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Climate change policy inventory and analysis for Tanzania



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Climate change policy inventory and analysis for Tanzania

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Abstract: Abstract: This report is an output of the Global Framework for Climate Services Adaptation Programme in Africa. The goal of the report is to: 1) assess the extent to which climate change concerns have been integrated or mainstreamed into national policy documents in mainland Tanzania, 2) to consider the role of climate services in achieving national sectorial policy goals, and 3) identify entry points for the further development of climate services within the current policy frameworks. Fifteen key policy documents relevant to economic development, climate change and environment, agriculture and food security, disaster management and risk reduction, and health planning were analysed. Three major findings emerged from this analysis. First, while climate change is addressed in a number of the policy documents, the concept of climate services was not. Second, policy documents across all sectors identified improved early warning systems as a specific objective. This represents a common entry point for development and delivery of climate services, as well as an opportunity to increase cross-sectorial adaptation coordination and planning. Third, the analysis highlighted that efforts to manage short- and long-term climate risks are not well integrated under current policies and legislation in Tanzania. Additionally, we found that the National Environmental Policy and National Environmental Management Act are the primary policy documents that oversee climate change-related issues. It will be important to link the development and delivery of climate services with the established institutional structures for climate change adaptation under these current policies and legislation, to avoid creating isolated or duplicative institutional arrangements. Based on these findings, several recommendations are made that can inform climate services development and delivery in Tanzania.

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LIST OF ABBREVIATIONS

CICERO	Centre for Climate and Environmental Research – Oslo
DM/DRR	Disaster Management and Disaster Risk Reduction
DMP	National Disaster Management Plan
Draft DMP	Draft National Disaster Management Plan
EWS	Early Warning System
GDP	Gross Domestic Product
GFCS	Global Framework for Climate Services
GoT	Government of Tanzania
GTZ	German Technical Cooperation
HSSP III	Third Health Sector Strategic Plan
IK	Indigenous Knowledge
IPCC	Intergovernmental Panel of Climate Change
LEWS	Livestock Early Warning System
MAFC	Ministry of Agriculture, Food and Cooperatives
MFEF	Ministry of Finance and Economic Affairs
MIT	Ministry of Industry and Trade
MKUKUTA-II	Swahili Acronym for the NSGRP-II
MLDF	Ministry of Livestock Development and Fisheries
MLFA	Ministry of Livestock and Fisheries Development
MLHHSD	Ministry of Lands Housing and Human Settlement Development
MoW	Ministry of Water
MoWI	Ministry of Water and Irrigation
NADMAC	National Disaster Management Committee
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NCCS	National Climate Change Strategy
NCCSC	National Climate Change Steering Committee
NCCTC	National Climate Change Technical Committee

NCCCS	National Climate Change Communication Strategy
NDCRA	National Disaster Relief Coordination Act
NEAC	National Environmental Advisory Committee
NEMA	National Environmental Management Act
NEMC	National Environment Management Council
NEP	National Environment Policy
NHP	National Health Policy
NSGRP-II	National Strategy for Growth and Reduction of Poverty II
NWSDS	National Water Sector Development Strategy
PMO	Prime Minister's Office
PMO-DMD	Prime Minister's Office, Disaster Management Department
PMO-RALG	Prime Minister's Office, Regional Administration and Local Governments
SUA	Sokoine University of Agriculture
TMA	Tanzania Meteorological Agency
UDSM	University of Dar es Salaam
UNFCCC	United Nations Framework Convention on Climate Change
URT	United Republic of Tanzania
VPO	Vice Presidents Office
VPO-DoE	Vice-President's Office, Division of Environment
WMO	World Meteorological Organization



1 Foreword

This report assesses the extent to which climate change concerns have been integrated or mainstreamed into national policy documents in mainland Tanzania¹. Additionally, the report considers the role of climate services in achieving national sectorial policy goals and identifies existing and potential entry points for the development of such services within the current policy frameworks. The analysis was conducted by the Centre for Climate Change Studies (CCCS) at the University of Dar es Salaam (UDSM) and the Centre for International Climate and Environment Research – Oslo (CICERO) as part of the Global Framework for Climate Services Adaptation Programme in Africa (GFCS-APA), a multi-agency initiative implemented under the umbrella of the Global Framework for Climate Services (GFCS) and funded by the Government of Norway. To prepare this report, key policy documents that guide national development, climate change and environment, agriculture and food security, disaster management and risk reduction, and health planning were reviewed in order to: 1) assess whether and how climate change dimensions are addressed; 2) identify whether and how the policies respond to the objectives and prioritized measures that are outlined in the National Climate Change Strategy; 3) highlight potential policy gaps and conflicts and; 4) identify entry points for enhancing climate services provision across policies and sectors.

Three major findings emerge from this analysis. First, while climate change is discussed and/or addressed in a number of the policy documents, climate services were never explicitly mentioned. We found that when climate change is included in policy documents, these concerns are often addressed peripherally or indirectly. While there are objectives with regard to increased use of climate data and information, the concept of ‘climate services’ specifically is not reflected in any of the documents. Second, policy documents across all sectors, as well as those specific to climate change, identified improved early warning systems (EWS) as a specific objective. This

¹ The United Republic of Tanzania (URT) is comprised of a union between mainland Tanzania and the semi-autonomous archipelago of Zanzibar. Because climate change, environment, and many sectors are designated as ‘non-union’ issues under the current constitution, there are separate policies and legal structures for mainland Tanzania and Zanzibar. For simplicity, this analysis has not included analysis of policy documents for Zanzibar. Within this report, reference to policies for ‘Tanzania’ will refer to policies that apply to mainland Tanzania. While policy documents are prepared by the government of the URT, and are thus cited in this way, these apply only to mainland Tanzania.

represents a common entry point for development and delivery of climate services, as well as an opportunity to increase cross-sectorial adaptation coordination and planning. Third, the analysis highlighted that efforts to manage short- and long-term climate risks are not well integrated under current policies and legislation in Tanzania. As such, short- and long-term climate risk management may remain segregated. This may prevent effective and robust adaptation planning, both across government institutions and timescales.

Additionally, we found that the National Environmental Policy (NEP) and National Environmental Management Act (NEMA) are the primary policy documents that oversee climate change-related issues. Other climate change policy documents, such as the National Climate Change Strategy (NCCS) and National Adaptation Programme of Action (NAPA), have been designed to build upon the institutional structures and mandates put in place by the NEP and NEMA. Therefore, it will be important to link the development and delivery of climate services with established institutional structures for climate change adaptation (e.g., National Climate Change Steering Committee) under the current policies and legislation, to avoid creating isolated or duplicative institutional arrangements. Importantly, while a National Climate Change Strategy is already in place in Tanzania, there is a lack of overarching and binding climate change legislation to support implementation and enforcement for climate mitigation and adaptation activities.

Based on these findings, there are several recommendations that could inform implementation of the GFCS-APA in Tanzania. It will be essential to work closely and to maintain dialogue with a range of existing entities and institutions that are mandated to address climate change-related issues under current policies and legislation, to ensure that there is broad institutional buy-in for climate services and to improve coordination across government structures. Additionally, it is advisable that efforts to develop climate services delivery tap into the existing systems and institutional structures for delivering information about climate change and other environmental issues that have already been established by the National Climate Change Communication Strategy and National Environment Policy; however, it will also be important to assess whether and how these systems may be strengthened or built upon to enable and ensure effective climate service delivery. Lastly, because climate services are fairly new, there is a need to increase awareness of the concept, particularly among national level policy makers who would be responsible for integrating climate services within policies and legislation to support well-informed climate change adaptation strategies at a variety of timescales. While initial efforts have been undertaken through the GFCS-APA in Tanzania, it is recommended that such activities are continued and expanded in the remaining duration of the project. Importantly, such activities would also increase the capacities for users of climate services to identify and express their climate information needs in order to enhance opportunities for co-production of climate services in the future.

2 Introduction and objectives

Climate change is a crosscutting issue that is of central importance to national development planning in Tanzania². Tanzania's economy is already very vulnerable to the impacts of climate variability and change³, and climate projections show that climate change will further impact climate-sensitive sectors through changes in temperature and precipitation patterns. It is therefore imperative that Tanzania develops effective policies and institutional frameworks for supporting climate resilience in climate-sensitive sectors (Yanda 2013a). The central objective of this report is to assess whether and how climate change concerns and the concept of climate services have been, or could be, mainstreamed in key policy documents for Tanzania that directly address or otherwise regulate critical aspects of national policy pertaining to climate change, including food security and agriculture, disaster management and risk reduction, and health. According to the World Meteorological Organization, the concept of climate services refers generally to the provision of climate information in such a way as to assist with decision-making.⁴ The report moreover aims to identify existing and potential entry points for integrating

² In Tanzania, climate change has contributed to altered rainfall patterns, increasing unpredictability and intensity of precipitation, shortened growing seasons, increasing temperature, and increases in outbreaks of pests and crop and animal diseases (URT, 2012). While there have been inconsistent trends in average annual precipitation across the country, with some stations observing decreases in average annual precipitation and others recording increases, there has been greater variability in the rainy seasons in all locations (URT 2007). This has included greater departures from the average for measurements of both maximum and minimum precipitation, resulting in less predictable rainfall. This has been accompanied by an observed increasing trend in temperature in many locations across the country, including significant trends in the maximum extreme temperature (VPO, 2006).

³ For instance, agriculture employs 80 per cent of the population and accounts for roughly 50 per cent of rural households' incomes and one quarter of Tanzania's GDP (URT/MFEA, 2009; World Bank, 2012).

⁴ However, multiple definitions of climate services exist. For example, the European Commission defines climate services broadly as "transforming climate-related data and other information into customised products such as projections, trends, economic analysis, advice on best practices, development and

climate services within the sectorial policies and makes recommendations for supporting future efforts to improve the delivery of climate services for adaptation within the national policy context in Tanzania.

The report starts by outlining the key policy documents that guide national development planning and the government's climate change responses before moving to an assessment of sector- and issue-specific policies, focusing on policies relating to agriculture and food security, disaster management and risk reduction (DM/DRR) and health planning. A synthesis discussion of the broad trends with regard to integration of climate change and climate services within policy documents in Tanzania follows. The synthesis identifies current policy gaps in dealing with sectorial and crosscutting risks and vulnerabilities arising from climate change and outlines entry points and opportunities for strengthening climate services in national climate adaptation and sectorial policy efforts. The report concludes by making several recommendations for ways in which the GFCS-APA can coordinate with, and build upon, ongoing policy efforts to improve the delivery of climate services in Tanzania.

evaluation of solutions, and any other climate-related service liable to benefit that may be of use for the society.” (European Commission 2015) According to Hewitt et al. (2012), a successful climate service must be: “based on scientifically credible information and expertise, have appropriate engagement from users and providers, have an effective access mechanism and meet the users' needs.”

3 Methods

To achieve the objectives outlined above, we reviewed the content of specific policy documents⁵, as well as the overall policy environment that structures policy formulation and implementation, relating to climate change and to the selected sectors. The report thus presents an overview of broad policy goals and objectives related to climate change, and to the climate-sensitive sectors, as articulated in the selected policy documents. This report has sought to identify the primary policy documents that oversee the target themes and sectors, while recognizing that the list of documents reviewed is not exhaustive. (See Table 1 below for the list of policy documents included in this analysis.)

We (the research team composed of members from UDSM and CICERO) utilized the method of document analysis (see Creswell, 1998) to conduct systematic examination and interpretation of the selected policy documents with regard to the research objectives. We first searched for the key words ‘climate change’, ‘adaptation’, and ‘climate services’ to identify areas in which the documents directly address issues related to climate change and climate services. We then re-examined the documents in greater detail, in order to: 1) assess whether and how climate change dimensions are addressed; 2) identify whether and how the policies respond to the prioritized adaptation themes that are outlined in the National Climate Change Strategy; 3) highlight potential policy gaps and conflicts and; 4) identify entry points for enhancing climate services provision across sectors and policies.

