Strategic Plan

for the Period 2025 to 2030

Department of Climate Change and Meteorological Services

Ministry of Natural Resources
Energy and Mining

Foreword

Over the past decade, Malawi has faced increasingly frequent and severe weather extremes, including floods, droughts, and erratic rainfall, which have significantly impacted its climate-sensitive socioeconomic sectors, particularly agriculture, water resources, and public health. Catastrophic events like the 2019 and 2023 heat wave episodes and a series of devastating tropical cyclones—Idai and Kenneth (2019), Anna and Gombe (2022), and Freddy (2023)—have served as stark reminders of the nation's vulnerability. These events have aroused significant concern among the population, and have prompted climate-dependent institutions and sectors to seek more information about weather and climate. The scale of these weather-related events has constantly made headlines and attracted media attention both locally and internationally, underscoring the urgent need for action to strengthen Malawi's resilience to climate change impacts.

Recognizing this need, government agencies, nongovernmental organizations (NGOs), and development partners are actively collaborating to improve coordination and ensure the implementation of evidence-based, data-driven interventions. This increased demand for effective climate action necessitates that the Ministry of Natural Resources, Energy and Mining reorganize itself to respond to the evolving needs of the nation with greater effectiveness and efficiency.

In direct response to the pressing demands, the ministry has revised the Climate Change and Meteorological Services' Strategic Plan to incorporate emerging priorities, including the Early Warning for All initiative and the national development framework, Malawi Vision 2063. The overarching aim of the revised strategic plan is to provide timely, accurate, and actionable information on weather, climate, and climate change, ultimately safeguarding lives and property, while also providing critical support for Malawi's sustainable economic growth. Furthermore, the plan also prioritizes the strategic integration of modern technologies to enhance the efficiency, reach, and overall effectiveness of climate services delivery.

Designed to guide service delivery from 2025 to 2030 and beyond, this Strategic Plan focuses on building adaptive capacity and realizing a more resilient Malawi. By strengthening early warning systems, improving climate information dissemination, and promoting climate-smart practices across various sectors, this plan will empower the nation to effectively address the complex challenges posed by a changing climate and to build a more secure and prosperous future for all Malawians.

Richard Perekamoyo
Permanent Secretary for Natural Resources, Energy and Mining

Message from the Director

The Strategic Plan represents a significant step forward in bolstering Malawi's resilience to climate variability and change. Designed to enhance the effectiveness and efficiency of climate service delivery across the nation, this plan provides a roadmap for improved weather monitoring, weather forecasting, and dissemination of critical climate information. The plan's development was developed in a consultative process that actively worked with diverse stakeholders across Malawi to incorporate their needs and priorities. This inclusive approach ensures that the plan is relevant, responsive, and aligned with the real-world challenges faced by communities and sectors vulnerable to climate change impacts. Furthermore, the plan thoughtfully builds upon the successes of and lessons learned from the previous Strategic Plan, thereby ensuring continuous improvement and a commitment to best practices.

Over the past five years, DCCMS has made commendable progress in modernizing weather monitoring infrastructure, refining forecast generation models, and expanding early warning dissemination networks. These advancements have demonstrably improved the country's ability to anticipate and respond to weather-related hazards. However, recognizing that gaps and challenges remain, this Strategic Plan proactively addresses them, particularly in the context of the ambitious Early Warning for All initiative. This effort underscores DCCMS's dedication to ensuring that every community in Malawi has access to timely and accurate information needed to protect lives and livelihoods.

This plan outlines specific strategies for achieving DCCMS's core mission: "To provide reliable, responsive, and high-quality weather, climate, and climate change services for socioeconomic development of Malawi." To realize this mission, the plan establishes five overarching strategic goals that seek to strengthen governance and legislative frameworks, optimize climate service delivery mechanisms to improve both resilience and economic growth, leverage advancements in science and technology to enhance predictive capabilities, and foster strategic partnerships to broaden reach and impact. The interconnected nature of these goals reflects DCCMS's holistic approach to climate service provision.

Complementing the Strategic Plan is an accompanying Implementation Plan, which details concrete measures and timelines for achieving the department's overarching vision. This detailed roadmap outlines specific actions related to conducting staff development, identifying and acquiring critical expertise, implementing necessary technology upgrades, and ensuring sustainable financing mechanisms. The Implementation Plan serves as a practical guide for translating the strategic goals into tangible results.

