,000	45,000	45,000	45,000	**1,447,000**
1.4 Increased Growth of Incomes	540,000	540,000	540,000	495,000	460,000	285,000	240,000	240,000	240,000	240,000	**3,820,000**
2.1 Improve soil health and restore degraded lands	270,000	270,000	220,000	165,000	165,000	135,000	135,000	135,000	135,000	135,000	**1,765,000**
2.2 Conservation of Natural Resources and Catchments	186,000	186,000	186,000	149,000	164,000	134,000	134,000	134,000	134,000	134,000	**1,541,000**
2.3 Insurance and Other Safety Nets	125,000	125,000	131,000	51,000	51,000	45,000	45,000	45,000	45,000	45,000	**708,000**
2.4 Early Warning System and Emergency Preparedness	188,000	188,000	108,000	58,000	58,000	48,000	48,000	48,000	48,000	48,000	**840,000**
2.5 Synergies in adaptation and mitigation enhanced	60,000	60,000	60,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	**460,000**
3.1 Development of new agricultural products	100,000	100,000	100,000	60,000	60,000	18,000	18,000	18,000	18,000	18,000	**510,000**
3.2 Increased competitiveness and enhanced integration into domestic, regional and international markets	145,000	145,000	84,000	56,000	56,000	56,000	56,000	56,000	56,000	56,000	**766,000**
4.1 Agricultural research funding and Uptake of Agricultural Technologies and Innovations along the Value Chain	304,000	304,000	304,000	269,000	269,000	215,000	100,000	100,000	100,000	100,000	**2,065,000**
4.2 Research Extension Linkage strengthened and made functional by 2018	65,000	65,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	**410,000**
5.1 CSA knowledge generation and dissemination	138,000	173,000	133,000	133,000	98,000	98,000	98,000	98,000	98,000	98,000	**1,165,000**
5.2 Enhance extension, climate information services and agro- weather advisories	325,000	325,000	325,000	325,000	280,000	185,000	185,000	145,000	145,000	145,000	**2,385,000**
6.1 Improve Inter-Ministerial and Local Government Coordination	245,000	245,000	205,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	**955,000**
6.2 Partnerships with private sector and civil society organizations	163,000	163,000	85,000	55,000	30,000	30,000	30,000	30,000	30,000	30,000	**496,000**
6.3 Programmatic Coordination with Development Partners strengthened	76,000	76,000	76,000	76,000	76,000	40,000	40,000	40,000	40,000	40,000	**380,000**
GRAND TOTAL	**6,347,000**	**5,272,000**	**5,364,000**	**3,979,000**	**3,284,000**	**2,521,000**	**2,194,000**	**2,154,000**	**1,904,000**	**1,889,000**	**32,158,000**

ANNEXES

Annex I: Tanzania Map

Tanzania showing regional and international boundaries

Annex IIa: Tanzania Agricultural Zones

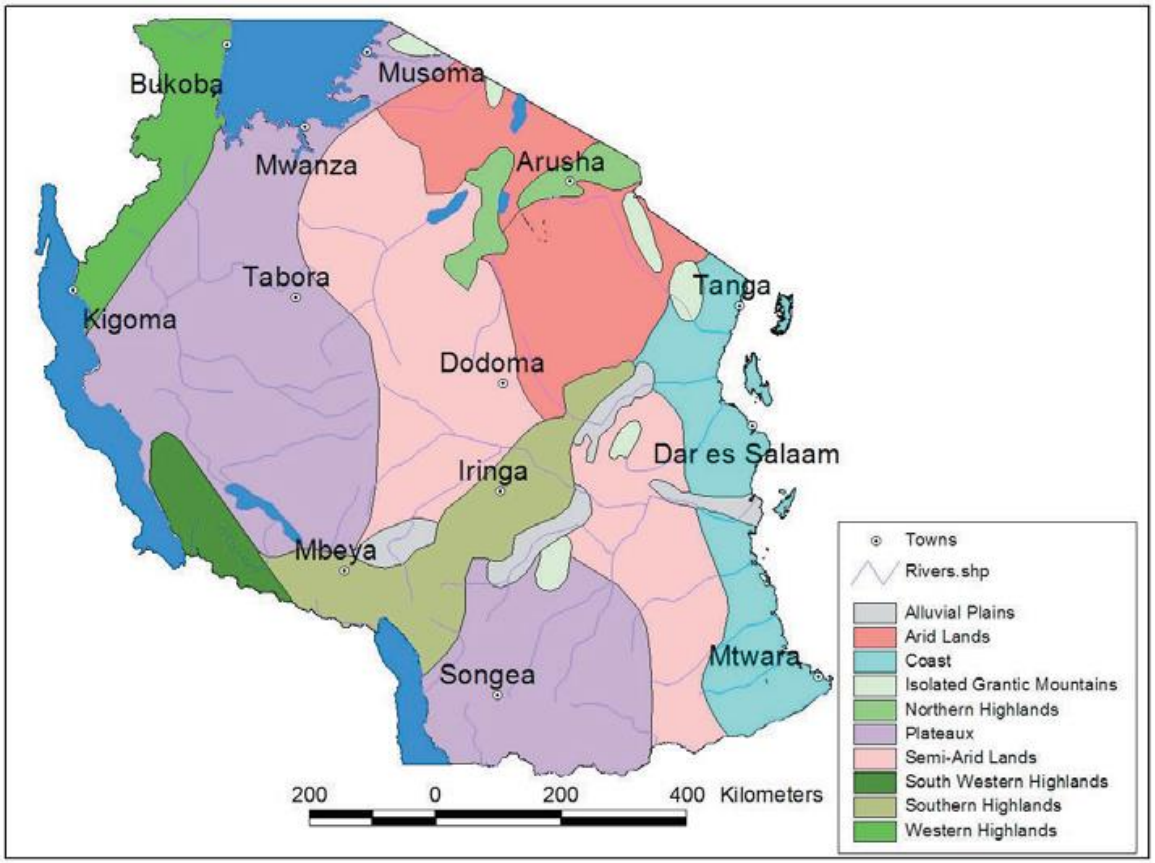
Zone	Sub-Zone and areas	Soils and Topography	Altitude (m)	Rainfall (mm/yr)	Growing season
COAST	North: Tanga (except Lushoto), Coast and Dar-es- Salaam	Infertile sands on gently rolling uplands, Alluvial soils in Rufiji, Sand and infertile soils	Under 3000	North: Bimodal, 750-1200mm	October-December and March-June
	South: Eastern Lindi and Mtwara (except Makonde Plateau)	Fertile clays on uplands and river flood plains		South: Unimodal, 800-1200mm	December-April
ARID LANDS	North: Serengeti, Ngorongoro Parks, Part of Masai land	North: Volcanic ash and sediments. Soils variable in texture and very susceptible to water erosion	1300-1800	North: Unimodal, unreliable, 500-600mm	March- May
	Masai Steppe, Tarangire Park, Mkomazi Reserve, Pangani and Eastern Dodoma	South: Rolling plains of low fertility. Susceptible to water erosion. Pangani river flood plain with saline, alkaline soil	500-1500	South: Unimodal and Unreliable, 400-600mm	
SEMI-ARID LANDS	Central Dodoma, Singida, Northern Iringa, some of Arusha, Shinyanga	Central: Undulating plains with rocky hills and low scarps. Well drained soils with low fertility. Alluvial hardpan and saline soils in Eastern Rift Valley and lake Eyasi. Black cracking soils in Shinyanga.	1000-1500	Central: unimodal and unreliable: 500-800mm	December - March

