

# Malawi NAP Stocktaking Report

**Final Report - 2016**



Shravya K Reddy and Kenneth J Gondwe



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## Abbreviations and Acronyms

ASWAp	Agriculture Sector Wide Approach
CA	Conservation Agriculture
CABMACC	Capacity Building and Management of Climate Change
CARLA	Climate Change Adaptation for Rural Livelihoods and Agriculture
CoP	Conference of Parties
CSA	Climate Smart Agriculture
CSOs	Civil Society Organizations
DEC	District Executive Committee
DISCOVER	Developing Innovative Solutions with Communities to Overcome Vulnerability through Enhanced Resilience
DPSIR	Driving forces, Pressures, State, Impacts and Responses
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EAD	Environmental Affairs Department
ECRP	Enhancing Community Resilience Programme
EMA	Environment Management Act
GCM	Global Circulation Model
GEF	Global Environmental Facility
GHG	Greenhouse Gas Emissions
GIZ	German Technical Agency
GoM	Government of Malawi
INDC	Intended National Determined Contributions
IWRM	Integrated Resource Water Management
KPA	Key Performance Indicator
LCBCCAP	Lake Chilwa Basin Climate Change Adaptation Programme
LDC	Least Developed Countries
LEAD SEA	Leadership in Environment and Development in Southern and Eastern Africa
LEAP	Long range Energy Alternative Planning system
LUANAR	Lilongwe University of Agriculture and Natural Resources
MCA	Multi-Criteria Analysis
MEAs	Multilateral Environmental Agreements
MGDS	Malawi Growth and Development Strategy
MNSSD	Malawi National Strategy for Sustainable Development

NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NATCOMMs	National Communications to the UNFCCC
NCCIP	National Climate Change Investment Plan
NCCP	National Climate Change Policy
NCE	National Council for the Environment
NECCCS	National Environment and Climate Change Communication Strategy
NEP	National Environmental Policy
NTCCC	National Technical Committee on Climate Change
PCC	Planning for Climate Change
SADC	Southern Africa Development Community
NSCCC	National Steering Committee on Climate Change
SWOT	Strength Weaknesses Opportunities and Threats
UNECA	United Nations Economic Commission for Africa
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
USCSP	United States Agency for International Development
WSSD	World Summit on Sustainable Development

## CONTRIBUTING AUTHORS

### **International Consultant**

Ms. Shravya Reddy  
Pegasys Global  
4 Spin Street, 4 Church Square  
Cape Town – 8000, South Africa  
Email: shravya@pegasys.co.za

### **National Consultant**

Kenneth J Gondwe  
Private Bag 303  
Chichiri  
Blantyre 3  
Email: gondwekj@gmail.com/ kgondwe@poly.ac.mw

## Acknowledgements

We would like to thank Director of Environmental Affairs Department, Mrs. Tawonga Mbale-Luka, and colleagues in EAD (Shamiso Najira, Evans Njewa, Golivati Gomani and Hannah Kasongo) for hosting us, facilitating stakeholder consultations and for general guidance throughout the NAP Stocktaking Process. We are also grateful to UNDP (especially Sothini Nyirenda and Sarah Mclvor) for logistical arrangements, guidance and helpful comments.

In addition, we would like to acknowledge the valuable contributions made by many other groups and individuals: the NAP Core Team Members, CISOECC Secretariat and its members, participants of the consultative meetings, Dedza and Salima DEC members, CARLA group in Ntakataka (Dedza), COOPI in Salima, Mr. Fred Kossam (NAP National Technical Lead), Dr. D R Kamdonyo (NAP Roadmap Consultant) and Dr. David Mkwambisi (Coordinator of CABMACC Project at LUANAR).

**Shravya K Reddy**  
Consultant

**Kenneth J Gondwe**  
Consultant

# Executive Summary

## **An Overview of the National Adaptation Plan Process**

The National Adaptation Plan (NAP) process is an opportunity for countries to address climate change adaptation in a holistic manner, to enable the setting up or strengthening of an institutional mechanism to integrate climate change adaptation priorities into broader development and economic planning. NAP is intentionally designed to be an iterative process that allows countries to periodically re-asses, revise, update, and iterate implementation of their national climate change adaptation interventions.

The NAP process allows countries to focus on medium to long term priorities, and to take a more coordinated, government-wide, holistic, consolidated approach to climate change preparedness. Most importantly, the NAP process is intended for countries to integrate climate change adaptation into medium to long term development planning, and align adaptation actions with the country's social and economic development goals.

Stocktaking is one of the initial steps of the NAP process. Of the 17 steps as indicated in the NAP Technical guidelines produced by the Least Developed Country Expert Group (LEG), stocktaking is the second step, following the creation of a NAP roadmap. The purpose of the stocktaking step is to examine whether a country has adequate technical and institutional capacity and climate change knowledge base for it to proceed ahead with the remaining 15 steps in the NAP process.

The current report is Malawi's Stocktaking Report. In keeping with the objective of the Stocktaking exercise within the NAP process (and in accordance with NAP Technical Guidelines by the UNFCCC), the report serves as a readiness assessment and a gaps analysis, to answer the questions: "Is Malawi prepared to proceed with the NAP process? What more is needed for Malawi to proceed ahead with the NAP process?"

## **Climate Change and Sustainable Development in Malawi**

In the medium to long term, Malawi faces some very significant climate change risks. The most significant climate risks are changes in rainfall patterns and rising temperatures. All of Malawi is expected to experience between 3-5 degrees C rise by the latter half of the century, but temperatures could rise even higher if the world follows high-emission trajectories. Southern Malawi will likely experience higher temperature rise than the rest of the country.

There is less clarity about the medium to long term impacts of climate change on precipitation. Due to the complexity of weather patterns, the directional change of rainfall is not extremely clear in climate models. Most seem to suggest that Malawi will experience drier conditions over time. Even with total annual rainfall relatively unchanged, more rain will likely fall in fewer, heavy, intense events. This, coupled with higher evaporation rates due to high temperatures, pose a threat of longer and more intense droughts during the dry season.

Along with the changes temperature and rainfall come a host of potential extreme weather events (more intense flooding, harsher droughts, more forest fires), as well as specific impacts that major economic sectors in Malawi will need to adapt to. These climatic events will have major impacts in most of Malawi's social economic sector as was highlighted in the NAPA Report of 2006. The relevant chapter provides a snapshot of potential climate change impacts on the agriculture sector, water, energy, forestry, fisheries, wildlife, human health, gender, and education.

Malawi's efforts towards sustainable development must take these future climate change impacts into account.

### **Climate Change Science and Data Resources**

There is a critical mass of climate change science data and information available in the public domain, with respect to Malawi. While this is by no means abundant, it offers an adequate knowledge base to use as a foundation for further work in the NAP process. Existing climate change literature pertaining to Malawi comes largely from UN agencies, Government of Malawi-commissioned reports, and studies by global academic institutions. As regards modelling data, this too is sourced from foreign scientific bodies. In addition, there is a wealth of research and analysis from civil society and NGOs.

The limited data that is available and often referenced is outdated, and thus newer studies could better inform the NAP process moving forward. Similarly, while there is an adequate amount of literature for each of the sectors to have an initial understanding of future threats from climate change, there is a need for more Malawi-specific studies, and more sector-specific studies. The generation of such climate science in-country will take some time and the NAP process need not be delayed further by waiting for this body of Malawi-specific knowledge to expand (in the interim there is a great deal of sector-specific knowledge about climate change in East Africa that can be extrapolated from). But the NAP process can take into account the need for deepening local capacity to generate climate change related scientific studies, and designate resources accordingly. This signifies the need to provide adequate technical and financial resources to academic, research and government institutions involved in climate change science activities in Malawi.

### **Policy and Planning Entry Points for National Adaptation Plan**

Malawi launched Vision 2020 in year 2000 to provide a long-term policy framework for Malawi's development roadmap to the year 2020. The ambition of Vision 2020 is for Malawi to be "secure, democratically mature, environmentally sustainable and self-reliant with equal opportunities for and active participation by all" and to have "social services, vibrant cultural and religious values and a technologically driven middle-income economy". Vision 2020, despite being developed consultatively, lacked an implementation framework that would have ensured consistency in implementation despite changes in government's political inclination. The final NAP Report must have a clear implementation plan and supporting budget lines to ensure successful implementation.

Malawi Growth and Development Strategies (MGDS) I and II are probably the most comprehensive medium-term development plans for Malawi. The MGDS has been the basis for sectoral planning processes. Ministries and departments report on, and are monitored and evaluated on how they have performed against, key performance indicators. Therefore, Malawi, despite the implementation challenges, has some entry points as far as national planning processes are concerned. Furthermore, the National Climate Change Investment Plan (NCCIP), which is a national climate change investment framework, has four key priority areas to promote climate change management in Malawi, namely, adaptation; mitigation; climate change research and systematic observation, technology development and transfer; and capacity building. The NCCIP provides a platform for coordination of investments in climate change arena. NAP plans would fit in the future versions of NCCIP.

### **National Environmental Action Plan and National Environmental Policy**

The Malawi Government published its National Environmental Action Plan (NEAP) in 1994 as one of the outcomes of the Rio Summit. The NEAP identified 9 factors that exacerbate poverty in Malawi, namely: soil erosion, deforestation, water resources degradation and depletion, threats to fish resources, threats to biodiversity, human habitat degradation, high population growth, air pollution and climate change. Although, the NEAP did not directly address adaptation issues, the key factors identified could closely aligned to the identified NAPA sectoral studies (GoM, 2006). In 1996, National Environmental Policy (NEP) and Environmental Management Act (EMA) were

published. The current version of the Policy was revised in 2004. It provides a framework for aligning sectoral policies to principles of environmental management and sustainable development. It also addresses issues of climate change and social equity.

Malawi does not yet have a National Climate Change Policy. However, work on the policy started in 2012 and was completed in 2015. Currently, the Policy is awaiting Government approval. It has been reported that the draft Policy has clearly addressed the need for long term climate change adaptation planning.

Despite the absence at this time of the specific climate change policy, the Government has published a number of strategies and related documents which have guided the implementation of climate change activities in Malawi. These are Initial and Second National Communications, National Adaptation Programmes of Action (NAPA), State of Environment and Outlook Report, National Environment and Climate Change Communication Strategy and Malawi's Climate Change Learning Strategy amongst others.

#### **Areas of Focus for NAP**

There are several sources of sectors and thematic areas that could form the potential list for NAP. The revised NAPA (2015) had a specific recommendation for the NAP. However, what is emerging as potential list is as follows: agriculture, energy, water, health, forestry, fisheries, wildlife, infrastructure, gender and education.

#### **Stakeholder Mapping**

There are many public and private institutions involved in climate change adaptation activities in Malawi. Coordination of activities is one of the major challenges. The key stakeholders or actors are Government ministries, departments and agencies to provide policy direction; vulnerable communities who bear the negative impacts; development partners who provide financial and technical support; Non-Governmental Organizations (NGOs)/ Civil Society Organization (CSOs) who speak for the voiceless and implement projects; academia/research institutions who generate new local knowledge and develop appropriate adaptation solutions; private sector who provides specific commercial adaptation solutions and media who propagates climate change adaptation messages.

#### **Gaps and Barriers Analysis**

Based on a review of available literature, enriched through in-person stakeholder consultations, and informed by both site visits and stakeholder consultation workshops, several areas have been identified where the NAP process in Malawi should direct its attention. It should be clarified that none of the gaps or needs identified are of a critically intractable nature and should not be reason for the NAP process to pause or deviate from its current path. However, when the NAP process moves forward, subsequent steps in the process should take these findings into account and use them to strengthen the NAP process, with the ultimate goal of creating not only a substantive and extremely beneficial NAP for Malawi but also ensuring its effective implementation.

Gaps and needs have been interrogated in detail in the relevant chapter, but an overview is as follows:

Reliability of available data: the need for more updated climate projections, especially through modelling.

Sectoral data: the need for more rich data regarding a wide range of aspects within multiple sectors.

In-country climate science capacity: the need for more domestic climate science expertise and technical resources within Malawi.

Data-gathering systems: the need for more robust data and information gathering mechanisms or networks to be established for every sector that currently does not have such a mechanism.

Information integration and access: the need for a centralized, coordinated, user-friendly repository for all climate change studies and data in Malawi, accessible to researchers, planners, and the general public.

Climate change communication: the need for better science communication to translate technical information into messages that are relevant to the public, and actionable by the target audience.

Medium and long term planning: the need for mainstreaming climate change into planning, including by integrating it into the MDGS process and through the formulation of explicit guidelines on taking climate change into account in planning at various levels.

Policy landscape: the need for more integration and coordination in what currently appears to be a fragmented landscape.

Actors and actions: the need for more coordination of adaptation plans and projects, to reduce the multiplicity and duplication of effort, and to have resources be used in an additive manner that can benefit wider spatial scales and greater numbers of people, and result in longer-term interventions. At the same time, there is a need to involve the private sector more strategically in climate change activities.

NAP Process: the need for more widespread and more coherent understanding of the NAP process by stakeholders. A sustainable source of funding for adaptation in Malawi is also an area of need.

Monitoring and Evaluation of adaptation action in government and other sectors, including the development of appropriate adaptation indicators.

## **Recommendations**

In light of the gaps and barriers analysis that helped identify several areas of need that the NAP process should address as it moves forward, this report makes the following key recommendations for the NAP process in Malawi:

Commission a comprehensive current climate risk assessment for Malawi and updated climate change projections for Malawi with more recently developed scenarios

Call for additional research on climate change's sectoral impacts in Malawi

Strengthen in-country climate change science generation capacity

Design and put in place more comprehensive data gathering and management systems in Malawi, at different levels

Create a searchable, user-friendly climate change science and adaptation information database

Invest in climate change and scientific communication efforts

Align the NAP process with medium and long-term planning, and develop planning guidelines related to climate change for other planning processes in Malawi such the Malawi Growth and Development Strategy (MGDS) III or its equivalent;

Ensure an enabling policy environment for climate change adaptation, including through the approval and publication and implementation of the National Climate Change Management Policy

Improve coordination between different actors working on climate change adaptation in Malawi, such as through existing forums like the Donor Working Group or with improved collaboration with the Technical Committee on Climate Change

Strengthen the NAP process by improving knowledge of the NAP amongst stakeholders, establishing a strong and time-bound process in the NAP Roadmap to minimize delays, and prioritize the identification of a sustainable funding mechanism for adaptation programmes in Malawi.

Develop a sustainable funding mechanism for the NAP process from government and other partners ;

Develop an action plan to operationalise climate change learning strategies which has identified a number of human resources capacity gaps, including climate change adaptation related areas.

# Chapter 1 – Introduction to the NAP Process

## 1.1 Background

The United Nations Framework Convention on Climate Change (UNFCCC) has established the National Adaptation Plan (NAP) process to facilitate climate change adaptation planning in Least Developed Countries (LDCs) and in developing nations more broadly.<sup>1</sup>

According to the UNFCCC, there are two main objectives of the NAP process:<sup>2</sup>

To reduce vulnerability to the impacts of climate change, by building adaptive capacity and resilience; and  
To facilitate the integration of climate change adaptation, in a coherent manner, into relevant new and existing policies, programmes, and activities – in particular development planning processes and strategies - within all relevant sectors and at different levels, as appropriate.

Vulnerability is defined as the extent to which natural and social systems are susceptible to damage from climate change, depending on the degree of sensitivity of the system, the level of exposure to climate change impacts, and the effect of (or lack thereof) coping mechanisms that provide resilience or adaptive capacity. In this report, the term is used generally to refer to communities, places (hotspots) and sectors which include ecosystem based sectors.

The NAP process is designed to be a continuing, iterative effort as opposed to a one-time product. The UNFCCC views it as an opportunity for countries to address their medium- and long-term adaptation needs, building on the NAPA process. Thus the NAP process is to be used by countries to:<sup>3</sup>

- Advance from NAPA experiences and arrangements into comprehensive, longer-term planning for adaptation;
- Consolidate overall adaptation activities and embark on a coherent and strategic adaptation approach;
- Ensure continuity and learning in planning and implementing adaptation, and to communicate progress through iterative outputs;
- Fully integrate adaptation into existing planning systems and to prioritize activities so as to prevent negative climate impacts on development;
- Identify the level of climate risk which can be addressed given economic, social and ecological constraints;
- Encourage the provision of adequate and predictable support which takes into account the comprehensive, continuous and iterative nature of the NAP process;
- Create confidence in agencies to support a country-owned, country-driven process that requires institutional action beyond the implementation of projects;
- Contribute to learning about how to manage multiple stress factors that combine in complex ways across scales;
- Promote streamlining of adaptation approaches under the Convention.

Prior to a more in-depth discussion of the NAP “Stocktaking” process in Malawi, it is important to first clarify the linkages between the National Adaptation Programs of Action (NAPAs), which Least Developed Country parties to the UNFCCC have undertaken, and the NAP process.

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<sup>1</sup> [https://unfccc.int/files/adaptation/cancun\\_adaptation\\_framework/national\\_adaptation\\_plans/application/pdf/decision\\_5\\_cp\\_17.pdf](https://unfccc.int/files/adaptation/cancun_adaptation_framework/national_adaptation_plans/application/pdf/decision_5_cp_17.pdf)

<sup>2</sup> UNFCCC, LDC Expert Group, “The National Adaptation Plan Process – A Brief Overview,” 2012.

[http://unfccc.int/resource/docs/publications/publication\\_ldc\\_napp\\_2013.pdf](http://unfccc.int/resource/docs/publications/publication_ldc_napp_2013.pdf)

<sup>3</sup> UNFCCC, LDC Expert Group, “The National Adaptation Plan Process – A Brief Overview,” 2012.

[http://unfccc.int/resource/docs/publications/publication\\_ldc\\_napp\\_2013.pdf](http://unfccc.int/resource/docs/publications/publication_ldc_napp_2013.pdf)

NAPs are meant to build on the work done in formulating NAPAs. NAPAs use a less flexible, eight-step process that results in a list of discrete projects, but not in a holistic plan – which is the purpose of the NAP. The UNFCCC established the NAPAs in 2001 to help the least developed countries address their most urgent and immediate adaptation needs. Completing a NAPA made the least developed countries eligible to apply for NAPA project funding under the Global Environment Facility’s Least Developed Countries Fund. The NAP process, on the other hand, is not currently linked directly to a funding source, and the Durban NAP decision specifically invites all developing countries, not just the least developed, to undertake NAPs. However, it is LDCs that have the most to gain from the development of strong NAPs; hence the process has picked up early traction with countries like Malawi.

## 1.2 What the NAP Entails

The United Nations Framework Convention on Climate Change (UNFCCC) recognizes the crucial role that a national level climate change adaptation plan can play in Least Developed Countries (LDCs) like Malawi. In its initial guidelines for the formulation of national adaptation plans by LDC parties, the UNFCCC notes that the main elements of a NAP are as follows:<sup>4</sup>

### **Laying the groundwork and addressing the gaps**

This involves identifying weaknesses and gaps in enabling environments, and addressing them as necessary, to support the formulation of comprehensive adaptation plans, programmes, and policies, through:

Identification and assessment of institutional arrangements, programmes, policies, and capacities for overall coordination and leadership on adaptation;

Assessment of available information on climate change impacts, vulnerability and adaptation, measures taken to address climate change, as well as gaps and needs at the national and regional levels;

Comprehensive and iterative assessments of development needs and climate vulnerabilities.

### **Preparatory elements**

This involves identifying specific needs, options, and priorities on a country-driven basis; utilizing the services of national and, where appropriate, regional institutions; and the effective and continued promotion of participatory and gender-sensitive approaches, coordinated with sustainable development objectives, policies, plans, and programmes. This would include:

Design and development of programmes, policies, and plans, to address gaps and needs;

Assessment of medium and long term adaptation needs and associated development needs and climate vulnerabilities;

Integration of climate adaptation into national and sub-national development and sectoral planning;

Consultation with stakeholder in a participatory manner; and

Communication, awareness-raising and education.

### **Implementation strategies**

This includes:

Prioritizing work according to development needs and climate change vulnerability and risk;

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<sup>4</sup>UNFCCC, “Initial Guidelines for the Formulation of National Adaptation Plans by Least Developed Country Parties,” FCCC/CP/2011/9/Add.1. Available at [http://unfccc.int/files/adaptation/cancun\\_adaptation\\_framework/national\\_adaptation\\_plans/application/pdf/nap\\_initial\\_guidelines\\_annex\\_to\\_decision\\_5cp17\\_eng.pdf](http://unfccc.int/files/adaptation/cancun_adaptation_framework/national_adaptation_plans/application/pdf/nap_initial_guidelines_annex_to_decision_5cp17_eng.pdf)

Strengthening institutional and regulatory frameworks to support adaptation;  
Training and coordination at sectoral and sub-national levels;  
Public dissemination of information on the NAP process, to be made available to the public and the UNFCCC secretariat; and  
Consideration of other relevant multilateral frameworks, international programmes and initiatives, with a view to building and complementing existing adaptation planning.

### **Monitoring, Reporting, and Review**

Inclusion of strategies devised (as well as national adaptation plan documents) in national development strategies and plans, as well as the periodic review and updating of the strategies to regularly fill gaps and reflect emerging science. This would require monitoring and review of the various efforts to be undertaken, and updates integrated into the national communication process.

The NAP thus comprises of four main stages, each with its own sub-components, as represented below:<sup>5</sup>

## **1.3 Importance of NAP process for Malawi**

The impacts of climate change are already being experienced the world over, including in southern Africa. African countries have contributed only 3.8% of the total global greenhouse gas (GHG) emissions. Ironically, the countries contributed the least GHG emissions are the ones that are disproportionately feeling or likely to feel the brunt of climate change. Most of these countries have the inadequate resources to dedicate towards building resilience against the negative consequences of climate change, given a host of other pressing development needs and the imperative to assure basic services to its people.