DCCMS recognizes that effective climate action requires a coordinated and collaborative effort, and it deeply values and appreciates the ongoing collaboration with stakeholders and partners. The department remains committed to continuously improving its services to the public and beyond, and to fulfilling its mandate of comprehensive weather and climate monitoring and prediction. By empowering communities and sectors with actionable climate information, DCCMS aims to make a significant contribution to Malawi's sustainable socioeconomic development and enhance its resilience to the impacts of climate change.

Dr. Lucy Mtilatila
Director for Climate Change and Meteorological Services

Acknowledgement

We appreciate the invaluable support and contributions of various individuals and organizations. We extend our deepest gratitude to the World Meteorological Organization through the Climate Risk and Early Warning Systems (CREWS) initiative and the World Bank for their significant financial backing, which has been instrumental in bringing this plan. Additionally, we appreciate the technical expertise and guidance provided by numerous stakeholders and individuals, whose input has enriched the content and helped shape the direction of this strategic plan. Their collective efforts have not only enhanced the quality of the plan but also ensured that it is informed by a diverse range of perspectives and experiences, ultimately strengthening its potential to drive meaningful impact. We recognize and thank all those who have played a role in this process, and we look forward to continuing our collaboration as we work towards implementing the vision and objectives outlined in this strategic plan.

Executive Summary

This Strategic Plan outlines the path being taken by Malawi's Department of Climate Change and Meteorological Services (DCCMS) to enhance its provision of timely and accurate weather, climate, and climate change information and services. The goal is to protect lives and properties and support Malawi's economic growth.

The plan addresses the increasing challenges posed by climate change and extreme weather events. It incorporates rapid advancements in science and technology to ensure that DCCMS services are effective. The plan focuses on the following key goals:

- **Goal 1.** Deliver improved early warning services to enhance safety and resilience in Malawi, contributing the National DRM Strategies and plans, and EW4All.
- **Goal 2.** Deliver targeted weather and climate services in support of socioeconomic sectors, and climate change information contributing to national and international obligations, including the Malawi Vision 2063 and associated Sustainable Development Goals.
- **Goal 3.** Strengthen capacity for Climate Change Science and Information for Evidence-Based Decision-Making for climate risk management and adaptation planning.
- **Goal 4.** Leverage science and technology through the application of innovative approaches for improved weather services, climate services, and climate change information.
- **Goal 5.** Strengthen international and national stakeholder engagement and public-private partnerships (PPPs) for sustainability of investments and improved weather services, climate services, and climate change information.
- **Goal 6:** Strengthen and sustain the institutional capacity of DCCMS as the authoritative voice to effectively deliver its mandate including early warning services.

This Strategic Plan supports the following national and international strategies and initiatives:

- Malawi Vision 2063: "An Inclusively Wealthy and Self-resilient Nation"
- Malawi's National DRM Strategy and National DRM Policy
- The United Nations' Sustainable Development Goals and
- The African Union's Agenda 2063

This strategic plan will be financed primarily by the Government of Malawi through national budgetary allocations. Additionally, significant support will be expected from development partners.

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Abbreviations

CJC	Climate Just Communities
CREWS	Climate Risk and Early Warning Systems (CREWS)
DCCMS	Department of Climate Change and Meteorological Services
DMS	Department of Meteorological Services
DRM	disaster risk management
EW4All	Early Warning for All initiative
EWS	early warning system(s)
GBON	Global Basic Observing Network
IPCC	Intergovernmental Panel on Climate Change
M&E	monitoring and evaluation
NFWCS	National Framework for Water and Climate Services
NGO	nongovernmental organization
PESTEL	political, economic, social, technological, environmental, and legal
PPP	public-private partnership
QMS	quality management system
RCRP	Regional Climate Resilience Program for Eastern and Southern Africa
SDG	Sustainable Development Goal
SWOT	strengths, weaknesses, opportunities, and threats
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIMA	University of Malawi
WMO	World Meteorological Organization

1. Introduction

This introduction gives a brief overview of the Department of Climate Change and Meteorological Services (DCCMS), presents the key achievements from the last strategic planning period, outlines the strategic planning activities undertaken to develop this Strategic Plan, and describes the DCCMS structure, the strategic plan process, the alignment with key initiatives, and the environmental scan. A separate and "live" Operational Plan will help manage and deliver the detailed activities resulting from the Strategic Plan and will provide a tool for monitoring and evaluation (M&E) of the plan's implementation.