Zone	Sub-Zone and areas	Soils and Topography	Altitude (m)	Rainfall (mm/yr)	Growing season
	Southern: Morogoro (except Kilombero and Wami Basins and UluguruMts).Also Lindi and Southwest Mtwara	Southern: Flat or undulating plains with rocky hills, moderate fertile loams and clays in South (Morogoro), infertile sand soils in centre	200-600	South-eastern: Unimodal 600-800mm	
PLATEAUX	Western: Tabora, Rukwa (North and Centre), Mbeya	Western: Wide sandy plains and Rift Valley scarps	800-1500	Western: unimodal, 800-1000mm	November-April
	North: Kigoma, Part of Mara	Flooded swamps of Malagarasi and Ugalla rivers have clay soil with high fertility	1,500-1,700		
	Southern: Ruvuma and Southern Morogoro	Southern: upland plains with rock hills. Clay soils of low to moderate fertility in south, infertile sands in North.	500-2,000	Southern: unimodal, very reliable, 900-1300mm	
SOUTHERN AND WESTERN HIGHLANDS	Southern: A broad ridge of from N. Morogoro to N. Lake Nyasa, covering part of Iringa, Mbeya	Southern: Undulating plains to dissected hills and mountains. Moderately fertile clay soils with volcanic soils in Mbeya	1200-1500	Unimodal, reliable, local rain shadows, 800-1400	December – April
	South-western: Ufipa plateau in Sumbawanga	South-western: Undulating plateau above Rift Valleys and sand soils of low fertility	1400-2300	Unimodal, reliable, 800-1000	November-April
	Western: Along the shore of Lake Tanganyika in Kigoma and Kagera	Western: North-south ridges separated by swampy valleys, loam and clay soils of low fertility in hills, with alluvium and ponded clays in the valleys	100-1800	Bimodal, 1000-2000	October-December and February-May

Zone	Sub-Zone and areas	Soils and Topography	Altitude (m)	Rainfall (mm/yr)	Growing season
NOTHERN HIGHLANDS	Northern: foot of Mt. Kilimanjaro and Mt. Meru. Eastern Rift Valley to Eyasi	Northern: Volcanic uplands, volcanic soils from lavas and ash. Deep fertile loams. Soils in dry areas prone to water erosion.	1,000-2,500	Bimodal, varies widely 1000-2000	November-January and March-June
	Granite MtsUluguru in Morogoro, Pare Mts in Kilimanjaro and UsambaraMts in Tanga, Tarime highlands in Mara	Granite steep Mountain side to highland plateaux. Soils are deep, arable and moderately fertile on upper slopes, shallow and stony on steep slopes	1,000-2,000	Bimodal and very reliable 1000-2000	October-December and March-June
ALLUVIAL PLAINS	Kilombero (Morogoro)	Cental clay plain with alluvial fans east and west	750-1200	Unimodal, very reliable, 900-1300	November-April
	Rufiji (Coast)	Wide mangrove swamp delta, alluvial soils, sandy upstream, loamy down steam in floodplain	<500	Unimodal, often inadequate 800-1200	December-April
	Usangu (Mbeya)	Seasonally Flooded clay soils in North, alluvial fans in South	2,400-5,000	Unimodal, 500-800	December-March
	Wami (Morogoro)	Moderately alkaline black soils in East, alluvial fans with well drained black loam in West	400-1,000	Unimodal, 600-1800	December-March

Source: Modified from de Pawn, 1984

Annex IIb: Tanzania Agricultural Map



Source: *SUA*

Annex III: Agricultural production

	'000 Metric Tons										
Year	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14*
Maize	3,157	3,219	3,423	3,302	3,556	3,326	4,475	4,341	5,104	5,288	6,734
Sorghum	757	714	712	971	861	709	789	807	839	782	883
Millets	201	221	228	194	203	220	372	312	214	292	363
Rice	688	759	805	872	875	868	1,700	1,461	1,170	1,342	1,681
Wheat	67	102	110	83	92	95	62	113	109	102	167
Pulses	879	886	1,050	1,156	1,126	1,116	1,254	1,632	1,827	1,871	1,697
Cassava	1,480	1,846	2,053	1,733	1,797	1,972	1,464	1,549	1,821	1,878	1,664
Bananas	734	991	1,169	1,028	982	1,073	975	1,048	842	1,317	1,064
Potatoes	874	931	1,396	1,322	1,379	1,392	1,231	1,710	1,418	1,808	1,761

Crop	Metric Tons									
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Tea	32,000	30,000	34,446	32,698	34,165	33,160	35,000	33,000	33,700	33,000
Sugarcane	229,620	263,317	192,535	265,434	276,605	279,850	317,000	260,055	286,380	293,011
Tobacco	51,970	56,500	65,299	55,567	58,702	60,900	78,000	126,624	74,240	100,000
Cotton	344,210	376,591	130,565	200,662	368,229	267,004	260,000	225,938	351,151	246,767
Pyrethrum	1,000	2,800	1,500	2,800	3,280	3,320	5,000	5,700	6,100	7,000
Sisal	26,800	27,794	30,934	33,039	33,208	26,363	35,000	33,406	23,344	41,104
Coffee	54,000	34,334	48,869	43,000	62,345	40,000	60,575	33,219	71,200	48,599
Cashew	81,600	77,158	92,232	99,107	79,068	74,169	121,070	160,00	121,704	127,939

Crop	2008/2009	2009/10	2010/11	2011/12	2012/13	2013/14
Fruits	557,400	3,297,910	3,751,170	3,938,730	4,096,280	4,416,690
Vegetables	602,000	766,570	858,740	901,680	937,750	1,005,305
Flower		8,670	9,100	9,850	10,200	10,790
Spices	6,865		7,150	7,370	8,125	8,377

	Production (tonnes)			% increase	Export (tonnes)	
Product\Year	2001/02	2006/07	2011/12	2001/02 to 2011/12	2006	2012
Sugar (refined)*	184.0	228.0	249.0	35.3%	n/a	n/a
Coffee	37.5	34.3	33.3	-11.2%	15.2	17.9
Cotton	49.9	125.6	75.7	51.7%	36.6	19.6
Tea	28.7	30.3	31.5	9.8%	14.2	16.9
Cashewnuts	67.3	77.4	158.4	135.4%	26.1	94.8
Tobacco	28.0	52.0	126.6	352.1%	5.9	46.5
Sisal	23.5	27.8	36.8	56.6%	4.1	7.0

Source: *BEST, 2014*

Annex IV: Agriculture Sector Financing Gap (TShs) 2010/2011 – 2014/2015

	2010/11	2011/12	2012/13	2013/14	2014/15	Total
DPs Commitments	175,835,883,000	74,906,910,000	56,074,200,000			
Government Contribution	727,964,117,000	982,751,557,950	1,326,714,603,233	1,791,064,714,364	2,417,937,364,391	7,246,432,356,938
Farmers contributions	117,990,800,000	138,910,574,161	180,614,528,841	243,829,613,935	329,169,978,813	1,010,515,495,750
Total Fund available	**1,021,790,800,000**	**1,196,569,042,111**	**1,563,403,332,074**	**2,034,894,328,299**	**2,747,107,343,204**	**8,256,947,852,687**
Actual Requirements	1,229,497,195,135	1,659,821,213,432	2,240,758,638,133	3,025,024,161,480	4,083,782,617,998	16,513,895,705,375
Financing gap (Tsh.)	**207,706,395,135**	**463,252,171,321**	**677,355,306,060**	**990,129,833,180**	**1,336,675,274,794**	**8,256,947,852,687**
Financing gap (USD)	**159,774,150**	**356,347,824**	**521,042,543**	**761,638,333**	**1,028,211,750**	**6,351,498,348**
Fin. Gap as a %-age of total requirements	**16.89**	**27.91**	**30.23**	**32.73**		**50.00**

Annex V: Resource Requirement for Zanzibar

Year	MKUZA/MDGs Resource Projections (Resource Requirement) (USD)	Available Resources as % of Resource Requirement	Existing Financial Gap in Agriculture
2009/10	22,197,361	12.2	87.8
2010/11	23,746,430	16.6	83.4
2011/12	26,216,808	31.4	68.6
2012/13	27,826,658	55.9	44.1
2013/14	26,427,060	78.9	21.1
2014/15	27,489,017	111.4	(11.4)
Total	**153,903,334**		

Annex VI: Wood Fuel Demand and Consumption

Wood Fuel Demand (2012)