Some member countries of the UNFCCC acknowledge this disproportionate burden, and have committed to providing necessary funds to support countries like Malawi in their adaptation activities. However, before these resources are made available, it is critical to first develop a strong assessment of the potential impacts of climate change on Malawi, gauge absorptive capacity of the existing institutions and mechanisms to address climate change adaptation, identify gaps and needs, articulate priority strategies for adaptation, and then channel new and additional resources in the appropriate form and direction. This is where the overall NAP process becomes particularly important for building and implementing a robust and effective national adaptation plan that serves the needs of Malawi and its people. It is imperative that Malawi develops resilience against the impacts of climate change.

The United Nations Development Programme Human Development Report (UNDP HDR) of 2014 did not discuss climate change implications for Malawi (which UNDP HDR 2007 did), but nevertheless identified Malawi as low on the HDI and, as such, one of the more vulnerable countries in sub-Saharan Africa. Malawi has been experiencing extreme weather events in terms of floods and droughts happening with the same year. For instance, the floods of 2014/15 were unprecedented in their damaging impact, showing both increasing intensity and spatial distribution.

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<sup>5</sup> UNFCCC, LDC Expert Group, "The National Adaptation Plan Process – A Brief Overview," 2012.  
[http://unfccc.int/resource/docs/publications/publication\\_ldc\\_napp\\_2013.pdf](http://unfccc.int/resource/docs/publications/publication_ldc_napp_2013.pdf)

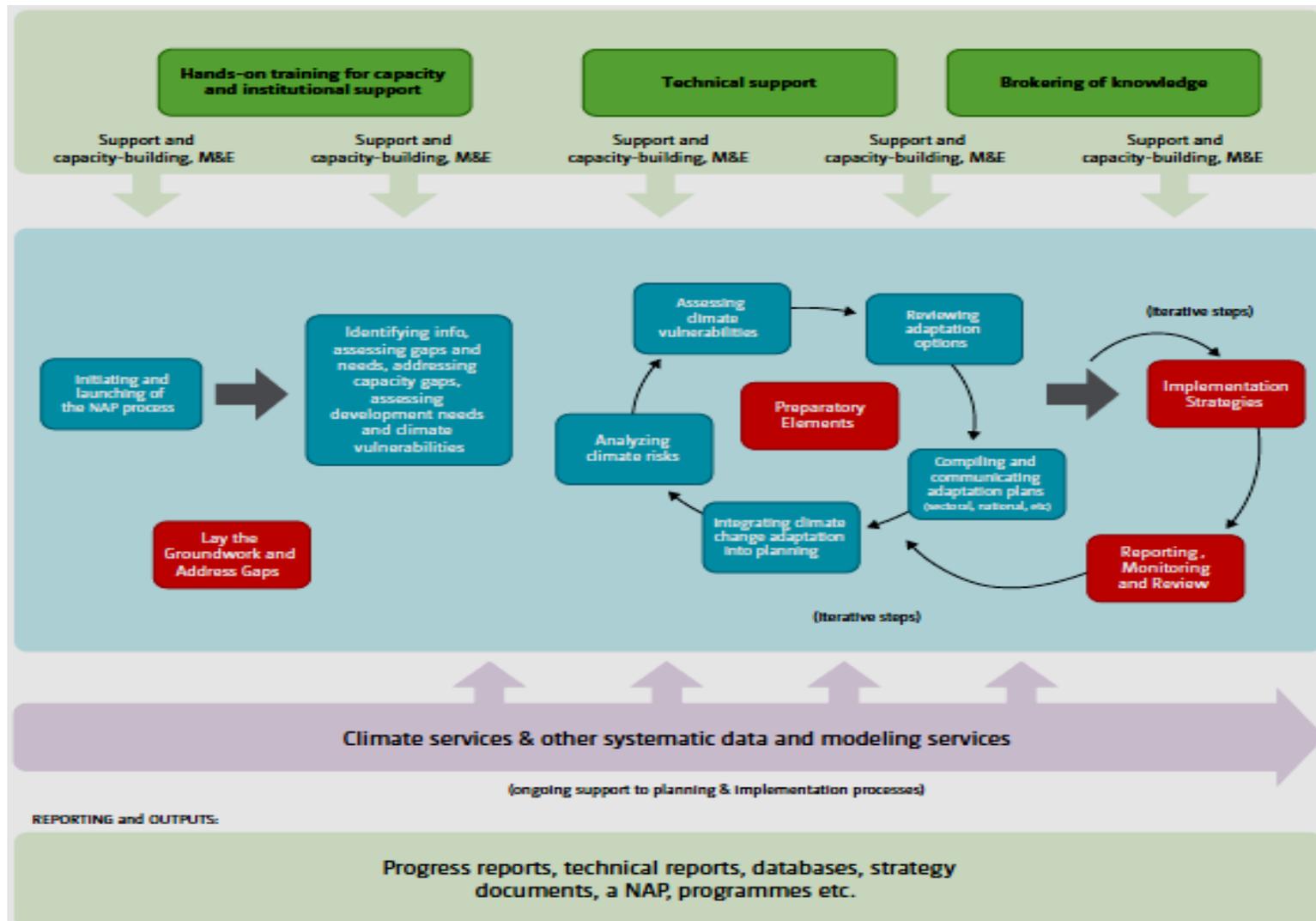


Figure 1- Example of NAP Process

Source: The NAP Process: A brief Overview, LDC Expert Group (2012), page 5.

A useful description of the NAP process by the UNFCCC and the 17 steps involved therein is available in Annex A.

Heavy floods were reported in 15 out of 28 districts of Malawi, 1.1 million people were affected, 230,000 displaced, 106 killed and 172 reported missing. The cost of damage and loss was pegged at US\$335 million, and that of recovery and reconstruction was US\$494 million.<sup>6</sup> Staggering costs like these push Malawi's economic development back and divert valuable resources from other economic development efforts. The NAP process is intended to allow recognition of such climate change-development linkages to be integrated into the country's overall development planning mechanisms.

Climate change adaptation is particularly important for a country like Malawi because of its high vulnerability or susceptibility to climatic factors. Malawi's economy is dependent on rain-fed agriculture for foreign currency, employment, food security and raw materials for industrial production. Thus improving the resilience of the agricultural sector to the threats of climate change would greatly contribute towards sustainable social and economic development of Malawi and its peoples. Natural assets such as land and water must be protected from the vagaries of climate change, so that the agriculture sector can continue to grow, benefit, exhibit more value-addition, and sustain the growing population even in the face of altered climatic conditions. Rural communities must be assisted to cope with extreme weather and unpredictable, varying weather patterns. Small scale industries and businesses must be equipped to adapt as climate change affects their raw material supply or their physical operations. Women and children and other most vulnerable segments of society must be empowered to face the challenge of climate change. The NAP process is a pathway to ensuring that all such efforts take place in an integrated manner and become embedded in national level planning, instead of as one-off or disparate programmes and projects.

#### **1.4 Status of the NAP Process in Malawi (i.e. the Road Map, Establishment of NAP Core Team etc.)**

Malawi commenced the NAP process in September 2014 through the establishment of the Core Team and a subsequent official launch that took place at Capital Hotel. This was followed by initial sector training that took place in Salima, and commissioning of the preparation of Malawi's NAP Roadmap, including a target timeline for the 17 different steps involved in the NAP process (per the UNFCCC guidelines). The Roadmap has taken a comprehensive approach to Malawi's NAP development process, separating out key elements in the chronology.

The NAP Roadmap is expected to be formally adopted at the start of 2016. In anticipation of the Roadmap's coming into effect, UNDP has supported the Environmental Affairs Department (EAD) with the launch of the next stage of the process, i.e. NAP Stocktaking.

#### **1.5 The Stocktaking Process**

In accordance with the UNFCCC, stocktaking entails identifying available information on climate change impacts, vulnerability, risks, and adaptation for a specific LDC country and at the same time stocktaking also involves assessing the gaps and needs of the enabling environment for the NAP process in the country in question.

Stocktaking establishes the knowledge base for developing a NAP, drawing on available data and information. A gap analysis identifies areas that require strengthening in order for the country to successfully undertake the NAP process. Potential barriers to the design and implementation of adaptation are identified, so that a plan to address the gaps can be developed in the next stage.

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<sup>6</sup> Government of Malawi, "Malawi 2015 Floods Post Disaster Needs Assessment Report," March 2015. <https://www.humanitarianresponse.info/en/system/files/documents/files/malawi-2015-floods-post-disaster-needs-assessment-report.pdf>

The questions that have guided the stocktaking investigation for Malawi are as follows:

- What information on climate change is already available for / in Malawi?
- What data and knowledge are available to assess current and future climate risks, vulnerability, and adaptation?
- What are the gaps in such information? Are existing sources of such information adequate?
- How can the storage and management of this data and knowledge be coordinated?
- What does the enabling (institutional and policy) environment in Malawi look like to support climate change adaptation?
- What are the gaps in this environment? What are the barriers to the success or scale-up of climate change adaptation in Malawi? And what are the barriers to effective design and implementation?
- Where do we stand regarding effective short and long term adaptation activities?

In December 2012, the UNFCCC's Least Developed Country (LDC) Expert Group formulated guidelines for all components of the NAP process. It explained the key ingredients of the stocktaking effort as follows:

Conduct a stocktaking of ongoing and past adaptation activities;

Synthesize available analyses of the current and future climate at a broad national or regional level;

Conduct a gap analysis to assess capacities and weaknesses, adequacy of available data and information, and resources to effectively engage in the NAP process; and

Assess potential barriers to the planning, design, and implementation of adaptation activities

As per the guidelines, this provides the foundation for the subsequent step, i.e. to actively address the capacity gaps and weaknesses in undertaking the NAP process.

## 1.6 Linkage of NAP process to pre-existing climate adaptation processes in Malawi

Malawi has already done a great deal of groundwork that will be incorporated / integrated in the NAP and which is useful for the preparation of a NAP in Malawi such as National Adaptation Programme of Action (NAPA), the National Environmental Action Plan (NEAP), the Malawi Growth and Development Strategy (MGDS) II, Second National Communication (SNC) of Malawi to UNFCCC, State of Environment and Outlook Report (SEOR), Malawi's Intended Nationally Determined Contribution (INDC), Draft National Climate Management Change Policy, and Draft National Meteorological Policy – just as a few examples (amongst many more, including the materials and resources listed in Annex F). In other words, all such work will be built on by and integrated into the NAP.

Despite the ground work, it is essential at this point to engage in a situation analysis and ascertain what has been done to date, what still needs to be done, to what extent the building blocks for future work already exist in the form of all the work done for NAPAs, national communications (NATCOMMs) etc., what could be done to use the foundation of existing work and strengthen it, and to set priorities for how the process can move forward effectively and efficiently.

There is need for a landscape assessment or stocktaking, analysis, synthesis, evaluation and integration of expert and stakeholders' inputs. Furthermore, there is need for reviewing climate change through the lens of development and linking adaptation goals to Malawi's development prerogatives.

# Chapter 2 – Climate Change and Sustainable Development in Malawi

## 2.1 Observed and projected impacts of climate change in Malawi, short and medium term

### 2.1.1 Observed Climate Change

There are very few localized studies undertaken to document observed and projected impacts of climate change in Malawi. During the Initial (GoM, 2002) and Second National Communications (GoM, 2011) some broad projected impacts were made for various sectors. The Department of Climate Change and Meteorological Services (DCCMS) also undertook some studies based on observations (GoM, 2011). The most comprehensive and oft-quoted work on climate change trends and projections is the UNDP study by McSweeney et al. (2010), which is referenced by a large majority of subsequent climate change studies and reports on Malawi, and is also the basis for the discussion below.

#### *Temperature*

Mean annual temperature has increased by 0.9°C between 1960 and 2006, an average rate of 0.21°C per decade. This increase in temperature has been greater in the summer (December-January-February) and slower in the spring (September-October-November).

Daily temperature observations demonstrate a trend of increasing hot days and nights in all seasons; the average number of hot days per year in Malawi has increased by 30.5 days between 1960 and 2003 (representing an increase of over 8%). The largest increase has been in the summer months of December-January-February.

Between 1960 and 2003, the average number of hot nights per year increased by 41 nights, which represents an 11% increase. The increase in hot nights is also largest in the December-January-February period.

As a corollary, the frequency of cold days and nights has decreased significantly since 1960 in all seasons (except in spring, i.e. in September-October-November); the average number of cold days per year has decreased by 16 days (or 4.3% of days) between 1960 and 2003. The biggest decrease has been in fall/autumn months of March-April-May. The average number of cold nights per year has decreased by 33 nights (or 8.9% of nights). This decrease has also been most notable in the fall/autumn months of March-April-May.<sup>7</sup>

#### *Rainfall*

Inter-annual variability of rainfall is already very significant in Malawi (one major factor for this is the El Niño Southern Oscillation – or ENSO – phenomenon; other factors are the Indian Ocean Dipole and the Subtropical Indian Ocean Dipole). Thus, an examination of historic rainfall data of annual rainfall averages or even daily rainfall observations does not yield clear and statistically significant precipitation trends. To some degree, available data suggests a small decrease in annual rainfall between the 1960s and 2006, but this is not a strong enough result.<sup>8</sup>

<sup>7</sup>McSweeney, C., New, M. & Lizcano, G. 2010. UNDP Climate Change Country Profiles: Malawi. Available at <http://www.geog.ox.ac.uk/research/climate/projects/undp-cp/index.html?country=Malawi&d1=Reports>

<sup>8</sup>McSweeney, C., New, M. & Lizcano, G. 2010. UNDP Climate Change Country Profiles: Malawi. Available at <http://www.geog.ox.ac.uk/research/climate/projects/undp-cp/index.html?country=Malawi&d1=Reports>

Historic data also suggests a decrease in annual runoff and increase in evaporation. Thus, Malawi has seen more water stress in recent years. One of the consequences of a changing hydrological regime has been falling lake levels in Lake Malawi.

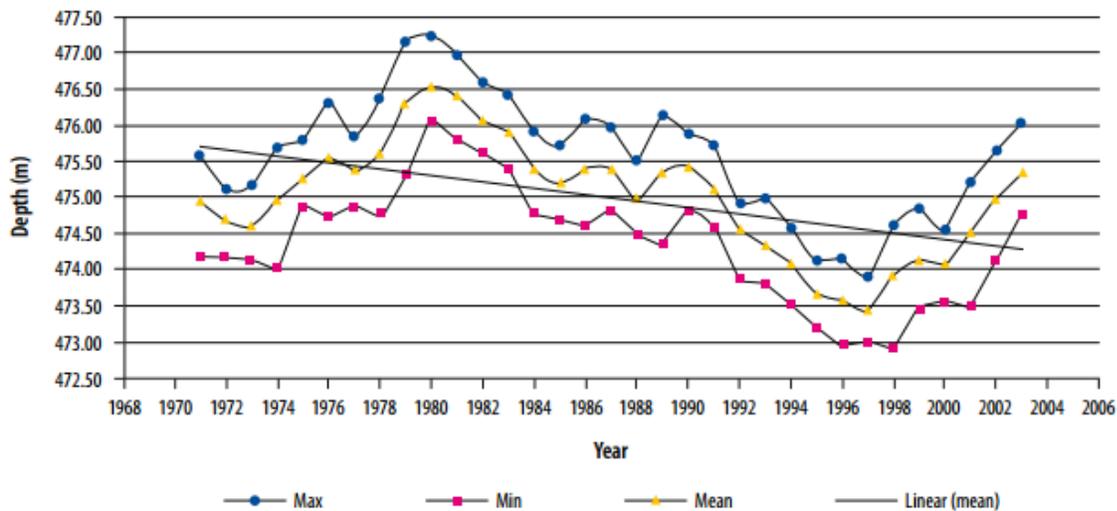


Figure 2 – Trends in Lake Malawi Levels (Malawi State of the Environment Report, 2010)

### Extreme Weather Events

Malawi has historically been prone to both droughts and floods, arising from rainfall variability. Wildfires have also shown an increasing trend. The floods of the 2014-2015 rainy seasons were particularly devastating. In 2016, the southern region of the country is suffering from drought conditions which have led to crop failure for maize.

Figure 10.3: Frequency of Extreme Weather Events.

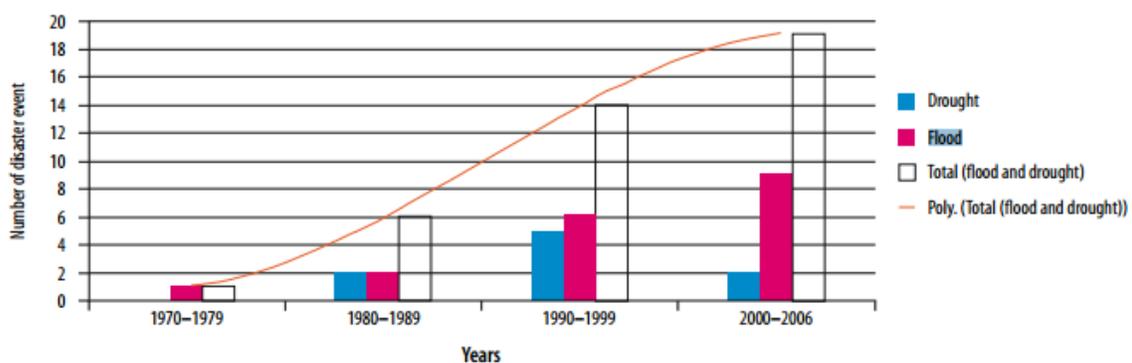


Figure 3 – Frequency of Extreme Weather Events (State of the Environment Report 2010; Data from ActionAid)

Southern Malawi is more at risk for flooding than central and north Malawi. This pattern has been seen in several recent flooding episodes.

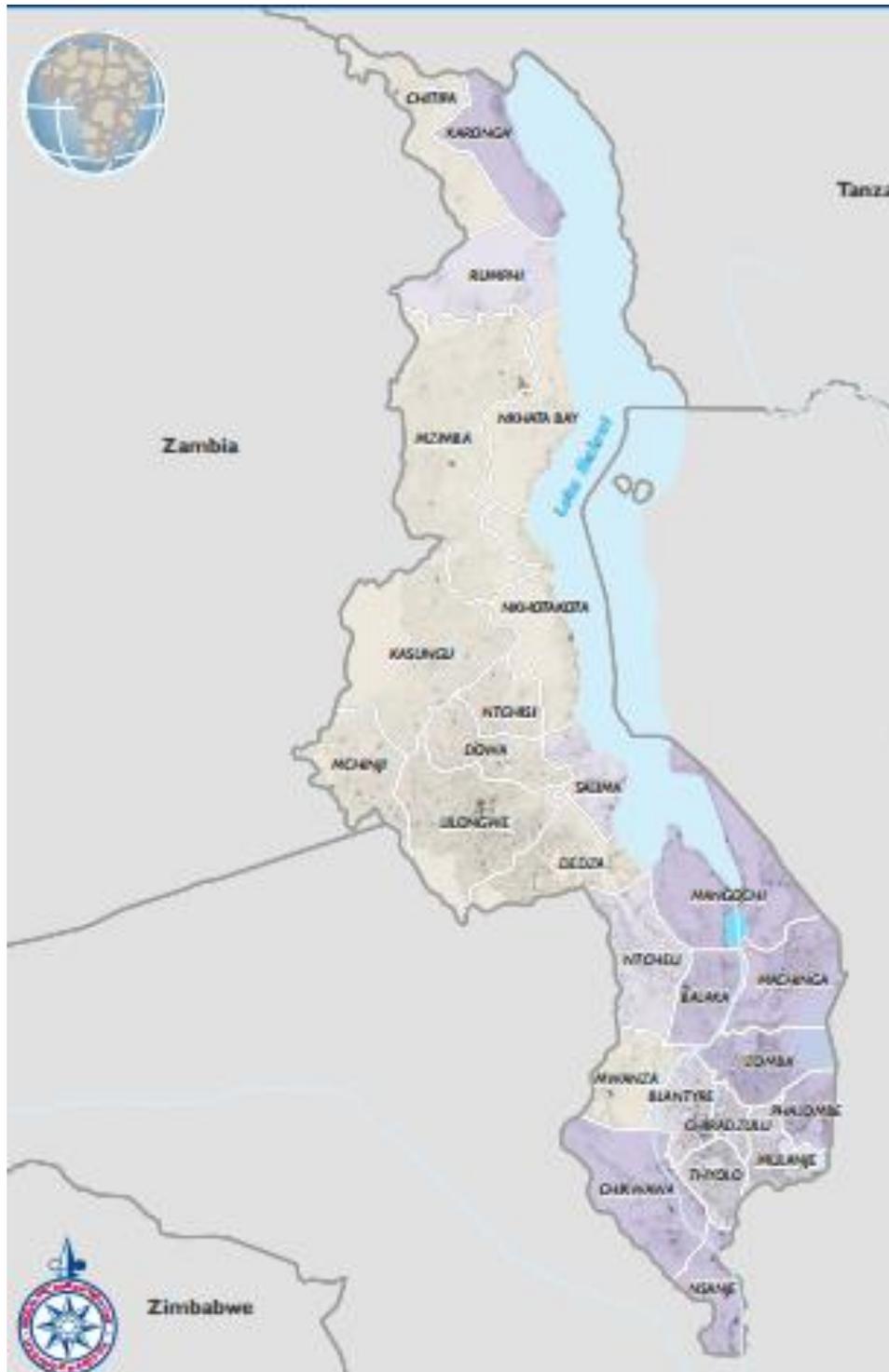


Figure 4 – Malawi Flood Map from 2015 Flooding (Southern Malawi is most-affected) – Source: USAID

## 2.1.2 Projected Climate Change

### Temperature

Based on Global Circulation Models (GCMs), mean annual temperature in Malawi is projected to increase by 1.1 to 3.0°C by the 2060s, and 1.5 to 5.0°C by the 2090s. All projections – using a variety of scenarios - indicate substantial increases in the frequency of hot days and nights. Annually, projections indicate that hot days will occur on 14-32% of days by the 2060s, and 15-53% of days by the 2090s. Hot nights (relative to the 1970-1999 average) are projected to increase more quickly than hot days, occurring on 27-53% of nights by the 2060s and 31-72% of nights by the 2090s. All projections indicate decreases in the frequency of days and nights that are considered cold in the current climate.<sup>9</sup>