1.1 Department of Climate Change and Meteorological Services: History and Background

The DCCMS in Malawi is under the Ministry of Natural Resources, Energy and Mining. It encompasses 20 district offices/observing sites as well as offices in Blantyre (the headquarters), Lilongwe, and Mzuzu. DCCMS provides all meteorological services in Malawi.

Recorded meteorological observations in Malawi started in the 1800s, when they were undertaken mainly by British colonial farmers and missionaries. Meteorological services were later taken over by the Federal Government of Rhodesia and Nyasaland. In 1964, when this entity ceased to exist and Malawi achieved independence, the Government of Malawi provided these services under the Department of Civil Aviation. During the period from 1964 to 1982, growth of meteorological services was weak, and aviation meteorology was given higher priority than other meteorological activities. The first meteorological weather forecasters in the country were in place on January 1, 1968.

Recognition of the meteorological sector received a boost in 1983, when the autonomous Department of Meteorological Services (DMS) was created within what was then the Ministry of Transport and Communication. The department assumed a more diverse set of roles than those pursued by the Department of Civil Aviation, which had managed all meteorological affairs up to that time. With the creation of DMS, meteorological programs benefited from the recruitment of qualified staff. Creation of an autonomous department also resulted in a further expansion and wider application of meteorological services, including aviation meteorology, agrometeorology, hydrometeorology, public weather services, climate services, and meteorological engineering.

The growth of the department was a result of internal capacity development and external factors like the technological evolution of the 1990s. This growth resulted in programs for collection of observations, development of forecasting, distribution of data, and generation of various meteorological products. In 2009, the department was renamed the Department of Climate Change and Meteorological Services within the Ministry of Natural Resources and Climate Change in recognition of the synergy between climate change and meteorology. Its task was to provide leadership and guidance on meteorology and climate change by undertaking systematic observation and providing the scientific climate information required for adaptation to and mitigation of climate change impacts.

1.2 Progress and Lessons Learned from the Previous Strategic Plan

In the past five years, DCCMS has made progress in the following areas:

- Capacity built for modeling, climate database, climate change, engineering and ICT operations and maintenance
- Forecast Office equipped with a workstations for analyzing and forecasting
- Monitoring system upgraded with the installation and maintenance of at least 120 automatic weather stations
- Downscaling and dissemination of seasonal forecasting enhanced
- Capacity built for warning generation; communication tool implemented for dissemination
- National Meteorological Policy developed and approved
- Meteorology Bill drafted
- Weather and climate information incorporated into most district contingency plans annually
- SMS (text messaging) approach piloted
- Web-based platforms established
- Outreach materials developed and disseminated
- Awareness campaigns conducted
- National Framework for Water and Climate Services (NFWCS) developed
- Staff trained in quality management systems (QMS)
- Climate change models downscaled to Malawi; climate projections prepared for the Third National Communication to the United Nations Framework Convention on Climate Change
- Some climatological products developed and provided to various user sectors
- Numerical weather prediction operationalized
- Impact-based forecasting initiated

Some key lessons learned from the development and implementation of the last Strategic Plan (2017–2021) have been adopted and incorporated within this planning phase:

- The DCCMS staff has become more involved in the strategic planning process to increase their connection to deliverables and ensure that alignment of staff objectives is better achieved and managed.
- Efforts have been made to engage with stakeholders, and follow-up discussions are expected on an ongoing basis.
- Stronger links to external initiatives have been developed as DCCMS has become more involved in some significant development projects.