⁵ National response to climate change will depend on a range of policy instruments, each with varying roles and levels of enforceability within Tanzania’s governance structure. It is important to recognize and understand these differences, to identify appropriate “levers” that are available to policy makers and in order to understand how the policy documents that have been analyzed fit within the broader governance landscape. Policies are the primary instruments guiding government activities in Tanzania. However, policies are not enforcement mechanisms and are generally implemented and legally enacted through legislation in the form of specific acts and regulations. Additionally, strategies, guidelines, and frameworks have been developed in many areas and sectors as a means of detailing interventions and steps to be taken to achieve compliance with policies, acts, and regulations, but do not have the ability to enforce implementation. This report will use the term ‘policy documents’ to broadly refer to the entirety of these policy instruments.

Sector / Theme	Policy Document
Climate Change / Environment	1. National Adaptation Programme of Action (2007) 2. National Climate Change Strategy (2012) 3. National Environmental Policy (1997) 4. National Environmental Management Act (2007) 5. National Climate Change Communication Strategy (2012)
Development	6. National Growth and Poverty Reduction Strategy II (2010 – 2015) 7. Five Year Development Plan (2011 – 2016)
Agriculture / Food Security	8. Agriculture Climate Resilience Plan (2014 – 2019) 9. National Food Security Act (DRAFT 2012) 10. National Livestock Policy (2006) 11. National Food and Nutrition Policy (1992)
Disaster Management / Risk Reduction	12. National Disaster Relief Coordination Act (1990) 13. National Disaster Management Policy (2004) 14. National Disaster Management Policy (DRAFT 2011)
Health	15. National Health Policy (2003) 16. Health Sector Strategic Plan (2009 – 2015)

TABLE 1: List of Policy Documents Analysed.

4 Policy documents specific to climate change in Tanzania

4.1 Overview of policy environment for climate change mitigation and adaptation

Climate change as a policy issue is institutionally situated under the auspices of the Division of Environment in the Vice President's Office (DoE-VPO), which is the national focal point for climate change under the United Nations Framework Convention on Climate Change (UNFCCC) and the designated National Authority for climate change in Tanzania. The overarching policy structure that oversees issues related to environment, including climate change mitigation and adaptation, is the National Environmental Policy (NEP) of 1997, which is implemented in conjunction with the National Environmental Management Act (NEMA) of 2004. The NEP of 1997 is currently under revision, with a first draft recently submitted for review by national stakeholders. However, a number of other strategies, plans, and guidelines, have been put into place that provide specific directives for national and local level climate change mitigation and adaptation activities. These include the National Adaptation Programme of Action (NAPA) of 2007, the National Climate Change Strategy (NCCS) of 2013, and the National Climate Change Communication Strategy (NCCCS) of 2012. Additionally, in line with the NCCS, the government of Tanzania has developed several specific documents to support policy makers and government ministries, departments, and agencies to mainstream climate change within sectorial activities and national planning. These documents include the Guidelines for Integrating Climate Change Adaptation into National Sectorial Policies, Plans, and Programmes (2012) and the Process and Roadmap for Formulating National Adaptation Plans in Tanzania (2013). Notably, there are current and ongoing activities aimed at conducting analysis and review of policy documents with relation to climate change in Tanzania.⁶

⁶ One example includes the ongoing Policy Action and Climate Change Action (PACCA) project, which is led by the International Institute for Tropical Agriculture, under CGIAR and CCAFS, in collaboration with the Vice President's Office (VPO) and the University of Oxford, to support Tanzania in the development of climate-resilient policies. Another example includes the initiative led by the Division of

4.2 National adaptation programme of action (NAPA) of 2007

The broad goal of NAPA is to enable Tanzania to identify immediate and urgent climate change adaptation actions that are robust enough to lead to long-term sustainable development in a changing climate. The NAPA draws its aspirations from the National Development Vision 2025, and is therefore strives to be well linked with existing national development goals. More specifically, the NAPA aims at i) identifying and developing immediate and urgent activities to adapt to climate change and climate variability; (ii) protecting the life and livelihoods of people, as well as infrastructure, biodiversity and the environment; (iii) mainstreaming adaptation activities into national and sectorial development policies, strategies, goals, visions, and objectives; (iv) increasing public awareness of climate change impacts and adaptation activities in communities, within civil society, and among government officials; (v) assisting communities to improve and sustain human and technological capacity for environmentally friendly exploitation of natural resources in a changing climate; (vi) complementing national and community development activities which are hampered by adverse effects of climate change; and (vii) creating long-term sustainable livelihood and development activities at both community and national levels in a changing climate. The NAPA is intended to serve as the foundation for future National Adaptation Plans (NAPs), which support the identification of medium- and long-term adaptation needs and implementation strategies. It is intended that NAPs should be devised and revisited on an iterative basis (every 5 years). Tanzania has yet to finalize its first NAP; the process has been significantly delayed and is not expected to be completed before the end of 2016. Until the NAP is finalized, the NAPA will serve as the primary document identifying priority adaptation activities at the national level.

Through consultations with different actors at national, regional, and district levels, the NAPA prioritized fourteen adaptation activities. Of those identified, the following activities are related to the food security and agriculture, DM/DRR, and health sectors, and are thus of particular relevance to the GFCS-APA: 1) enhancing water efficiency in crop production and irrigation to boost production, 2) alternative farming systems and water harvesting activities, and 3) establishing and strengthening community awareness programmes on preventable major health hazards. It is important to note, however, that the other priority activities, which focus primarily on alternatives for water catchment and storage, energy production, and forest conservation, can also benefit greatly from climate services and are both directly and indirectly linked with activities that are of relevance to the priority sectors of the GFCS-APA.

The NAPA has extensively identified the existing and potential adaptation options for the various sectors, but few of the proposed activities directly address the need for better weather forecasts, climate information, or climate services. Indeed, the use of climate information as an

Environment in the VPO, supported by UNDP, to develop guidelines for mainstreaming climate change adaptation into sectorial policies.

adaptation option has been given little attention, despite the fact that Tanzania Meteorological Agency (TMA) has been named as a primary collaborating institution within the implementation of the NAPA. For example, the enhanced use of climate information is only explicitly discussed with reference to the agricultural sector, which highlights the need for improved use of weather and climate data, forecasts, and other tools, as well as expanded weather and climate data collection networks. Many of the adaptation activities prioritize the need for enhancing local-level understanding of climate change and its impacts. Additionally, the development of early warning systems (EWS), along with improved use of climate and weather data and forecasts, has been suggested as an adaptation option for the agriculture, health, and water sectors. These are areas where the delivery of climate services will be essential, but enhanced EWS are currently not specified as a priority activity. Additionally, the NAPA does not prioritize activities related to monitoring and forecasting of climate change and its impacts, research, information exchange, awareness and education initiatives, all of which will be essential to the development of effective climate services.

4.3 National climate change strategy (NCCS) of 2012

The broad goal of the National Climate Change Strategy (NCCS) is to enable Tanzania to effectively adapt to climate change and participate in global efforts to mitigate climate change while achieving sustainable development under Tanzania's Development Vision 2025 document (see Section 4.1 for more detail). The NCCS employs a three-pronged approach aimed at enhancing technical, institutional and individual capacities to address the impacts of climate change. The Strategy outlines a range of strategic interventions for climate change mitigation, adaptation, and crosscutting issues.⁷ Adaptation interventions are given explicit priority over mitigation interventions and are intended to build upon, and expand, the priority activities defined within the NAPA. Strategic adaptation and crosscutting interventions are organized under a range of sectors/themes⁸ (see Table 2 below). The strategic interventions for adaptation that are of particular relevance for the GFCS-APA are reflected in the National Climate Change Strategy (see Table 4 pp. 54 – 62 and Table pp. 69 – 75, 5th column for detailed descriptions of adaptation and cross-cutting interventions respectively).

⁷ This report will only discuss NCCS strategic interventions for adaptation and cross-cutting themes/sectors, while recognizing that climate information will also have important roles to play within mitigation intervention planning and implementation.

⁸ Strategic interventions are organized by sectors/themes in the NCCS. The NCCS also outlines strategic goals, objectives, interventions, and key actors under each sector/theme.

Adaptation Themes / Sectors (From Table 4, under Section 3.4.1)	Crosscutting Themes / Sectors (From Table 6, under Section 3.4.3)
<ol style="list-style-type: none"> 1. Water Resources 2. Coastal and Marine Environment 3. Forestry 4. Wildlife 5. Agriculture and Food Security 6. Human Health 7. Tourism 8. Energy 9. Industry 10. Livestock 11. Fisheries 12. Infrastructure 13. Human Settlements 14. Land Use 	<ol style="list-style-type: none"> 1. Research and Development 2. Information, Communication, Education 3. Technology Transfer and Development 4. Institutional and Capacity Building 5. Systematic Observation 6. Early Warning Systems 7. Disaster Risk Management 8. Impacts of Response Measures 9. Gender and Vulnerable Groups 10. Planning and Financing 11. International Cooperation 12. Climate Change and Security

TABLE 2: Priority Adaptation and Crosscutting Themes and Sectors in the NCCS.

The NCCS designates the National Climate Change Steering Committee (NCCSC) and the National Climate Change Technical Committee (NCCTC) as the primary governmental bodies for overseeing climate change activities. The NCCTC is tasked with providing technical advice to the National Climate Change Focal Point (VPO-DoE), while the NCCSC is responsible for providing analysis and policy guidance, as well as coordinating climate change activities across various sectors. Respective ministries, departments, and agencies, and local government authorities will implement specific strategic interventions and activities in line with mandates outlined in the National Environmental Management Act (NEMA). The NCCS is a crucial first step toward addressing climate change at the national level in Tanzania; however, it is currently lacking the supporting policy structures to operationalize and enforce the strategies, such as a designated national climate change plan, policy, or act.

The NCCS outlines eight objectives, several of which are closely linked with the need for effective climate services provision and are of particular relevance to the GFCS-APA, including: building capacity to adapt to climate change impacts, enhancing public awareness of climate change, strengthening information management related to climate change, and enhancing institutional arrangements to adequately address climate change. While it does not make mention of climate services specifically, the NCCS does address the need for enhanced provision of weather and climate information to support mitigation and adaptation activities. The NCCS acknowledges that adaptation activities at all time scales will require reliable data about climate change impacts and vulnerabilities to inform adaptation and mitigation options. However, it points out that there is currently a deficiency of such data and that efforts should be undertaken to enhance capacities to produce this kind of information. For example, one suggested area for intervention under the strategy involves making use of available weather and climate models, as well as developing new models when needed, for predicting the impacts of climate change and estimating adaptation and mitigation costs. The TMA is mentioned as a key agency in supporting these activities. Additionally, several of the strategic interventions

proposed under cross-cutting themes focus on improving climate information, weather forecasts, and early warning systems. Several of the interventions in the strategy promote the use of indigenous knowledge, which is also an essential component of developing an integrated climate services framework. Another crosscutting theme deals with information, communication, education, and public awareness. However, it is important to recognize that the NCCS builds upon other national policy documents and works within their institutional arrangements. For example, strategic interventions under the theme of information management and communication will be undertaken in accordance with the NEMA of 1997, which has appointed the VPO as the central institution in charge of collecting, managing, and communicating information about climate change.

Another crosscutting theme in the NCCS strategy is the need for systematic observation to enable efficient and reliable weather and climate predictions. The GFCS-APA is conducting several activities that are of direct relevance to the interventions under this theme. For example, the NCCS includes interventions involving the improvement and maintenance of observation networks, remote sensing, creation and management of databases, and the promotion of IK in weather forecasts and climate prediction. Additionally, the NCCS recommends the development of EWS to respond to challenges related to climate variability and change. This includes both increasing weather forecasting technologies, as well as establishing systems to package and disseminate climate information. The strategic interventions that are recommended to support the development of EWS in Tanzania include: enhancing monitoring and prediction capacities, including the monitoring and prediction of extreme weather events and impacts and capacities in numerical weather prediction and modeling, enhancing information dissemination and exchange, enhancing cooperation among relevant stakeholders and media, and reviewing systems frequently.