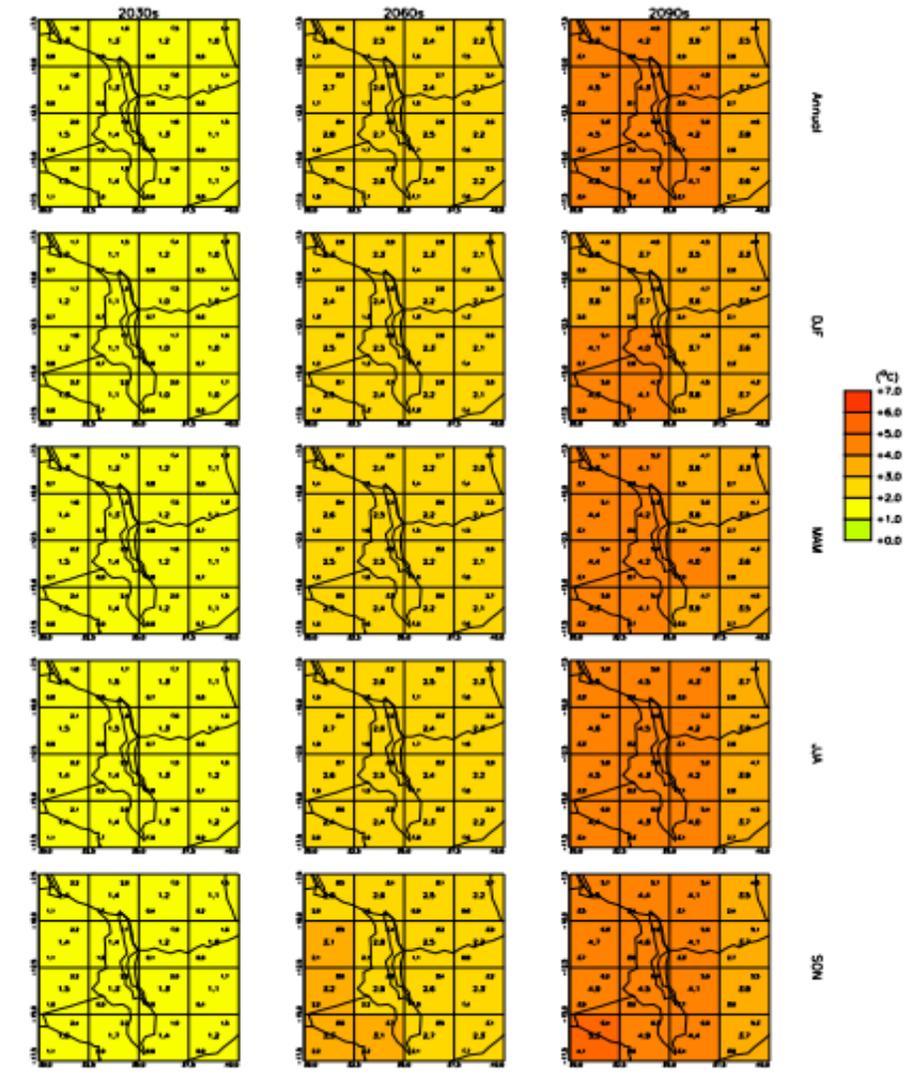


Figure 5 - Projected change in mean seasonal temperature in Malawi under SRES A2 Scenario (Source: McSweeney et al.)

<sup>9</sup>McSweeney, C., New, M. & Lizcano, G. 2010. UNDP Climate Change Country Profiles: Malawi. Available at <http://www.geog.ox.ac.uk/research/climate/projects/undp-cp/index.html?country=Malawi&d1=Reports>

## Rainfall

Projections of mean rainfall do not indicate substantial changes in total annual rainfall (i.e. the volume of rainfall to be received). There is considerable variance between different models, with some showing even a 13% decrease in total annual rainfall, while some indicating as much as a 32% increase in total rainfall per year.<sup>10</sup>

Several models converge in terms of suggesting a decrease in rainfall during the dry season and an increase during the wet season. Models also suggest that the rainy season may begin a little later than it currently does, with late onset having implications for cropping seasons, yields, and harvests.<sup>11</sup> Most models consistently project increases in the proportion of rainfall that falls in heavy events, especially under higher emissions scenarios. The increase in heavy rainfall events is expected to be greater in the wet season – December - May – than the rest of the year.<sup>12</sup>

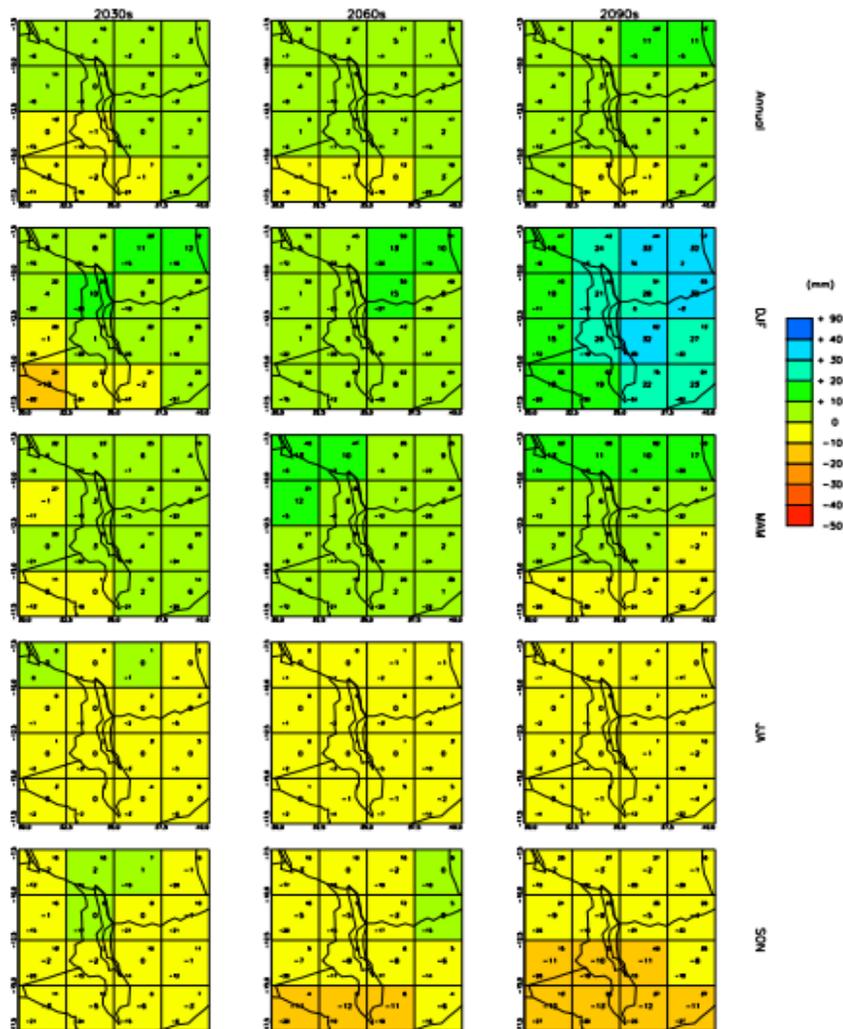


Figure 6- Projected changes in precipitation for Malawi under SRES scenario A2 (Source: McSweeney et al.)

<sup>10</sup>McSweeney, C., New, M. & Lizcano, G. 2010. UNDP Climate Change Country Profiles: Malawi. Available at <http://www.geog.ox.ac.uk/research/climate/projects/undp-cp/index.html?country=Malawi&d1=Reports>

<sup>11</sup>Trocaire, Climate Change Case Study, "Malawi," <http://www.trocaire.org/sites/trocaire/files/resources/policy/malawi-climate-change-case-study.pdf>

<sup>12</sup>McSweeney, C., New, M. & Lizcano, G. 2010. UNDP Climate Change Country Profiles: Malawi. Available at <http://www.geog.ox.ac.uk/research/climate/projects/undp-cp/index.html?country=Malawi&d1=Reports>

### **Extreme Weather Events**

Droughts are likely to increase in Malawi, at least in their intensity and length, if not in frequency. With higher temperatures, greater evaporation, and rainfall concentrated in the wet season, the dry season will likely see a major decrease in soil moisture.

More heavy periods of intense rainfall also suggest an increase in riverine flooding and flash floods.

Delayed rainfall in the Lake Malawi catchment area would affect the lake levels and thus affect the level and flow of water in the Shire River. Reduced levels in the Shire would impact irrigation in the Shire Valley Basin, availability of water supply for the city of Blantyre, and most of Malawi's hydro-power stations that supply 98% of grid electricity would not be constrained in their ability to generate electricity. This, in turn, would have an impact on domestic, commercial and industrial electricity supply. Since Shire River feeds into the Zambezi River, any changes in the levels will impact the Zambezi as well; extremely heavy flows would result in flooding and low flows in potential drought.

Lake Chilwa, which is the source of about a fourth of Malawi's fish production, could also see water levels falling. While drying has occurred in the past, they are expected to increase in the future with climate change. This is particularly so because of the shallow level of the lake and its dependence on a network of fragile wetlands that would be vulnerable to hydrological shifts.

Dryer and hotter spells also create the risk of increased forest fires.

## **2.2 Factors underlying Malawi's vulnerability to climate change**

According to a 2005 study (Brooks et al., 2005), Malawi is amongst the top 30 most vulnerable countries from climate change.

Table 1 shows that Malawi is jointly ranked as the 11th most vulnerable country, together with Burkina Faso and Brunei Darussalam. This is due to both climatic and non-climatic (socio-economic factors).

### **2.2.1 Climate Stressors**

The key climate stressors in Malawi are:

- Heavier rains
- Less Predictable Rains
- Changes in Growing and Planting Seasons
- Heat waves
- Extended Dry Season

Table 1 – Most vulnerable countries to climate change (on the left column) and moderately vulnerable countries (right column)

Afghanistan	13	Cote d'Ivoire	10
Angola	13	Qatar	10
Burundi	13	Kenya	9
Central African Rep.	13	Laos	9
Democratic Republic of Congo	13	North Korea	8
Eritrea	13	Yugoslavia	7
Ethiopia	13	Nigeria	7
Equatorial Guinea	13	Benin	6
		<b>Turks and Caicos Islands</b>	6
Gambia	13	Bosnia Herzegovina	5
Guinea Bissau	13	Congo	5
Haiti	13	Mali	5
Mauritania	13	Guadeloupe	5
Mozambique	13	Senegal	5
Niger	13	Tonga	5
Pakistan	13	Nepal	4
Rwanda	13	Djibouti	3
Sierra Leone	13	Zimbabwe	3
Somalia	13	Azerbaijan	2
Sudan	13	Puerto Rico	2
Togo	13	Bangladesh	1
Turkmenistan	12	Bhutan	1
Chad	12	Estonia	1
Gabon	12	Cambodia	1
Iraq	12	Uganda	1
Liberia	12	United Arab Emirates	1
Malawi	11	French Guiana	1
Brunei Darussalam	11	Morocco	1
Burkina Faso	11	<b>Wallis and Futuna Islands</b>	1

## 2.2.2 Non Climate Stressors

There are also several non-climate stressors. These are:

*Economic Insecurity:* The World Bank estimates that over half of Malawi's population can be classified as poor, with a quarter living in extreme poverty. Despite the country's overall economic recovery since the crisis of 2012, poverty has actually risen in rural areas, where over 85% of the population lives. Inflation is expected to keep rising, with the added risk of overall development aid diminishing in the years to come.

*Rain-fed Agriculture:* Roughly 90% of Malawians are dependent on rain-fed agriculture.

*Small-holder Farming:* In Malawi, approximately 78% of cultivated land belongs to small-holder farmers, who generate three-fourths of the country's agricultural output.

*Dominance of Maize:* Maize is particularly temperature sensitive, and several studies have shown that maize yields fall in high temperatures. With more than 70% of agricultural land in Malawi used to grow Maize, the climate-sensitivity of Maize makes the population vulnerable to food insecurity.

*Limited Irrigation and Water Storage Infrastructure:* An estimated 92% of people in the country rely directly on rain-fed sources of water. More than 70% of small-holder farmers cultivate less than one hectare parcels of land.

*Poor Public Health Status:* According to the NAPA Report (2006), Malawians are vulnerable to climate sensitive diseases such as malaria, diarrheal diseases (cholera and dysentery) and malnutrition. Furthermore, nearly 14% of Malawi's population between the ages of 15-50 suffers from HIV/AIDS. This, coupled with generally sub-optimal

levels of nutrition and prevalence of Tuberculosis makes the population physically less resilient, and thus more vulnerable to the health impacts of climate change.

*High Population Density:* Malawi's high population density (one of the highest in Sub Saharan Africa) puts greater pressure on land. With climate change impacting the productivity of land, there is likely to be even greater pressure on this limited resource.

*Deforestation and Land Degradation:* As a result of growing population and infrastructure development, land and natural resources have experienced degradation in recent years. Deforestation rates have risen, and poor agricultural practices have denuded soil.

## 2.3 Sector-wise Climate Change Implications

A range of studies and reports provide insight into what Malawi can expect – and should thus prepare for – in terms of future climate change. One of the most comprehensive resources in this regard is Malawi's Second National Communication (SNC) to the UNFCCC. Both the national communication and the recent NAPAs provide a useful summary of anticipated climate impacts for each of the country's major economic sectors (as well as crosscutting sectors with implications for all other sectors, namely gender and education).

### 2.3.1 Agriculture

As a predominantly agrarian country whose GDP and labor force are both defined by agriculture, it is crucial that Malawi give particular attention to the impacts of climate change on the agricultural sector. Agriculture is the backbone of Malawi's economy. It accounts for 30% to 40% of Malawi's gross domestic product (GDP), employs about 85% of the country's workforce, contributes over 80% of foreign exchange earnings and supplies 60-70% of the raw materials to the manufacturing sector (GoM, 2010). Furthermore, the Agriculture sector contributes significantly to national and household food security. Maize, which is grown in all districts of Malawi, has been studied to be sensitive to both temperature and rainfall changes. Studies especially suggest that an increase in temperature but a decrease in rainfall could have significant negative impacts on farming incomes, due to decreases in yield.

Extreme events like floods and droughts also have negative implications for crop yields and soil productivity.

Some studies also suggest that there could be an increase in soil salinity in certain parts of the country, such as the upper and lower Shire Valley.

Livestock rearing also faces climate change implications in Malawi. Prior studies indicate that climate change could dry up or degrade much of Malawi's wetlands (dambos), which are used for grazing purposes. Grazing land could also become more scarce and degraded due to erratic rains. Periods of heavy rainfall are tied to a spike in certain livestock diseases, and climate change could make these more prevalent. While it is unclear whether Malawi-specific data is available regarding the correlation between rising temperature and dairy production, global data supports the fact that dairy cattle produce less milk when they undergo heat stress at higher temperatures.

For both crop impacts and livestock impacts, the situation in the Shire Valley is expected to be worse than in the Lilongwe Plain.

### 2.3.2 Water

Malawi's water resources are derived from a network of streams, rivers, underground aquifers and the five lakes of Malawi, Chilwa, Malombe, Chiuta and Kazuni. Lake Malawi dominates as the largest water body with an annual mean live storage of some 101 km<sup>3</sup> of water. The Shire River is the second dominant water body with an average flow rate of some 400 m<sup>3</sup> per second as it leaves Lake Malawi, passing an annual average of some 18 km<sup>3</sup> of water out of the country as it enters into the Zambezi River.

Lake Malawi supports navigation, the fishing industry, tourism and wildlife resources. Lake transport is the only means of public transport for some areas along the Lakeshore Plain, such as Usisya, and also provides the cheapest means of cargo transportation. The outlet of Lake Malawi, Shire River, accounts for 98% of the hydro-electric power generated in Malawi.

Overall, the biggest implications from climate change are overall lower flows (especially in the dry season), greater siltation, and lower water levels in Lake Malawi. Flows, however, are also expected to peak during more frequent flooding episodes tied to more heavy rainfall events.

Climate implications for the water sector are particularly difficult to gauge because of the variability of climate model results, based on scenarios used. Since there is both the possibility of greater rainfall volume overall as well as lower rainfall volume overall, the direction of change in water resources is not as clear. However, once more the increase in intra-annual and inter-annual variability and extremes is fairly certain.

Water supply and sanitation in Malawi is at a somewhat underdeveloped level at present. The likelihood of lower flows and recurrent droughts poses a challenge for future improvement in this sector. Cities like Blantyre, Lilongwe, Mzuzu and Zomba have run-of-river water supply schemes that would be affected by lower river flows. While they also have storage reservoirs, the dams are not large enough to ensure supply after a protracted multi-year drought, which is more likely with climate change.

### 2.3.3 Energy

Wood based fuels (charcoal and firewood) represent over 90% of Malawi's aggregate energy demand. One of the major drivers of deforestation in Malawi is fuel collection. As prime forest areas dwindle, this reduces landscape resilience to floods and climatic extremes. One outcome of this is more erosion, more flash floods, and greater siltation during flooding episodes. This in turn reduced hydropower efficiency and productivity – creating a challenge for Malawi's energy sector.

Given the lion's share of the country's electricity (341 MW) that comes from the Shire River, projections of greater drought and lower water levels in the Shire Basin – at least in the dry season – pose serious implications for dams located on the river.

Malawi's NAPA Energy Sector Report (2005) highlighted the vulnerability of the electricity generation, which is almost entirely concentrated on Shire River. During the delayed onset of rains in 1991/92, lake levels dropped to dangerously low levels, threatening total shut down of hydro-electric power generation plants. Conversely, floods in 2003 damaged parts of the generation plant, cutting off considerable generation capacity and resulting in load shedding (NAPA-Energy, 2005).

### **2.3.4 Fisheries**

Fish provide 50 to 60% of total animal protein in the diets of Malawi's people, and the fisheries sector contributes an estimated 4% to the country's Gross Domestic Product (GDP). Fisheries from the five lakes and the network of rivers are a source of both subsistence and livelihood to many communities in Malawi.

The increased likelihood of drought, as well the expected increase in drought intensity and length, will have serious consequences on communities around the lakes.

Changes in surface water temperature as well as pH levels and dissolved oxygen will have greater impact on some species over others. While a downward trend in trophic levels has already been observed in some of Malawi's lakes, it is unclear how much is the contribution of climatic factors versus human intervention. There is currently not enough research on the impacts of climate change on the country's fisheries sector – more is required.

According to one study, Malawi is ranked 15 in the list of countries whose economies are most vulnerable to the impact of climate change on fisheries (Allison et al., 2005).

### **2.3.5 Land Use Change and Forestry**

The primary threat to forests in Malawi is expected to be the spread and heightened intensity of forest fires. Higher temperatures and longer dry periods create conditions for forest fires to catch on and rapidly expand. Recent trends indicate an increase in incidence of such fires, especially in plantation areas. Extended drier periods also tend to reduce forest productivity, thereby threatening potential source of firewood. Biomass accounts for over 90% of Malawi's primary energy source. Dry spells and drought reduce tree planting rates, as people have to wait for rains to plant the trees, resulting in fewer trees being planted. Additionally, tree survival rate is also reduced (as happened recently in the 2015/2016 season).

Another significant impact is from changing vegetation types due to shifting climatic conditions. Studies on potential forest changes in Malawi indicate that in some areas there may be negligible changes in the types of trees and plants that grow – such as in the Nyika and Viphya plateau areas – while in other regions forest cover could alter markedly due to the predominance of more dry habitat vegetation, e.g. in the Kasungu Game Reserve and the Vwaza Marsh areas. In general, higher carbon concentrations in the atmosphere also spur the growth of more wooded / cellulosic plant varieties, to the detriment of grassland type vegetation.

While land use changes are likely to be driven by human factors (such as growing population) rather than climatic factors, it is plausible that greater agricultural insecurity from climate change (including degradation of grazing land or a fall in soil fertility) could lead to agricultural expansion into currently forested areas, further lowering the resilience of some of Malawi's forest lands.

### **2.3.6 Wildlife and Biodiversity**

Altered forest types imply changes in biodiversity, favoring species that can adapt well to drier conditions. Drier vegetation frequently has lower nutrient content, implying potential health challenges for certain species feeding on such plants and grasses.

Wildlife population is already facing serious threat of extinction from human interference in form of poaching<sup>13</sup>. Therefore, climate change related impacts add on pressure to already vulnerable wildlife population. In addition to changes in habitat and food types, wildlife is also susceptible to increased risk from extreme events like forest fires, floods, and intense drought. For instance, during the 1991/92 drought, Lengwe National Park lost a significant number of Nyala.

Studies in Malawi suggest issues of concern for elephant health and nutrition in the face of climate change, including due to lower availability of water.

### 2.3.7 Human Health

One of the biggest implications of climate change in Malawi is a potential increase in malnutrition and food insecurity due to negative impacts in the agricultural sector.

Climate change also poses a significant challenge in terms of vector borne diseases. At present, 97% of Malawi's population faces endemic Malaria risk, while 3% faces epidemic Malaria risk. Global and regional studies establish that climatic factors affect all life stages of the Malaria parasite carrier – the female anopheles mosquito. Current studies in Malawi suggest that decreased rainfall could lead to a slight increase in Malaria incidence. Temperature plays less of a role. Malawi's NAPA Health Sector Report (2005) suggested that Malaria could become more prevalent even in areas that were previous considered safe (such as Mzuzu and Dedza Plateaux).

The risk of more frequent and more intense flood events brings with it health impacts like water borne diseases including cholera, diarrhea, a dysentery. Epidemiological data show an increase in such diseases with a rise in temperature as well.

### 2.3.8 Crosscutting Sectors

#### *Gender*

Malawi's Gender Development Index (GDI) of 0.374 is indicative of sharp gender disparities between men and women. Women are disadvantaged in Malawi in several ways, including access to resources, education, employment opportunities, reproductive resource access, and opportunities for participation in the political and development process.