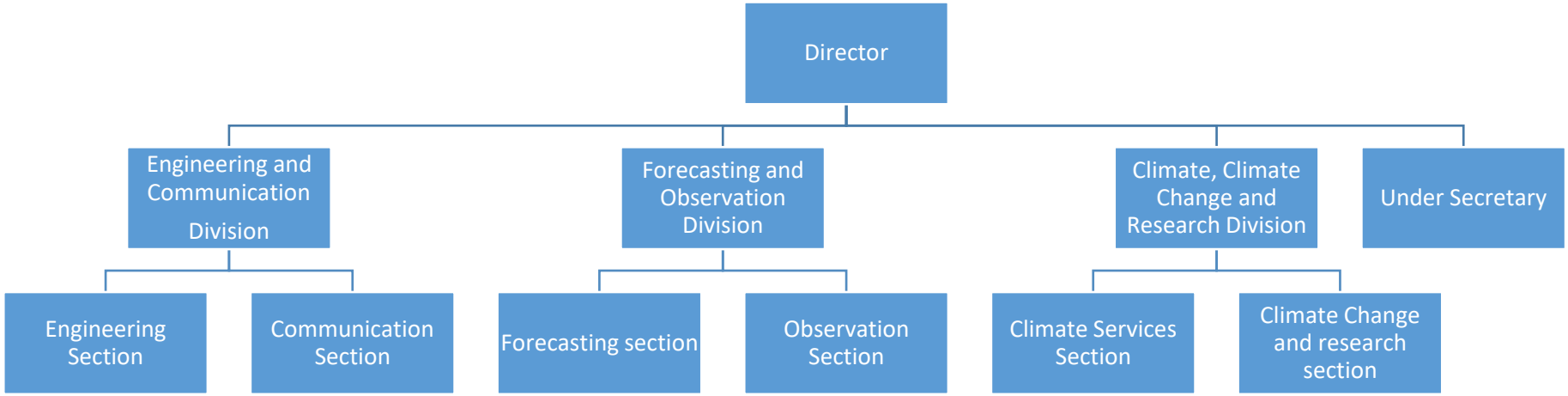
1.3 Organizational Structure

Figure 1 shows the organizational structure of DCCMS as of the time this plan was published. The department currently has three main technical divisions: Observation and Forecasting; Engineering and Communication; and Weather, Climate, Climate Change, and Research. Each

division is overseen by a deputy director, to whom a chief of the Sections reports. A fourth division is administrative and finance and is overseen by an undersecretary, who has responsibility for human resources, procurement, accounting, security, and other administrative activities. Each Section, headed by a Chief Meteorologists, includes a number of staff required to perform the related functions of the Division/Section.

However, the implementation of this Strategic Plan will require the development and recruitment of evolving professions, skills, and competencies. The organizational chart will likely be updated in line with the outcomes of this Strategic Plan, alongside the strategies needed to recruit and retain staff.

Figure 1. DCCMS Organizational Chart



Source: DCCMS, Ministry of Natural Resources, Energy and Mining.

1.4 Service as Cochair of Joint Technical Committee

DCCMS acts as cochair of the Joint Climate Change and Disaster Risk Management Technical Committee. The committee reports to two steering committees, Climate Change and Disaster Risk Management. The objective of the joint technical committee is to provide a forum for technical guidance, knowledge sharing, planning, and technical analysis of programs and strategies related to climate change, meteorology, environment, and disaster management.

1.5 International Membership

Through DCCMS, the Government of Malawi is affiliated with a number of international organizations and associations, notably the World Meteorological Organization (WMO), United Nations Framework Convention on Climate Change (UNFCCC), African Centre for Meteorological Applications for Development (ACMAD), Intergovernmental Panel on Climate Change (IPCC), and United Nations Environment Programme (UNEP).

1.6 Strategic Planning Process

The strategic planning process was led by the DCCMS director, deputy directors, and DCCMS staff, supported by the Climate Risk and Early Warning Systems (CREWS)-Malawi project. The consultation and engagement with stakeholders helped gather stakeholders' requirements and in turn helped define the DCCMS's strategic goals, objectives, and activities.

The Strategic Plan builds on relevant key priorities and activities of the previous plan (for 2017–2021), the National Framework for Water and Climate Services (NFWCS), and gender and youth plans. It also draws on new and enhanced activities and approaches to strengthen DCCMS's capacity.

Notably, this Strategic Plan supports key national and international plans, directions, and initiatives, including the National DRM Strategy 2016, the Malawi Vision 2063 and associated Sustainable Development Goals, and the Early Warning for All initiative (EW4All). More detail is in Section 1.7.

1.7 Alignment with Key Initiatives

DCCMS is actively involved in several activities, projects, and initiatives at both national and global levels. This involvement is reflected in the Strategic Plan and thus supports DCCMS in fulfilling and enhancing its mandate and promoting the country's economic growth and well-being.