Woodfuel Demand	Firewood		Charcoal		Total Charcoal & Firewood in m3 Fuel Wood (mi)
	Tonnes (mi)	M3 Fuel wood (mi)	Tonnes (mi)	M3 Fuel wood equiv (mi)	
Rural	20.97	29.96	0.52	3.88	33.83
Urban	1.64	2.34	1.51	11.38	13.72
Total	**22.60**	**32.29**	**2.03**	**15.26**	**47.55**

Source: *Adapted from BEST, 2014*

Tanzania Fuel Wood Consumption by household (2012)

Area	Total Population	percent Population using wood	No. using wood
Dar es Salaam	4,364,541	3.0 percent	130,936
Other Urban	7,316,739	19 percent	1,381,334
Rural	33,246,720	90.0 percent	29,922,048
Total	**44,928,000**	**70.0 percent**	**31,434,318**

Sources: *National Bureau of Statistics 2002 and 2012 Census, and 2007 Household Budget Survey, and Tanzania Commission for AIDS, Tanzania HIV/AIDS and Malaria Indicator Survey 2011-12 (NBS, 2007, NBS, 2009, NBS, 2013b and TACACIDS, 2013)*

Annex VII: Logical Framework Matrix or Program Design Matrix

	Verifiable Indicators	Source of Verification	Assumptions
Overall Goal Tanzania achieves enhanced sustainable productivity, climate resilience and food security for the agricultural sector growth	CSA Policy index (CSA-Pol) CSA Results index (CSA-Res)	• Specialized targeted surveys • End of Program evaluation Report	• Available policies to support CSA • Available services and infrastructure to support CSA • Governments continue to support agriculture and poverty reduction as priorities • Equitable distribution of benefits occurs
PDO (Purpose)			
The PDO is: A: Enhanced climate resilience of agricultural and food systems B: CSA Program - Strengthens policy, legal and institutional framework to increase efficiency and effective implementation of climate smart agriculture C: Enhance collaboration in CSA related activities among ministries, agencies institutions and private sector service providers	% of farming communities practicing CSA (disaggregated by gender) Rate of change of adoption of sustainable climate smart technologies and sustainable land management practices (disaggregated by type) – (in %) Rate of increase in CSA information and knowledge transfer among stakeholders Rate for adaptation to climate change and variability	• End of Program evaluation Report • Mid-Term Reports • Quarterly Reports	

	Verifiable Indicators	Source of Verification	Assumptions
Tanzania CSA programs accesses climate financing and uses it effectively to support climate change resilience and low carbon sustainable growth	Level of stakeholder satisfaction with the CSA technologies and innovations (%) by number of products users (by gender, age, and location) Transparent national Climate Change financing mechanism established		
Intermediate Outcomes			
Component 1: Improved Productivity and incomes			
CSA Program has enhanced use of climate-smart agricultural practices, promoting improved land management and sustainable crop-livestock and fisheries intensification	New CSA practices developed relative to plan (%) Number of Sustainable CSA technologies adopted by smallholder farmers Increased annual yields of targeted crops (such as maize, rice, sorghum, cassava, potatoes and beans, aquaculture and livestock Percent of farmers using improved inputs. Number of extension officers and management of Irrigators	• Evaluation Reports • Annual Reports • Communication priority setting document • Annual survey reports. • Mid Term Reports • Review Missions Implementation support Reports	•

	Verifiable Indicators	Source of Verification	Assumptions
	Organization trained. Number of farmers trained on irrigation technologies % increase in irrigated land Number of irrigation schemes constructed to its full potentiality. % increase in Income from crop, livestock, aquaculture production by men and women		
Component 2: Building resilience and associated mitigation co-benefits			
Strengthened policy, legal and institutional framework to increase efficiency and effective implementation of climate smart agriculture in identified priority areas.	Number of evidence based policy responses to food insecurity adopted Number of established CSA/SLM Knowledge Platforms with disaggregated data on men and women. Number of villages with land use plan. Number of small scale CSA projects implemented annually. % change in Farm/community forest cover	• Quarterly Reports • Annual survey reports. • Evaluation Reports • CSA Program Annual Reports • Specialized survey Reports	

	Verifiable Indicators	Source of Verification	Assumptions
	Rate of Adoption of sustainable climate smart technologies and sustainable land management practices Number of generated CSA and SLM knowledge to support policy and investment decision making % change in Crop and livestock weather-indexed insurance Reduction of GHG emissions intensity from the agriculture sector (%)		
Component 3: Value Chain Integration			
Availability of infrastructure to support value addition, marketing, trade and postharvest management.	Number of new commercially viable products developed from each of the staple crops, horticultural crops, livestock and fisheries Number of Efficient pilot value chains developed for selected commodities in each agro-ecological zone Value and Quantity of Marketed output of food and cash crops, livestock and fish products by smallholders	• Quarterly Reports • Evaluation Reports • Annual Reports • Mid Term Reports • Review Missions Implementation support Reports • TRA data. • Annual survey reports	• Partnerships and platforms with adequate capacity for generation and uptake of technologies and innovations exist • Government, non-government, regional and national organizations operate effectively at appropriate levels.

	Verifiable Indicators	Source of Verification	Assumptions
	Value of Export of non-traditional agricultural commodities by men and women smallholders Established Grading and standardization systems of agricultural commodities		
Component 4: Research for Development and Innovations			
Generated and disseminated improved land management and gender sensitive climate resilient agricultural practices and technologies in targeted areas	Hectares of land managed under climate-resilient practices Number of CSA technologies developed Increased funding in research and development and innovations % adoption of improved CSA technologies and practices by men and women along the value chain	• Quarterly Reports • Publications • Mass media • Evaluation Reports • Annual survey reports • Annual Reports • Mid Term Reports • Review Missions Implementation support Reports • Diagnostic Survey Reports	• Agricultural research in support of CSA • Conducive policy environment maintained
Component 5: Improving and Sustaining Agricultural Advisory Services			
Knowledge on Climate Smart Agriculture documented and scaled up and out in targeted areas.	Number of existing and new CSA practices disseminated targeted areas Number of Ward Resource Centres equipped with CSA knowledge.	• Quarterly Reports • Publications • Mass media • Annual survey reports. • Evaluation Reports • Annual Reports • Mid Term Reports	• Government, non-government, regional and national organizations operate effectively at appropriate levels. • Conducive policy environment maintained • Partnerships and platforms

	Verifiable Indicators	Source of Verification	Assumptions
	Number of demand-driven gender-responsive CSA made available to uptake pathways Number of technology uptake pathways (e.g. web-based information platform, radio, TV program, etc.) compared to plan. Established robust CSA Knowledge Management System (Platform/Hub) across the country Number of synthesis reports and case studies on CSA best approaches and guidelines prepared and disseminated % increase in agro-climate information services and timely-use of agro-weather products Level of satisfaction of stakeholders with the technology uptake pathways (%) Number of stakeholders whose capacity building needs have been addressed Number of networks and stakeholder	• Review Missions Implementation support Reports	with adequate capacity for generation and uptake of technologies and innovations exist • Primary schools leavers with CSA knowledge and practice

	Verifiable Indicators	Source of Verification	Assumptions
	platforms Number of staff trained (short-term and study tours) and applying skills acquired in conducting CSA practices		
Component 6: Improved Institutional Coordination			
Coordination and management of CSA activities and initiatives in all implementing agencies enhanced	Number of Climate Change plans developed in key sector ministries, private sector Percent of CSA Program activities implemented according to plan. Harmonized M&E system for CSA Program developed, adopted, and implemented according to plan (%). Established effective joint platform for collaboration between ministries responsible agriculture, livestock, fisheries, environment, forestry, water, finance and planning Number of relevant policies, laws, regulations, and/or procedures reviewed for harmonization Level of compliance with the Environment and Social Safeguards.	• Evaluation Reports • Annual Reports • Mid Term Reports • Review Missions Implementation support Reports • Quarterly Reports	

Footnote:

1. The CSA-Pol reflects the most significant aspects of the enabling environment for implementing CSA at the national level.
2. The CSA-Res indicators provide an understanding about the short-term to medium-term results of a CSA intervention which may relate to food security, poverty reduction and environmental sustainability.