As a relatively disadvantaged group, women carry a disproportionate burden from natural disasters and extreme events. Climate change is thus going to inhibit women's development and gender empowerment efforts by creating more challenging economic circumstances for the population as a whole, but also by making access to natural resources (water, fuelwood etc.) more difficult. Women also have fewer material and financial resources at hand – and often less autonomy – to help themselves cope with shocks like natural disasters.

Negative implications of climate change on all the sectors discussed above are likely to disproportionately affect women in both direct and indirect ways.

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<sup>13</sup>" Poaching represents additional pressure for the elephant population that has halved in under 20 years (currently estimated 2,344 elephants) and in some protected areas, such as Majete (prior to the private-public partnership) and those parks close to Lilongwe, numbers have dropped even more alarmingly. For example, Kasungu National Park now supports just ca. 40 elephants down from over 2000 in the late 1980s."-quoted from GIZ.

## Education

Education is a central pillar of Malawi's development strategies, and essential for the country to climb the development ladder from an LDC to a developing or emerging economy. The national literacy rate currently stands at 61.3% (2012), but is higher for men than women.

The imperative to provide a stable and strong education to Malawi's youth is challenged by difficulties exacerbated by climate change. Greater floods, droughts, and potential health impacts affect the student population's access to education, while physical impacts damage school infrastructure.

While education is a critical component of climate change adaptation (to empower Malawi's population with better and more reliable information on how to cope with future changes), it may also be important to create adaptation responses to protect this sector and build resilience within schools and universities to the impacts of climate change.

In 2003, Malawi published its Climate Change Learning Strategy. Since then, the Ministry of Education Science and Technology (MoEST) has developed climate change curriculum for primary and secondary schools, and trained some teachers in this curriculum. At present, MoEST is producing course materials for implementing the new curriculum. There is, however, great need to train more teachers in the implementation of the new curriculum. As for tertiary institutions, a number of public universities teach climate change as part of environmental, energy and related degree programmes. Specialised climate change degrees are not yet taught in Malawi at the college (varsity) or post-graduate level.

## 2.4 Sustainable Development in Malawi – Implications of Climate Change

Malawi is a predominantly agrarian country, currently classified as a Least Developed Country (LDC) but with a growing economy and an increasingly educated labor force that is likely to drive changes. Malawi's GDP was estimated at \$ 5146 million USD in 2013, and shrank in comparison to 2010. Similarly, the 2013 GDP annual average GDP growth rate was 5.4% in 2013, down from 6.9% in 2010. As a corollary, GDP per capita fell from \$ 463 USD in 2010 to \$ 314 USD in 2013, both due to a slightly shrinking economy and population expansion.<sup>14</sup>

Despite the challenges of a small economy, Malawi's unemployment rate has remained relatively low compared to many other African nations, and stayed stable at around 7.5% over the last decade. Between 2010 and 2015, population growth rate was 2.8% while urban population growth was higher at 3.8%. Currently just over 16% of the population resides in urban areas.<sup>15</sup>

Life expectancy in Malawi is relatively low, at roughly 54-55 years for both males and females, compared to 71 years as a world average. While almost 85% of the population has some degree of access to an improved drinking water source (as of 2010), only 10% of the population (in 2010) had access to improved sanitation.<sup>16</sup>

In 2012, a third of Malawi (roughly 33%) was under forest cover. Just under half of Malawi's land is agricultural land, and the vast majority of its farmers are involved in small-scale, small-holder subsistence farming. Despite the prominent share of agriculture (maize, tobacco, potato, cassava, sugarcane) in the country's GDP, the share of value-added agriculture in GDP was only 35% in 2009. Food insecurity and under nutrition remain persistent problems, with an estimate 23% of the population suffering from under nutrition in 2012.<sup>17</sup>

<sup>14</sup>UNDATA, Country Profiles, Malawi <http://data.un.org/CountryProfile.aspx?crName=malawi>

<sup>15</sup>UNDATA, Country Profiles, Malawi <http://data.un.org/CountryProfile.aspx?crName=malawi>

<sup>16</sup>UNDATA, Country Profiles, Malawi <http://data.un.org/CountryProfile.aspx?crName=malawi>

<sup>17</sup>FAOSTAT, Country Profiles, Malawi, [http://faostat.fao.org/CountryProfiles/Country\\_Profile/Direct.aspx?lang=en&area=130](http://faostat.fao.org/CountryProfiles/Country_Profile/Direct.aspx?lang=en&area=130)

It is in this larger context that Malawi has framed its approach to sustainable development and its key economic growth and development strategies.

Malawi's Growth and Development Strategy II (MGDS II) for the period 2011-2016 identifies nine priority areas: agriculture and food security; transport and Nsanje world inland port; energy, industrial development, mining, and tourism; education, science, and technology; public health, sanitation, malaria, HIV-AIDS management; integrated rural development; green belt irrigation and water development; child and youth development and empowerment; and climate change, natural resources, and environmental management. MGDS II emphasizes on sustainable economic growth, i.e. growth that can be maintained over time, social development, social support and disaster risk management, infrastructure development, governance, and gender and capacity development.

Based on what we know about the implications of climate change both regionally and globally, one can postulate that climate change – especially future climate change impacts – can undermine efforts to make progress on all these fronts. Sustained inclusive growth and improvement in overall socio economic indicators is threatened by climatic impacts that negate or nullify the resources invested and the results accruing from development projects.

Vision Malawi 2020 also captures Malawi's development targets in several key areas:

**Achieving economic growth and development:** developing the manufacturing sector, mining sector, agriculture, increasing savings and investment, developing the financial sector, developing domestic and international tourism, developing business culture, and developing an export-oriented economy.

**Developing economic infrastructure:** improving physical planning, roads development, rail transport development, water transport development, increasing air transport, increasing rural transport, promoting electricity supply and distribution, improving supply of petroleum products, reducing dependence on fuelwood, improving communications, increasing access to water and sanitation, and improving the construction industry.

**Food security and nutrition:** increasing food crop production, developing the livestock sub-sector, irrigation development, improving the efficiency of markets, improving land utilization and management, reducing post-harvest losses, improving disaster management, improving nutritional status, promoting non-farm generating activities, economic empowerment of vulnerable groups, and improving policy analysis.

**Human resource development and management:** improving health, improving education, managing population.

**Achieving science and technology led development:** improving science and technology education and culture, promotion of commercialization of research and development, promoting the transfer and adaptation of new and emerging technologies, promoting environmentally sound technologies, and promoting information technology.

**Fair and equitable distribution of income:** reducing unemployment, accelerating enterprise development, improving tenancy arrangements, improving smallholder agriculture, improving marketing systems, improving access to land, improving gender equality, addressing disability issues, increasing social services, improving rural water supply, improving rural transport, and improving housing.

**Natural resources and environment management:** controlling land degradation, arresting deforestation, preventing degradation and depletion of water resources, developing fisheries, developing the wildlife sector, restoring and conserving biodiversity, developing human settlements, controlling air pollution and managing climate change issues, managing hazardous substances and wastes, eradicating poverty and managing population growth, and political advocacy for proper management of natural resources. While there are a range of additional development related plans and programs, the MGDS II and Vision Malawi 2020 are used here in an illustrative capacity to indicate the breadth of areas where Malawi is committed to developing. On the one hand, the preparation of detailed action plans for any of the goals or areas of development described above should take climate change into account since climate change is likely to impact the full spectrum of development. On the other hand, the government of Malawi should also consciously use these and other development plans as instruments to promote and effect climate change adaptation. Virtually all of the goals articulated in Vision 2020 can be viewed as climate adaptation measures as well. Hence, as the strategies are made more concrete through detailed studies and programmes of action, they should explicitly evolve with climate change in mind, so that they create not only broad-based development but also climate-resilient development for Malawi.

# Chapter 3 – Climate Change Science and Data Resources in Malawi

## 3.1 An Overview of climate data management in Malawi

Literature review of a large sample of existing climate change science and data resources in Malawi suggests that Malawi has an adequate foundation of climate science information to support moving forward with the NAP process. In other words, there is a knowledge base available to inform and guide adaptation planning in Malawi. However, part of what the NAP process should facilitate is to make the generation of new and updated climate change information a priority. Existing climate science is approximately a decade old, with multiple reports repeating / repositioning studies that used 2005-2006 era data. While the age of the findings does not invalidate them (and the existing studies do remain a credible and reliable source to utilize), more effective adaptation planning may be possible with newer data as well as data at different resolution (note that the temptation to pursue downscaling does add variation and reduces confidence in climate change modelling; nevertheless, additional climate modelling at different scales could be useful as the NAP process moves forward. Furthermore, the IPCC has switched to using RCP scenarios instead of the SRES A1, A2, B1, B2 scenarios etc. so there is need for new projections in line with current global best practice.

Further development is also needed in sector-specific climate change risk, vulnerability, and impact studies. Relative to other sectors, there is a larger amount of information on climate change impacts in the agriculture sector. However, with respect to human health, forestry, fisheries, energy etc., more focused information could add great depth and breadth to future climate change adaptation efforts in Malawi.

In terms of the sources of climate change science data and resources in Malawi, the vast majority of sources are currently external to Malawi (for an illustrative list of resources, please see Annex F). The broad categories of climate change information sources for Malawi are as follows:

**Government of Malawi:** Official reports, studies, inventories, and communications produced by the Government of Malawi (such as by the Department of Environment Affairs, under the Ministry of Natural Resources, Energy, and the Environment). The bulk of these materials have been produced by consultants. In terms of meteorological and weather data sets, Malawi's Department of Climate Change and Meteorological Services (DCCMS) has an extensive, high quality time series of weather data collected from a network of stations across the country.

**United Nations Organization:** The UN – and chiefly UNDP – has generated a significant share of quality resources that exist on climate change issues related to Malawi. In particular, the Africa Adaptation Programme (AAP) produced a wealth of data and information that has contributed a great deal to the solid foundation of current information. UNEP, UNICEF and other UN agencies have also commissioned or funded reports.

**Scientific Institutions Outside Malawi:** Research Institutions like the Council for Scientific and Industrial Research (CSIR), the Climate Systems Analysis Group (CSAG), CFIAR, and others have been a credible source of climate change science and information related to Malawi and the broader region. This includes modelling, mapping, and raw data.

**Climate Research Departments at Foreign Universities:** Several universities – particularly in the UK and continental Europe – have research departments that have generated peer-reviewed climate change research published in academic and scientific journals. While some of these studies may have been conducted in partnership with local Malawi universities, there remains a significant gap for local research. Universities in Malawi can contribute a great deal more locally relevant research, with added capacity.

**Civil Society and Non-Governmental Organizations:** International NGOs such as Oxfam, ActionAid, Care International, WWF and local NGOs such as Civil Society Network on Climate Change (CISONECC), Centre for Environmental Policy and Advocacy (CEPA) and others have produced several useful reports on climate change in

Malawi, including sector-specific materials that speak to specialized areas such as food security, public health, children, gender etc. These have contributed valuable insights in the existing body of knowledge.

One of the options the NAP process in Malawi can consider is to create an online, searchable, well-categorized database of climate change information and science related to Malawi. The Climate Action Intelligence (CAI) database that Malawi has published (and is in the process of uploading online) is a model that could be used to create an interactive inventory of climate science and data resources.

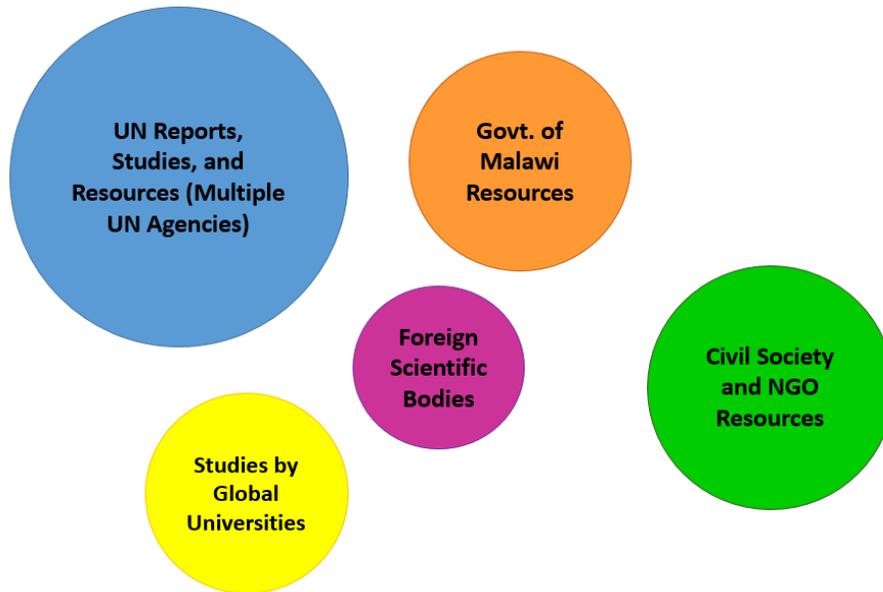


Figure 7- Relative Availability of Climate Change Science and Data for Malawi, by Source Type (indicative; not to scale)

## 3.2 Adaptation Data and Information System Management

Various institutions generate and use adaptation data to inform decision making and planning processes. It is within this NAP Stocktaking step that issues flows are understood and gaps identified. Since there are so many actors, it would be necessary to identify and document the type of data available, key players, who generates and stores the data, whether the data is properly managed and used for planning future adaptation activities. General data that would be useful for adaptation planning and their sources are tabulated as below:

*Table 2 – Climate Change Adaptation Data Flow Status*

Type of data	Source institution	Status
Climatological data	Department of Climate Change and Meteorological Services	Data is regularly collected and stored
Hydrological data	Department of Water Resources	Monitors rivers flows
Vulnerability maps- spatial - population	Department of Surveys	Maps are regularly produces- hardware and software needs
	Department of Surveys	
Local information - access roads and topography - social- education, health - economic- source of livelihood	DODMA- District Offices	Normally assessments are undertaken by district teams in case of a disaster incident
Climate scenario	Department of Climate Change and Meteorological Services	Update climate models and training will be required
Sectoral or thematic sectoral adaptation needs	Various sectors/ departments	Updated sectoral models and capacity building will be required
Directory of adaptation service providers	EAD	CIA
Demographic, social and economic	National Statistical Office	NSO Yearbooks, Integrated Household Surveys (IHS)
Various sectoral studies	Academia and research institutions (public and private universities)	Report, theses and journals

Although data related to climate risks may be regularly collected and stored, there is no data management system in place that could link the trigger points from climate data, EWS, the vulnerable communities and DODMA.

Secondly, data that could inform planning involves information on past adaptation initiatives. There have been a number of initiatives by different stakeholders who implemented an array of adaptation projects. Experiences, lessons and best practices are not documented, collected and shared. The development and publication of Climate Actors and Action Intelligence Report is a major first step information gathering and sharing.

Thirdly, adaptation is also about preparing for future vulnerabilities. As such data on future climate risk must be collected and be harmonized or if lacking generation of future climate scenarios have to be undertaken. For Malawi, some vulnerability and adaptation (V&A) assessments were done during the preparation of the Second National Communication (SNC) which provide the starting point for projected climate risks. This work could also benefit from more recent studies that have been done at regional levels on impacts and vulnerability studies. In addition, the data on vulnerable sectors will also be required. This will depend on the data requirement for specific sectoral models. There is general lack of capacity in both climate and sectoral models.

The figure below shows the data flow from various institutions that will be critical in the development of medium and long term adaptation plans.

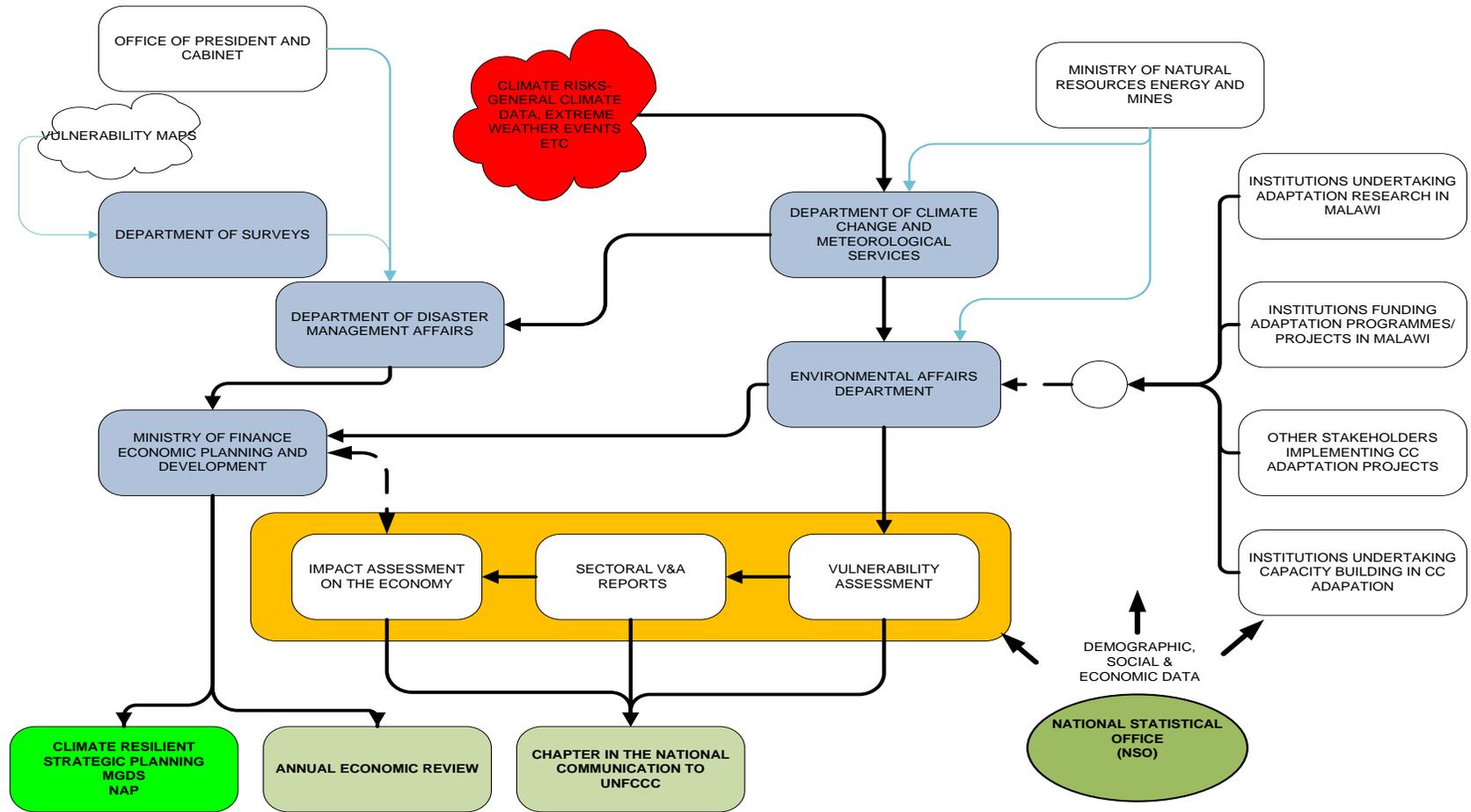


Figure 8- Data Flow Chart to Aid Adaptation Planning

# Chapter 4 – Policy and Planning Entry Points in Malawi for Climate Change Adaptation

## 4.1 Malawi's medium and long term development plans

Long term and medium term development plans provide road map to guide development efforts in various sectors. The reviews have shown that there are three planning platforms that the NAP process could draw lessons from. These are discussed below.

### 4.1.1 Vision 2020

Vision 2020 was launched in 2000. It is a long term plan and framework for national development goals, policies and strategies. This document articulates the long-term development perspective for the country. Its mission is "*by the year 2020, Malawi as a God-fearing nation will be secure, democratically mature, environmentally sustainable, self-reliant with equal opportunities for and active participation by all, having social services, vibrant cultural and religious values and being a technologically driven middle-income economy*". Vision 2020 emphasizes the need for integrating social and economic issues in sustainable development. This will be achieved, among other interventions, by "contributing to global efforts to managing climate change and other global environmental issues; incorporating environmental considerations at all stages, and enhancing the participation of the public in the planning and implementation of natural resource and environmental programmes." Key responses such as mitigation and adaptation were not even mentioned. However, it covered such area as: improving monitoring and information systems on disaster preparedness, promoting education in climate change and use of climate friendly technologies. The coverage of climate change strategies was rather narrow in scope and not specific enough. NAP, being a medium and long term plan, could be reflected in the successor to Vision 2020.

### 4.1.2 Malawi Growth and Development Strategy II

Malawi Growth and Development Strategy(MGDS) II is Malawi's medium term strategic development plan. The MGDS provides guidelines to the Malawi Government on resource allocation and use in various sectors of the economy, namely: agriculture and food security; irrigation and water development; transport infrastructure and development; energy generation and supply; integrated rural development; and prevention of nutritional disorders and HIV / AIDS. The MGDS I was launched in 2006 to guide development in Malawi over the period 2006-2011, The original version of MDGS I did not include climate change as a priority area. It was in 2009, that the Government recognized Climate Change, Environment and Natural Resources Management as one of the Key Priority Areas (KPA) in the Malawi Growth and Development Strategy (MGDS). Climate change adaptation issues have been addressed (GoM, 2012). The MGDS II goal is "to continue creating wealth through sustainable economic growth and infrastructure development". The MGDS II has put climate change as a priority area. The prioritization of climate change in MGDS II was a clear demonstration of government's commitment to address mitigation and adaptation challenges and opportunities. Since the MGDS II is expiring in 2016, there are all the opportunities to include NAP in the successor to MGDS II.

## **An Overview of Climate Change in Malawi**

### **Background**

Malawi experiences a number of adverse climatic hazards such as prolonged dry spells, droughts, unpredictable rainfall patterns, floods and increased temperatures. Recently, these have increased in frequency, intensity and magnitude. This is partly attributed to effects of climate change and in all likelihood will worsen in the future.