4.4 The national environmental policy of 1997

The National Environmental Policy (NEP) aims at ensuring sustainable and equitable use of resources for meeting basic societal needs, preventing and controlling degradation of land, water, vegetation and air, and improving the condition and productivity of degraded rural and urban areas (VPO 1997). The policy emphasizes both cross-sectorial and sectorial issues with an aim of attaining sustainable economic growth and poverty reduction (Yanda 2013b). Notably, the policy identifies six major environmental problems facing Tanzania, including: land degradation, lack of safe water, environmental pollution, loss of biodiversity, deterioration of aquatic systems, and deforestation.

To date, the policy does not specifically acknowledge climate change as one of the major environmental and developmental problems facing the country (Yanda 2013b). The need to identify specific mitigation options and to undertake studies to understand the impacts of climate variability and change is mentioned, but only peripherally, within the context of adhering to international environmental agreements. In this way, the policy currently situates climate change as an international issue, rather than as a national priority. The policy also lacks detail with regard to the mechanisms that will be used to implement climate change mitigation options or undertake climate vulnerability assessments at the national level. Importantly, there is no

explicit mention of adaptation to climate change within the policy. Thus, there is scope for review and revision of the policy (as noted in the Five Year Development Plan, see Section 4.3) in order to integrate climate change as one of the major environmental problems facing the country and to mainstream mitigation and adaptation activities within existing environmental management strategies. This shortcoming of the current NEP policy has already been widely recognized and is one of the primary drivers for the current revision of the NEP. Given that the NEP is the overarching policy for dealing with all environmental issues facing Tanzania, including climate change within the NEP will be a critical first step toward fully integrating climate change issues across sectorial and governmental activities in Tanzania.

Notwithstanding the lack of specific references to climate change in the current NEP, there are several entry points that are of relevance to the development of national climate services in Tanzania. For example, the policy notes the past, current, and potential future value and contributions of indigenous knowledge and culture toward protection of the environment. This could be expanded to include the value of indigenous knowledge (IK) for understanding trends in climate variability and change and informing adaptation strategies. Additionally, the NEP recognizes the need to align with a variety of international treaties and agreements, such as the Kyoto Protocol and other UNFCCC treaties, thus enabling additional pathways for mainstreaming climate change within national policies, plans, and strategies. Additionally, The NEP mandates respective government ministries, departments, and agencies to establish Environmental Sections to help mainstream climate change into their activities. However, it has been recognized that the capacity of these Sector Environmental Sections is currently restricted by limited knowledge of climate change and insufficient financial resources (Yanda et al. 2013).

The NEP designates the Minister responsible for the environment to prepare guidelines for the management of environmental emergencies, including those related to natural and climate change-related disasters, such as floods and drought. Such guidelines are meant to be formulated in consultation with the PMO and other relevant ministries. While an important provision, this appears to conflict with other disaster management and risk reduction policies, which generally designate the Disaster Management Department under the Prime Minister's Office (DMD-PMO) with preparing disaster preparedness plans. It will thus be important for the GFCS-APA to gain additional insight into these institutional arrangements to ensure proper understanding of roles and responsibilities for disaster preparedness.

4.5 National environmental management act of 2007

The National Environmental Management Act (NEMA) of 2007 stipulates the legal and institutional framework for environmental management in Tanzania and provides the basis for implementing and enforcing the NEP. The NEMA outlines management principles and specifies the need for and content of environmental impact and risk assessments, environmental standards, and pollution controls.

Section 75 of the NEMA (see p. 316) specifically addresses climate change. It mandates that the Minister in charge of the environment (which is currently the Minister of State – Environment, under the VPO) should take measures to address climate change in consultation with relevant sector ministries, particularly with regard to climate change impacts. This will include issuing

guidelines to address climate change and its impacts, putting in place legal requirements for ministries and other departments to enact strategies and action plans to address climate change, advising schools and higher learning institutions to include climate change within their curriculum, and formulating and presenting national positions on matters relevant to climate change at the global level through the UNFCCC or other relevant bodies. Importantly, the act stipulates that the Minister in charge of environment must approve any action taken to address climate change, meaning she/he is a key gatekeeper for climate change-related decision- and policy-making.

The act also details the roles of the National Environmental Management Council (NEMC) and the National Environmental Advisory Committee (NEAC). The NEMC⁹ is tasked with coordinating and disseminating research, investigations, and surveys relating to the environment, including maintaining oversight of Environmental Impact Assessments, as well as providing advice and technical support to all entities in Tanzania engaged in environmental management activities. The NEAC¹⁰ is designated as a technical advisory body and reports to the VPO and NEMC. Currently, it is not clear how active the NEAC is. On the other hand, the NEMC appears to be engaged and thus has the potential to be a natural entry point to help coordinate, consolidate, and disseminate findings of various research activities with regard to climate change, including scientific analyses of climatic trends and studies of physical and social vulnerability and adaptation.

Under NEMA, it is the duty of the Environmental Sections (created under the NEP) within ministries to liaise with the Director of Environment and NEMC in order to undertake analyses of sectorial policies, plans, strategies, and programmes with regard to their potential environmental impact. The act also calls for the establishment of Regional and District level structures to implement and enforce the act.¹¹ This institutional structure may be a useful entry

⁹ The president appoints the NEMC chairperson and the secretary is the Director of Environment. The remainder of the committee is composed of seven members who are appointment by the Minister in charge of the environment, currently the Vice President. The NEMC is mandated to meet three times per year.

¹⁰ The NEAC is composed of a range of ministers, the Director of NEMC, and a representative from higher learning institutions, civil society organizations, and the private sector. The TMA is not currently designated as a member of the NEAC, which may serve as a barrier to ensuring flows of key information about climate variability and change to inform environmental policy decision-making. However, within the NEMA, there is provision for the committee to add individuals that may support the deliberations of the NEAC.

¹¹ This includes putting in place a Regional Environment Management Expert who is responsible for providing technical advice and implementation oversight and Environment Management Officers in Districts, cities, and towns to oversee local implementation and enforcement, facilitate public awareness and education, and gather and manage information on the environment and utilization of natural resources in the area.

point for the GFCS-APA in Tanzania to build upon as a means of disseminating climate information, particularly with regard to long-term climate trends and projections.

4.6 National climate change communication strategy of 2012

4.6.1 Overview of the policy document

The National Climate Change Communication Strategy (NCCCS) of 2012 was developed to facilitate the implementation of the NCCS, with the mandating action to increase public awareness of climate change. It was developed by a national task force comprised of a range of national stakeholders, under the leadership of the VPO. The Strategy aims to enhance awareness and understanding of climate change throughout Tanzanian society within the context of the national communication channels and procedures, recognizing that there is a gap between the growing body of knowledge about climate change causes and impacts, and the information that is available to the general public. The Strategy targets six thematic areas, including: general knowledge of climate change, adaptation, mitigation, climate change research, gender, and financing. With its focus on enhancing awareness of climate change, the Strategy does not address communication of climate information at shorter timescales (e.g., weather forecasts, interannual forecasts, warnings for extreme events). This may have the unanticipated impact of preventing streamlined pathways for communicating climate information and services across timescales (e.g., delivery of seamless forecasting).

While the NCCCS does not address climate services, it does acknowledge the need for systems to improve information flows and strengthen networks among stakeholders in order to provide timely and relevant information to Tanzanian citizens and policy makers to support informed decision-making and to enhance capacities to adapt to climate change. The Strategy includes communication to audiences at the international, national, and sub-national levels. Designated sources for climate change information for audiences at the international and national level are: policies and environmental agreements; research reports; national and international meetings' reports; and Government directives. The policy states that information about climate change at local levels will be generated from best practices in pilot areas; community experiences on climate change adaptation; indigenous knowledge; and documented evidence from sites affected by climate change. This appears to neglect the role of TMA as a primary source in providing essential data and analysis with regard to weather and climate trends. The Strategy briefly discusses communication channels and dissemination of information in Section 2.4.1. The VPO is designated as the primary body responsible for communicating climate change information, but the Strategy does not specify clear institutional pathways for provision of information beyond the VPO. It does, however, name the responsible actors in charge of disseminating information in the six thematic areas, but the list of actors is quite long and the designation of roles is not clear, which may prevent any one actor from taking the lead on these activities. TMA, for example, is included as a responsible actor for facilitating communications across almost all themes and issues. Suggested channels for delivery of climate change information include: electronic and print media, social media, community information centers (not yet developed), meetings and social gatherings, and theatrical performances (e.g., songs, dance).

5 Policy documents for development

5.1 Overview of the development policy environment in Tanzania

In recent years, the government of Tanzania has cited several important achievements toward poverty reduction; however, significant challenges remain to achieving sustainable and equitable development¹². The government of Tanzania developed the Tanzania Development Vision 2025, a long-term (30-year) development agenda in 1995, following the liberalization of the economy in the early 1990's. Under Vision 2025 the government established the philosophy and scope of development goals for the country. This is the guiding document for all other development policies, plans, and strategies in the country. Of particular relevance to the GFCS-APA are Vision 2025 Goals 1 and 5, (high quality livelihoods and a strong and competitive economy), which cover issues of food security, gender equality, access to safe water, eradication of extreme poverty, and diversified economy. To implement Vision 2025, the government has developed specific strategies and corresponding action plans on 5-year time horizons. This presents a key opportunity for advocacy efforts to enhance climate change considerations within development planning (for example, the 2015/16 policy-making cycle). The National Strategy for Growth and Reduction of Poverty II (NSGRP-II, also known by the Swahili acronym MKUKUTA-II) is the strategic framework for 2010 – 2015. The corresponding plan for the NSGRP-II is the Five Year Development Plan (FYDP) for 2011 – 2016, which lays out concrete implementation actions. In addition to the NSGRP-II and FYDP, the Tanzanian government has also established the Big Results Now (BRN) programme in 2013, which is a sector-based approach intended to fast-track lagging development progress in 6 sectors, including agriculture. This analysis will focus on the primary strategic and planning documents, the NSGRP-II and FYDP.

¹² For example, Tanzanians living in rural areas continue to experience much higher rates of poverty than those living in urban areas. This is, in part, due to sluggish growth in the agricultural sector, where there remain poor infrastructure to support agriculture, inadequate extension services, and insufficient access to technology, financing mechanisms, and markets. Additionally, challenges related to providing access to safe and reliable water resources, electrification, health services, and quality education all create barriers to improvements in human well-being, particularly outside of urban centers.

5.2 The national strategy for Growth and reduction of poverty II of 2010

The second NSGRP-II was adopted in July 2010 and applies from 2010 – 2015. It is the second national development strategy and is the medium-term policy framework for the Tanzania Development Vision 2025 and the primary mechanism for the realization of the Millennium Development Goals. NSGRP-II is organized under three clusters, and has sets of related goals under each cluster.

Although many of the goals under Cluster 1 (Growth for Reduction of Income Poverty) and Cluster 2 (Improvement of Quality of Life and Well-being) can enable adaptation, the document does not address the issue of climate change in significant depth. Under Cluster 1, climate change issues are addressed through the discussion of the need for: 1) participatory climate change adaptation measures at the water catchment level, 2) coordination of environmental and developmental policies, including those dealing with climate change, and 3) development of research programs to support new agricultural technologies and practices to enable climate mitigation and adaptation. Goal 4 under Cluster 1 (Ensuring food and nutrition security, environmental sustainability and climate change adaptation and mitigation) is the only goal that focuses centrally on dealing with the adverse impacts of climate change through enhanced food security, nutrition, and environmental sustainability. Under Cluster 3 (Goal 4: Ensuring national and personal security and safety of properties), enhancement of capacities to mitigate the adverse impacts of climate change and natural disasters is included as an operational target. Associated interventions include: 1) strengthening institutions dealing with early warning systems, risk management, and disaster management and 2) developing and instituting methods for adapting to adverse climate change impacts.