Annex VIII: Budget Estimates for 2015 - 2025

A: Investment					Quantities											BASE COSTS US$										
		Activities	Expenditure Account	Unit of measure	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Unit Cost (in US$)	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Total
1.1. Physical resources																										
	1.1.1: Civil works	Rehabilitate existing warehouses and silos	Works	Set	0	2	2	1	0						30,000	0	60,000	60,000	30,000	0	0	0	0	0	0	150,000
		Rehabilitate, restock and build capacity of livestock breeding centres to produce improved breeds of livestock.	Works	Set	1	1	1	0	0						100,000	100,000	100,000	0	0	0	0	0	0	0	0	200,000
		Develop agro-meteorological infrastructure to support weather-indexed insurance	Works	Unit	0	2	2	0	0						150,000	0	300,000	300,000	0	0	0	0	0	0	0	600,000
		Construction of water harvesting structures at household and community levels.	Works	Unit		5	5	5	5	5	5	5			50,000	0	250,000	250,000	250,000	250,000	250,000	250,000	250,000			
		Sub Total Civil Works														**100,000**	**710,000**	**610,000**	**280,000**	**250,000**	**250,000**	**250,000**	**250,000**	**0**	**0**	**950,000**
	1.1.2: Office equipments	Procurement of office equipment/a	Goods	Unit	24	0	12	0	0	15					50,000	1,200,000	0	600,000	0	0	0	0	0	0		1,800,000
		Procurement of vehicles	Goods	Unit	10	0	0	5	0		10				50,000	500,000	0	0	250,000	0	0	0	0	0	0	750,000
		Sub Total Office Equipments														**1,700,000**	**0**	**600,000**	**250,000**	**0**	**0**	**0**	**0**	**0**	**0**	**2,550,000**
1.2: Human resources	1.2.2: Trainings and tours	Short term courses																								
		Study tour	Tour	Lump sum	60	50	50	50	0						5,000	300,000	250,000	250,000	250,000	0	0	0	0	0	0	1,050,000
		short-term training	Training	Lump sum	50	50	50	50	50	20	20	20	20		3,000	150,000	150,000	150,000	150,000	150,000	0	0	0	0	0	750,000
																0	0	0	0	0	0	0	0	0	0	0
		Sub Total Human Resources														**450,000**	**400,000**	**400,000**	**400,000**	**150,000**	**0**	**0**	**0**	**0**	**0**	**1,800,000**
Total Cost Physical and Human Resources																**2,250,000**	**1,110,000**	**1,610,000**	**930,000**	**400,000**	**250,000**	**250,000**	**250,000**	**0**	**0**	**5,300,000**

** Footnotes:

a/ Computer set= computer, printer, scanner and accessories, photocopiers, GPS

4.1 Improved Productivity and Incomes

Component	Activities	Expenditure Account	Unit of measure	Quantities										Unit Cost (in US$)	BASE COSTS IN US$										
				Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Total
4.1.1 Improved productivity and nutrition	Identify, upgrade, disseminate and practice climate smart technological packages	service	Lumpsum	1	1	1	0	0	0	0	0	0	0	50,000	50,000	50,000	50,000	0	0	0	0	0	0	0	150,000
	Introduce improved crop varieties (high yielding, early maturing, disease and pest resistant and nutrient fortified)	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	500,000
	Increase access to farm inputs (fertilizers/pesticides/seeds/vet drugs) and its wise application	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	300,000
	Strengthen surveillance of agricultural input trade and use	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	600,000
	Identification of best indigenous knowledge and its interaction with scientific knowledge to enhance climate change adaptation	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	300,000
	Train farmers on CSA agronomic practices	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	400,000
	Introduce improved livestock breeds (increased productivity, disease resistant and drought tolerant)	Service	Lumpsum	1	2	2	1	1	0	0	0	0	0	30,000	30,000	60,000	60,000	0	0	0	0	0	0	0	150,000
	Undertake genetic characterization and improvement of local livestock breeds	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	40,000	40,000	40,000	40,000	40,000	40,000	0	0	0	0	0	200,000
	Identify, upgrade, disseminate and practice improved livestock technological packages.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	40,000	40,000	40,000	40,000	0	0	0	0	0	0	0	120,000
	Train farmers on livestock husbandry and disease management	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	400,000
	Develop and disseminate best management practices of aquaculture throughout the country	Service	Lumpsum	1	1	1	1	1	1	0	0	0	0	35,000	35,000	35,000	35,000	35,000	35,000	35,000	0	0	0	0	210,000
	Train fisher folks in good fishing practices	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	250,000
	Strengthen fish health and disease surveillance	Service	Lumpsum	1	1	1	1	1	1	0	0	0	0	20,000	20,000	20,000	20,000	20,000	20,000	20,000	0	0	0	0	120,000
	Strengthen and increase fingerlings breeding and multiplication centers	Service	Lumpsum	1	1	1	1	0	0	0	0	0	0	40,000	40,000	40,000	40,000	40,000	0	0	0	0	0	0	160,000
	Sensitize and support private sector involvement in fingerling and feed production and distribution	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	200,000
	Strengthen integrated fish farming (e.g. in paddy farms)	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	200,000
	Promote production and consumption of high quality protein cereals, orange fleshed sweet potatoes (for vitamin A) and leafy vegetables	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	150,000
	Develop other high quality staples through breeding – cassava, rice, potatoes etc	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	200,000
	Promote fortification of staples during processing (micronutrient fortification and blending products)	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	200,000
	Educate and train consumers on appropriate food combination	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	250,000
	Sub Total														**650,000**	**680,000**	**680,000**	**530,000**	**490,000**	**450,000**	**395,000**	**395,000**	**395,000**	**395,000**	**5,060,000**

4.1.2 Irrigation and water management	Promote development and diffusion of appropriate efficient small-scale irrigation technological packages.	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	30,000	30,000	30,000	30,000	30,000	30,000	0	0	0	0	0	150,000
	Train extension workers on irrigation and water management technologies and skills.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	350,000
	Build the capacity of Irrigators Organizations in agricultural water management and their obligations	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	300,000
	Undertake comprehensive management needs assessment of existing large scale irrigation schemes.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	15,000	15,000	15,000	15,000	0	0	0	0	0	0	0	45,000
	Review of the National Irrigation Master Plan (2002) and update irrigation potential areas for small scale irrigation	Service	Lumpsum	1	1	0	0	0	0	0	0	0	0	35,000	35,000	35,000	0	0	0	0	0	0	0	0	70,000
	Train farmers in the installation, operation and maintenance of recommended irrigation technologies	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	150,000
	Establish links to input and output markets and service providers (strengthen value chain and technical backstopping).	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	20,000	20,000	20,000	20,000	0	0	0	0	0	0	0	60,000
	Identify suitable areas for rainwater harvesting and agricultural water management systems.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	25,000	25,000	25,000	25,000	0	0	0	0	0	0	0	75,000
	Train farmers/household members in water harvesting and agricultural water management technologies.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	0	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	0	135,000
	Facilitate the construction of water harvesting structures at household and community levels.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	300,000
	Introduce and promote in-situ rainwater harvesting technologies (e.g. Conservation agriculture)	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	450,000
	Sub Total														**295,000**	**295,000**	**260,000**	**200,000**	**200,000**	**170,000**	**170,000**	**170,000**	**170,000**	**155,000**	**2,085,000**