Nationally, the Strategic Plan supports the Malawi Vision 2063: "An Inclusively Wealthy and Self-Resilient Nation." This document highlights some of the most critical challenges facing Malawi today and articulates the country's aspirations for "the Malawi we want by 2063" (National Planning Commission 2020):

- An inclusively wealthy and self-reliant industrialized upper middle-income country

- A vibrant knowledge-based economy with a strong and competitive manufacturing industry that is driven by a productive and commercially vibrant agriculture and mining sector.
- World-class urban centers and tourism hubs across the country with requisite socio-economic amenities for a high-quality life.
- A united, peaceful, patriotic and proud people that believe in their own abilities and are active participants in building their nation.
- Effective governance systems and institutions with strict adherence to the rule of law.
- A high-performing and professional public service.
- A dynamic and vibrant private sector.
- Globally competitive economic infrastructure.
- A globally competitive and highly motivated human resource.
- An environmentally sustainable economy.

DCCMS will directly contribute to delivering key outcomes specified under the pillars of Malawi Vision 2063—e.g., development and production of target products for socioeconomic sectors such as agriculture (in support of Pillar 1); promoting research, science, technology, and innovation (contributing to Pillar 2); and implementing impact-based forecasts and risk-based warnings (supporting Pillar 3). These activities are reflected within the goals and objectives in this Strategic Plan.

Malawi's National DRM Strategy and National DRM Policy aim to build a resilient nation capable of effectively managing and mitigating disaster risks, in alignment with the country's development goals. The strategy and policy encompass a comprehensive approach, including risk assessment, prevention, preparedness, response, and recovery. They also emphasize the importance of a multi-stakeholder approach that involves government, NGOs, the private sector, and development partners. DCCMS's provision of weather and climate early warnings in support of prevention, preparedness, and response is critical for implementing the DRM strategy and policy.

Malawi is also committed to the UN's Sustainable Development Goals and the African Union's Agenda 2063. Key DCCMS activities that contribute to Malawi's inputs to these agendas include development of specialized agrometeorological products to reach zero hunger (contributes to SDG2) and the ongoing provision of and enhancements to climate services (contributes to SDG13). Some studies have demonstrated that SDG13 significantly influences other SDGs and thus consider climate action the central SDG (e.g., Filho et al. 2023); see Figure 2. Apart from calling for the strengthening of climate resilience and capacity to adapt to climate extremes, this SDG also promotes the proper integration of climate in national and global policies.

Figure 2. Centrality of Climate Action to Sustainable Development Goals

Source: Filho et al. 2023.

With support from the World Bank Malawi Watershed Services Improvement Project (MWASIP), the Government of Malawi is implementing several interventions aimed at strengthening the institutional capacity of DCCMS and other major actors in early warning and disaster risk management. The project seeks to restore degraded landscapes in priority river basins and improve water security, agricultural productivity, and livelihoods. With strengthened institutional capacity, DCCMS will be able to effectively implement and manage weather and climate early warning systems (EWS). The success of the project should contribute to the sustainable development and long-term resilience of Malawi by reducing the vulnerability of communities and infrastructure to climate-related hazards.

DCCMS is also benefiting from the Regional Climate Resilience Program for Eastern and Southern Africa (RCRP), which is a programmatic framework (structured as a series of projects) funded by the World Bank. The Project Development Objective (PDO) of the RCRP is to improve the management of, and early response to, water-related climate hazard impacts in Eastern and Southern Africa. The second project (RCRP2) supports catalytic medium- to large-scale investments to reduce Malawi's exposure to climate shocks, with a focus on protective, multi-benefit infrastructure; risk adaptation and mitigation via improved EWS and planning; and scaling up of adaptive safety nets and decentralized resilience-building activities. A key priority of the program is to support management of water-related disaster and climate impacts in the participating countries, in particular management of hazard from increased rainfall variability and extremes, droughts, floods, and cyclones. DCCMS will benefit from the installation of a second weather radar and automatic weather stations in key locations, which will improve its capacity to monitor weather and detect hazardous weather conditions.

DCCMS participates in a number of other projects and programs:

1. The implementation of EWS interventions under the Climate Just Communities (CJC) program. CJC is funded by the Scottish government's Climate Justice Fund, which supports locally led community projects in Malawi, Rwanda, and Zambia. In Malawi, the project is implemented by DAI Global UK.