Of direct relevance to the GFCS-APA, the NSGRP-II calls for the number of hydrological and meteorological monitoring stations that regularly produce reliable data to increase from 83 in 2009 by 438 by 2015 (see Cluster 1, Goal 2: Reducing income poverty through promoting inclusive, sustainable and employment-enhancing growth). Under this goal, there is also discussion of the need for improved systems for information collection and dissemination to enable early warning. Additionally, under Cluster 1 (see Goal 4: Ensuring food and nutrition security, environmental sustainability and climate change adaptation and mitigation) development of specific mitigation and adaptation options and strengthening climate change projections and early warning capacities are prioritized strategies.

5.3 The five-year development plan for 2011 - 2016

The Five-Year Development Plan (FYDP) is the formal implementation tool of the country's long-term development agenda, as set out in Vision 2025. The plan has identified five core areas as part of an integrated strategy to facilitate economic development: 1) infrastructure, 2) agriculture, 3) industry, 4) human resource development, and 5) tourism, trade and financial services. The plan presents a range of strategic interventions designed to achieve these goals (see summary on p. 54 of the FYDP).

Environmental management and adaptation to climate change are deemed key approaches to achieving success in these five core development areas. Moreover, the plan acknowledges that climate change is a significant threat to economic growth and lists climate change as one of four “underlying prerequisites” that must be addressed in order to foster an enabling environment

for achievement of development goals. Furthermore, the FYDP emphasizes the need to revisit key policy documents overseeing climate change, including the NEMA and NEP, in order to better mainstream environmental considerations within development planning, as well as to afford higher priority to assessing and addressing the risks posed by climate change. The plan notes the need for a national policy framework to guide climate mitigation and adaptation measures. Other goals related to climate change within the FYDP include the need for development of a national climate strategy, national mechanisms to mobilize global climate finance, enhancing awareness and ownership of climate change initiatives within the government, and synchronization of existing climate change efforts. At the sector level, climate change is recognized as pivotal issue and the plan proposes strategic objectives and activities that could support sectorial mitigation and adaptation activities. For example, within the agricultural sector, increased irrigation is suggested as a key intervention. In sum, the FYDP has mainstreamed climate change to a much greater extent than Vision 2025 or the NSGRP-II. Given that the FYDP is the operational implementation mechanism, this is encouraging.

None of the strategic goals or interventions outlined in the plan mention climate services, though almost all of these would likely depend on climate information of some kind. For example, one intervention calls for applied research on climate change impacts and costs, which would likely rely on climate information, such as long-term data, trends, and projections. Thus, while the FYDP has mainstreamed climate change considerations to a large degree, there is scope for greater integration of climate services within such development policies as a tool to enhance planning and implementation of development interventions. Given that the FYDP will be revisited in 2015/16, there is a key opportunity to advocate for increased recognition of the role of climate services in supporting key development activities during the next 5-year planning horizon.

6 Policy documents related to agriculture and food security

6.1 Overview of the agriculture and food security policy environment in Tanzania

Agricultural productivity and commercialization is at the top of the priority areas for investment for the government of Tanzania (URT 2011); however, it is also recognized as a sector that is highly vulnerable to the impacts of climate change. The agricultural sector, under the leadership of the Ministry of Agriculture, Food Security, and Cooperatives (MAFC), is one of the few sectors at the national level in Tanzania that has responded directly to the call within the NCCS to develop sectorial climate change action plans (see section 4.2 on the Agricultural Climate Resilience Plan below for more detail). Furthermore, the other agricultural and food security policy documents analyzed in this report have generally mainstreamed mechanisms to mitigate and adapt to climate change though to varying degrees (with the exception of the National Food and Nutrition Policy). The manner and extent to which climate change has been addressed is discussed in detail below for several key policy documents, including the National Agricultural Policy (2012), the National Livestock Policy (2006), and the National Food and Nutrition Policy (1992). The analysis also identifies aspects of the policies that might be targeted in order to make the agricultural and food security sector more responsive to climate change dimensions and to identify entry points for the inclusion of climate services in policy planning and implementation.

The MAFC is the primary government institution managing climate change issues in the agricultural sector. Within the MAFC, there are seven divisions and two units that are responsible for climate change related activities within the sector.¹³ The National Food Security, Crop Development, and Agricultural Research and Development divisions at the MAFC are of particular relevance to addressing issues related to climate change. The National Food Security

¹³ The divisions that oversee climate-related issues are: (i) agricultural research and development, (ii) crop development, (iii) national food security, (iv) agricultural land use planning and management, (v) agricultural mechanization, (vi) policy and planning, and (vii) irrigation and technical services. The two units that manage climate change activities are: 1) information, education, and communication, and 2) environmental management.

division houses the crop monitoring and early warning section and the post-harvest management section, both of which are critical elements to improved climate risk management. The Agricultural Research and Development division's main objective is to undertake the development of appropriate agricultural technologies through participatory approaches. The Crop Development Division has the core responsibility to provide expertise and services on crop development. Some of the climate-relevant functions of the division are: (i) to develop crop development strategies and programmes and (ii) to control quality of seed varieties. Function (ii) corresponds directly with strategic adaptation intervention "d" (promoting early maturing and drought tolerant crops) under Adaptation Sector/Theme 5 in Table 4 of the NCCS. The National Food Security division is also important for climate adaptation, based on the fact that it houses two crucial functions: (i) crop monitoring and (ii) early warning and post-harvest management. These functions correspond well with strategic adaptation interventions "h" (strengthening weather forecast information sharing for farmers) and "i" (strengthening post-harvest processes and value addition) under Adaptation Sector/Theme 5 in Table 4 of the NCCS.

Strategic Theme/Sector	Relevant Strategic Interventions
Water Resources	Protect water catchments; rain water harvesting; enhance water availability; manage water resources to improve sanitation and hygiene; conduct vulnerability assessments.
Wildlife	Management of human-wildlife conflicts.
Agriculture and Food Security	Assess crop vulnerability and suitability for different regions; assess comparative trade advantages for traditional export crops with changing climate; develop appropriate irrigation systems; promote appropriate indigenous knowledge and practices; promote drought-resistant and pest/disease-resistant crops; develop crop insurance; strengthen weather forecast information for farmers; address soil and land degradation; strengthen pest surveillance and early warning.
Livestock	Develop livestock insurance; develop land-use plans; enhance livestock sector infrastructure and services; strengthen weather information distribution for pastoralists; develop livestock insurance mechanisms; promote livelihood diversification among livestock keepers; promote improved-traditional livestock keeping systems.
Fisheries	Promote alternative livelihoods for fisheries-dependent communities; promote aquaculture.
Land Use	Review and enforce land use plans; explore and promote sustainable land-use management technologies.
Research and Development	Research and promote indigenous knowledge on mitigation and adaptation; develop drought-tolerant, pest resistant, early maturing crop varieties and livestock.
Information, Communication, Education, and Public Awareness	Promote communication of climate change information; enhance availability and dissemination of climate change data; establish a network to enable sharing of adaptation knowledge and technologies appropriate to local conditions.
Systematic Observation	Improve or establish new agro-meteorological stations; promote documentation of indigenous knowledge.
Early Warning Systems	Enhance prediction of extreme weather events/impacts; enhance capacity; disseminate early warning; enhance cooperation among stakeholders for timely dissemination of warnings.

TABLE 3. Relevant strategic adaptation and crosscutting interventions (by strategic theme/sector) for Agriculture and Food Security contained in the NCCS.

6.2 Agriculture climate resilience plan for 2014 -2019

6.2.1 Summary of the policy document

The Agriculture Climate Resilience Plan (ACRP) has been developed in direct response to the directive within the NCCS, which states that all climate-sensitive sectors should develop action plans in order to implement the strategic interventions outlined in the NCCS, and to respond to the most pressing climate-related impacts on agriculture. The MAFC has taken a leading role in efforts to make agriculture one of the first sectors in Tanzania to respond to the NCCS by beginning preparation of the ACRP in April 2013. The document is the primary road-map

document to guide efforts to mainstream climate change within current agricultural policies, plans, and practices, as well as to identify areas where new or additional investments may be needed. The plan has a 5-year time horizon, to correspond with the 5-year time frame for the NCCS (and other development plans). It includes three main parts: 1) the climate change risk assessment for the agricultural sector, 2) priority resilience actions and key investments, and 3) implementation strategy. The report specifically aligns with the strategic interventions and follows the institutional arrangements described in the NCCS, which adhere to the structure detailed in the NEMA. The strategic interventions in the NCCS related to agriculture fall under the following themes: crops and crop varieties, water, on-farm practices, information, and markets. However, it is worth noting that many of the actions that were prioritized within participatory processes during development of the ACRP were related to water and land management. Therefore, the actions in the ACRP do not always align with the priority actions for agriculture identified in the NCCS. Additionally, this highlights the need for agricultural climate adaptation interventions to be closely linked with interventions in the water sector and within land-use planning and management.

6.2.2 Analysis with regard to climate change

The plan outlines the case for why climate action within the agricultural sector is needed, including analysis of historical climate trends, projections, and risks to agricultural growth and development. However, there are currently challenges to estimating the impacts of climate change on the agricultural sector for a variety of reasons, including lack of sufficient data and information. The ACRP identifies 4 priority actions in the sector: 1) improve agricultural land and water management, 2) increase yields through climate-smart agriculture, 3) protect the most vulnerable against climate-related shocks, 4) strengthen knowledge and systems to target climate action. Finally, the plan outlines a specific implementation strategy that includes analysis of the institutional framework, cost appraisal and financing strategy, monitoring and reporting guidelines, and a specific plan for a launch of the plan in the first year. Three main climate-related risks to agriculture were identified: 1) amplification of existing pressures on water resources, 2) declines in yields of key cereal crops, and 3) impacts on livelihoods, particular those of smallholder farmers. The implementation plan recognizes the need to strengthen institutions within the national and sub-national structures, as well as enhance coordination within the MAFC, across departments and units, as well as with other governmental ministries, departments, and agencies, including TMA. Importantly the plan acknowledges that irrigation alone is not sufficient to adapt to climate change in the agricultural sector. Additionally, there is recognition of the possibility of maladaptation, particularly with regard to irrigation, if such measures are not carefully evaluated with regard to the range of risks and in consideration of other drivers of vulnerability stemming from inappropriate water resources management and land use practices. Climate services could play a partial role in helping to develop more robust irrigation planning.

6.2.3 Analysis with regard to climate services

The ACRP directly overlaps with and/or complements several aspects of the GFCS-APA, specifically with regard to the development of systems to disseminate climate information, as well as establishing networks to enhance stakeholder engagement within the development of climate information products. The plan explicitly recognizes the role of weather and climate information in supporting climate resilience within the agricultural sector. Adaptation Action 4 focuses on increasing knowledge and strengthening systems to identify and prioritize climate

adaptation actions. This is a crosscutting theme that is intended to inform all other adaptation actions in the plan. For example, the plan states that all new irrigation and water resource rehabilitation projects should incorporate climate change projections. Additionally, lack of sufficient early warning systems has been identified as a key challenge to food security in mainland Tanzania. This is a clear entry point for improved climate services to support the implementation of the ACRP. Under Action 4, there are several key investments that are identified (see p. 58 of the ACRP) that are directly relevant to the GFCS-APA. These include investments 4.4, 4.5, and 4.7, which deal with: 1) the development of an information management system and portal for climate change and agriculture, 2) the establishment of stakeholder engagement and communication networks, and 3) the implementation of an ICT campaign to raise awareness and disseminate targeted weather and climate information. These investments directly overlap with activities within the GFCS-APA. Furthermore, TMA is identified as a key focal point for supporting implementation of the ACRP. Weather-related factors are identified as the largest risk to agricultural productivity, but the plan acknowledges that there are challenges to projecting future climate-related impacts due to poor data, uncertain climate projections and crop models, and the diversity of livelihoods. Most of the irrigation and agricultural water storage plans incorporate expected decreases in average rainfall, without acknowledging the potential for increased heavy rainfall events and flooding. This is a gap that the GFCS-APA could potentially fill. The ACRP also notes the need for improvements to networks for disseminating early warning messages to communities and that there are currently difficulties in interpreting and applying the forecasts, due to mismatches between the variables forecast and the operational needs of farmers, lack of trust, and understanding the forecasts. The ACRP calls for investments to support improved communication of weather information to local levels and also for improved coordination of hydro-meteorological information between TMA and MAFC. This includes ensuring that there are systems to enable end-user feedback and perspectives within the weather information systems, as well as increased investments in real-time weather stations, development of early warning systems for select crops, and identification of opportunities for private sector involvement in the development of communications technologies. These gaps represent clear entry points for the GFCS-APA to provide direct and substantial input toward the implementation of an existing plan or policy. It is also important to note that there are already plans for building resilience to weather-related shocks in the Tanzania under the Agriculture and Food Security Investment Plan (TAFSIP), which includes activities on EWS, emergency preparedness, and institutional systems for disaster risk management. To date, these efforts have not been sufficient to fully address climate risks. Furthermore, there are other initiatives, such as the UNDP-financed pilot program to increase the availability of climate information and improve EWS. The GFCS-APA should ensure that its activities are well aligned with the activities proposed in the ACRP, as well as other efforts outlined in the TAFSIP and ongoing UNDP-funded projects. The ACRP notes the need for the development of a group to be led by the MAFC Emergency Management and coordinated with the Information and Communication Unit to identify key stakeholders, appropriate communication packages, and suitable channels for conveying climate information to various audiences. The GFCS-APA should seek out contacts at this unit to establish coordination pathways.