### **Impact of climate change**

Climate change effects also result in loss of human and animal life; compromised water quality leading to diseases such as diarrhoea, cholera and malaria and infrastructure loss. In addition, effects of climate change have adverse impacts on agriculture, fisheries, wildlife, gender, energy, education, health, and forestry sectors. Numerous reports on Climate change indicate that disasters related to climate change have escalated with time. Between 1970 and 2006, Malawi experienced over 40 weather related disasters most of which occurred in the late 1990s. It is estimated that the 1992 drought reduced the country's maize production by 60 percent of its normal year production bringing about a 10 percent reduction in the country's GDP (NAPA, 2006). It is therefore, necessary for the country to mainstream climate change mitigation and adaptation measures in all sectors for improved resilience and sustainable development.

Malawi, just like many developing countries, is vulnerable to effects of climate change. In recognition of this, Government has accorded special attention to climate change in this national development strategy. On its path towards climate resilient growth, Malawi, therefore aims at pursuing the following goal, outcomes and strategies.

### **Goal**

The goal is to enhance resilience to climate change risks and impacts.

### **Medium-Term Expected Outcome**

The medium term expected outcome is improved climate change mitigation and adaptation measures.

### **Key Strategies**

Improving weather and climate monitoring, prediction systems, and information and knowledge management systems;

Promoting dissemination of climate change information for early warning, preparedness and response;

Developing and harmonizing climate change related strategies, policies and legislation; •

Mainstreaming climate change issues in sectoral policies, plans and programmes; •

Promoting climate change related education, training, awareness and capacity building;

Enhancing implementation of climate change mitigation and adaptation programmes;

Implementing a comprehensive national climate change investment plan;

Enhancing cross sectoral co-ordination of climate change programmes;

Enhancing legal and regulatory framework on climate change; and

Developing and implementing appropriate greenhouse gas mitigation programmes and actions.

Source: Extract from Malawi Growth and Development Strategy (2011)

Box 1: Coverage of climate change in the Malawi's medium development plan, MGDS II

### **4.1.3 Malawi Climate Change Investment Plan (2013-2018)**

National Climate Change Investment Plan (NCCIP) is a medium term vision and planning framework developed by various stakeholders with the main objective of increasing and coordinating investment in the area of climate change. This would be achieved by developing capacity in climate change management in the protection and conservation as well as increasing the productivity of the environment and natural resources. The NCCIP focuses in four main action areas of climate change adaptation, namely, integrated watershed management, improving climate change resilience of communities in agriculture production, development of climate-proofed infrastructure and enhancing disaster risk management. Like MGDS, the NCCIP could be a vehicle to concretize and implement NAP activities in its subsequent versions.

## **4.2 Policy Environment**

### **4.2.1 National Environmental Action Plan**

The Malawi Government participated at the Rio Earth Summit in Brazil in 1992. One of the outcomes of the Rio Summit was the development and publication of the National Environmental Action Plan (NEAP). The NEAP was developed through an extensive consultative process involving a wide range of stakeholders, and it is the operational tool for the implementation of Agenda 21. Nine key environmental concerns were identified as factors that exacerbate poverty in Malawi (EAD, 1994). These were: soil erosion, deforestation, water resources degradation and depletion, threats to fish resources, threats to biodiversity, human habitat degradation, high population growth, air pollution and climate change. Although, the NEAP did not directly address adaptation issues, the key factors identified could closely aligned to the identified NAPA sectoral studies (GoM, 2006).

### **4.2.2 National Environmental Policy (NEP)**

The National Environment Policy was first published in 1996 and then revised in 2004. The policy provides an overall framework through which sectoral policies are reviewed to assess their consistency with the principles of sound environmental management and sustainable development. It also addresses issues of climate change, and empowers local communities to manage natural resources sustainably and promote social equity. The NEP is supported by the Environment Management Act (1996). The climate change adaptation is not covered.

### **4.2.3 Draft National Meteorological Policy**

The Malawi Government, through the Department of Climate Change and Meteorological Services, has produced a draft National Meteorological Policy whose main goal is to monitor and understand Malawi's weather and climate to all users and stakeholders. Once published, the policy will address a number of areas which are relevant to NAP process, namely, monitoring and observation of weather and climate systems; analysis and prediction of weather and climate systems; climate and weather services and public participation; climate change and research services and Management of meteorological data amongst others.

### **4.2.4 National Climate Change Management Policy**

Malawi does not yet have a climate change policy. There have been a number of Policy oriented studies and reports that have guided climate change work in Malawi (see Figure 9). Work to develop the National Climate Change Management Policy started in 2012 and a final draft was produced in 2015. The final draft has since been vetted by the Office of the President and Cabinet and been submitted to Cabinet for consideration.

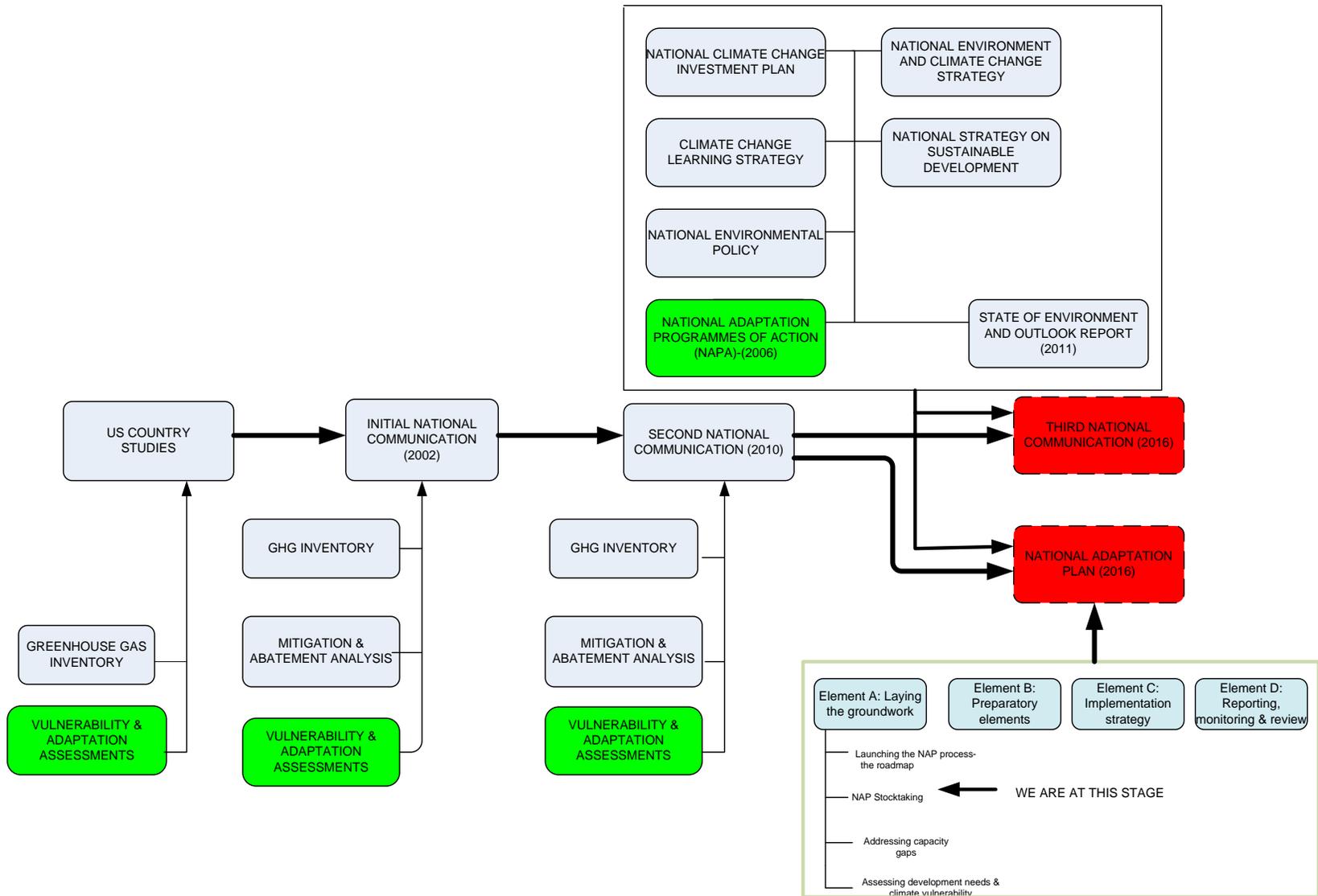


Figure 9 - Past and present climate change related activities and link to the NAP process

### 4.3 Priority Sectors and Thematic Areas for the NAP Process

The identification of priority sectors for the NAP stems from the NAPA. Malawi's NAPA concentrated on adaptation interventions that were urgent and immediate for vulnerable sectors and communities. The process of developing, implementing, mainstreaming, monitoring and evaluating NAPA interventions generated a number of lessons that could be applied in adaptation activities that would address short, medium and long term interventions. Findings during the NAPA development process in Malawi have been used in this stage of the NAP process.

The NAPA clearly identified 8 vulnerable sectors, namely: agriculture, energy, forestry, fisheries, wildlife, water, human health, and gender. Another sector that is emerging is infrastructure. All these sectors will require very specific approach in order to identify the knowledge base and gaps, so that appropriate strategies could be developed to ensure an effective and efficient NAP process. During the consultation process of the NAPA, one additional sector, Infrastructure, was added. The final sectors/thematic areas are:

*Table 3 – Sectoral Adaptation Challenges and Opportunities*

	Sector	Climate change challenges and opportunities
1	<i>Agriculture</i>	The biggest adaptation challenge is Malawi's heavy reliance on rain-fed agriculture despite abundance of fresh water resources. Erratic rainfall, droughts and sometimes floods have been the major challenge affecting rural small holder farmers. Malawi has abundant water resources that could be harnessed for irrigation at both small and large scale levels. Climate change also requires farmers to adapt to new agronomic practices such as conservation agriculture, growing of drought tolerant crops, precision agriculture and agro-forestry amongst others in order to improve productivity.
2	<i>Water</i>	Despite the abundant water resources, there some challenges relating to harmonization of policies and strategies for catchment area protection, water conservation and sustainable utilization. The adaptation actions that Malawi is implementing in this sector include: the construction of multipurpose dams, implementation of water harvesting technologies, capacity building in integrated water resources management (IWRM), catchment management, promotion of irrigated agriculture, fish farming, and water supply development for domestic and livestock use.
3	<i>Human health</i>	Various studies have shown that under climate change scenario, the spread of climate-sensitive diseases such as malaria and diarrhea would increase, and food production would decline resulting in malnutrition. Years of below-normal rainfall have correspondingly led to higher incidents of malnutrition. These issues are highlighted in the NAPA.
4	<i>Wild life</i>	Erratic rainfall, delayed onset of rains and droughts pose a major threat to wildlife in terms of availability of forage and water. Adaptation interventions are meant to prevent the extinction of the animal species while ensuring optimal population sizes are retained based on carrying capacity of the reserve.
5	<i>Energy</i>	Over 98% of Malawi's grid electricity is from hydro power which is under threat and vulnerable to droughts and delayed onset rains that affect Lake Malawi levels resulting in massive load shedding. Malawi needs to invest in alternative energy sources. Biomass briquettes and bio-fuels provide alternative energy sources in place of charcoal and firewood as the national forest stand is simultaneously under pressure from unsustainable wood extraction and climate change effects.
6	<i>Forestry</i>	Forest productivity will be greatly affected by erratic rainfall and extended droughts. Overtime, communities may adapt by planting tree species that are drought tolerant and fast growing such as bamboos. This would reduce pressure on standing forests since communities would be harvesting wood for fuel from their own woodlots. Some mitigation interventions in the forestry sector also have adaptation co-benefits elements.

7	<i>Fisheries</i>	Fish provides about 60% of animal protein intake in Malawi and is a source of employment for many Malawians. Unfortunately, fish population is declining rapidly due to climate change as well as non-climate factors such as rapid population growth resulting in unsustainable levels of fish harvesting. Aquaculture provides an alternative fish production potential.
8	<i>Gender</i>	Vulnerable groups, especially women and girls, carry the burden of the impacts of climate change. They walk longer distances in search of food, firewood and water. Culturally, most women do not have authority of production resources including land. There is need to mainstream this in all planning processes and all sectors.
9	<i>Infrastructure</i>	Adaptation measures under this subsector are meant to provide physical barriers for flood prevention and control and facilitate the revision of construction and building standards and guidelines in line with the changes in climate-based design parameters. The interventions are also meant to contribute to green and climate-resilient buildings.

During the consultation process the NAPA, the following thematic areas were recommended by stakeholders to be considered for the medium and long term adaptation planning process i.e. the NAP process:

- i. Improved access to energy sources;
- ii. Increased resilience to food production systems;
- iii. Improved weather and climate forecasting;
- iv. Improving agriculture to ensure farmers are moving from subsistence to commercialization;
- v. Promote catchment management practices;
- vi. Integrated water resource management to encourage large scale commercial irrigation;
- vii. Population change and human settlement;
- viii. Civic education and adult literacy;
- ix. Infrastructure development;
- x. Promote gender, disability and other socially excluded vulnerable groups in implementation of climate change adaptation interventions;
- xi. Monitoring of climate: adequate database and easy access to all people;
- xii. Development of collaborative wildlife management; and
- xiii. Education, Science and green technology.

Malawi Government recently developed and published the Intended Nationally Determined Contributions (INDC) to UNFCCC. The INDC incorporated both mitigation and adaptation activities (Table 2). The INDC, like the NAP, also reflect medium and long term planning. The adaptation thematic areas included new sector, Industry, to the current NAPA list. Furthermore, Education and Urban poor were added to the list during the recent consultative meetings.

Table 4 – Adaptation Policy Actions that were Submitted to UNFCCC as part of Malawi’s INDC

Key: Unconditional (UC) Capacity requirements (CR), technology requirements (TR) and finance requirements (FR)

Sectors	Intended policy based action	Provision of implementation means			
		UC	CR	TR	FR
<b>Agriculture</b>	Increase irrigation at smallholder level	✓			
	Increase land under irrigation through Greenbelt initiative from 20000 to 40000 ha	✓			
	Expanded programmes of Greenbelt initiative from 40000 ha to 10000 ha by 2030		✓	✓	✓
	Build adaptation capacity in climate resilient agronomic practices for smallholder farmers	✓			
	Promote on-farm water conservation technologies	✓			
	Support an expanded programme of constructing multipurpose dams for irrigation and aquaculture		✓	✓	✓
	Develop financial mechanisms to support crop insurance targeting smallholder farmers		✓	✓	✓
	Promote improved land use practices	✓			
<b>Water</b>	Implement integrated catchment conservation and management programme	✓			
	Promote water harvesting technologies at all levels	✓			
	Support the revision of water related policies and strategies (inc. water-SWAP)		✓	✓	✓
	Develop and enhance climate information system and early warning mechanism		✓	✓	✓
<b>Health</b>	Build capacity to diagnose, prevent and control climate-sensitive diseases such as malaria, diarrhoeal diseases and malnutrition	✓			
	Support expanded programme for preventing and controlling climate-sensitive diseases		✓	✓	✓
	Support the establishment of centre of excellence for research and disease control targeting climate-sensitive diseases		✓	✓	✓
<b>Energy</b>	Promote use of biomass briquettes as substitute for firewood and charcoal	✓			
	Support an expanded programme of briquette production and use		✓	✓	✓
	Upscale the use of bio-fuels for lighting and cooking replacing fossil based fuels (with condition)		✓	✓	✓
	Upscale solar PVs and the use of energy efficient bulbs		✓	✓	✓
	Promote use of bio-fuels for lighting and cooking replacing fossil based fuel	✓			
<b>Forestry</b>	Support research in drought tolerant and fast growing tree species	✓			
	Promote growing of drought tolerant and fast growing tree species	✓			
<b>Wildlife</b>	Provide watering points at strategic locations of national park/ game reserve		✓	✓	✓
	Support capacity building in wildlife institution to lead in adaptation initiatives e.g. translocation and culling.		✓	✓	✓
<b>Fisheries</b>	Capacity building in aquaculture and cage culture fish farming practices	✓			
	Promote aquaculture and cage culture fish farming practices		✓	✓	✓
	Protection of fish spawning/breeding sites	✓			
	Maintaining fingerings for stocking lakes and rivers after severe droughts episodes	✓			
<b>Gender (and vulnerable groups)</b>	Promote gender mainstreaming in policies, programmes and projects	✓			
	Support capacity building programmes for vulnerable groups		✓	✓	✓
<b>Infrastructure</b>	Construct flood control infrastructure in vulnerable areas		✓	✓	✓
	Revise existing building standards in line with climate change	✓			
<b>Industry</b>	Promote research in industrial technologies		✓	✓	✓

## 4.4 The SWOT Analysis

One of the key components of any medium or long term planning is the review of internal and external environments, capacities and capabilities. There are several models that could be used for such an analysis. The most popular model is the SWOT (strengths, weaknesses, opportunities and threats) model. The model reviews internal strengths and weaknesses, and external opportunities and threats that have an impact on its mission. The result of a SWOT analysis facilitates development of medium and long term plans of how strengths and opportunities can be taken as competitive advantage to achieve desired goals, convert current weaknesses into future strengths, as well as minimize impacts that external threats have on its objectives.

### 4.4.1 Strengths (Internal Factor)

The Strategy derives its strength from six main factors highlighted below:

- Institutional setup
  - Environmental Affairs Department,
  - Department of Economic Planning and Development
  - Department of Climate Change and Meteorological Services
  - Department of Disaster Management Affairs
  - National Steering and Technical Committee (Advisory Committees)
  - Government- Donor working groups (on Climate Change as well as the one Climate Change, Environment and Natural Resources Management)
- Supportive policy initiatives
  - MGDS II (KPA), National Climate Change Investment Plan and other related documents.
- Active Civil Society Organizations: CISON ECC and its members;
- Forum for information sharing: Annual Forum on climate change.

### 4.4.2 Weaknesses (Internal Factor)

Potential weakness in the operation of the strategy includes the following:

- Low level of awareness about climate change at all levels of the society:
  - Policy makers,
  - Local communities,
  - Schools, and
  - Professionals, including the academia, public service, and CSOs/ NGOs;
- Limited number of experts in the various key sectors of climate change adaptation;
- There are no climate change centres of learning and research;
- Lack of locally-driven sustainable climate change funding;
- Policies take too long to be developed and approved;
- Limited gender considerations in climate change adaptation initiatives;

- Limited institutional capacity in terms of resources/equipment;
- Weak institutional capacity for managing climate change;
- Inadequate mainstreaming of climate change issues;
- Weak enforcement capacity of laws and regulations; and
- Poor land use management practices.

#### **4.4.3 Opportunities (External Factor)**

The following are some of the opportunities that would benefit the implementation of activities spelled out in the Climate Change Learning Strategy:

Malawi is one of the Least Developed Countries (LDC) and hence eligible for financial and technical support under the UNFCCC;

Malawi has benefited from technical and financial support from the UN system namely: UNFCCC/IPCC, UNDP, UNITAR, UNEP, WMO etc.

Malawi is a beneficiary of multilateral and bilateral support;

Malawi has signed several Multilateral Environmental Agreements (MEAs) through which technical and financial support for climate change learning may be sourced; and

Strong global support for climate change adaptation activities (recent Paris Agreement).

Availability of financial support by climate change multilateral funds such as the GCF, LDCF, ACCF<sup>18</sup> and others.

#### **4.4.4 Threats (External Factor)**

The following are some of the potential threats:

There is stiff global competition from other equally important socio-economic and socio-political issues, such as health, education, wars and refugees, terrorism, etc.;

The Global Economic Crisis has potential to affect climate change funding; and

The failure of major powers to sign and ratify MEAs.

Thus through the NAP process, Malawi could take advantage of its strengths to change things around. Appropriate strategies could be developed to address the weaknesses so that they could become future strengths.

Furthermore, Malawi could use its strengths to turn the opportunities into programmes and projects that could contribute to building adaptive capacity and resilience to the negative impacts of climate change.

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<sup>18</sup> GCF, LDCF, ACCF- These are some of the climate change financing mechanisms- Global Climate Fund, Least Developed Country Fund, Africa Climate Change Fund respectively.

# Chapter 5 – Stakeholder Mapping of Entities Relevant for Climate Change Adaptation in Malawi

## 5.1 Background

The implementation of the US Country Studies Programme (USCSP) in 1996/97 started with extensive human resource capacity building because there was none on the ground. The people who were trained during the USCSP became the lead persons when Malawi received support to prepare for the Initial National Communication in 1999. There were very few institutions who understood the language and science of climate change (Government of Malawi, 2002). Since then, the landscape has considerably changed for the better. A number of institutions are offering short and long term climate change related training programmes. The country has built capacity overtime, interest has grown at various levels and it is not unusual to here climate change issues being discussed by ordinary citizens. Recent studies indicate that there are over 300 institutions involved in climate change issues in Malawi as financiers, facilitator or implementers (Government of Malawi, 2013).

It is therefore critical to ensure that all the actors in climate change arena are given an opportunity to play their rightful role so that synergy could be attained. The synergy will also ensure that duplication and wastage of resources are minimized. The key stakeholders or actors are:

Government ministries, departments and agencies;  
Vulnerable communities;  
Development partners;  
Non-Governmental Organizations (NGOs)/ Civil Society Organization(CSOs),  
Academia/research institutions;  
Private sector; and  
Media.

## 5.2 Roles of various stakeholders

### 5.2.1 Government Ministries, Department and Agencies

The role of Government ministries, departments and agencies is to provide policy direction and strategic direction in the particular sector of interest. The roles may also include policy formulation, coordination of the thematic activities; monitoring, reporting and verification (MRV) of project activities, capacity building, and resource mobilization.

#### *Ministry of Natural Resources, Energy and Mining*

Ministry of Natural Resources, Energy and Mining is the lead ministry mandated to coordinate natural resources and environment (including climate change), energy and mining issues. The Ministry hosts the Environmental Affairs Department, Department of Climate Change and Meteorological Services, Department of Forestry, Department of Energy Affairs, Mining Department, and Department of Parks and Wildlife.