2. REPRESA (Resilience and Preparedness to tropical cyclones across Southern Africa), which is a regional research project including Malawi, Madagascar, and Mozambique. It aims to better understand the impact of climate change on future tropical cyclones in order to improve flood management and community early warning systems.

3. SOFF (Systematic Observations Financing Facility), which is a United Nations multi-partner trust fund created in 2021 by the WMO, UNEP, and United Nations Development Programme for the provision of a global public good: basic weather and climate observations. Malawi is one the countries targeted for readiness support, which aims to identify and fill any gaps in the Global Basic Observing Network (GBON), thus contributing to improving the quality of weather forecasts.

4. The United Nations initiative Early Warnings for All, which seeks "to ensure everyone on Earth is protected from hazardous weather, water, or climate events through life-saving early warning systems by the end of 2027" (United Nations, n.d.). DCCMS's current and planned activities are fully aligned with EW4All through the roadmap developed in 2024.

5. A CREWS initiative, which supports regional cooperation to strengthen seamless operational forecasting and multi-hazard EWS. The main objectives of this initiative are to (i) improve early warning dissemination and preparedness/response capacity; (ii) strengthen drought and flood EWS in the Shire basin; (iii) enhance urban flood risk information and management; and (iv) operationalize the risk financing strategy and improve the financial capacity to respond to disasters in a timely fashion.

6. Implementation of the Plant Health Project, which is supported under the name Malawi Digital Plant Health Service (MaDiPHS). The main objective of this project is to improve management of plant pests and diseases.

7. The UNIMA CRAFS (University of Malawi Centre for Resilient Agri-food Systems) Project. DCCMS supports UNIMA by providing data, and UNIMA offers scholarships to DCCMS staff so they can pursue master's and doctorate degrees at the university.

8. The Improving Smallholder Resilience through Customized Climate Services program, which is carried out by Agricultural Resilience through Climate Services (ARCS). The program is funded by the consortium partners consisting of NORCAP, the Development Fund, Norwegian Research Centre (NORCE), and Christian Michelsen Institute (CMI). This is a five-year project that aims to enhance climate resilience and food and nutritional security through access to reliable climate information services and agricultural advisories.

9. Numerous interconnections within the WMO networks, including regional and global centers, as well as working groups that are key to the operations of a national meteorological and hydrological service such as DCCMS. Malawi is a member of the WMO Regional

Association I (RA I), and the DCCMS director serves as the Permanent Representative of Malawi with WMO. DCCMS also has close links with numerous other institutions, such as the UK Met Office and Met Norway.

1.8 Environmental Scan: Analyses

An environmental scan was carried out in preparing this Strategic Plan. The SWOT (strengths, weaknesses, opportunities, and threats) analysis from the previous Strategic Plan was reviewed and updated to capture the newer aspects of the environment and their effect on DCCMS for the period of the plan. A PESTEL (political, economic, social, technological, environmental, and legal) analysis was also developed.

1.8.1 SWOT Analysis

Strengths (internal)	Weaknesses (internal)
• **Availability of expertise** • **Wide spectrum of users of DCCMS services** • **Management commitment to implement reforms** • **Well-established nationwide infrastructure for weather and climate services** • **Status as sole national provider of climate and meteorological services** • **Affiliation with regional and international bodies that provide similar services** • **Status as sole national custodian of climatic data** • **Political will and support**	• Inadequate human resources capacity • Lack of a Meteorology Act • Outdated National Meteorological Policy • Lack of QMS • No definition of responsibilities for providing climate change information • Inadequate instruments and equipment • Inadequate financial resources • Dependence on donor funding for human resource and infrastructure development • Unmotivated staff due to inadequate incentives related to career progression, training opportunities, etc. • Brain drain • Lack of stable housing within a ministry • Dilapidated offices and inadequate office space
• **Climate change management as a global issue and government priority** • **Support from international organizations (WMO, International Civil Aviation Authority, UNFCCC, IPCC, Meteorological Association of Southern Africa)** • **Research activities in partnership with universities**	• Technological advances • Availability of climate change and meteorological products, forecasts, and information online and from other sources • HIV, AIDS, and other prevalent diseases • Staff attrition • Public misconception of meteorological services

- **Knowledge exchange with other institutions (e.g., internships and secondments)**
- **Technological advances**
- **Availability of expanded electronic, print, and social media coverage**
- **Association with critical public and private institutions**
- **Possibility to operate on cost recovery basis**
- **Increased demand for weather and climate services for various users**