4.1.3 Improved Food Storage and Distribution	Invest in improved appropriate storage facilities and technologies along the value chain.	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	40,000	40,000	40,000	40,000	40,000	40,000	0	0	0	0	0	200,000
	Promote small scale agro-processing industries in rural areas.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	150,000
	Train producers, processers and marketers in post-harvest management.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	150,000
	Provide regular market information (deficit/surplus areas) to improve distribution of agricultural commodities/food stuffs.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	150,000
	Facilitate establishment of marketing centres in rural areas with the appropriate infrastructure.	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	25,000	25,000	25,000	25,000	25,000	25,000	0	0	0	0	0	125,000
	Link Region and District by feeder roads to various marketing centres and highways.	Service	Lumpsum	1	1	1	1	1	1	0	0	0	0	20,000	20,000	20,000	20,000	20,000	20,000	20,000	0	0	0	0	120,000
	Strengthen and link the smallholder farmers to the Warehouse Receipt System (WRS) in the grain supply chain.	Service	Lumpsum	1	1	1	1	1	1	0	0	0	0	30,000	30,000	30,000	30,000	30,000	30,000	30,000	0	0	0	0	180,000
	Establish Public-Private-Partnerships management.	Service	Lumpsum	1	1	1	1	1	1	0	0	0	0	25,000	25,000	25,000	25,000	25,000	25,000	25,000	0	0	0	0	150,000
	Support private sector to invest in food processing, pasture and pasture seed production as well as value addition.	Service	Lumpsum	1	1	1	1	1	1	0	0	0	0	25,000	25,000	25,000	25,000	25,000	25,000	25,000	0	0	0	0	150,000
	Facilitate linkages with relevant service providers and markets (inputs and outputs).	Service	Lumpsum	1	1	1	1	1	1	0	0	0	0	12,000	12,000	12,000	12,000	12,000	12,000	12,000	0	0	0	0	72,000
	Sub Total														**222,000**	**222,000**	**222,000**	**222,000**	**222,000**	**157,000**	**45,000**	**45,000**	**45,000**	**45,000**	**1,447,000**

4.1.4 Increased Growth of Incomes	Build capacity of nursery operators in all crop growing areas and support them to expand and improve quality of seedlings.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	150,000
	Build capacity of Quality Declared Seed producers and support them to expand and improve quality of seed.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	200,000
	Build capacity of food and cash crop farmers to improve productivity and produce quality.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	200,000
	Facilitate contractual arrangements between food and cash crop producers and market/industry.	Service	Lumpsum	1	1	1	1	1	1	0	0	0	0	25,000	25,000	25,000	25,000	25,000	25,000	25,000	0	0	0	0	150,000
	Develop and promote innovative micro-financing packages to facilitate food and cash crop farmers to access credit.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	25,000	25,000	25,000	25,000	0	0	0	0	0	0	0	75,000
	Rehabilitate, restock and build capacity of livestock breeding centres to produce improved breeds of livestock.	Service	Lumpsum	1	1	1	1	1	1	0	0	0	0	20,000	20,000	20,000	20,000	20,000	20,000	20,000	0	0	0	0	120,000
	Facilitate and support the acquisition of improved breeding stocks by men and women farmers.	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	30,000	30,000	30,000	30,000	30,000	30,000	0	0	0	0	0	150,000
	Provide adequate and effective extension knowledge and agro-weather	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	300,000
	Strengthen and/or establish efficient and sustainable animal health and artificial insemination services.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	350,000
	Develop and support innovative micro-financing packages to support livestock keepers' access to credit and markets.	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	25,000	35,000	35,000	35,000	35,000	35,000	0	0	0	0	0	175,000
	Identify areas with acute problem of water for livestock and construct water infrastructures.	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	30,000	25,000	25,000	25,000	25,000	25,000	0	0	0	0	0	125,000
	Facilitate improvement of demarcated	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	25,000	30,000	30,000	30,000	30,000	30,000	0	0	0	0	0	150,000
	Promote use of crop residues and agro-industry byproducts	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	250,000
	Promote value addition for livestock products	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	30,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	250,000
	Facilitate and support acquisition of fingerlings by men and women fish farmers	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	25,000	30,000	30,000	30,000	30,000	30,000	0	0	0	0	0	150,000
	Promote value addition for fish products	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	20,000	25,000	25,000	25,000	25,000	25,000	0	0	0	0	0	125,000
	Facilitate contractual arrangements between fish farmers and market	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	15,000	20,000	20,000	20,000	0	0	0	0	0	0	0	60,000
	Establish and support innovative micro-financing packages to support fisherfolks access to credit.	Service	Lumpsum	1	1	1	1	0	0	0	0	0	0	20,000	15,000	15,000	15,000	15,000	0	0	0	0	0	0	60,000
	Support Local Governments to identify and demarcate potential areas within urban and peri-urban areas for agricultural activities.	Service	Lumpsum	1	1	1	1	0	0	0	0	0	0	30,000	20,000	20,000	20,000	20,000	0	0	0	0	0	0	80,000
	Train urban and peri-urban producers in Good Agricultural Practices.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	20,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	300,000
	Monitor the safety of outputs from urban and peri-urban agriculture.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	200,000
	Enforce laws and bylaws related to urban and peri-urban land use.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	6,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	200,000
	Sub Total														**540,000**	**540,000**	**540,000**	**495,000**	**460,000**	**285,000**	**240,000**	**240,000**	**240,000**	**240,000**	**3,820,000**
	TOTAL RESULT AREA 1 : IMPROVED PRODUCTIVITY AND INCOMES														**1,707,000**	**1,737,000**	**1,702,000**	**1,447,000**	**1,372,000**	**1,062,000**	**850,000**	**850,000**	**850,000**	**835,000**	**12,412,000**

4.2. Building resilience and associated mitigation co-benefits

Component	Activities	Expenditure Account	Unit of measure	Quantities											BASE COSTS IN US$										Total
				Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Unit Cost (in US$)	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	
2.1 Improve soil health and restore degraded lands	Promote integrated soil fertility and water management interventions.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	100,000
	Establish CSA/SLM knowledge hubs across the country to support adoption of CSA and SLM technologies and practices by men and women that improve soil health and restore degraded lands.	Service	Lumpsum	1	1	0	0	0	0	0	0	0	0	25,000	25,000	25,000	0	0	0	0	0	0	0	0	50,000
	Enhance the capacities of private sector service providers and farmer-based organizations to support farmers' adoption of existing/new/improved CSA and SLM technologies and practices.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	20,000	20,000	20,000	20,000	0	0	0	0	0	0	0	60,000
	Develop and integrate CSA and SLM principles into farmer-field schools, primary, secondary and tertiary curriculum.	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	20,000	20,000	20,000	20,000	20,000	20,000	0	0	0	0	0	100,000
	Establish mechanisms for joint planning and implementation of CSA and SLM at the local level.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	10,000	10,000	10,000	10,000	0	0	0	0	0	0	0	30,000
	Develop and implement sustained awareness creation program on CSA and SLM in addressing soil health and land degradation challenges.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	25,000	25,000	25,000	25,000	0	0	0	0	0	0	0	75,000
	Facilitate the development and implementation of at least five (5) small scale CSA Projects annually.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	250,000
	Facilitate the dissemination and adoption of CSA and SLM technologies and practices at the farm level across the country through Local Government's CSA Projects.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	1,000,000
	Establish CSA/SLM Knowledge Platform with disaggregated data on men and women.	Service	Lumpsum	1	1	0	0	0	0	0	0	0	0	25,000	25,000	25,000	0	0	0	0	0	0	0	0	50,000
	Document and publicize successful CSA/SLM technologies, practices and interventions	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	10,000	10,000	10,000	10,000	10,000	0	0	0	0	0	0	50,000
	Sub Total														**270,000**	**270,000**	**220,000**	**165,000**	**165,000**	**135,000**	**135,000**	**135,000**	**135,000**	**135,000**	**1,765,000**