6.3 The draft national agricultural policy of 2012

6.3.1 Summary of the policy document

The Draft National Agricultural Policy (Draft Agricultural Policy) of 2012 aims to develop an efficient, competitive, and profitable agricultural industry that contributes to the nation's economic growth and well-being of Tanzanians (MAFC 2012a). The policy strives to accommodate issues and changes that were not included in the 1997 National Agriculture and Livestock Policy, including: (i) increased calls and awareness on climate-friendly agricultural practices, (ii) emergence of biotechnologies thought to be essential for improved agricultural productivity, (iii) Tanzania's commitment to several regional and global agricultural growth programs, and (iv) the need for increased agricultural productivity so as to meet several national goals and targets.

6.3.2 Analysis with regard to climate change

In terms of addressing risks and vulnerabilities to climate change, the policy has detailed several policy objectives and statements that are very likely to be instrumental in implementing some strategic interventions – relating to both mitigation and adaptation – as identified by the NCCS. The policy aims to enhance crop productivity and profitability through irrigated agriculture (MAFC 2012a), which is seen as an essential adaptation under a changing climate. In Sub-section 4.2.1 on irrigation development, the policy recognizes the increased threats that climate change will create, particularly through increasing seasonal climate variability and notes the need for enhanced irrigation capacities to mitigate these risks. However, the policy does not mention the need to evaluate irrigation schemes for potential unintended consequences or maladaptation that may increase vulnerability (a potential risk discussed in the Agriculture Climate Resilience Plan). Additionally, Section 4.12 addresses risk management and identifies changes in weather and climate as a primary risk to agricultural production and states that there is a need for strengthened systems to provide warnings about climate variability and change. The policy also aims to promote environmentally sound agricultural practices, which are discussed under Sub-section 5.1.3 and includes policy statements that could be beneficial for promoting mitigation and adaptation options. Some of these statements are: (i) ensuring coordination (with relevant ministries) of sustainable environmental early warning and monitoring systems, (ii) improving (in collaboration with other stakeholders) of adaptation measures to climate change effects and dealing with risks involved, (iii) scaling-up activities that enhance carbon storage capacity through conservation agriculture and agro-forestry, and (iv) raising awareness about the potential of agriculture as a carbon sink. Moreover, due to outbreaks of crop pests and diseases associated with climate change (VPO 2012), the policy aims at combating pests and diseases to enhance the production of quality agricultural products (MAFC 2012a). However, there is little discussion within the research and development framework to further develop early maturing and drought tolerant crops that may be more resilient to both observed and projected changes in climate.

6.3.3 Analysis with regard to climate services

Climate services have significant potential to inform agricultural practices and could play an important role in managing increased threats to agricultural production under conditions of climate change; however, climate services are not specifically mentioned in the Draft

Agricultural Policy. The policy does make several references to the need for strengthening EWS, both for hydro-meteorological conditions, as well as pests and crop diseases. Efforts should be made to explore how climate services can collaborate with the MAFC to develop multi-risk early warning products to address the range of risks faced by farmers (e.g., drought, disease outbreaks, infestations). Importantly, section 5.6 of the policy deals with Information Communication Technology (ICT) in the agriculture sector and includes the objective of developing a national ICT system to support agriculture. The policy states that this objective is to be undertaken by a range of actors in collaboration with the Ministry of Science and Technology to enable increased efficiency in information sharing in the agricultural sector, in both rural and urban areas. It will be essential for the GFCS-APA to assess progress to date toward fulfilling this objective and to build upon and synergize with existing efforts to strengthen ICT capacities in Tanzania to improve delivery of climate information and services.

6.4 The national livestock policy of 2006

6.4.1 Summary of the policy document

This policy is a revision of the National Agricultural and Livestock Policy of 1997 (MLD 2006). The revision was conducted to address specific key issues with relevance to the sub-sector. Of great interest to this synthesis is the inclusion of: (i) indigenous technical knowledge, (ii) biotechnology and bio safety, (iii) emerging diseases, and (iv) livestock related disasters. Additionally, the policy aims to commercialize and modernize the livestock industry and to stimulate its development, while conserving the environment (*Ibid*). The objective is to be achieved through policy statements, which call for: (i) strengthening of technical support on environmental services, (ii) promoting proper land-use planning for livestock production, and (iii) strengthening inter-sectorial coordination on environmental issues. These statements are essential in implementing strategic interventions for the livestock sub-sector set out by the NCCS (VPO 2012).

6.4.2 Analysis with regard to climate change

The document does not address climate change specifically. The policy is, therefore, inconsistent with NCCS, which provides the mandate for all climate-sensitive sectors to integrate climate change considerations within plans and policies. The policy should be reviewed with regard to providing directives on how to manage risks brought about or exacerbated by climate change, especially those associated with prolonged and recurring drought in semi-arid areas such as those found in northern parts of Tanzania (VPO 2012) that are known to have severe and widespread impacts on the livestock sector. For example, policy guidance on how to manage risks associated with reduced agricultural and industrial production of animal feeds as a result of climatic changes is needed.

6.4.3 Analysis with regard to climate services

While the Livestock Policy does not address the need for climate services directly, it does make a commitment to strengthening the Livestock Early Warning System (LEWS) in order to improve disaster management and mitigate impacts of pasture shortages. Climate services are crucial for the livestock sector for provision of early warning systems for weather conditions, such as droughts and floods, which have direct impacts on water and pasture resources.

Additionally, climate services can also provide key information about weather and climate conditions that may enhance early warnings in advance of disease outbreaks among livestock populations. Despite the commitment to strengthen the LEWS, there is no specification about how this will be achieved, what resources and actions will be need to be undertaken, or who is responsible for carrying out these activities. Thus, while there is a clear entry point for the GFCS-APA to support the development of the LEWS in Tanzania, it is unclear based on this policy document how to approach this. It will be important for the programme to liaise with contacts in the MLFD to determine how to best to support these efforts.

6.5 The national food and nutrition policy of 1992

6.5.1 Summary of the policy document

The National Food and Nutrition Policy (FNP) seeks to integrate food and nutrition activities across sectors and to create an enabling policy environment for each sector to play its role in reducing food insecurity and malnutrition, enhancing availability of food to meet nutritional requirements, and incorporating food and nutrition issues within development planning. The FNP allocates specific roles and responsibilities to respective ministries, agencies, and departments to implement the policy. Chapter two deals extensively with food security and outlines strategies to ensure national food security through: (i) food crop production, (ii) food harvesting and preservation, (iii) food processing and preparation, and (iv) food availability, distribution and consumption

6.5.2 Analysis with regard to climate change

The FNP provides statements on how to attain national food security, which could support implementation of some of the strategic interventions in the NCCS. Furthermore, there are other policy statements that are likely to be important in supporting adaptation options relating to food security. These are: (i) statements in Sub-sections 44 and 47 which aim at promoting and impacting better crop harvesting, preservation, and processing knowledge to reduce post harvest losses, and (ii) statements in Sub-sections 49 and 51 which aim at enhancing food availability, distribution and consumption in various places in the country, with special attention focused on children, pregnant and lactating women and the elderly.

However, the policy lacks attention to risks and vulnerabilities that are likely to be exacerbated by changing weather patterns and climate trends. A review of the policy would help to integrate risks and vulnerabilities associated with climate change within the current policy objectives, particularly those addressed in chapter two¹⁴. While this chapter of the policy acknowledges that droughts, floods, and other natural disasters contribute to inadequate levels of crop production, it would be beneficial for the policy to acknowledge climate change as one of the primary factors that could threaten food security, and to examine options for mitigating impacts of climate

14 Chapter two of the National Food and Nutrition Policy of 1992 deals specifically with the food crop production, harvesting, and post-harvest handling, including distribution and availability.

change.¹⁵ In addition, it would be useful to have a sub-section that provides directives and statements on how to manage risks and vulnerabilities brought about by climate change, as well as conflicts or risks brought up by other policy objectives. For example, this is evident in the livestock sector, where land use policies, agricultural investments, water management, and irrigation policies and decisions may affect the scope of adaptation options among livestock keepers.

6.5.3 Analysis with regard to climate services

Climate services have the potential to enhance food crop production through EWS for extreme events and provision of weather information relevant for food crop production. To date, the FNP does not address this potential. The policy acknowledges that food insecurity is an underlying cause of food and nutrition problems in Tanzania, which has implications across a variety of sectors and ministries, including those concerned with health, social welfare, agriculture, and livestock. There is also discussion of the need for increasing crop production, availability, and consumption. However, there is no mention of the role that climate-related data, information, or services might be able to play in supporting this goal. For example measures (ii) and (iii) address food crop production (as listed on p. 16 of the policy, under Section 41 addressing food crop production) and discuss the need to ensure that adequate and appropriate implements and inputs are available and distributed, along with appropriate procedures to enable access to these. Such activities could be usefully informed by seasonal climate forecasts and associated advisories, as well as short-term forecasts and long-term climate trends and projections. The FNP also acknowledges the disparities in levels of malnutrition among vulnerable groups, especially women and children. Thus, a key entry point for climate services would be to understand specific climate service needs for these groups such that they may better address issues of food security and malnutrition. The policy notes the direct linkages between food security, malnutrition, and health issues. This highlights the potential for synergies and cross-sectorial planning in response to available climate information among all three target themes/sectors in the GFCS-APA in Tanzania.

¹⁵ In sub-section 40 of the policy, drought, flood, and other climate hazards have been mentioned as reasons for inadequate food crop production in the country (MoH, 1992). However, there are no directives or statements regarding how best to manage such hazards. In addition, due to climate change, the intensity and frequency of such hazards are expected to increase. Hence, a policy revision should be considered in order to integrate such factors.