#### *Environmental Affairs Department*

The Environmental Affairs Department (EAD) is the climate change focal point in the country. Therefore, EAD provides policy direction on issues related to climate change mitigation, adaptation, public awareness and technology transfer. The EAD is supported by a National Technical Committee on Climate Change, a multi-stakeholder technical team, to provide critical inputs to current and future climate change programmes and

projects. At the policy level, it is supported by the National Steering Committee on Climate Change (NSCCC)<sup>19</sup>. The EAD in collaboration with the Department of Climate Change and Meteorological Services (DCCMS), is also responsible for coordinating international climate change related issues.

#### *Department of Climate Change and Meteorological Services*

The Department of Climate Change and Meteorological Services, previously known as Department of Meteorological Services, is mandated to provide reliable, responsive and high quality weather and climate services to meet national, regional and international obligations through timely dissemination of accurate and up to-date data and information for socio-economic development of Malawi. The DCCMS has manned and automated weather stations throughout the country and also manages district climate change information offices to disseminate climate change information to aid district development planning. It is the only official authoritative voice on weather and climate for the Malawi Government, and manages all weather and climate data for Malawi as the official custodian of such information.

#### *Department of Forestry*

The Department of Forestry (DoF) is mandated to plan, provide technical extension guidelines, and facilitate forestry development on customary land and forest reserves, and participation of all stakeholders in the sustainable management of our natural resources in Malawi. Although its activities tend to mainly support climate change mitigation by conserving or enhancing carbon sinks, the Department has also looked at adaptation co-benefits e.g. REDD+. The Forestry Research Institute of Malawi (FRIM), which is within DoF, provides technical support in forest management to environment and agriculture departments.

#### *Department of Disaster Management Affairs*

The Department of Disaster Management Affairs (DoDMA), under the Office of the President and Cabinet (OPC), is responsible for coordinating and directing disaster risk management programmes in the country in order to improve and safeguard the quality of life of Malawians, especially those vulnerable to and affected by disasters. As part of disaster management, DoDMA monitors, assesses, updates and disseminates disaster related information to various stakeholders.

#### *Ministry of Finance and Economic Planning and Development*

The Ministry of Finance and Economic Planning and Development (MoFEPD) is mandated to manage fiscal flows and economic development plans such as the Malawi Growth and Development Strategy (MGDS). The Department of Economic Planning and Development, in the recent past, was also actively involved in management of climate change programmes. Since MGDS is a medium term development plan for the country, MoFEPD will be instrumental in ensuring the NAP processes are captured in the MGDS III which is under development.

#### *Ministry of Agriculture, Irrigation and Water Development*

The Ministry of Agriculture, Irrigation and Water Development (MoAIWD) is one of the largest ministries hosting nine departments, namely: Animal Health and Livestock; Agriculture Extension Services; Agriculture Research Services; Fisheries; Crop Development; Land Resources Conservation; Irrigation Services; Water Resources and Water Supply. The MoAIWD is mandated to implement the Agriculture Sector Wide Approach (ASWAp) and is instrumental in generating and disseminating agriculture and water related adaptation knowledge and technology products to smallholder farming communities, who ultimately experience the greatest impacts of climate change. The Ministry is currently working with the Food and Agriculture Organization (FAO) to develop Agriculture National Adaptation Plan.

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<sup>19</sup>The NSCCC is a committee of Principal Secretaries. It advises EAD on issues of policy on climate change programmes, projects and related activities.

### *Ministry of Health*

The Ministry seeks to achieve health for all Malawians by delivering health services and disseminating health information to the general public. The Ministry mission is to raise the level of health status of all Malawians by reducing the incidence of illness and occurrence of death in the population. This will be done through the development of a sound delivery system capable of promoting health, preventing, reducing and curing disease, protecting life and fostering general well-being and increased productivity. The Ministry has been working with the World Health Organization (WHO) to undertake climate change vulnerability assessment of the health sector.

### *Ministry of Education, Science and Technology*

The Ministry of Education, Science and Technology (MoEST) is responsible for the development and delivery of basic and higher education. The Ministry, through Malawi Institute of education (MIE), participated in the development of Malawi's Climate Change Learning Strategy and is currently mainstreaming climate change in primary and secondary school curricular. This has a potential of bringing climate change adaptation awareness to household level.

### *Ministry of Local Government and Rural Development*

The Ministry of Local Government and Rural Development (MoLGRD) is mandated to promote and accelerate local governance and participatory democracy and social-economic development of local governance. MoLGRD is responsible for the District led development efforts. The districts, through the Decentralization Policy, are a vehicle of capturing developmental needs from the grassroots to inform central government planning processes.

## **5.2.2 Communities**

Vulnerable communities have an important role in the development of an effective and efficient medium and long term adaptation plan for Malawi. They are the ones that are directly impacted by the negative effects of climate change, and therefore are better able to articulate the real adaptation needs. The bottom-up approach also enhances ownership and participation of all vulnerable groups including women who often carry the burden of climate change. Women are producers of food, and often walk long distances in search of water and energy (firewood) for cooking. Furthermore, some communities can be source of indigenous knowledge since they have lived with the impacts for many years and they have developed their own innovative approaches that have enhanced their resilience to the negative impacts.

Under the Decentralization Policy, the rural communities have established structures that can be the avenue for informing the district planners on adaptation needs. Committees such as Village Development Committees (VDCs) and Civil Protection Committees (CPCs) could play a lead role in reporting articulation of disaster and adaptation.

It was observed during the field visit of Climate Change Adaptation for Rural Livelihoods and Agriculture (CARLA) Project in Ntakataka (Dedza) that full participation by communities is constrained by a number of barriers. The barriers, which reduce their adaptive capacity, include abject poverty, low levels of education, lack of skills, lack of appropriate technologies, environmental degradation, and water availability, amongst others. Adaptation programmes or projects need to respond to the specific needs and vulnerabilities of the given community.

## **5.2.3 Development partners**

Development Partners play a number of roles in addressing effects of climate change. Some of the institutions consulted included United Nations Development Programme (UNDP), Department for International Development (DFID) African Development Bank, JICA, Royal Norwegian Embassy, World Bank, USAID, FAO, and World Food

Programme. Development partners provide grants to local partners for implementation of climate change related programmes. In addition, they are also involved in coordinating and monitoring of funded projects and capacity building for their implementing partners.

#### **5.2.4 United Nations Development Programme**

UNDP has been the largest multilateral donor supporting environmental and climate change programmes and projects in the country. A number climate change projects have been implemented with support from UNDP and partners: Initial and Second National Communication, National Adaptation Plan of Action (NAPA), Africa Adaptation Programme (AAP) , Building Capacity for integrated and comprehensive approaches to Climate Change Adaptation in Malawi, Community Empowerment for Sustainable Land Management and Livelihood Improvement Project, Disaster Risk Reduction, and Private Public Sector Partnership on Capacity Building for Sustainable land Management in the Shire River amongst others. UNDP supported the establishment and operations of National Climate Change Programme (NCCP) office in the Environmental Affairs Department, as the coordinator of the programme.

#### **5.2.5 United Kingdom Department for International Development (DFID)**

The UK Department for International Development (DFID) is the official development agency of the Government of UK managing aid for the poor, developing countries. The objective of providing aid to developing countries is to eradicate extreme poverty around the globe. DFID has supported a number of programmes to the government as well as other implementing partners. Some of the programmes that DFID has supported are: Agriculture Development Programme - Input Subsidy program, Attaining Sustainable Services from Ecosystems through Trade-off Scenarios (ASSETS) & Ecosystem Services, Climate Change Action Programme, Community Based Disaster Risk Management , Community Economic Improvement Project, Developing Innovative Solutions with Communities to Overcome Vulnerability through Enhanced Resilience, Enhancing Community Resilience to climate variability and climate change program (ECRP). ECRP was jointly financed by DFID, the Royal Norwegian Embassy (RNE) and Irish Aid and implemented through NGO partners (Christian Aid, Concern Universal, CARE and Action Aid).

#### **5.2.6 European Union (EU)**

The GCCA was established by the European Union (EU) in 2007 to strengthen dialogue and cooperation with developing countries, in particular least developed countries (LDCs) and Small Island developing states (SIDS). The Malawi project started in December 2013 and runs up to December 2019.

The overall objective of the project is to alleviate poverty through enhancing the resilience of Malawian institutions and communities at national and local levels to climate change risks and impacts.

The specific objectives of the project are:

- To contribute to climate change mainstreaming in the irrigation sector; and
- To contribute to climate change mainstreaming in natural resources, agriculture and forestry sectors in the districts of Blantyre, Neno, Phalombe and Zomba.

There are a number of opportunities to link this project to the NAP process in the agriculture sector that is being implemented by FAO and MoAIW, as well as the main NAP process.

### **5.2.7 Non-Governmental and Civil Society Organisations.**

Civil Society Network on Climate Change (CISONECC) is an umbrella organization that coordinates activities of their members with respect to related thematic area of climate change. It has currently 41 members coming from a diversified group consisting of local and international NGOs, faith-based groups and networks/associations passionately involved in climate change and disaster risk management (DRM) in Malawi. CISONECC members work in various areas which include livelihoods related interventions; capacity building and awareness; providing inputs such as seedlings; fertilizers, cassava cuttings, potato vines; early warning systems; exchange visits; tree planting; provision of health interventions; youth engagements; generation of energy efficient technology; and land administration. During the consultative process, CISONECC particularly highlighted the plight of the urban poor; women and girls are vulnerable groups whose needs should be taken on board in adaptation plan. Some of the CISONECC members are listed in Annex C.

### **5.2.8 Public Universities**

Lilongwe University of Agriculture and Natural Resources (LUANAR) has probably the most extensive climate change programme amongst the public universities. The Polytechnic and Chancellor, constituent colleges of University of Malawi, as well as Mzuzu University have implemented a number of studies initiated by the government and cooperating partners. Kamuzu College of Nursing, College of Medicine and Malawi University of Science and Technology have not been actively involved in climate change issues despite the link between disease epidemiology and climate change.

### **5.2.9 The Media**

In the 80's, Malawi has no television station, one radio station and two daily papers. Since multiparty democracy in 1994, Malawi has seen explosion in terms of growth in the electronic media. Malawi also has an Association of Environmental Journalists that concentrate to publicize environmental related news. The media should be taken on board in the NAP process as they would play a critical role in bringing awareness and disseminating climate adaptation messages to the general public.

### **5.2.10 Private Sector**

Participation of private sector in climate change issues in general and climate change adaptation in particular has been rather low. Private sector through the extraction of natural resources and production processes do contribute to environmental degradation and GHG emissions. As such, the private sector is expected, as part of its public social responsibility, to contribute to both national climate change adaptation and mitigation efforts. Umbrella institutions such Malawi Confederation of Chambers of Commerce and Industry (MCCCI) should play a lead role to sensitize and mobilize its members.

# Chapter 6 – NAP Process Gaps and Barriers Analysis for Malawi

## 6.1 Approach to Gaps and Barriers Analysis

Gap analysis constitutes the core of this NAP Stocktaking Report. This step of the NAP process provides an answer as to whether the process could proceed as per plan.

### 6.1.1 Framework for Gap Analysis

World Resources Institute (WRI) recommends a framework for gap analysis based on key institutional functions for designing, developing and implementing climate change adaptation programmes, projects and actions (Dixit et al, 2012). The framework suggests that the following factors be evaluated and gaps in these areas be identified.

*Assessments:* There is need for iterative process of assessing available information of various aspects of adaptation including vulnerability, impacts, practices and sensitivity of development activities.

*Prioritizations:* There is need for a comprehensive and transparent approach or set of tools to help set priorities in terms of vulnerable groups, sectors and geographical areas.

*Coordination:* As it was shown in Chapter 5, there are many actors that are critical in the effective implementation of adaptation activities. Thus coordination will be critical to ensure efficiency and effectiveness in national programmes implementation.

*Information Management:* Collecting, processing, storing and sharing of information to support adaptive capacity. Information on adaptive capacities of various sectors would be critical to adaptation planning.

*Climate Risk Management:* There is need to know what climate risks are affecting the country and whether institutions are available to address those potential climate risks.

### 6.1.2 Framework for Barrier Analysis

It is necessary to identify potential adaptation barriers because they may delay, divert or hinder progress. There are chiefly two types of barriers that are key to the NAP process. These are:

*Planning barriers:* These may derail the NAP Roadmap. They include institutional, materials/resources, cultural and policy. Planning barriers need to be addressed urgently so the NAP process may proceed as stated in the NAP Roadmap.

*Implementation Barriers:* These are barriers that need to be overcome along the way to ensure readiness to implement NAP once it is launched. Some of these barriers could be addressed during implementation following the development of a NAP Implementation Strategy.

A detailed barrier analysis framework has been developed by Ekstrom et al (2011)<sup>20</sup>. This could be used during Step 3 of the NAP process which will concentrate on "Addressing Gaps and Weaknesses".

Stocktaking requires an assessment both of the scientific information and data available to support a country's undertaking a NAP process, as well as an assessment of the technical and implementing capacity of the country to create and put in effect a NAP. The following two sections address these dual realms of stocktaking for Malawi.

## 6.2 Gaps and Barriers in Climate Change Information Capability

### 6.2.1 Gaps and Barriers Relating to Reliability of Available Data

#### *Gaps*

A significant proportion of available climate change data (such as from DCCMS stations or from academic, peer reviewed journal articles) is credible and reliable. However, a large section of available climate change literature on Malawi refers back to climate change modelling projections that emerged from the McSweeney et al. 2010 study, which itself relied on 2005-2006 data. While smaller studies have both generated and relied on newer data, there appears to be a need to update the type of broad, multi-variable, Malawi-wide study that was conducted in the McSweeney et al. effort. This will also help update the type of climate change scenarios used for modelling Malawi's future climate change impacts, from SRES scenarios to RCP scenarios, allowing even greater comparability with other countries and regions that have now started relying on RCP scenario projections.

It should be noted that this gap is not critical enough to justify the NAP process pausing to address this; the gap can be filled even as the NAP process moves on to the next stage. New and updated modelling studies will strengthen the overall NAP effort even if the study results emerge after a period of time.

#### *Barriers*

Commissioning new studies as comprehensive as the 2010 McSweeney effort will be a costly undertaking. Constraints on monetary resources and funds would be a barrier in terms of obtaining new and updated information.

Additionally, the time period for such studies may be longer than the NAP process calendar, so the findings may not feed into NAP. However, since the NAP is a dynamic process (rather than a one-time, standalone document), the NAP process and adaptation planning overall in Malawi would benefit from updated studies.

### 6.2.2 Gaps and Barriers Relating to Sectoral Data

#### *Gaps*

Within the many key economic and social sectors in Malawi, there is a need to build a stronger understanding of the impacts of climate change on multiple aspects of the sectors. While certain aspects of each individual socio-economic sector have been studied till date, there are still several additional questions in each sector that should be investigated. Especially given that a NAP process is geared towards medium to long-term adaptation, the data and anticipated impacts for each sector should be as comprehensive as possible to support adaptation planning.

Specifically the following gaps need to be addressed:

- General information targeting weather/climate data users e.g. farmers;

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<sup>20</sup>Ekstrom JA, Moser SC and Torn M (2011): Barriers to Adaptation: A Diagnostic Framework. PIER Research Report CEC-500-2011-04 prepared for California Energy Commission.

- Information on impacts for policy makers, development agencies and other stakeholders; and
- Detailed scientific data targeting academics, researchers, modelers and other stakeholders.

#### *Barriers*

Constraints on monetary resources and funds would be a natural barrier in terms of commissioning or supporting a range of studies about different elements of each major sector. For funding that comes from non-public sources (e.g. private sector funding to researchers at universities) only certain sectors may be attractive enough or of commercial interest enough to fund more wide-ranging studies about climate change impacts.

As noted above, the time period for such studies may be longer than the NAP process calendar, so the findings may not feed into NAP. However, as also articulated earlier, since the NAP is a dynamic process (rather than a one-time, standalone document), the NAP process and adaptation planning overall in Malawi would benefit from updated studies.

### **6.2.3 Gaps and Barriers Relating to In-Country Climate Science Capacity**

#### *Gaps*

Currently, none of the major climate change modelling studies and only a few of the impact related peer-reviewed studies have been conducted by Malawian institutions. There is a dependency on foreign scientists and researchers. While the fact that climate science and analysis for Malawi is generated outside the country does not take away at all from the reliability and high quality of these studies, it straitjackets Malawi in framing study parameters that reflect its own specific interests. Building more in-country capacity to undertake climate science studies could help align such studies more with Malawian development goals and reflect Malawian social and economic context to a greater degree.

#### *Barriers*

Scientific capacity within a field like climate change is slow to build up. Even if significant resources were allocated to programs that support the education and training of scholars in key fields (climatology, hydrology, atmospheric chemistry etc.) there are limit to absorptive capacity. There may not be enough students to train in these fields, or enough academic departments well equipped to provide such qualifications.

Universities also have competing priorities in terms of what they would need to do with available funding. Similarly, public funding to grow technical capacity in universities needs to be spread out over several key fields of national interest, not only climate change.

### **6.2.4 Gaps and Barriers Relating to Climate Change and Adaptation Data-Gathering Systems**

#### *Gaps*

There is a lack of uniformity across different socio-economic sectors in Malawi in terms of the comprehensiveness and geographical spread of the data they are able to measure and analyse. While some sectors such as agriculture and health appear to have extremely robust data and information-gathering networks, established across multiple levels (local, district, national), not all sectors have such systems in place.

Putting in place the architecture to collect such data, in all major sectors, is a key precondition for reliable monitoring and evaluation. It will help Malawi's decision makers better understand progress on climate change adaptation in each sector, but also be able to compare results and identify successes across sectors.

#### *Barriers*

Different sectors have different characteristics, and would require different data collected as well as different data collection methods. Thus a bespoke system would take some time to design and put in place. In the interim, existing systems should be leveraged where possible.

It should be noted that constraints on monetary resources and funds would naturally be a barrier to ensuring more robust data-gathering across more sectors and at different geographic levels.

### **6.2.5 Gaps and Barriers Relating to Climate Information Integration Systems and Access**

#### *Gaps*

Not only is the collection of more primary data necessary from different sectors and different regional units (local, district, national etc.), this information should be well organized and made accessible. This accessibility will benefit researchers, decision makers in government, policymakers, and the public at large. Based on the literature review conducted for this stocktaking it is clear that a wealth of scientific data and information about Malawi and climate change already exists (in numerous reports, studies, and within government files etc.) but it is not as readily accessible as it could be.

If climate change impact and adaptation related data and information from different sectors and areas is not easily accessible by different departments and agencies within government as well as by civil society, this constrains cross-sectoral learning.

#### *Barriers*

Creating information management systems (such a web-based portals or clearinghouses) requires both monetary resources as well as technically skilled personnel to operate such systems. Merely setting up the system is insufficient – there also needs to be investment in O&M, periodic updates, manual cross-referencing etc. This would come with a price tag that could be too much of a disincentive.

Additionally, the mere existence of such a system will not automatically spur cross-sectoral planning and coordination. Each sector would still have to proactively contribute its data and information (perhaps spurred by a mandate to do so). Changing the culture of information-sharing and access is invariably challenging task.

### **6.2.6 Gaps and Barriers Relating to Climate Change Communication**

#### *Gaps*

Multiple stakeholders and experts have indicated that when climate and weather related information is communicated by the government, researchers, academia and other experts, it is too opaque for the recipients to know how they should interpret it or respond. Thus there is a gap regarding scientific communication, and in particular climate change communication. There is a need for some specialized knowledge and training in how to translate complicated technical information into actionable statements that are relevant to the audience.

A related issue is that even knowledge and awareness about the NAP process itself is inconsistent, with limited understanding. For the NAP to truly contribute to medium and long term adaptation and sustainable interventions, it is critical that different government agencies as well as civil society be as familiar with the NAP process and

objectives as possible, both to contribute during its development, and to assure its success during the implementation.

#### *Barriers*

Science communication is often treated as a secondary priority to building scientific capacity, but this should be changed because stronger scientific and technical capacity is of limited value when the products of such efforts do not have the required impacts as a result of flawed communication.

## 6.3 Gaps and Barriers in Climate Change Institutional Capability

### 6.3.1 Gaps and Barriers Relating to Medium and Long Term Planning

#### *Gaps*

The need to integrate NAP in development planning has been discussed in various forums. It is also a fact that the Department of Economic Planning and Development, the lead institution in planning process, is represented in these forums and committees, there is no guarantee that the process could indeed be implemented since there are no written guidelines to deliberately initiate an action to align the NAP process to government development plans. This is particularly critical now that the successor to MGDS II is being prepared. This could also be applied to district development plans.

Similarly, there have been efforts, through Africa Adaptation Program (AAP), to mainstream climate change adaptation in planning processes. Although policy makers were trained in various aspects of climate change including adaptation, there are no written guidelines to ensure the mainstreaming process is indeed taking place.

Malawi has some experience in long term and medium term planning. However, the experience is limited to development planning (Vision 2020 and MGDS as examples). Malawi has limited experience in terms of development of long term and medium term climate change adaptation and/or climate change resilience plans.

#### *Barriers*

The NAP Road map is critical in providing strategic direction to efficiently and effectively implement the NAP process. The delays in the finalization have affected the progress. Although the NAP process is country-driven, the opportunities out there will not wait for any particular nation.

As it was highlighted earlier, adaptation planning requires a range of skills (Dixit et al, 2012). Despite the progress in human capacity development in general issues of climate change, there is need for more specialized skill relevant to adaptation. During the consultations with stakeholders, it was observed that there are clear capacity gaps in knowledge relating to climate risk assessment and modelling.

There is also a barriers relating to limited financial resources allocated to climate change adaptation activities (competing for resources with other equally critical sectors such health and education). This would tend to limit spatial and temporal scopes of adaptation plans.

The NAP process needs to recognize the cultural attachment communities may have to land and natural resources that may derail adaptation planning processes.