2.2 Conservation of Natural Resources and Catchments	Upscale Natural Forest Conservation through Participatory Forest Management (PFM)	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	180,000
	Protect water catchment areas through integrated watershed management.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	100,000
	Increase forest cover through natural regeneration, Agroforestry, Reforestation. and Afforestation	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	200,000
	Promote best management practices for natural resources management to improve and maximize net benefits for the farmers and other downstream users (e.g. power generation and urban water supply).	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	150,000
	Promote and support on farm soil conservation activities	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	150,000
	Promote sustainable production and marketing of charcoal from miombo woodlands	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	130,000
	Promote sustainable land use management	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	100,000
	Develop a business model for ecosystem management in order to facilitate payment for ecosystem services (e.g. tourism revenue used to motivate farmers to conserve wildlife and payment for water in urban areas used to pay farmers for conservation of water catchments).	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	25,000	25,000	25,000	25,000	0	0	0	0	0	0	0	75,000
	Develop and implement management plans for ecosystems in order to encourage sustainable use	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	15,000	15,000	15,000	15,000	15,000	15,000	0	0	0	0	0	75,000
	Document biodiversity in the ecosystems including below ground biodiversity and develop eco-tourism opportunities in such areas	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	15,000	15,000	15,000	15,000	15,000	15,000	0	0	0	0	0	75,000
	Undertake natural resources accounting for ecosystem services.	Service	Lumpsum	0	0	0	0	1	1	1	1	1	1	15,000	0	0	0	0	15,000	15,000	15,000	15,000	15,000	15,000	90,000
	Identify agroforestry species for different agro-ecological zones and support farmers to increase tree cover	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	12,000	12,000	12,000	12,000	0	0	0	0	0	0	0	36,000
	Undertake afforestation and reforestation through Public-Private Partnerships.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	180,000
	Sub Total														**186,000**	**186,000**	**186,000**	**149,000**	**164,000**	**134,000**	**134,000**	**134,000**	**134,000**	**134,000**	**1,541,000**

2.3 Insurance and Other Safety Nets	Develop and implement varied innovative crop and livestock weather-indexed insurance packages.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	25,000	25,000	25,000	25,000	0	0	0	0	0	0	0	75,000
	Develop agro-meteorological infrastructure to support weather-indexed insurance and to use them for improved weather and climate information services for farmers.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	15,000	15,000	15,000	15,000	0	0	0	0	0	0	0	45,000
	Enhance the capacity of micro-finance institutions to act as agents to deliver innovative crop and livestock weather-indexed insurance packages.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	25,000	25,000	25,000	25,000	0	0	0	0	0	0	0	75,000
	Raise awareness within the insurance industry of extreme weather and climate risks and communicate actions and opportunities.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	15,000	15,000	15,000	15,000	0	0	0	0	0	0	0	45,000
	Undertake farmer education to address their concerns regarding insurance products with a view to gain their trust	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	150,000
	Establish livestock insurance schemes and use of insured livestock as collateral	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	300,000
	Explore ways of using existing and other safety nets such as cash transfers or workfare programmes.	Service	Lumpsum	0	0	1	1	1	0	0	0	0	0	6,000	0	0	6,000	6,000	6,000	0	0	0	0	0	18,000
	Sub Total														**125,000**	**125,000**	**131,000**	**51,000**	**51,000**	**45,000**	**45,000**	**45,000**	**45,000**	**45,000**	**708,000**

2.4 Early Warning System and Emergency Preparedness	Prepare vulnerability maps for targeting food security and emergency preparedness interventions.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	20,000	20,000	20,000	20,000	0	0	0	0	0	0	0	60,000
	Develop tools to support vulnerable households and communities to establish household community systems that can respond to emergencies (with regards to food insecurity).	Service	Lumpsum	1	1	0	0	0	0	0	0	0	0	20,000	20,000	20,000	0	0	0	0	0	0	0	0	40,000
	Monitor crops, livestock and fish pests and diseases.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	80,000
	Integrate scientific weather forecasting and indigenous knowledge for early warning and to inform farmer decisions.	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	10,000	10,000	10,000	10,000	10,000	10,000	0	0	0	0	0	50,000
	Establish a National Seed Emergency stock.	Service	Lumpsum	1	1	0	0	0	0	0	0	0	0	60,000	60,000	60,000	0	0	0	0	0	0	0	0	120,000
	Improve EWS messages (clear, consistent) that include risk information; designed to link threat levels.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	10,000	10,000	10,000	10,000	0	0	0	0	0	0	0	30,000
	Capacity development to farmers on early warning systems and emergency preparedness.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	200,000
	Improve mass delivery system particularly on content development and communication channels.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	100,000
	Establish a feedback and evaluation process of messages delivered.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	10,000	10,000	10,000	10,000	0	0	0	0	0	0	0	30,000
	Develop an effective frame-work for collaboration emergency communication centres/stakeholders.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	10,000	10,000	10,000	10,000	0	0	0	0	0	0	0	30,000
	The explicit development of contingency plans on district level	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	100,000
	Sub Total														**188,000**	**188,000**	**108,000**	**58,000**	**58,000**	**48,000**	**48,000**	**48,000**	**48,000**	**48,000**	**840,000**
2.5 Synergies in adaptation and mitigation enhanced	Promote adoption of low cost climate smart technologies that minimize emission of carbon dioxide and enhance soil carbon	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	400,000
	Develop a national carbon accounting and measurement, reporting and verification	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	20,000	20,000	20,000	20,000	0	0	0	0	0	0	0	60,000
	Sub Total														**60,000**	**60,000**	**60,000**	**40,000**	**40,000**	**40,000**	**40,000**	**40,000**	**40,000**	**40,000**	**460,000**
	TOTAL RESULT AREA 2 : BUILDING RESILIENCE AND ASSOCIATED MITIGATION CO-BENEFITS														**829,000**	**829,000**	**705,000**	**463,000**	**478,000**	**402,000**	**402,000**	**402,000**	**402,000**	**402,000**	**5,314,000**

3. Value Chain Integration

Component	Activities	Expenditure Account	Unit of measure	Quantities										Unit Cost (in US$)	BASE COSTS IN US$										Total
				Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	
4.3.1 Development of new agricultural products	Solicit funds for research and innovation into agricultural value chains	service	Lumpsum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Develop improved infrastructure for agricultural value chains.	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	10,000	10,000	10,000	10,000	10,000	10,000	0	0	0	0	0	50,000
	Institute competitive grant scheme for agriculture value chains.	Service	Lumpsum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Identify existing value addition technologies and incentivize the private sector to promote them.	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	16,000	16,000	16,000	16,000	16,000	16,000	0	0	0	0	0	80,000
	Establish regional hubs (a cluster of livelihood zones in the same AEZ) for value chain development and backstopping.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	15,000	15,000	15,000	15,000	0	0	0	0	0	0	0	45,000
	Identify and build capacity of actors in value chain processes.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	180,000
	Undertake advanced market feasibility studies to promote demand for the selected commodities.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	25,000	25,000	25,000	25,000	0	0	0	0	0	0	0	75,000
	Facilitate linkages to markets for the selected commodities.	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	16,000	16,000	16,000	16,000	16,000	16,000	0	0	0	0	0	80,000
	Sub Total														**100,000**	**100,000**	**100,000**	**60,000**	**60,000**	**18,000**	**18,000**	**18,000**	**18,000**	**18,000**	**510,000**

4.3.2 Increased competitiveness and enhanced integration into domestic, regional and international markets	Create agricultural, livestock and fish commodity hubs through participation of private sector especially micro-financiers and apply viable models of linkage with smallholders	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	16,000	16,000	16,000	16,000	0	0	0	0	0	0	0	48,000
	Facilitate capacity building of farmers on demand- and market-driven production.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	80,000
	Design and launch a market promotion program for import substitution commodities.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	12,000	12,000	12,000	12,000	0	0	0	0	0	0	0	36,000
	Work with supermarkets, hotels and restaurants to participate in selected commodity value chains with a smallholder production base.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	80,000
	Identify successful lead private sector firms with access to assured markets and apply viable models of linkage with smallholders.	Service	Lumpsum	1	1	0	0	0	0	0	0	0	0	5,000	5,000	5,000	0	0	0	0	0	0	0	0	10,000
	Design sustainable programmes to support the certification of smallholders for export markets.	Service	Lumpsum	1	1	0	0	0	0	0	0	0	0	10,000	10,000	10,000	0	0	0	0	0	0	0	0	20,000
	Develop branding of Tanzania produce for regional and international markets.	Service	Lumpsum	1	1	0	0	0	0	0	0	0	0	20,000	20,000	20,000	0	0	0	0	0	0	0	0	40,000
	Develop grading and standardization systems for agricultural commodities that do not have grades and standards	Service	Lumpsum	1	1	0	0	0	0	0	0	0	0	26,000	26,000	26,000	0	0	0	0	0	0	0	0	52,000
	Promote the adoption of grading and standardization systems for all agricultural commodities for both domestic and export markets.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	400,000
	Sub Total														**145,000**	**145,000**	**84,000**	**56,000**	**56,000**	**56,000**	**56,000**	**56,000**	**56,000**	**56,000**	**766,000**
	TOTAL RESULT AREA 3 : VALUE CHAIN INTEGRATION														**245,000**	**245,000**	**184,000**	**116,000**	**116,000**	**74,000**	**74,000**	**74,000**	**74,000**	**74,000**	**1,276,000**