7 Policy documents for disaster management and risk reduction

7.1 Overview of disaster risk reduction policy environment in Tanzania

DM/DRR will be a key area of focus for climate adaptation efforts in Tanzania, where 70% of disasters are caused by hydro-meteorological hazards (URT 2013). Current DM/DRR activities in Tanzania are guided primarily by two pieces of legislation. These are the National Disaster Relief Coordination Act (NDRCA) of 1990 and the National Disaster Management Plan (DMP) of 2004. As mandated through this policy and piece of legislation, DM/DRR activities are overseen by the Disaster Management Department (PMO-DMD), which is situated under the Prime Minister's Office (PMO). Disaster response and relief efforts are coordinated by the Tanzania Disaster Relief Committee (TANDREC)¹⁶. The NDRCA covers the creation, maintenance, and operation of institutional structures and systems for coordination of disaster response and relief in Tanzania. The passage of the DMP of 2004 promoted a shift to more comprehensive approach that addresses all phases of the disaster management cycle, including disaster prevention and mitigation, preparedness, response, recovery, and post-disaster review. Additionally, the policy provides the overarching institutional arrangements and coordination at national and sub-national levels. In 2011, a new DMP was drafted in recognition of several challenges within the DMP of 2004, including: the lack of capacity with regard to changes in the frequency and magnitude of existing and emerging disasters (including those associated with climate change), a lack of multi-hazard and community-based approaches, and a need to align national policy with international disaster frameworks and strategies. Additionally, it was recognized that the DMP of 2004 did not adequately incorporate crosscutting issues, such as climate change and gender issues. While the draft policy was prepared in 2011, there has been significant delay in passing the policy in Tanzanian Parliament, meaning it has not yet been enacted. In March 2015, the policy continued to be discussed in Parliament, but there are

¹⁶ TANDREC is an inter-ministerial committee chaired by the Principal Secretary in the PMO, along with eight Ministers in relevant sectors as determined by the Prime Minister. In August 2014, TANDREC expanded its mandate to serve as the Steering Committee for Climate Services in Tanzania. Additionally, during national consultations TANDREC was designated as the primary institutional platform to manage the user interface dimensions of development and provision of climate services.

ongoing debates about the constitutionality of the policy (The Citizen, 21st March 2015). This analysis will include aspects of both the DMP of 2004 and the Draft DMP of 2011, recognizing that the DMP of 2004 will remain the driving policy overseeing DRR in Tanzania unless the draft DMP is passed.

Strategic Theme/Sector	Relevant Strategic Interventions
Water Resources	Protect water catchments; rain water harvesting; enhance water availability; manage water resources to improve sanitation and hygiene; conduct vulnerability assessments.
Coastal and Marine Environment	Coastal erosion control; enhance water availability; support alternative livelihoods for coastal communities.
Forestry	Forest fire control; support alternative livelihood alternatives for forest-dependent communities
Wildlife	Management of human-wildlife conflicts
Agriculture and Food Security	Assess crop vulnerability and suitability for different regions; develop appropriate irrigation systems; promote drought resistant and pest/disease resistant crops; develop crop insurance; strengthen weather forecast information for farmers; address soil and land degradation; strengthen pest surveillance and early warning
Human Health	Increase availability of trained staff for climate-related diseases; enhance information sharing systems and cooperation.
Livestock	Develop livestock insurance; strengthen weather information for pastoralists; promote livelihood diversification among livestock keepers.
Fisheries	Promote alternative livelihoods for fisheries-dependent communities.
Infrastructure	Enhance building codes and standards for CC; promote integrated planning, construction, and rehabilitation of infrastructure; develop insurance for infrastructure
Human Settlements	Enhance building codes and standards for CC; improve settlements in climate-risk prone areas; relocate settlements from high-risk areas; develop insurance for human settlements.
Land Use	Review and enforce land use plans
Research and development	Develop drought-tolerant, pest-resistant, early maturing crop varieties and livestock
Early Warning Systems	Enhance prediction of extreme weather events/impacts; enhance capacity to disseminate early warning; enhance cooperation among stakeholders for timely dissemination of warnings; review early warning systems for effective functioning
Disaster and Risk Management	Enhance climate risk and vulnerability assessments; strengthen disaster and risk management institutions; enhance preparedness at all levels; promote technologies for management of climate-related risks and disasters; establish community-based early warning and disaster management systems; enforce land use plans

TABLE 4. Relevant strategic adaptation and crosscutting interventions (by strategic theme/sector) for DM/DRR contained in the NCCS.

7.2 National disaster relief coordination act (NDRCA) of 1990

7.2.1 Summary of the policy document

The NDRCA is the main legal instrument dealing with the creation, maintenance, and operation of systems for coordination of disaster response in Tanzania and details the institutional structure of disaster response mechanisms in Tanzania. This included the creation of

TANDREC and the Disaster Management Department (DMD) under the Prime Minister's Office. The DMD reports to TANDREC and is responsible for implementing the NDRCA. The act also details procedures for funding arrangements, provision and transfer of information, disaster declarations, and disaster operations.

7.2.2 Analysis with regard to climate change

The NDRCA reflects an outdated emphasis on disaster relief and aid, which does not fully incorporate the need for other elements of disaster management and risk reduction more broadly. This is of concern under conditions of climate change because of impacts on the frequency and magnitude of hydro-meteorological hazards, both of which are expected to increase under conditions of climate change. Because the DMD and other agencies are already stretched thin, an increase in hydro-meteorological hazards could overwhelm capacities if proactive measures are not taken to reduce disaster risks. Therefore, there is a need for legislation that deals with disaster management and risk reduction in a more comprehensive way and takes into account shifting hazards and vulnerabilities, including those brought about by climate change.

7.2.3 Analysis with regard to climate services

The NDRCA outlines specific requirements with regard to provision of information, stipulating that any department, organization, department, or individual may be required to provide information that may aid in disaster prevention and relief operations. A deficiency of the act is that it does not lay out the specific institutional frameworks and mandates for proactive delivery of information that is relevant to disaster management and risk reduction, including EWS. Furthermore, there is not any discussion of early warning elements and the relative responsibilities of various governmental institutions in providing information relative to disaster reduction, preparedness, response, and recovery. While the NDRCA of 1990 deals with requirements for providing information relevant to disasters, it does not provide direct requirements or mandates that illustrate the pathways for communication systems to function in a well-developed manner.

7.3 National disaster management policy (DMP) of 2004

7.3.1 Summary of the policy document

The DMP of 2004 is the overarching policy for DM/DRR in Tanzania. Indeed, the policy fosters a more proactive approach to DM/DRR than the NDRCA by addressing the full disaster management cycle. Additionally, the policy acknowledges that there are crosscutting themes that run across all phases of the disaster management cycle. One key area that is noted in the 2004 DMP is that previous legislation, such as the NDRCA of 1990, had not addressed challenges related to insufficient data and poor information flow and management, which can result in slow or inadequate disaster mitigation, preparedness, and response.

7.3.2 Analysis with regard to climate change

The DMP of 2004 does not incorporate climate change considerations or acknowledge linkages between DM/DRR and climate adaptation explicitly. However, the policy indirectly addresses issues that are pertinent to climate adaptation, including: 1) providing directives for reducing or eliminating long-term risks to people and property from hazards and their effects, 2) building the emergency management capacities to effectively prepare for, mitigate against, respond to,

and recover from hazards through increased planning, training, and research, and 3) rebuilding communities to improve living standards and to protect against future hazards. Additionally, the need to include cross-cutting issues and themes within DM/DRR is acknowledged, but there is lack of specificity with regard to which issues would be of primary importance to promoting effective DM/DRR policies, plans, and strategies.

7.3.3 Analysis with regard to climate services

Particularly relevant to GFCS implementation in Tanzania is the theme focusing on strengthening EWS. This includes directives for agencies tasked with providing early warning to invest appropriately to enable effective warnings. Additionally, the policy highlights the need to include local or indigenous early warnings to improve access and use of early warning information that is relevant to local contexts. Additionally, the policy explicitly lays out the role of various stakeholders with relation to early warning. The policy states that TMA, along with other institutions such as the Famine Early Warning System Network (FEWS NET) and the MAFC, are mandated to provide early warning information, but also notes that there are challenges to doing so because of lack of equipment, personnel, and funds. TMA and the MAFC are named as the two agencies responsible for issuing early warnings. TMA's role is detailed as providing final early warning systems and monitoring hazardous weather. TMA's activities are specified to include: forecasting weather, monitoring, analyzing, interpreting and processing all weather related data. While the policy develops institutional frameworks and mandates with regard to providing weather and climate information for DM/DRR activities, these are not detailed. It primarily mentions the need to produce information and does not fully address the need to move from producing information to providing usable climate services. Furthermore, the early warning component of the policy focuses exclusively on short-term hazards, such as extreme weather events and seasonal anomalies; it does not address the need to incorporate climate information to inform risk reduction at longer timescales. For example, this could include integration of long-term climate trends and projections in disaster mitigation, as well as the recovery and reconstruction phases of the disaster management cycle. The incorporation of long-term historical trends and consideration of future climate scenarios and model projections under conditions of climate change will be essential to supporting effective DM/DRR policies in the future.

7.4 Draft national disaster management policy (Draft DMP) of 2011

7.4.1 Summary of the policy document

The review of the DMP of 2004 was conducted in 2010 with the recognition that there were several shortcomings in the current policy. Such challenges include: deficiencies in the provision of reliable disaster information; the lack of coordination with other international frameworks; low integration of community-based disaster management and risk reduction approaches; failure to sufficiently address cross-cutting issues, like climate change adaptation and gender issues; and a need to develop pathways for effective resource mobilization to address new and emerging risks. The draft policy seeks to embrace a more integrated approach that is aligned with other relevant and supporting legislation in other sectors including the Agricultural and Livestock Policy of 1997 (currently under review), the Food Security Act of 1991, the National Environmental Policy of 1997 (currently under review), the National Forestry Policy of 1998,

the National Health Policy of 2003, the National HIV/AIDS Policy of 2001, the National Water Policy of 2002, the National Energy Policy of 2003, the National Mineral Policy of 1997, and the Transportation Policy of 2003.

7.4.2 Analysis with regard to climate change

A specific objective of the Draft DMP is to include crosscutting issues, including climate change and gender. With regard to hazards identification and risk assessment, this involves analysis of the frequency and intensity of hazards, including hydro-meteorological hazards, for different areas using historical data or scientific analysis. In general, the Draft DMP notes that there is a lack of systematic hazard and risk assessment in Tanzania, including analysis of risks associated with climate variability and change. This is often because of gaps in historical weather and climate data records. Importantly, the policy recognizes the need to put hazards and disaster risk within the context of climate change and to incorporate climate considerations, both short- and long-term, within the risk assessment processes. It is also noted that climate change is a direct threat to DM activities, because it changes the landscape for hazards and increases uncertainty within disaster mitigation, planning, and preparedness. The policy recognizes the enhanced need for effective EWS that may help to mitigate risks associated with increasing extreme events and erratic weather patterns expected under climate change.

The policy notes nine drivers of disaster management that create the context for DM/DRR practice, one of which is climate change and environmental conservation. The policy makes explicit linkages between environmental destruction (e.g., deforestation) and the occurrence of disaster events and changes in climate, including extreme events such as drought and flood. The specific objectives with relation to climate change include enhancing community awareness and behavioral change to promote increased environmental conservation and supporting adaptation for improved livelihoods opportunities. This is very general, however, and there is little detail about the strategies that should be employed to facilitate local adaptation.

7.4.3 Analysis with regard to climate services

While the Draft DMP discusses the need for localized adaptation measures, there is no reference to the kinds of information that communities will need to inform their adaptation decisions or how adaptation actions should be prioritized. However, this is an area where climate services could play a key role in informing adaptation decision-making. A new element of the Draft DMP is that TMA is specifically included as a listed member of the proposed National Disaster Management Committee (NADMAC), which would replace TANDREC. The policy stipulates that NADMAC should meet on a regular basis (at minimum twice a year), and also in advance of periods of enhanced risks that may occur on a seasonal basis, when early warning thresholds indicate the need, and when a disaster strikes. The more frequent and regular meeting of NADMAC is an important development in ensuring that climate information can be systematically included within all relevant DM/DRR activities in advance, not only during times of emergency. The policy notes several strengths and weaknesses of current DM/DRR approaches in Tanzania that may be relevant to the development and provision of climate services. Strengths include the recognition of functioning EWS, particularly within the food security sector. Weaknesses that are noted include insufficient information dissemination, including a lack of clear policies to coordinate information dissemination and communication. Additionally, challenges are related to insufficient coordination and linkages between main actors and institutions. The policy covers ten issues, several of which can be directly informed

through improved climate services, including: 1) hazards identification and risk assessment, 2) disaster knowledge management and information sharing, and 3) early warning systems. It is important to recognize, however, that climate services have the potential to indirectly support all aspects of the disaster management cycle. While knowledge management and information sharing are recognized as essential to supporting improved DM/DRR, the policy does not highlight the need for and role of improved climate data, climate forecasting and prediction, and delivery of climate services more broadly. It is also recognized that many communities in Tanzania often do not receive early warning information and that further efforts need to be undertaken to disseminate information. While this problem is not limited to climate information alone, the development of effective climate services would be highly pertinent to addressing this shortcoming. The GFCS implementation plan, including elements of the User Interface Platform and the climate information system, would contribute significantly in this area.