- Overlapping mandates of climate change and disaster risk reduction with other departments

1.8.2 PESTEL Analysis

Political

- **DCCMS faces serious problems with financing. The limited budget available is not sufficient to fully operate the department; investments are being made through development partner funding, but appropriate funding from the government is necessary for sustainability. Cost recovery from aviation services and commercial services may supplement financing and be used for reinvestment by DCCMS to improve its services. But this funding will not replace the funds required from the government for DCCMS's core business/foundational aspects.**
- **Cost recovery and commercial services require an appropriate legal framework. DCCMS must operate as a semi-autonomous authority; this status needs to be supported by the government and reflected in a Meteorology Act.**
- **Recruitment depends on government decisions. Stakeholders' evolving needs require new competencies, expertise, and skills. Alignment with the Strategic Plan requires an appropriate reorganization of DCCMS, and the government must ensure that the relevant positions at DCCMS are established and staffed. In addition, because weather- and climate-related disasters can happen at any time, the Forecast Office needs to operate 24/7. This change cannot be made without political will.**

Economic

- **Cost recovery and commercial services require an enabling legislative landscape, including a data policy and a Meteorology Act.**
- **Any future disaster (e.g., COVID-19-type pandemic, major weather or climate event) affects the economy. It therefore impacts government funding and the planned cost recovery for aviation services and commercial services, in turn compromising DCCMS operations.**
- **Prospective clients' willingness to pay for climate services depends on a sound economy and a population that is sensitized to the importance of these services.**

Social

- **DCCMS is responsible for providing information on weather, climate, and climate change and therefore needs to work with other government departments and institutions in assessing the impacts of climate change on various sectors and society as a whole. Improving climate change information has become imperative for DCCMS.**
- **DCCMS still lacks visibility and needs to build recognition and trust among stakeholders and the population.**
- **Implementing gender and youth plans would contribute to equity and innovation.**

Technological

- **Research and development using new technologies and tools is considered a priority by the government and requires close collaboration with academia.**
- **Use of social media is growing, and DCCMS should align with this trend.**
- **Codesign and cogeneration of EWS/DRM and other products and services by DCCMS and stakeholders require cross-sectoral engagement, reliable technology, human capacity, and increased bandwidth.**
- **Artificial Intelligence (AI) and digital transformation (including cloud services), and the gathering, storage, and manipulation of big data, will change how DCCMS operates.**
- **The Government of Malawi has a new data center that can be used by DCCMS.**
- **DCCMS faces challenges in operation and maintenance of meteorological equipment due to limited expertise and skills, including instrumentation skills.**

Legal

- **The legal status of DCCMS is not well defined, and a Meteorology Act is required to establish DCCMS as a semi-autonomous authority able to recover costs and provide commercial services.**
- **A data policy is needed.**
- **Responsibilities and roles related to Malawi's EWS operations must be clearly defined.**

Environmental

- **Disaster preparedness and response are becoming more important, as recent tropical cyclones impacting Malawi have made clear.**
- **Prevailing weather and climate extremes such as heat waves and high rainfall intensities are evident in the Southern African region, including Malawi.**

1.9 Environmental Scan: Conclusions

The environmental scan and related discussions identified several important themes, including some elements that were considered for the formulation of strategic goals and objectives.