## 6.3.2 Gaps and Barriers Relating to Climate Change Policy Landscape

### *Gaps*

Despite effort taken to align policies, there is still a problem of policies not talking to each other. It has been observed that although climate change in general and adaptation in particular are known cross cutting issues, there is no deliberate mechanism or written guidelines to mainstream them in policies and strategies in similar way to the way gender and HIV/AIDS. Furthermore, the process of reviewing and approving policies takes too long. In addition, most policies do not have a clear implementation plan or action agenda to ensure what is put in the policy is actually implemented. It is pleasing to note that the draft National Climate Management Policy does have an implementation plan.

### *Barrier*

The process of developing policies requires extensive consultation of a range of stakeholders. There is lack of financial resources to facilitate adequate consultations resulting in lack of engagement of critical stakeholders at various stages of the policy development.

## 6.3.3 Gaps and Barriers Relating to Actors and Actions

### *Gaps*

Having too many climate change adaptation projects and implementers, in itself, is not bad. The challenge occurs when there is no coordination. Often there are too many small/pilot projects and actors working independently yet concentrating within narrow spatial presence, not all vulnerable hotspots are reached. Most of the projects are short term in nature (2 to 3 years). The period is not long enough periods to build resilience. There were very few projects that were collaboratively funded and implemented.

One critical gap in this context is the low level of private sector participation in the NAP process and in climate change adaptation efforts overall in Malawi. While the private sector was engaged to some degree during the formulation of the Malawi national climate change investment plan, that initial engagement has not translated into deeper connectivity with the NAP process or other climate change processes in the country.

### *Barrier*

Transferring of adaptation knowhow and technologies to communities does guarantee enhancement of their resilience. Most of Malawian communities have low adaptive capacity due to high level of poverty, low levels of education, limited availability to appropriate technologies and degraded natural resources, limited extension support services and uncoordinated HR development in higher education institutions.

The barrier regarding involvement of the private sector is the lack of clarity on the part of industry and businesses about the relevance of climate change adaptation to their interests. Increasingly, corporate entities globally and in Africa are starting to engage with the issues of corporate climate risk, and this may be an entry-point to the private sector in Malawi.

### 6.3.4 Gaps and Barriers Relating the NAP Process

#### *Gaps*

During the consultations process, it was observed that most stakeholders had unclear understanding of NAP process, NAP and NAPA. This occurred at all levels. The NAP Stocktaking consultative meetings did help to bridge this knowledge gaps to those that participated. The fact, however, remains that the understanding of the process is still rather low.

The other identified gap relates to limited sources of funding adaptation initiatives. There is no sustainable local funding source as is the case with say the Energy Sector who have energy fund derived from fuel levy.

There is limited collaboration in planning for climate change adaptation projects. The existing structures, such as TCCC, tend to concentrate on monitoring of ongoing projects.

#### *Barrier*

There is general lack of awareness and ownership of the NAP process by the stakeholders. The delays in the approval of National Climate Change Management Policy in directly have slowed down the NAP process. Similarly, some stakeholders observed that delays in establishments of some enabling institutions e.g. National Implementing Entity will prevent Malawi to take advantage of some of global funding opportunities.

## Chapter 7 – Recommendations for the NAP Process Moving Forward

In keeping with the approach taken in Chapter Six, which first described informational gaps and barriers, followed by institutional gaps and barriers, recommendations for the NAP process are also structured similarly.

### 7.1 Recommendations Pertaining to Climate Change Information Capability

#### 7.1.1 Commission New and Updated Climate Change Projections for Malawi

The Government of Malawi should seek funding support to commission an update to the 2010 McSweeney study or commission another group (e.g. CGIAR or CSAG within Africa etc.) to produce a fresh study that looks at the same variables, including from a seasonal viewpoint. The fresh work but should use RCP scenarios (AR5) instead of SRES scenarios (TAR and AR4). To the extent that downscaling is feasible without significantly reducing confidence levels, the new study should also provide for regional differentiation within Malawi

#### 7.1.2 Call for Additional Research on Climate Change’s Sectoral Impacts in Malawi

The Government of Malawi, in coordination with key development partners, should identify resources that could support a call for new research. The objective of this new research should be to increase the knowledge base about impacts and adaptation options in different sectors, so that a much more comprehensive realm of information is available about Malawi’s major socio-economic sectors and how climate change impacts them. Instead of commissioning studies that look at the sector as a whole, these new studies should be focused on as many important sub-components of a sector as possible.

#### 7.1.3 Strengthen In-Country Climate Change Science Generation Capacity

Over the medium to long term, the Government of Malawi and its development partners should slowly build up in-country scientific and technical research capacity, especially in universities and within public science and research bodies. In the short to medium term, before universities are fully capacitated, one option could be to send talented students to universities abroad to study climatology, modelling etc. with bursaries or scholarships.

#### 7.1.4 Design and Put in Place More Comprehensive Data-Gathering and Management Systems in Malawi

To increase the level of data and information being measured and recorded in Malawi (pertaining to climate change impacts, the performance of adaptation measures, and a range of sector-specific metrics social economic data ), the government of Malawi should create a robust architecture for information-gathering in all major sectors, and from all major administrative levels (local, district, national). It could start by using models such as those being used in the agriculture sector (through extension officers etc.) or the health sector (HMIS) and extending these to other sectors, adapting and customizing as needed. It should put in place robust surveillance, data-gathering, and reporting networks that allow information to pass both up and down the chain.

### **7.1.5 Create a User-Friendly Climate Change Science and Adaptation Information Database**

Malawi should invest in creating an online, interactive, searchable database of both finished climate resources and raw data. The government could use the CAI database as an example, but must ensure user-friendly interface. The existing information portal of the NAP Core Team could also be a starting point, but the system should have far more detail and flexibility. The design and operation of this could be done as collaboration between the National Statistics Office (NSO) and the Environment Affairs Department (EAD's) climate change team (to ensure that raw data tables collected by the NSO are appropriately analysed within the context of climate change). This database should also allow different departments and agencies in Malawi to add their own contributions in an organized manner, as well as to download any content required.

### **7.1.6 Invest in Climate Change and Scientific Communication Efforts**

Information products should be tailored more carefully for the intended audience. Institutions generating and disseminating information should invest in science communicators to help translate into lay language. Decision support tools should be developed to go along with information, to help people respond appropriately.

Better communication about the NAP process itself is necessary, and should target a wider audience, with more reader-friendly materials (summary briefs instead of in-depth reports).

## **7.2 Recommendations Pertaining to Climate Adaptation Institutional Capability**

### **7.2.1 Alignment of NAP Process to medium and long term development planning**

Development of successor to MGDS II is at an advanced stage. In order to ensure that all the relevant sectors are able to incorporate their medium and long term, a special NAP submission should be prepared for MGDS III, and be updated once the NAP is launched. This activity could be coordinated by DEPD and EAD.

There is also need to develop general planning guidelines to include climate change adaptation so that adaptation could be mainstreamed as a cross cutting issue.

Furthermore, the issue of cc-SWAp, which has been raised in other forums, should be seriously taken forward as a programming and funding model to climate change activities in Malawi.

### **7.2.2 Ensuring Enabling Policy Environment**

Speeding up the approval and publication of the National Climate Change Management Policy will a critical first step to providing guidelines to harmonize and resolve policy related challenges that exist now. From the Policy Acts and specific strategies will be developed to operationalize the policy. Specific to the NAP process,

development of adaptation implementation strategies should be aligned to the adaptation issues contained in the Policy.

### **7.2.3 Improved Coordination Among Actors and Adaptation Actions**

Existing coordination mechanisms and platforms such as Donor Working Group, Technical Committee on Climate Change and other forums should be strengthened to include deliberate information sharing and pooling together of resources for joint implementation to ensure scaling up of project activities.

Building on the Climate Action Intelligence Report, the Government should produce complete compendium of adaptation projects or baseline studies to encourage collaboration. There should also be deliberate effort to geographically spread out adaptation projects.

Due to low participation process of the private sector in the NAP process and adaptation activities in general, the EAD and NAP Core Team should arrange a tailor-made regional consultative meeting with MCCCCI members or alternatively could target MCCCCI periodic meeting to raise awareness.

### **7.2.4 Strengthening the NAP Process**

In order to improve understanding of adaptation and NAP process. In particular, the Roadmap should also articulate key definitions and scope in terms of duration and geographical spread. It could be prudent to make budgetary commitments legally binding say as % of annual budget.

Climate related impacts are becoming more frequent and intense. To provide adequate financial flows for climate change adaptation, the Government should urgently consider setting up a special fund or ensure adequate allocation by Treasury for climate change adaptation activities by different line ministries and departments. This type of approach could be recommended and formalized in the NAP.

Furthermore, the Government could lead in the process of developing alternative innovative local funding mechanisms to provide sustainably resources required e.g. carbon tax at the borders on all foreign vehicles as is the case with Zimbabwe, or a small levy on polluting products such as fossil fuels, or similar instruments that charge polluters and cross-subsidize adaptation projects.

# ANNEX A – NAP Process Steps (UNFCCC)

Steps	Checklist of building blocks	Sample NAP outputs
 <b>Element A. Lay the groundwork and address Gaps</b>		
1. <b>Initiating and launching of the NAP process</b>	<input type="checkbox"/> Briefing on NAP process - adaptation challenges & opportunities <input type="checkbox"/> Coordinating mechanism <input type="checkbox"/> National vision and mandate for NAPs <input type="checkbox"/> Access to technical and financial support <input type="checkbox"/> NAP framework/strategy and road map	<ul style="list-style-type: none"> <li>» Mandate for the NAP process</li> <li>» Framework and strategy for climate change adaptation</li> <li>» Funded project to support operations of the NAP process</li> <li>» Road map for the NAP process</li> </ul>
2. <b>Stocktaking: identifying available information</b> on climate change impacts, vulnerability and adaptation and assessing gaps and needs of the enabling environment for the NAP process	<input type="checkbox"/> Stocktaking of adaptation activities <input type="checkbox"/> Synthesis of available knowledge on impacts, vulnerability and adaptation <input type="checkbox"/> Capacity gap analysis <input type="checkbox"/> Barriers analysis	<ul style="list-style-type: none"> <li>» Report on synthesis of available information</li> <li>» Geospatial database in support of the NAP process</li> <li>» Knowledge-base of observed climate impacts, vulnerabilities and potential interventions</li> <li>» Gap and needs analysis report</li> <li>» Barrier analysis report</li> </ul>
3. <b>Addressing capacity gaps</b> and weaknesses in undertaking the NAP process	<input type="checkbox"/> Building institutional and technical capacity <input type="checkbox"/> Opportunities for integrating adaptation into development <input type="checkbox"/> Programmes on climate change communication, public awareness-raising and education	<ul style="list-style-type: none"> <li>» Strategy document(s) for capacity-building, awareness-raising, communication and education</li> <li>» NAP website</li> </ul>
4. <b>Comprehensively and iteratively assessing development needs and climate vulnerabilities</b>	<input type="checkbox"/> Compile development objectives, policies, plans and programmes <input type="checkbox"/> Synergy between development and adaptation objectives, policies, plans and programmes	<ul style="list-style-type: none"> <li>» Report on stocktaking of development/adaptation activities</li> <li>» Report on approaches for ensuring synergy between development and adaptation</li> </ul>
 <b>Element B. Preparatory elements</b>		
1. <b>Analysing current climate and future climate change scenarios</b>	<input type="checkbox"/> Analysis of current climate <input type="checkbox"/> Future climate risks and uncertainty/Scenario analysis <input type="checkbox"/> Communicating projected climate change information	<ul style="list-style-type: none"> <li>» Report on climate analysis</li> <li>» Report on climate risks/Projected climate changes</li> <li>» Strategy for climate information services</li> </ul>
2. <b>Assessing climate vulnerabilities and identifying adaptation options</b> at sector, subnational, national and other appropriate levels	<input type="checkbox"/> Climate vulnerability assessment at multiple levels <input type="checkbox"/> Ranking climate change risks and vulnerabilities <input type="checkbox"/> Scoping adaptation options	<ul style="list-style-type: none"> <li>» Vulnerability and adaptation assessment report</li> </ul>
3. <b>Reviewing and appraising adaptation options</b>	<input type="checkbox"/> Appraisal of adaptation options	<ul style="list-style-type: none"> <li>» Report on appraisal of adaptation options</li> <li>» Sectoral and subnational plans or strategies</li> </ul>
4. <b>Compiling and communicating national adaptation plans</b>	<input type="checkbox"/> Draft national adaptation plans <input type="checkbox"/> Finalize NAPs and process endorsement <input type="checkbox"/> Communicate NAPs at national level	<ul style="list-style-type: none"> <li>» Draft NAPs for review</li> <li>» Endorsed NAPs</li> </ul>
5. <b>Integrating climate change adaptation</b> into national and subnational development and sectoral <b>planning</b>	<input type="checkbox"/> Opportunities and constraints for integrating climate change into planning <input type="checkbox"/> Building capacity for integration <input type="checkbox"/> Integration of adaptation into existing planning processes	<ul style="list-style-type: none"> <li>» Report on integration of adaptation into development</li> </ul>
 <b>Element C. Implementation strategies</b>		
1. <b>Prioritizing climate change adaptation in national planning</b>	<input type="checkbox"/> National criteria for prioritizing implementation <input type="checkbox"/> Identify opportunities for building on existing adaptation activities	<ul style="list-style-type: none"> <li>» Report on prioritization of adaptation in national development</li> </ul>
2. <b>Developing a (long-term) national adaptation implementation strategy</b>	<input type="checkbox"/> Strategy for adaptation implementation <input type="checkbox"/> Implementation of NAPs through policies, projects and programmes	<ul style="list-style-type: none"> <li>» Implementation strategy for the NAPs</li> </ul>
3. <b>Enhancing capacity</b> for planning and implementing adaptation	<input type="checkbox"/> Strengthening long-term institutional and regulatory frameworks <input type="checkbox"/> Training at sectoral and subnational levels <input type="checkbox"/> Outreach on outputs nationally & promotion of international cooperation	<ul style="list-style-type: none"> <li>» National training and outreach programme(s)</li> </ul>
4. <b>Promoting coordination and synergy at the regional level and with other multilateral environmental agreements</b>	<input type="checkbox"/> Coordination of adaptation planning across sectors <input type="checkbox"/> Synergy at the regional level <input type="checkbox"/> Synergy with multilateral environmental agreements (MEAs)	<ul style="list-style-type: none"> <li>» Report on regional synergy</li> <li>» Report on synergy with MEAs</li> </ul>
 <b>Element D. Reporting, monitoring and review</b>		
1. <b>Monitoring the NAP process</b>	<input type="checkbox"/> Identify (few) areas of the NAP process to monitor progress, effectiveness and gaps (PEG) <input type="checkbox"/> Define metrics for documenting PEG <input type="checkbox"/> Collect information throughout the NAP process to apply the metrics developed	<ul style="list-style-type: none"> <li>» Metrics report/Monitoring Plan</li> <li>» Database of metrics</li> </ul>
2. <b>Reviewing the NAP process</b> to assess progress, effectiveness and gaps	<input type="checkbox"/> Synthesis of new assessments & emerging science and the results and outcomes from implemented adaptation activities <input type="checkbox"/> Evaluate metrics collected to assess progress, effectiveness and gaps of the NAP process	<ul style="list-style-type: none"> <li>» Evaluation report</li> </ul>
3. <b>Iteratively updating the national adaptation plans</b>	<input type="checkbox"/> Repeat some steps and update NAPs and related documentation <input type="checkbox"/> Production of updates to the NAP outputs aligned with relevant national development plans	<ul style="list-style-type: none"> <li>» Updated NAPs</li> </ul>
4. <b>Outreach on the NAP process and reporting on progress and effectiveness</b>	<input type="checkbox"/> Disseminate the NAPs and related outputs to the UNFCCC secretariat and others <input type="checkbox"/> Provide information in national communications on progress in and effectiveness of the NAP process	<ul style="list-style-type: none"> <li>» Progress report and information in national communications</li> </ul>

## ANNEX B – Selected list of Actors Involved in Adaptation

Name of Institution	Name of Main Contact Point	Address and Physical Location	Email and Phone# of Contact
<b>Central Government Departments, Agencies, and Offices</b>			
Environmental Affairs Department	The Director	Lingadzi House, City Centre, Private Bag 394, Lilongwe 3	Tel: 2651771111 Fax: 2651773379
Department of Climate Change and Meteorological Services	The Director	Government Office Complex, Victoria Avenue, P.O. Box 1808, Blantyre	Tel: 2651822014 Fax: 2651822215
Ministry of Agriculture, Irrigation & Water Development (Departments)	The PS	P.O. Box 30014, Capital City Lilongwe 3, Malawi	Tel: 01789033 Fax: 01789390
- Animal Health and Livestock Development	The Director	PB 2096, Lilongwe	Tel: 01754963 Fax: 01751349
-Agriculture Extension Services	The Director	PB 30145 Lilongwe 3	Tel: 01750384 Fax: 01750384
-Agriculture Research Services	The Director	Chitedze Research Station, PB 158, Lilongwe	Tel: 01707222 Fax: 01707041
-Fisheries	The Director	PB 593 Lilongwe	Tel: 01788511 Fax: 01788712
-Crop Development	The Director	PB 30145 Lilongwe 3	Tel: 01789033 Fax: 01789252
-Land Resources Conservation	The Director	PB 30291 Lilongwe	Tel: 01755048 Fax: 01755354
-Irrigation Services	The Director		
-Water Resources	The Director	Tikwere House, Private Bag 390, Capital City, Lilongwe 3,	Tel: 01770344
-Water Supply	The Director		Fax: 01773737
Ministry of Health	The PS	PB 30377 Lilongwe 3	Tel: 01789400

			Fax: 01789365
Department of Forestry	The Director	PB 30048 Lilongwe 3	Tel: 01771000 Fax:01774268
Department of Energy	The Director	PB 309, Lilongwe	Tel: 01770688 Fax: 01770094
Department of Disaster Management Affairs	The Director	Capital Hill, PB 336, Lilongwe 3	Tel:01788188 Fax:01789142
Department of Economic Planning and Development	The Director	PB 30136 Lilongwe 3	Tel: 01788888 Fax: 01788247
Ministry of Gender	The PS	PB 330 Lilongwe	Tel: 01770411 Fax: 01770101
Ministry of Local Government	The PS	PB 30312 Lilongwe 3	Tel: 01789388 Fax:01788083
Ministry of Education Science and Technology	The PS	PB 328 Lilongwe 3	Tel: 01789422 Fax: 01788184
<b>District Government Departments, Agencies, and Offices</b>			
<b>Development Partners</b>			
UNDP	The Resident Coordinator	UNDP Malawi, Area40/Plot 7, P.O. Box 30135, Lilongwe 3	Tel: 2651773500 Fax: 2651773637
DFID	Team Leader	DFID Malawi, British High Commission, 8 Convention Drive, P.O. Box 30042, Lilongwe 3	Tel: 2651772400 Fax: 2651772657
World Bank	Country Manager	Mulanje House, City Centre, P.O. Box Lilongwe 3	Tel: 2651770611
USAID	Chief of Party	USAID/Malawi, P.O. Box 30455, Lilongwe 3	Tel: 2651772455 Fax: 2651773181
FAO	FAO Representative in Malawi	Evelyn Curst/ Plot No. 13/31, P.O. Box 30750, Lilongwe 3	Tel: 2651773255 Fax: 2651773263

			Email: FAO-MW@fao.org
European Union	Head of Delegation	Delegation of EU to Malawi, Area 18 Roundabout/Corner Presidential Way, P.O. Box 30455, Lilongwe 3	Tel: 2651773199 Fax: 2651773534 Email: delegation-malawi@eeas.europa.eu
World Food Program	WFP Representative	P.O. Box 30571, Lilongwe 3	Tel: 2651774666 Fax: 2651773785 Email: WFP.lilongwe@wfp.org
Norwegian Embassy	The Ambassador	ARWA House, Capital City, PB B323, Lilongwe 3.	Tel: 2651774211 Fax: 2651772845 Email: emb.lilongwe@mfa.no
<b>International Non-Governmental Organizations and Multilateral Development Institutions</b>			
Action Aid	Country Director	Kang'ombe Building, First Floor-East Wing, P.O. Box 30735, Lilongwe 3	Tel: 2651757500 Fax: 2651757330
Christian Aid	Country Director	On Top of 7/11 Supermarket, Along Kamuzu Procession Road, Lilongwe	Tel: 2651752944 Fax: Email: info@christian-aid.org
Concern Universal	Country Director	Area 6, P.O. Box 159, Lilongwe	Tel: 2651759880
DanChurch Aid	Regional Representative	PB 282, Lilongwe 3	Tel: 265999971974 Fax: 2651744210 Email: malawi@dca.dk
Oxfam	Country Director	PB B331, Lilongwe 3	Tel: +265 1 770 525 Fax: +265 1 770 491
Red Cross	The Executive Director	Malawi Red Cross, Area 14, P.O. Box 30096, Lilongwe 3	Cell: 0999 952 356 Fax: 01 775 590
GIZ	The Country Director	PB 470 Lilongwe	Tel: 01794895 Fax: 0179527
<b>National (Domestic) Non-Governmental Organizations</b>			

CISONECC Secretariat	The National Coordinator		
LEAD	The Regional Director	LEAD_SEA, PB 7, Zomba	Tel: 01526059 Fax: 01524251
CURE	The Executive Director		
<b>Universities, Academic Institutions, and Scientific and Technical Research Organizations</b>			
LUANAR	The Principal	Bunda Campus, P.O. Box 218, Lilongwe	Tel: 2651771111 Fax: 2651773379
MZUNI	The Vice Chancellor	Mzuzu University	Tel: 2651771111 Fax: 2651773379
POLYTECHNIC	The Principal	The Polytechnic, Private Bag 303, Chichiri, Blantyre 3	Tel: 2651870411 Fax: 2651870568 Email: principal@poly.ac.mw
CHANCELLOR COLLEGE	The Principal	Chancellor College, P.O. Box 280, Zomba	Tel: 2651771111 Fax: 2651773379
<b>Private Sector</b>			
Malawi Confederation of Chambers of Commerce and Industry	The CEO	Trade Fair Grounds	Tel: 01871988 Fax: 01871147