The issue of early warning has received attention as a stand-alone area of concern. The objectives for early warning components under the policy include ensuring that this information is acted upon and that communication systems and protocols are well developed and known. The policy notes that there are already effective warning systems coming from the TMA and the MAFC. However, interviews with other national and local scale stakeholders in Tanzania indicate that there are still weaknesses in the communication systems (e.g., information arrives late, information may reach some individuals but not others) that may limit the extent to which this information can be acted upon. It is also noted that community-based EWS, based on indigenous knowledge, should be reviewed and developed to provide predictions and to help with in interpretation of warning messages that are relevant to communities. This is an important element for the User Interface Platform of the GFCS implementation in Tanzania, which will ideally involve both bottom-up and top-down flows of information, as well as interaction between various producers and users of scientific and other forms of knowledge. This is a potential synergy with efforts to include weather and climate related indigenous knowledge within production and provision of climate services.

8 Policy documents for the health sector

8.1 Overview of the health sector policy environment in Tanzania

The health sector is a key sector for the Tanzanian government and is identified in the Vision 2025 as a priority area. There have been major developments in health services in Tanzania in recent decades; however, according to a recent review of the health sector, significant challenges remain, including: health care financing, maternal, newborn, and child health, prevention and control of communicable diseases, emergency preparedness and response, and social welfare and protection (URT – Health Sector Strategic Plan). In Tanzania, there are two primary policy documents that drive Health sector activities. These are the National Health Policy (NHP) of 2003 and the Health Sector Strategic Plan III (HSSP III). The NHP provides the overarching guidance toward the improvement and sustainability of the health Tanzanian citizens through reductions in disability, morbidity, and mortality, improvements in nutritional status, and increased life expectancy. The primary goal of the HSSP III is to contribute to Tanzania's efforts to reduce child and maternal mortality, to control important infectious diseases, and to improve the environment and access to clean water. The Tanzania Public Health Act of 2009 is also an important enforcement mechanism, which defines roles and responsibilities of the Ministry of Health (MoH) and other relevant authorities for dealing with the prevention and management of communicable and non-communicable diseases, hygiene in both public and private spaces, waste management, and reporting requirements as related to these issues. It notes the role of the Minister overseeing health issues in ensuring that issues related to climate change are addressed through development of appropriate programmes and facilities, but does not elaborate how this should be achieved.

Strategic Theme/Sector	Relevant Strategic Interventions
Water Resources	Facilitate access to water resources; enhance management of water resources to improve sanitation and hygiene; promote water treatment and storage; conduct vulnerability assessment in water resources.
Marine and Coastal Environment	Support alternative livelihood strategies for coastal communities.
Forestry	Support alternative livelihood strategies for forest-dependent communities.
Agriculture and Food Security	Promoting early maturing and drought tolerant crops
Human Health	Strengthen control systems related to health risks and diseases; Increase availability of trained staff for climate-related diseases; enhance information sharing systems and cooperation; enhance information sharing systems and cooperation to address climate-related health issues; enhance health insurance systems.
Human Settlements	Improve settlements of communities in climate change risk prone areas; relocation of settlements from high risk areas
Research and development	Promote research on climate change related diseases, vectors and other health risks; develop new and use available models for predicting impacts of climate change.
Early Warning Systems	Enhance prediction of extreme weather events/impacts.
Disaster and Risk Management	Enhance climate risk and vulnerability assessments; strengthen disaster and risk management institutions; enhance preparedness at all levels.

TABLE 5. Relevant strategic adaptation and crosscutting interventions (by strategic theme/sector) for the health sectors contained in the NCCS

8.2 National health policy of 2003

8.2.1 Summary of the policy document

The NHP of 2003 is a revision of the Health Policy of 1990. The policy provides details for institutional arrangements for health services. Within this plan there are 3 administrative levels through which the provision of health services is delegated: national, regional, and district. The main emphasis of the policy is to specify which duties are to be undertaken at each of these administrative levels. At the national level, primary responsibilities are formulating policy and legislation, resource mobilization, mobilizing public health interventions, management of national hospitals, training, monitoring and evaluation, and research. At the regional level primary responsibilities include supervising health service provision, mobilizing resources, providing technical support, and interpreting policies for implementation at district and sub-district levels. The district level is the level at which primary health services are provided and other health interventions are implemented and where implementation and reporting are undertaken. The district level is also responsible for communicating directly with communities.

8.2.2 Analysis with regard to climate change

Despite the potential for climate change to impact several of the key objectives of the NHP, there is currently no explicit mention of the need to consider and incorporate climate change dimensions within health sector activities. The NHP of 2003 lays out 7 broad health service goals, all of which may be impacted by climate change in some way; however, 3 are directly climate sensitive. These include: 1) access to clean and safe water, 2) food self-sufficiency and

food security, and 3) gender equality and empowerment in all health parameters. Despite the fact that these areas of health service provision will be affected by climate change, this is not directly acknowledged as a potential added risk or threat to achieving health sector goals. Additionally, the policy lays out specific objectives with relation to national health services provision in Tanzania. Several of these are already sensitive to weather and climate variables and may be further affected by long-term changes in climate. The first involves reducing the burden of disease through the promotion of environmental health and sanitation, adequate nutrition, and control of communicable diseases, which is likely to become more challenging under more variable and erratic weather patterns and long-term shifts in climate. The second is ensuring the availability of drugs and medical supplies and infrastructures. With changes in distribution of diseases that are expected with rising temperatures, as well as the challenges posed by expected increases in extreme weather events, it will become more challenging, but increasingly crucial, to plan and coordinate provision of medical supplies. The third climate sensitive objective involves improving capabilities to assess and analyze problems and design appropriate action through community involvement at all institutional levels. Awareness of climate change and the potential impacts will be crucial to assessing and understanding challenges facing the health sector in the future and will be a key component of designing strategies to meet health sector related goals. Lastly, the fourth objective that has linkages with climate change adaptation is the need for awareness of the value of multi-sectorial approaches in addressing health issues. Climate change adaptation is a crosscutting issue and responses will also be multi-sectorial in nature. There are thus opportunities for synergies and integrated strategies that jointly consider health and climate change adaptation action.

8.2.3 Analysis with regard to climate services

The development and incorporation of climate services that are able to inform health sector activities has the potential to address several of the climate change adaptation challenges described above. There are several entry points within the NHP of 2003 for inclusion of climate services. For example, the policy notes that changes in urban/rural dynamics and environmental change have led to new, emerging (and re-emerging) patterns of disease, which are under the scope of district-level authority. This includes water borne epidemics (e.g., cholera) that are affected by extreme precipitation, and others that are responsive to long-term changes in climate (e.g., malaria), and changing patterns of development that may exacerbate weather- and climate-related conditions (e.g., dengue fever). However, the policy does not explicitly mention actions to be taken to address changes in the distribution of existing diseases or the emergence of new climate-sensitive diseases. Part of dealing with spread of communicable diseases includes early detection of cases, implementing appropriate environmental measures, and promoting behavioral change among the public. There are significant opportunities for climate information to support efforts to mitigate and respond to outbreaks of these diseases, but such opportunities are not discussed within the NHP of 2003. Another priority area for the health policy that is sensitive to weather and climate parameters is food security and nutrition. Potential interventions detailed in the policy include strengthening nutrition practices for vulnerable groups, particularly during disaster situations, and for promoting food safety during production, handling, distribution, storage, and preparation of food. Prediction and early detection of weather and climate events, such as flood and drought, may help to target interventions to ensure adequate food supply among vulnerable groups. Importantly, the policy does note the

need to develop and maintain an integrated disease surveillance system for the collection and reporting on communicable disease occurrences at all levels.

8.3 Health sector strategic plan III for 2009 – 2015

8.3.1 Summary of the policy document

The Third Health Sector Strategic Plan (HSSP III) reflects the strategic intentions of the health sector for the period 2009 – 2015. HSSP III consists of eleven strategies that focus on specific topics in the health service delivery related to diseases and management. The crosscutting issues elaborate on the approach towards quality, equity, gender and governance. The document explains which types of services are provided in the health sector, and also explains the roles and responsibilities of each level in the health system. This document is a guide for strategic planning at sub-national levels and for annual planning and therefore does not go into detail of operational activities, which are provided in specific plans of institutions and programmes. The strategic plan provides a description of the roles and responsibilities of the Health Emergency and Disaster Preparedness and Response Unit, which is responsible for responding to all disasters and collaborates closely with the DMD-PMO. Since the inception of the unit, it has developed an emergency operational plan and guidelines. Response teams are established at the national, regional and district level, which have come into action on several occasions.

8.3.2 Analysis with regard to climate change

There are a total of eleven strategies covered by the HSSP III. While climate change is not mentioned specifically, there are several strategies in particular that are climate sensitive: 1) the disease control program (which deals specifically with malaria and water-borne diseases), 2) emergency preparedness and response, 3) provision of medicine and medical supplies, 4) maternal, newborn, and child health, and 5) health care financing (which can depend upon weather and climate factors to ensure that there is sufficient funding in case of epidemics, etc.). Other crosscutting issues that are climate sensitive include: gender issues (because there is likely to be gendered dimensions to climate impacts on health) and equity (because underserved populations and underserved groups in terms of health services are also more likely to be vulnerable to impacts of climate change).

8.3.3 Analysis with regard to climate services

The HSSP III does not discuss the role of climate services in health sector activities. Services that are outlined by the strategy that could benefit most from the effective provision of climate services include health promotion (activities to enhance behavior change and to ensure that life styles of individuals are conducive to personal development and environmental safety) and preventative health services (to prevent diseases by promoting optimal nutrition and control of infectious diseases transmission, curtail epidemics and improvement of working environment to maintain highest standards of occupational health). The plan states that efforts will be undertaken to develop effective surveillance and information systems for emergency preparedness and response (e.g., risk assessment and EWS) will be created in coordination with other information systems in the sector (e.g., epidemiology) and in coordination with other sectors (e.g., meteorology). National and international networks will be developed, which monitor potential threat, provide timely warnings and which evaluate disasters and responses, in order to learn lessons for the future. This would be a natural entry point for incorporation of climate services. The plan notes the need to better understand the increasing disease burden, as

well as emerging and re-emerging diseases. For diseases that are climate sensitive, the provision of usable climate services could play a significant role in understanding the dynamics of these diseases and how they are impacted by both short-term climate variability and extreme weather events, as well as long-term climate change. Under-five mortality is directly dependent on the nutritional status of children, which can be climate sensitive, and can be improved through things like vitamin supplementation and improved malaria management. However, the policy does not make mention of developing methods for targeted monitoring efforts, early warning, and strategic interventions based on climate information. Furthermore, the information management system for emergency preparedness and response in the MoH is not adequately functional and communication is not well coordinated. Additionally, capacity to forecast and quantify needs in public health facilities at all levels is low. There is mention of the need for EWS, including the role of TMA in efforts to develop these, but there is little detail with regard to specific actions and responsibilities.