4: Research for Development and Innovations

Component	Activities	Expenditure Account	Unit of measure	Quantities										Unit Cost (in US$)	BASE COSTS IN US$										Total
				Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	
4.1 Agricultural research funding and Uptake of Agricultural Technologies and Innovations along the Value Chain	Increase public expenditure into research and development and innovations through national budget.	service	Lumpsum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Incentivize private sector investments in research and development and innovations.	Service	Lumpsum	1	1	1	0	0	0	0	0	0	0	35,000	35,000	35,000	35,000	0	0	0	0	0	0	0	105,000
	Conduct participatory research work on improved technologies and practices that is informed by needs of users and agro-ecological zones along the value chain.	Service	Lumpsum	1	1	1	1	1	1	0	0	0	0	55,000	55,000	55,000	55,000	55,000	55,000	55,000	0	0	0	0	330,000
	Conduct on-farm research into low-cost appropriate technologies and practices and deliver them as packages.	Service	Lumpsum	1	1	1	1	1	1	0	0	0	0	60,000	60,000	60,000	60,000	60,000	60,000	60,000	0	0	0	0	360,000
	Build the capacity of extension, producers and other stakeholders in the use of existing/new/improved CSA technologies and practices.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	600,000
	Support development of private sector input and appropriate CSA technologies outreach and distribution networks.	Service	Lumpsum	1	1	1	1	1	0	0	0	0	0	54,000	54,000	54,000	54,000	54,000	54,000	0	0	0	0	0	270,000
	Intensify field demonstration/field days/study tours to enhance adoption of existing/new/improved CSA technologies and practices.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	400,000
	Sub Total														**304,000**	**304,000**	**304,000**	**269,000**	**269,000**	**215,000**	**100,000**	**100,000**	**100,000**	**100,000**	**2,065,000**
4.2 Research Extension Linkage strengthened and made functional by 2018	Establish a platform through which researchers will have regular contacts with stakeholders and other users at the national, local and farm levels.	Service	Lumpsum	1	1	0	0	0	0	0	0	0	0	30,000	30,000	30,000	0	0	0	0	0	0	0	0	60,000
	Prepare CSA information packages and disseminate them to interested stakeholders using ICT.	Service	Lumpsum	1	1	1	1	1	1	1	1	1	1	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	350,000
	Sub Total														**65,000**	**65,000**	**35,000**	**35,000**	**35,000**	**35,000**	**35,000**	**35,000**	**35,000**	**35,000**	**410,000**
	TOTAL RESULT AREA 4 : RESEARCH FOR DEVELOPMENT AND INNOVATIONS														**369,000**	**369,000**	**339,000**	**304,000**	**304,000**	**250,000**	**135,000**	**135,000**	**135,000**	**135,000**	**2,475,000**

5: CSA Knowledge, Extension and Agro-weather Services

Component	Activities	Expenditure Account	Unit of measure	Quantities										Unit Cost (in US$)	BASE COSTS IN US$										Total
				Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	
4.5.1 CSA knowledge generation and dissemination	Undertake a CSA knowledge mapping, audit and analysis.	service	Lumpsum	1	1	1	0	0	0	0	0	0	0	25,000	25,000	25,000	25,000	0	0	0	0	0	0	0	75,000
	Equip Ward Resource Centres with CSA knowledge.	service	Lumpsum	1	1	1	0	0	0	0	0	0	0	50,000	50,000	50,000	50,000	0	0	0	0	0	0	0	150,000
	Develop and maintain a robust and functional CSA knowledge management system.	service	Lumpsum	1	1	1	1	1	1	1	1	1	1	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	250,000
	Build capacity to different stakeholders in the agricultural value chain at the national and local levels.	service	Lumpsum	1	1	1	1	1	1	1	1	1	1	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	500,000
	Undertake analyses and provide tools to support CSA decision-making.	service	Lumpsum	1	1	0	0	0	0	0	0	0	0	25,000	25,000	25,000	0	0	0	0	0	0	0	0	50,000
	Bundle and provide synthesized information on CSA approaches and case studies on CSA best approaches.	service	Lumpsum	1	1	1	1	1	1	1	1	1	1	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	300,000
	Develop and test CSA guidelines and decision-making support tools.	service	Lumpsum	1	1	0	0	0	0	0	0	0	0	40,000	40,000	40,000	0	0	0	0	0	0	0	0	80,000
	Produce regular CSA information and communication materials for influential stakeholders to support and inform policies, planning and agricultural advisory services.	service	Lumpsum	1	1	1	1	1	1	1	1	1	1	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	350,000
	Produce CSA information and communication materials to strengthen capacity of researchers, private sector, CSOs and farmer organizations to influence policy and decision makers.	service	Lumpsum	1	1	1	1	1	1	0	0	0	0	30,000	30,000	30,000	30,000	30,000	30,000	30,000	0	0	0	0	180,000
	Develop practical and applied training materials and packages for training on CSA.	service	Lumpsum	1	1	0	0	0	0	0	0	0	0	40,000	40,000	40,000	0	0	0	0	0	0	0	0	80,000
	Strengthen CSA knowledge and information sharing networks/forums.	service	Lumpsum	1	1	1	1	1	1	1	1	1	1	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	350,000
	Develop a portfolio of information sharing technology tools to support sharing of CSA information and learning resources.	service	Lumpsum	1	1	1	1	1	1	1	1	1	1	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000	330,000
	Establish CSA knowledge partnerships on knowledge generation, sharing and mobilization with governments, international organizations, research institutions, farmer organizations, private sector and civil society organizations.	service	Lumpsum	1	1	1	1	1	1	1	1	1	1	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	300,000
	Strengthen curriculum and put emphasis on practical experience.	service	Lumpsum		1	1	1							35,000		35,000	35,000	35,000	0	0	0	0	0	0	105,000
	Sub total														**138,000**	**173,000**	**133,000**	**133,000**	**98,000**	**98,000**	**98,000**	**98,000**	**98,000**	**98,000**	**1,165,000**

4.5.2 Enhance extension, climate information services and agro- weather advisories	Identify appropriate climate/weather services and products for small scale farmers	service	Lumpsum	1	1	1	1	1	0	0	0	0	0	25,000	25,000	25,000	25,000	25,000	25,000	0	0	0	0	0	**125,000**
	Promote integrated weather observation for improving availability and reliability of climate information.	service	Lumpsum	1	1	1	1	1	1	1	1	1	1	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	**500,000**
	Digitize historical climate data to enhance availability and accessibility of climate information.	service	Lumpsum	1	1	1	1	1	0	0	0	0	0	35,000	35,000	35,000	35,000	35,000	35,000	0	0	0	0	0	**175,000**
	Downscaling forecasted weather to various localities to promote the appropriate climate/weather services and products for small scale farmers, and pre-season dissemination of agro weather advisories	service	Lumpsum	1	1	1	1	0	0	0	0	0	0	45,000	45,000	45,000	45,000	45,000	0	0	0	0	0	0	**180,000**
	Promote in-season community agro-weather monitoring and post-season agro-weather review	service	Lumpsum	1	1	1	1	1	1	1	1	1	1	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	**300,000**
	Improve dissemination channels of climate information (e.g. use of mobile phone based early warning system).	service	Lumpsum	1	1	1	1	1	1	1	1	1	1	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	**300,000**
	Generate user friendly and tailor made products for improving smallholder farmers 'decision making.	service	Lumpsum	1	1	1	1	1	1	1	1	1	1	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	**350,000**
	Strengthen integration of climate research with agricultural research	service	Lumpsum	1	1	1	1	1	0	0	0	0	0	35,000	35,000	35,000	35,000	35,000	35,000	0	0	0	0	0	**175,000**
	Training of Regional Coordinators on CSA.	service	Lumpsum	1	1	1	1	1	1	1				40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	0	0	0	**280,000**
	Sub Total														**325,000**	**325,000**	**325,000**	**325,000**	**280,000**	**185,000**	**185,000**	**145,000**	**145,000**	**145,000**	**2,385,000**
	TOTAL RESULT AREA 5 : CSA KNOWLEDGE, EXTENSION AND AGRO-WEATHER SERVICES														**463,000**	**498,000**	**458,000**	**458,000**	**378,000**	**283,000**	**283,000**	**243,000**	**243,000**	**243,000**	**3,550,000**