## ANNEX C – CISONNECC MEMBERS

CISONNECC MEMBERS AND THEIR THEMATIC AREAS	
Organisation	Thematic areas
Action Aid	Gender, democracy, climate change, natural disasters and human conflict
Act Alliance	Humanitarian aid, development and advocacy
Assemblies Of God Relief And Development Services	Climate change, climate justice, conservation farming, HIV and AIDS national response and water, hygiene and sanitation
Christian Aid	Poverty reduction
Church Action In Relief And Development	Disaster response, rehabilitation, advocacy, development, gender and HIV & AIDS activities
CARE	Food security initiatives, economic empowerment of vulnerable communities
Clinton Development Initiative	Tree planting and management for livelihood improvement
Center For Environmental Policy And Advocacy	Environmental development and natural resources management
Citizens For Justice	Advocating for the environment, economy and social justice, pro-poor climate change policies
Civili Society Agriculture Network	Policy advocacy in agriculture
Concern Universal	Disaster risk reduction, climate change, food security, water and environmental sanitation and emission reduction
Coordination Union For The Rehabilitation Of The Environment	Provide technical support and improve networking in the area of the environment between NGOs, the government and other organisations
Dan Church Aid	Individual rights and equal worth
Development Fund Malawi	Sustainable agriculture production, climate change adaptation, gender equality, governance and market access
Eagles Relief And Development Programme International	Creating awareness on climate change, environmental degradation risk and adaptation assessment processes
Evangelic Association of Malawi	Food security, disaster risk reduction, climate change, advocacy and HIV & AIDS intervention
Evangelical Lutheran Development Service	Food security and livelihoods, water and sanitation, climate change and environmental management, human rights, gender and advocacy, micro-finance, disaster management, disaster risk reduction, HIV and Aids and Malaria
Farmers Union of Malawi	Improving livelihoods
Global Hope Mobilization	Conservative agriculture, provision of piped water systems in response to climate change , installation of solar panels and planting productive trees
Leadership For The Environment And Development- Southern And East Africa	Climate change adaptation and natural resources management
Link For Education Governance	Environmental education
Livng Waters Church Radio	Raise awareness, lobby and advocate issues surrounding the environment and climate change
Norwegian Church Aid	Access to quality health care, social mitigation of HIV & AIDS, gender based violence and resource and finance
Network For Youth Development	Environmental education, climate change, lobbying and advocacy
Oxfam	Climate change and national disaster risk management
Rescope	Training programs on sustainable environmental management, organic farming, environmental education, climate change adaptation and mitigation
Total Land Care	Community based approaches to increase agricultural production, food security and income
Trocaire	Ending poverty and hunger, justice and human rights, gender equality, HIV, climate change and emergency relief
Training Support For Partners	Food security, environment, water and sanitation and natural resources management
Voluntary Service Overseas	Market-led food and income security, HIV and countering stigma and discrimination, promoting community level climate resilience and climate change awareness
Water And Environmental Sanitation Network	Water and Sanitation
Wildlife And Environmental Society Of Malawi	Afforestation, Re afforestation, advocacy for sound natural resources management and environmental education

## ANNEX D – Attendance at the NAP Stocktaking Inception Report Presentation to Malawi's NAP Core team held at Wamkulu Palace Hotel on 13th November 2015

		Institution	Designation	Email/Phone
1	Shamiso Najira	Environmental Affairs Department (EAD)	Chief Environmental Officer	Shamiso_b@yahoo.com
2	Sarah Mclvor	UNDP Malawi	Program Analyst- CC	Sarah.mclvor@undp.org 0994736277
3	Emmanuel Kanchewa	Ministry of Agriculture Irrigation & Water Development	Principal Economist	ejaykten@gmail.com
4	Evans Njewa	EAD	Principal Environmental Officer	evansnjewa@gmail.com 0994853245
5	Hannah Siame	EAD	Environmental Officer	hannakasongo@yahoo.com
6	Francis G Kachule	Ministry of Finance Economic Planning and Development	Principal Debt and Aid Officer	kachulefrancis@yahoo.com 0999950172
7	Charles Gondwe	Forestry Department	Forestry Publicity Officer	cg2communications@gmail.com 0999943642
8	Chimwemwe Yonasi	EAD	Environmental officer	cyonasi@gmail.com
9	Golivati Gomani	EAD	Environmental officer	ggomani87@gmail.com
10	Donald Kamdonyo	Planning for Climate Change Project	Climate Change Expert	kamdonyo@yahoo.com donald.kamdonyo@pccmw.org
11	Precious Chizonda	Food and Agriculture Organization (FAO)	Agriculture NAP Officer	precious.chizonda@fao.org
12	George Phiri	FAO	Technical Coordinator	george.phiri@fao.org 0995611748
13	Humphreys Masuku	World Health Organization	EHO/NSPO	masukuh@who.int 0999942245
14	Annie Mapulanga	Ministry of Natural Resources Energy and Mines	Economist	anniemapulanga@gmail.com 0999268933

	<b>IN ATTENDANCE</b>			
	Kenneth J Gondwe	The Polytechnic	NAP National Consultant	kgondwe@poly.ac.mw/ gondwekj@gmail.com
	<b>APOLOGIES</b>			
	Shravya Reddy	Pegasys	NAP International Consultant	Shravya@pegasys.co.za
	Fred Kosamu	Department of Climate Change and Meteorological Services		

## ANNEX E – Field Consultations

### Dedza District

#### Members of Dedza District Committee

Name	Organization	Contact
P. Namakoma	CADECOM-Dedza	0888755190
Bruno Kamanga	EAD-Dedza	0999656728 / brunokamanga@yahoo.co.uk
Gift Moloko	Irrigation- Dedza	0999717675/ tadala2004@yahoo.com
Mwayi Katundu	EAD Dedza	0884458575/katundumwayi@gmail.com
Zione Viyazyi	DDC	0999283410/ zionechimata@gmail.com
G Gomani	EAD	0999383651ggomani87@gmail.com
K J Gondwe	Polytechnic	gondwekja@gmail.com/ 0888515050

#### Members of CARLA Village Committee, Ntakataka, Dedza

Name	Village/Address	Position
1. Emilia Pezemwawa	Kalindiza	Member
2. Maria Chitsonga	Chidampamba	Member
3. Ester Nzeru	Kafulama	Member
4. Eva Gift	Kubwenzimawa	Member
5. Pereye Patrick	Mlongoti	Member
6. James Jailosi	Njitcha	Secretary
7. Maria Kamondo	Greta	Member
8. Amos Kanyatula	Maluza	Treasurer
9. Erasmus Mgalira	Mtakataka	Field Technician-CARLA
10. Golivati Gomani	EAD	Environmental Inspector
11. K J Gondwe	Polytechnic	NAP Consultant

### Salima District

#### Salima District Environment Office

Name	Organization	Contact
Mr. Davis	Salima EAD	<a href="mailto:chogawana@gmail.com">chogawana@gmail.com</a>
Mr. Blessings	Salima EAD	<a href="mailto:bblssins@gmail.com">bblssins@gmail.com</a> / 0994200509

#### COOPI (NGO)

Mr. Aubrey	COOPI	<a href="mailto:anyekanyeka@gmail.com">anyekanyeka@gmail.com</a> / 0999954989
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## ANNEX F – Attendance List, Consultative Meeting, Wamkulu Palace, December 17, 2015

	NAME	ORGANIZATION	DESIGNATION	PHONE NUMBER	EMAIL
1	F G Kachule	Ministry of Finance	Principal Debt & Aid Officer	0999950172	kachulefrancis@yahoo.com
2	Hannah Siame	EAD	EO	0999118262	hannahkasongo@yahoo.com
3	John Mawenda	EAD	EI	0888100585	mawendaj@gmail.com
4	Matthews Tsirizeni	LEAD	PM	0994554731	mtsirizeni@leadsea.mw
5	Esau Chirwa	Fisheries Dept	Chief Fisheries Officer	0888872017	esauchirwa@yahoo.com
6	Donald Kamdonyo	Consultant	Consultant	0888865633	kamdonyo@yahoo.com
7	Kenneth J Gondwe	Polytechnic	National NAP Consultant	0888515050	gondwekj@gmail.com
8	Shravya Reddy	Pegasys	International Consultant	+27(0)818894625	shravya@pegasys.co.za
9	Senard Mwale	DFID Malawi	Resilience Advisor	0999552968	s-mwale@dfid.gov.uk
10	Lonely Chirimba	Irish Aid	Senior Advisor	0999866107	lonely.chizimba@dfa.ie
11	Sothini Nyirenda	UNDP	Programme Analyst	0888773869	sothini.nyirenda@undp.org
12	Esther Mweso	Concern Universal	Programme Manager	0888863823	esther.mweso@concern-universal.org
13	Herbert Mwalukomo	CEPA	Programme Director	0881038910	herbert@cepa.org.mw
14	Emmanuel Likoya	LUANAR Bunda	Research Fellow	0999910879	likoyaemmanuel@yahoo.com
15	George Phiri	FAO	Policy Coordinator	0995611748	george.phiri@fao.org

16	Charles Kachingwe	LWB	Water Quality Manager	0888364967	ckachingwe@lwb.mw
17	Benon Yasini	EAD	CEO	099416850	benyassin@gmail.com
18	Heather Maseko	CISONECC	Ass. National Coordinator	0999590782	heatherlulumaseko@gmail.com
19	Michael Makombera	EAD	ADEA	0999872282	makombera@yahoo.com
20	Jennings Kayira	MoEST	PISC	0888714669	jenningskayira@yahoo.com
21	Sipho Billiat	EP&D	PE	0991382843	siphobilliat@yahoo.com
22	Golivati Gomani	EAD	EI	0999383651	ggomani87@gmail.com
23	Ian Kambala	DNPW	SPWA	0881943098	kambalaian@gmail.com
24	Andrew Mazulu	MoITCE	PIO	0884339499	andrewmazulu@yahoo.com
25	Fred Kossam	DCCMS		0995319362	fred.kossam@gmail.com

## ANNEX G – Attendance List, Consultative Meeting, Golden Peacock Hotel, January 21, 2016

NO.	NAME	INSTITUTION	DESIGNATION	CONTACT DETAILS		EMAIL
				POSTAL ADDRESS	PHONE NO.	
1	Julius Ng'oma	CISONECC	Coordinator	P. O. Box 1056, Lilongwe	088879597	<a href="mailto:julius@cisoneccmw.org">julius@cisoneccmw.org</a> jayjovias@gmial.com
2	Henry Majawa	LEAD	Driver	P/bag 7, Zomba	0995446335	
3	Sarah Mclvor	UNDP	Programme Analyst	Lilongwe	0994736277	<a href="mailto:Sarah.mciw@undp.org">Sarah.mciw@undp.org</a>
4	D. Balarn	PAD	COP	P. O. Box 1413	0888216942	<a href="mailto:jbalarn@padwald.com">jbalarn@padwald.com</a>
5	Charles Mkoka	AED	Communication Practitioner	P. O. Box 2140	0999852469	<a href="mailto:Chikoka@gmail.com">Chikoka@gmail.com</a>
6	Memory Kamoyo	Environmental Affairs Department	Environmental District Officer-Ntcheu	P/Bag 1	0999337704	<a href="mailto:mchipyola@ymail.com">mchipyola@ymail.com</a>
7	Chimwemwe Kachepa Kamala	OXFAM	PO	P/Bag 331, Lilongwe	0999652391	<a href="mailto:ckachepa@oxfam.org.uk">ckachepa@oxfam.org.uk</a>
8	Gibson Kamtsalira	Ministry of Lands Housing & Urban Development	PPPO	P/Bag 311, Lilongwe 3	0999362473	<a href="mailto:aelifala@yahoo.com">aelifala@yahoo.com</a>
9	Fred Simwaka	Ministry of Gender	PGDO	P/Bag 330, Lilongwe	0888403590 0999839710	<a href="mailto:fsimwaka@yahoo.co.uk">fsimwaka@yahoo.co.uk</a>
10	David Mkwambisi	LUANAR	Programme Coordinator	P. O. Box 219, Lilongwe	0885313400	<a href="mailto:ddmkwambisi@gmail.com">ddmkwambisi@gmail.com</a>
11	Nelson Ngoma	LWB	Environmental Officer	P. O. Box 96, Lilongwe	0881273763	<a href="mailto:nngoma@lwb.mw">nngoma@lwb.mw</a>
12	Rodrick Kamoto	MEET	Accountant	P. O. Box 3053, Blantyre	0999783888	<a href="mailto:rodrick@naturetrust.mw">rodrick@naturetrust.mw</a>
13	Master simoni	Nkhata – Bay Council	Environmental District Officer	P. O. Box 1, Nkhata - Bay	0993598126	<a href="mailto:mbsimon001@gmial.com">mbsimon001@gmial.com</a>
14	Erasmus Mgalira	CARLA		Dedza		
15	Mavuto Phiri	CARD	Project Officer	P. O. Box 2733, Blantyre	0999219862	<a href="mailto:Mavutophiri017@gmail.com">Mavutophiri017@gmail.com</a>
16	Humphrey Masuku	WHO	EHO/NPO	P. O. Box 30390, Lilongwe 3	0999942245	<a href="mailto:masukuh@who.int">masukuh@who.int</a>
17	Spencer Ng'oma	TLC	Project Officer	P. O. Box 2440, Lilongwe	0999988513	<a href="mailto:ngomaspencer@gmail.com">ngomaspencer@gmail.com</a>
18	Veronica Mhango	DODMA	PMO	P/Bag 336, Lilongwe	0995229835	<a href="mailto:veromhango@yahoo.com">veromhango@yahoo.com</a>
19	Sugum Kubo	JICA	Assistant Residence Representative	P. O. Box 30321	0888205901	<a href="mailto:Kubo.sugum@jica.go.jp">Kubo.sugum@jica.go.jp</a>

20	Sipho Billiat	EP & D	Principal Economist	P. O. Box 30136, Lilongwe 3	0991382843	<a href="mailto:siphobilliat@yahoo.com">siphobilliat@yahoo.com</a>
21	Thokozani Malunga	Department of Energy Affairs	Energy Officer	P/Bag 309, Lilongwe 3	0884445136	<a href="mailto:tnmalunga@yahoo.com">tnmalunga@yahoo.com</a> tnmalunga29@gmail.com
22	Grace Chinamale	Ministry of Natural Resources Energy and Mining	Chief Nutrition HIV and AIDS Officer	P/Bag 350, Lilongwe	0999225799	gracechinamale@gmail.com
23	Sangwani Phiri	Ministry of Natural Resources Energy and Mining	Public Relations Officer	P/Bag 343, Lilongwe 3	0888517040	<a href="mailto:aviphiri2009@gmail.com">aviphiri2009@gmail.com</a>
<b>24</b>	<b>Juana Jurisid</b>	<b>GIZ</b>	<b>Junior Advisor</b>	<b>Mtendere Dr. 31g/10</b>	<b>0881038888</b>	<a href="mailto:ivana.jurisd@giz.de">ivana.jurisd@giz.de</a>
25	Esther Mweso	Concern Universal	Program Manager	P. O. Box 159, Lilongwe	0888863823	ester.mweso@concern-universal.org
26	Peter Magombo	Chikwawa District Council	Environmental District Officer	P/Bag 1, Chikwawa	0888117347	uniquemagombo@gmail.com
27	Hendricks Mgodie	MOH	EHO	P. O. Box 30377, Lilongwe 3	0999737719 0888342212	<a href="mailto:hendricks2007@yahoo.co.uk">hendricks2007@yahoo.co.uk</a>
28	Maurice Nyemba	MITC	Planning Officer	P/Bag 302, Lilongwe 3	0881770883	<a href="mailto:mnyemba@mitc.mw">mnyemba@mitc.mw</a>
29	D. Nthakomwa	Christian AID	NRM Specialist	P/Bag 369, Lilongwe	0995665013	<a href="mailto:dnthakomwa@christian.aid.org">dnthakomwa@christian.aid.org</a>
30	Bruno Kamanga	Dedza District Council	Environmental District Officer	P. O. Box 140, Dedza	0999656728	<a href="mailto:brunokamanga@yahoo.co.uk">brunokamanga@yahoo.co.uk</a>
31	Erasmus Mgarira	CARLA	FT	P. O. Box 48, Dedza	0997517125	<a href="mailto:erasmasmgalira@gmail.com">erasmasmgalira@gmail.com</a>
32	Senard Mwale	DFID	Resilience Advisor	P. O. Box 30042, Lilongwe	01772400 0999552968	s.mwale@dfid.gov.uk
33	Shravva Reddy	Pegasys	Consultant	Cape Town	+2781889462 5	<a href="mailto:SHRAVVA@PEGASYS.CO.ZA">SHRAVVA@PEGASYS.CO.ZA</a>
34	John Taulo	IRC/MUST	Researcher	P. O. Box 5196, Limbe, Blantyre	0995334164	<a href="mailto:johntaulo@yahoo.com">johntaulo@yahoo.com</a>
35	Dominic Nyirongo	WFP	Program Officer	P. O. Box 30571, Lilongwe	0998972465	dominic.nyirongo@wfp.org
36	Mathews Tsirizeni	LEADSEA	PM	P/Bag 7, Zomba	0994554731	mtsirizeneleadsea.mw
37	Khumbo Kamanga	CURE	PM	P. O. Box 2916, Blantyre	0992815001	<a href="mailto:kikamanga@yahoo.co.uk">kikamanga@yahoo.co.uk</a>
38	Mrs S. Najira	Environmental Affairs Department	Chief Environmental Officer	P/Bag 394, Lilongwe	0999895000 0888895000	
39	James Kalikwembe	EAM	PM	P. O. Box 2120, Blantyre	0991412220	jameskalikwembe@gmail.com
40	Benon Yassin	Environmental Affairs	Chief Environmental	P/Bag 394, Lilongwe 3	0995416850	benyassin@gmail.com

		Department	Officer			
41	Golivati Gomani	Environmental Affairs Department	Environmental Inspector	P/Bag 394, Lilongwe	0999383651	<a href="mailto:ggomani87@gmail.com">ggomani87@gmail.com</a>
42	Evans Njewa	Environmental Affairs Department	Principal Environmental Officer (P & P)	P/Bag 394, Lilongwe	088853245	<a href="mailto:evansnjewa@gmail.com">evansnjewa@gmail.com</a>
43	Hannah Siame	Environmental Affairs Department	Environmental Officer (P & P)	P/Bag 394, Lilongwe	0999118262	<a href="mailto:hannahkasongo@yahoo.com">hannahkasongo@yahoo.com</a>
44	John Mawenda	Environmental Affairs Department	Environmental Inspector	P/Bag 394, Lilongwe	0888100585	<a href="mailto:mawendaj@gmail.com">mawendaj@gmail.com</a>
45	Jonathan Mkungudza	NSO	Statistician	P. O. Box 301, Lilongwe	0999377622	<a href="mailto:mkungudza80@gmail.com">mkungudza80@gmail.com</a>
46	Sylvia Ambali	Zomba District Council	Environmental District Officer	P. O. Box 23, Zomba	0992445000 0885071333	<a href="mailto:sylambali@gmail.com">sylambali@gmail.com</a>
<b>47</b>	<b>David Chamers</b>	<b>WAID</b>	<b>EM</b>		<b>099926818</b>	<b>dchamers@wad80v</b>
48	Christina Mkatamala	Information	Editor	P/Bag 310, Lilongwe	0999234855	<a href="mailto:pmkutumula@gmail.com">pmkutumula@gmail.com</a>
49	Spencer Ng'oma	TLC	Project Manager	P. O. Box 2440, Lilongwe	0999988513	<a href="mailto:ngomaspencer@gmail.com">ngomaspencer@gmail.com</a>
50	Ben Tonho	Mangochi District Council	Environmental District Officer	P/Bag 1, Mangochi	0999278385	<a href="mailto:bentohno2000@yahoo.com">bentohno2000@yahoo.com</a>
51	Dominic Nyasulu	NYNCC	Manager	P. O. Box 607, Lilongwe	0999621845	<a href="mailto:dominicnyasulu@yahoo.com">dominicnyasulu@yahoo.com</a>
52	Jolamn Nkhokwe	DCCMS	Director	P. O. Box 1808, Blantyre	0999911314	<a href="mailto:jnkhokwe@yahoo.com">jnkhokwe@yahoo.com</a>
53	Andrew Mazulu	MoITCE	PIO	P/Bag 310 Lilongwe	0884339499	<a href="mailto:andrewmazulu@yahoo.com">andrewmazulu@yahoo.com</a>
54	Friday Njaya	Fisheries	ADOFP	P. O. Box 593, Lilongwe	0888516208	<a href="mailto:fnjaya@gmail.com">fnjaya@gmail.com</a>
55	Lawrence Mwenela	Environmental Affairs Department	Accountant	P/Bag 394, Lilongwe	0888558450	
56	M. Masiyano	Environmental Affairs Department	Messenger	P/Bag 394, Lilongwe	0999142757	
57	F. Mbando	Environmental Affairs Department	Secretary	P/Bag 394, Lilongwe	0888121123	<a href="mailto:florambado@yahoo.com">florambado@yahoo.com</a>
58	A. Lumwira	Environmental Affairs Department	Driver	P/Bag 394, Lilongwe	0888731166	
59	A Chione	Environmental Affairs Department	Driver	P/Bag 394, Lilongwe	0999726766	

60	M. Chakalamba	Environmental Affairs Department	Driver	P/Bag 394, Lilongwe	0888108910	
61	Shravya Reddy	Pegasys	NAP Consultant	Pegasys Global Cape Town – RSA	+27(0)818894 625	shravya@pegasys.co.za
62	Kenneth J Gondwe	Polytechnic	NAP Consultant	PB 303, BT3	0888515050	gondwekj@poly.ac.mw

## ANNEX H – List of Resources Helpful for Malawi’s NAP Process

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