9 Addressing user interface platforms: potential policy and institutional linkages

There are currently no formal institutional mechanisms that enable users (at all scales) and providers of climate information and services to interact systematically. This limits the extent to which users are able to regularly provide feedback about available climate information and services and also constrains user input toward the types of climate information or services that may be developed in the future. Thus, there is a need to examine options for improving TMA's linkages with other national institutions, building on the existing institutional landscape and policy environment, in order to create increased opportunities for dialogue and feedback between TMA, national level MDAs, NGOs, and stakeholders at sub-national scales. The institutionalization of the Participatory Integrated Climate Services for Agriculture (PICSA) trainings implemented by the CGIAR Research Program on Change Change and Food Security (CCAFS) and World Food Programme (WFP) as part of the GFCS-APA may offer a potential avenue for increasing systematic feedback between local users and TMA. Such efforts should be aligned with existing policies. For example, the Agriculture Climate Resilience Plan for 2014-2019 specifically prioritizes the need to build stakeholder engagement and communication networks, as well as capacities to disseminate targeted climate information (Key Investment 4.5 and 4.7). At the same time, it will also be important that any efforts to engage local users must be accompanied by more formalized institutional capacities and structures within TMA to receive, document, and respond to feedback and requests (e.g., standard operating procedures). This will also require additional human and financial resources that are dedicated specifically to managing user/producer interfaces in order to ensure continuity and sustainability.

At the national level, there are several institutional mechanisms that have been adopted to support interaction between national level users and producers of climate information. For example, the Tanzania Disaster Management Committee (TANDREC) expanded its mandate in August 2014 to act as the Steering Committee for the implementation of the GFCS-APA. TANDREC is an inter-ministerial committee that reports to the Prime Minister and is composed of the Principal Secretary in the Prime Minister's Office and eight other members, who are Ministers in relevant sectors and are appointed by the Prime Minister (URT, 1990). Given the multi-sectorial nature of the committee, placing oversight of the national climate services framework under TANDREC presents a significant opportunity to enable cross-sectorial dialogue and interaction between TMA and other national level institutions.

At the current time, TANDREC is only mandated to meet on an "as-needed" basis, generally in response to disasters or emergencies. Several national level respondents in relevant MDAs have reported that relying on TANDREC as the sole steering mechanism for climate services

at that national level may pose issues to long-term sustainability of climate services development. For example, while TMA has the authority to convene TANDREC, doing so generally requires a specific and high priority reason for calling the meeting. The committee is composed of high-level ministry staff (i.e. Permanent Secretaries), which can make it prohibitively difficult to convene meetings on a regular or timely basis. Moreover, because of TANDREC's role as a disaster or emergency response body, there is the risk that oversight of the practical and implementation dimensions climate services development may often be sidelined if emergencies arise.

For this reason, several national level stakeholders who were interviewed during the course of the programme have suggested that in addition to the Steering Committee, it would be highly useful to have a technical working group or task force composed of staff from relevant MDAs, who serve in operational roles, that would be able to meet on a regular and more frequent basis to formulate the operational dimensions of climate services implementation. This working group or task force could be mandated with developing implementation plans and providing targeted inputs and reports that could be presented to the full TANDREC membership when there is a need for higher-level substantive decisions, approvals, and action in the policy sphere. For example, this will be very similar to the process that the Climate Services Road Map is likely to undergo, with development occurring at the PDT level and approval and adoption undertaken by TANDREC. A potential entry point for the formation of such a technical working group would be to build on the structures proposed in the NEP, which mandates the creation of a Sector Environmental Section in all MDAs (led by a Sector Environmental Coordinator) to serve as a focal point for environmental issues including climate change. The climate services technical working group could engage the Sector Environmental Coordinators from respective MDAs, as well as other relevant stakeholders from non-governmental agencies and organizations as appropriate, to meet on a regular basis to inform and oversee the practical and operational dimensions of climate services development on a more regular basis, while reporting to TANDREC for higher level decision-making and approval as needed. It would be important to also consider including several representatives from sub-national scales within this working group or task force to ensure the legitimacy of climate services development. At the time of the publication of this report, not all MDAs have an operational Sector Environmental Section. Therefore, it will be important to liaise with MDAs as they work to comply with the NEP in order to identify the most appropriate focal point to participate in the working group or task force. Furthermore, it will be essential for any working group or task force that is developed to work closely with the National Climate Change Steering Committee, which is expected to be further developed to comply with NCCS in the coming years. In essence, this climate services working group or task force could replace the project-based PDT structure as a more sustainable operational and implementing body that is well integrated within existing policy and institutional structures, which could then report to the higher-level policy-focused TANDREC structure. This may help to improve linkages between the policy and operational spheres to ensure that there is sufficient buy-in and institutionalization of efficient mechanisms to support climate services development in the future that build on existing legislation and institutional structures.

10 Discussion and results

The level of integration of climate change adaptation and climate services within policies in Tanzania varies across sectors and even within sectors. Many of the policy documents reviewed in this report were drafted in the 1990's or early 2000's when climate change was only emerging as a central concern for national governments globally. As such, it is not surprising that there is sparse integration of explicit climate change concerns within many of these documents. Additionally, there may also be significant time lags between the development of various policies, acts, strategies, and programmes, even within themes and sectors. Therefore, some policy documents may better reflect up-to-date approaches to dealing with climate change issues and can serve to influence and shape the broader policy environment, even if other policy documents in a particular sector may not reflect current concerns related to climate change. For example, while the National Environment Policy (NEP) of 1997 has relatively limited integration of climate change considerations and fails to acknowledge climate change as a major environmental issue facing Tanzania, the development of Tanzania's National Climate Change Strategy (NCCS) in 2012 represents an important step forward in identifying and addressing the challenges of climate change. Throughout all policy documents analyzed, there is no explicit mention of 'climate services'; however, many documents discuss the need for enhanced use of weather and climate information, forecasts, and early warning systems, and the need for increased public awareness and education about climate change. This represents a clear entry point for the national climate services platform to build upon. It also highlights that there is a need for increased advocacy and education with regard to the concept of climate services, particularly among national policy makers, who may be unfamiliar with the concept. Therefore, if climate services are to be included within appropriate policy documents, this will be an important step.

This analysis has highlighted that the National Environmental Policy (NEP) of 1997 and the National Environment Management Act (NEMA) of 2007 are the overarching policy documents responsible for creating and maintaining the institutional structures and mandates through which government entities are positioned and mandated to respond to climate change issues. For example, the National Adaptation Programme of Action (NAPA) and National Climate Change Strategy (NCCS) have embraced the NEP and NEMA as the guiding policy and legislative structures for implementation of climate change mitigation and adaptation activities. Indeed, the NEP and NEMA have devised both national and sub-national level institutional structures that are proposed as the conduits for action on climate change. For example, the National Climate Change Steering Committee is designated as the primary coordinating body for climate change mitigation and adaptation activities across government ministries, agencies, and departments. These same structures are proposed within the National Climate Change Communication Strategy as the pathways for communicating knowledge about climate change across national and local levels. Additionally, the NEP has mandated all

ministries to put in place an Environmental Section, which is tasked with identifying, monitoring, and responding to environmental concerns, including climate change. Thus, it will be crucial for the GFCS-APA to effectively engage with and employ these existing structures and entities that have already been put in place by existing policies and legislation as key support mechanisms for facilitating effective development and provision of climate services in Tanzania. However, as noted previously, the NEP is currently under revision and it will be important to gain insight into how the new policy may build upon and/or change existing policy arrangements and institutional structures relating to environment and climate change, so that the programme can build upon updated structures and approaches. The analysis of climate change policy documents showed that although the NAPA and NCCS are important for mainstreaming climate change mitigation and adaptation, these documents are not supported by sufficient implementation and enforcement mechanisms. This is a current challenge to the operational implementation of the NAPA and NCCS.

Furthermore, the analysis shows that currently, policies and legislation often do not address climate risks across timescales in a holistic way, meaning that short- and long-term climate adaptation is often dealt with in separate policy documents. This is reinforced by the fact that these policy documents also create the institutional structures that are responsible for overseeing climate change and related issues, which may tend to divide short- and long-term climate adaptation planning and implementation. For example, because the Vice President's Office is tasked with overseeing climate change specifically, the office deals primarily with long-term issues (e.g., mitigation, adaptation planning). On the other hand, because the Prime Minister's Office and other ministries, departments, and agencies are mandated to oversee DM/DRR, these offices primarily manage risks associated with climate variability on shorter timescales (e.g., disaster preparedness and response, management of reserve food stocks). Thus, the way in which current policies and legislation are structured may create fragmented approaches to climate adaptation across timescales, governmental institutions, and sectors.

Additionally, a range of other sectorial policy documents address climate change mitigation and adaptation, both directly and indirectly. However, sectorial approaches to addressing climate change-related issues vary in the extent to which they are integrated with national efforts to address climate change supervised by the VPO. The sectors of agriculture and food security and DM/DRR exhibit higher levels of integration of consideration of climate variability and change than the health sector. This is particularly true of agriculture, which has developed the Agriculture Climate Resilience Plan in response to the NCCS. However, many policy documents across all three of these sectors have already included provisions for the development of EWS that can inform improved mitigation of, preparedness for, and response to impacts of climate variability and change. This is an area that could be informed by improved delivery of climate services and offers a direct entry point for developing cross-sectorial strategies and systems for climate change adaptation. At the same time, within most of the sectorial policy documents, climate change is only referenced peripherally as an issue of concern, if it is mentioned at all, and specific actions and mandates with regard to addressing climate change are generally lacking. For example, while there is currently acknowledgement of the need for improved EWS, there is no discussion of how impacts of climate change may increase the need for strengthening or adapting these systems to respond to new and changing risks. This presents a clear and existing entry-point for climate services to support improved adaptation measures in Tanzania that would build upon existing policies at the national level.

11 Conclusion and recommendations

This report has analyzed the key policy documents that directly address or otherwise regulate critical aspects of policy that are relevant to climate change, as well as select climate-sensitive sectors/themes, including food security and agriculture, DM/DRR, and health.

Based on analysis of these policy documents, this report has concluded that under the current policy environment:

- There is an absence of a comprehensive national climate change policy and other enforcement mechanisms (i.e., legislation in the form of acts or regulations) that create the legal mandates to enforce and to build on the NAPA, NCCS, and other climate change policy documents;
- There are several existing entry points for inclusion of climate services within the target sectors, as well as other climate sensitive sectors. In particular, goals and objectives related to the creation and/or improvement of EWS are consistent across sectors and represent an existing entry point for enhanced linkages for cross-sectorial climate services development; and
- Short- and long-term approaches to management of climate risks are not well integrated under the current policy architecture in Tanzania. At the same time, it is well recognized that comprehensive and robust adaptation portfolios should concurrently consider climate risks at multiple timescales to ensure successful and sustainable adaptation planning and implementation.

Based on the above, it is recommended that the GFCS-APA should:


- Explore opportunities for dialogue and linkages with the range of existing institutions and entities created under current policies, including: Tanzania Natural Disaster Relief Executive Committee, the National Climate Change Steering Committee, the National Environmental Management Council, the National Environment Advisory Committee, and others, to ensure broad and sustainable institutional buy-in and coordinated support for climate services development across government structures; and
- Make efforts to align the information dissemination strategies to be developed by the climate services programme with other policies that mandate the development of systems and institutional structures for delivering information about climate change. For example, the NEP and the National Climate Change Communication Strategy (2012) have delineated specific institutional structures for overseeing and communicating information about climate change and other environmental issues.

Thus, it will be important to build upon these existing structures, while seeking to further strengthen these pathways for information dissemination by increasing capacities and clearly defining roles and responsibilities within these communication networks.

- Explore opportunities and pathways for increasing awareness of the concept of climate services, particularly among national-level policy makers and civil servants, since it is a new area of concern that has not yet been reflected in policy documents dealing with climate change or other climate-sensitive sectors. This will also be a crucial first-step to familiarizing a wider audience with climate services, so that climate information needs can be clearly identified and expressed to support successful co-production across government institutions and sectors. This will be particularly crucial given that there are several development and sectorial policies that operate on 5-year time horizons and will be revised in the coming 1-2 years (e.g., Five Year Development Plan), presenting a timely opportunity to increase the role of climate services in supporting a wide range of adaptation activities in the future.

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