6: Improved Institutional Coordination

Component	Activities	Expenditure Account	Unit of measure	Quantities										Unit Cost (in US$)	BASE COSTS IN US$										Total
				Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	
4.6.1 Improve Inter-Ministerial and Local Government Coordination	Develop and implement an inter-ministerial communications strategy with respect to inter-ministerial coordination on matters relating to climate smart agriculture.	service	Lumpsum	1	1	0	0	0	0	0	0	0	0	40,000	40,000	40,000	0	0	0	0	0	0	0	0	**80,000**
	Introduce a biannual joint planning and review session between inter-ministerial team and the country government officials responsible for agriculture.	service	Lumpsum	1	1	1	1	1	1	1	1	1	1	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	**150,000**
	Train national, regional and local government staff in cross-sectoral planning and implementation.	service	Lumpsum	1	1	1	1	1	1	1	1	1	1	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	**300,000**
	Build policy review and analytical capacity at the national and local levels.	service	Lumpsum	1	1	1	0	0	0	0	0	0	0	50,000	50,000	50,000	50,000	0	0	0	0	0	0	0	**150,000**
	Strengthen the planning, implementation, monitoring and evaluation at the national and local levels.	service	Lumpsum	1	1	1	1	1	1	1	1	1	1	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	**200,000**
	Establish a framework for disseminating CSA programmatic planning and implementation as well as annual reports and studies and receiving feedback at national and local levels.	service	Lumpsum	1	1	1	0	0	0	0	0	0	0	25,000	25,000	25,000	25,000	0	0	0	0	0	0	0	**75,000**
	Sub Total														**245,000**	**245,000**	**205,000**	**130,000**	**130,000**	**130,000**	**130,000**	**130,000**	**130,000**	**130,000**	**955,000**

4.6.2 Partnerships with private sector and civil society organizations	Engage private sector to identify opportunities for increased investments in CSA.	service	Lumpsum	1	1	1	1	0	0	0	0	0	0	25,000	25,000	25,000	25,000	25,000	0	0	0	0	0	0	**100,000**
	Organize regular consultative meetings with private sector and CSOs on the planning and implementation of the CSA Program.	service	Lumpsum	1	1	1	1	1	1	1	1	1	1	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	150,000
	Identify appropriate incentives to catalyze private sector and CSO investments in CSA activities.	service	Lumpsum	1	1	1	0	0	0	0	0	0	0	30,000	30,000	30,000	30,000	0	0	0	0	0	0	0	**90,000**
	Publicize the Country CSA Program to private sector and CSOs with a view to identifying areas for their participation.	service	Lumpsum	1	1	0	0	0	0	0	0	0	0	33,000	33,000	33,000	0	0	0	0	0	0	0	0	**66,000**
	Establish communication channels for consultations between private sector and CSOs in the programmatic planning and implementation of CSA activities at the national and local levels.	service	Lumpsum	1	1	0	0	0	0	0	0	0	0	45,000	45,000	45,000	0	0	0	0	0	0	0	0	**90,000**
	Sub Total														**163,000**	**163,000**	**85,000**	**55,000**	**30,000**	**30,000**	**30,000**	**30,000**	**30,000**	**30,000**	**496,000**
6.3 Programmatic Coordination with Development Partners strengthened	Harmonize GoT and development partners' investments in climate smart agriculture through a common Country (National) CSA Program.	service	Lumpsum	1	1	1	1	1	0	0	0	0	0	**36,000**	36,000	36,000	36,000	36,000	36,000	0	0	0	0	0	**180,000**
	Strengthen collaboration between GoT and the Development Partners' Agriculture Coordination Group (with a standing agenda item programmatic planning and implementation of CSA Program).	service	Lumpsum	1	1	1	1	1	1	1	1	1	1	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	**200,000**
	Sub Total														**76,000**	**76,000**	**76,000**	**76,000**	**76,000**	**40,000**	**40,000**	**40,000**	**40,000**	**40,000**	**380,000**
	TOTAL RESULT AREA 6 : IMPROVED INSTITUTIONAL COORDINATION														**484,000**	**484,000**	**366,000**	**261,000**	**236,000**	**200,000**	**200,000**	**200,000**	**200,000**	**200,000**	**1,831,000**

Summary Cost by Component

	BASE COSTS IN US$										
	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Total
A: Investment	2,250,000	1,110,000	1,610,000	930,000	400,000	250,000	250,000	250,000	0	0	**5,300,000**
B: Components											
1.1 Improved productivity and nutrition	650,000	680,000	680,000	530,000	490,000	450,000	395,000	395,000	395,000	395,000	**5,060,000**
1.2 Irrigation and water management	295,000	295,000	260,000	200,000	200,000	170,000	170,000	170,000	170,000	155,000	**2,085,000**
1.3 Improved Food Storage and Distribution	222,000	222,000	222,000	222,000	222,000	157,000	45,000	45,000	45,000	45,000	**1,447,000**
1.4 Increased Growth of Incomes	540,000	540,000	540,000	495,000	460,000	285,000	240,000	240,000	240,000	240,000	**3,820,000**
2.1 Improve soil health and restore degraded lands	270,000	270,000	220,000	165,000	165,000	135,000	135,000	135,000	135,000	135,000	**1,765,000**
2.2 Conservation of Natural Resources and Catchments	186,000	186,000	186,000	149,000	164,000	134,000	134,000	134,000	134,000	134,000	**1,541,000**
2.3 Insurance and Other Safety Nets	125,000	125,000	131,000	51,000	51,000	45,000	45,000	45,000	45,000	45,000	**708,000**
2.4 Early Warning System and Emergency Preparedness	188,000	188,000	108,000	58,000	58,000	48,000	48,000	48,000	48,000	48,000	**840,000**
2.5 Synergies in adaptation and mitigation enhanced	60,000	60,000	60,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	**460,000**
3.1 Development of new agricultural products	100,000	100,000	100,000	60,000	60,000	18,000	18,000	18,000	18,000	18,000	**510,000**
3.2 Increased competitiveness and enhanced integration into domestic, regional and international markets	145,000	145,000	84,000	56,000	56,000	56,000	56,000	56,000	56,000	56,000	**766,000**
4.1 Agricultural research funding and Uptake of Agricultural Technologies and Innovations along the Value Chain	304,000	304,000	304,000	269,000	269,000	215,000	100,000	100,000	100,000	100,000	**2,065,000**
4.2 Research Extension Linkage strengthened and made functional by 2018	65,000	65,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	**410,000**
5.1 CSA knowledge generation and dissemination	138,000	173,000	133,000	133,000	98,000	98,000	98,000	98,000	98,000	98,000	**1,165,000**
5.2 Enhance extension, climate information services and agro- weather advisories	325,000	325,000	325,000	325,000	280,000	185,000	185,000	145,000	145,000	145,000	**2,385,000**
6.1 Improve Inter-Ministerial and Local Government Coordination	245,000	245,000	205,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	**955,000**
6.2 Partnerships with private sector and civil society organizations	163,000	163,000	85,000	55,000	30,000	30,000	30,000	30,000	30,000	30,000	**496,000**
6.3 Programmatic Coordination with Development Partners strengthened	76,000	76,000	76,000	76,000	76,000	40,000	40,000	40,000	40,000	40,000	**380,000**
GRAND TOTAL	**6,347,000**	**5,272,000**	**5,364,000**	**3,979,000**	**3,284,000**	**2,521,000**	**2,194,000**	**2,154,000**	**1,904,000**	**1,889,000**	**32,158,000**