- Both the environmental scan and discussions with stakeholders highlight the need to improve the legal and regulatory framework for DCCMS, including data-sharing policies. The current National Meteorology Policy needs updating to be more focused on users and service delivery. A dedicated Meteorology Act would allow DCCMS to become a semi-autonomous authority that provides all weather services, climate services, and climate change information and that issues warnings; it would also enable cost recovery, in particular for the aviation industry's meteorological services. If DCCMS is to take on the added function of supporting and providing information for managing climate change issues (as part of the effort to achieve the Malawi Vision 2063), it needs a strong legal basis for its functions and mandates. The CREWS-Malawi project provides opportunities for DCCMS to address these aspects.
- With the implementation of quality management systems, the DCCMS is prioritizing establishment of standards and documentation of processes related to operations and services. ISO 9001:2015 certification would allow DCCMS to pursue cost recovery, particularly for the aviation industry's regulated meteorological services. To reach this certification, support from CREWS-Malawi is critical.
- While development projects are welcome, the need for sustainable funding—especially for operation and maintenance of investments—has been highlighted. Understanding the socioeconomic benefits of the weather services, climate services, and climate change information provided by DCCMS will help the department develop and implement an appropriate business model, one that includes public-private partnerships (PPPs).
- Automation and digital transformation of DCCMS has also been identified as a need, and therefore upgrading ICT systems is a major focus for the period of this strategic plan. Development partners are supporting some relevant efforts, but further resource mobilization is required to fully implement this digital transformation.
- Discussions with stakeholders have identified the need for increased observations and observational data; thus SOFF's timely contributions toward fulfillment of GBON are welcome. There are also other opportunities to increase the observation network, including radars, through support from the World Bank and other development partners.
- Partnerships with the public and private sectors and academia are critical. Working with national stakeholders and district councils can also assist with site selection and with operation and maintenance of equipment.
- Various socioeconomic sectors' evolving needs—associated with emerging technologies and innovative approaches, such as the use of artificial intelligence and the internet of things—show the importance of research activities and partnerships with academia. Stakeholders have also highlighted the importance of involving sectors in codesign and coproduction of relevant products. In particular, they expect site-specific and more accurate warnings with longer lead times for multiple hazards, including tropical cyclones. The current Strategic Plan includes specific objectives that

align with the requirement for improved weather services, climate services, and climate change information.

- The range of competencies, expertise, and skills that are needed to succeed in achieving this Strategic Plan has not been underestimated and is clearly highlighted in Objective 5.3.
- Although weather knows no gender, climate change impacts will widen existing gender disparities. Women—who form the larger share of Malawi's population and who depend heavily on subsistence agriculture—will have their livelihoods disrupted. In addition, severe weather events will have varying effects on women, youth, disadvantaged groups, and men. The role of DCCMS in addressing the gender–climate change nexus is to ensure that women are accorded the same economic opportunities as men. This role should apply to other disadvantaged groups as well.
- Outreach campaigns, awareness materials, and activities that increase understanding of DCCMS products and services among the public and stakeholders have been identified as a priority for this strategic plan. Activities should aim at benefiting communities, improving delivery of services to socioeconomic sectors, increasing the credibility of DCCMS, and raising its profile with public media, partner agencies, and the government.

2. Mandate, Vision, Mission, Functions, and Values

Box 1 summarizes DCCMS's mandate, vision, mission, functions, and values.

Box 1. Overview of DCCMS

Mandate: *To monitor, predict, and provide information on weather, climate, and climate change in order to contribute toward the socioeconomic development of the country*

Vision: *A responsive nation to weather and climate change impacts*

Mission: *To provide reliable, responsive, and high-quality weather, climate, and climate change services to meet national, regional, and international obligations through timely dissemination of accurate and up-to-date data and information for socioeconomic development of Malawi*

Functions:

- *Provision of observation and forecasting services*
- *Provision of engineering and ICT services*
- *Provision of weather, climate, climate change, and research services*
- *Provision of finance and administrative services*

Core values:

- ***Building a resilient nation to climate change:*** *DCCMS recognizes that climate change is a threat to Malawi's socioeconomic development.*
- ***Protection of life and property:*** *DCCMS seeks to protect life and property through early warnings for weather- and climate-related disasters.*
- ***Access to weather, climate, and climate change data and information:*** *DCCMS believes that every person has the right to access weather and climate information for various socioeconomic uses, including climate change adaptation and mitigation.*
- ***Networking:*** *DCCMS understands the importance of networking and believes that its partners' business is also its business.*
- ***Commitment:*** *DCCMS is committed to national, regional, and international cooperation in the exchange of data and information.*
- ***Investment in technology:*** *DCCMS sees investing in new meteorological science and technology as key to providing timely, reliable, and up-to-date information.*
- ***Innovation:*** *DCCMS encourages innovation and creativity.*
- ***Team work:*** *DCCMS believes in collective responsibility and a sense of belonging.*

Source:

3. Strategic Goals and Objectives

Picture 1 Mlare AWS - Photo: Fatsanawo Dzingomvera

Table 1 lists DCCMS's strategic goals and associated strategic objectives for 2025–2030.

Table 1. Strategic Goals and Objectives for 2025–2030

Strategic goal	Associated strategic objectives
Goal 1. Deliver improved early warning services to enhance safety and resilience in Malawi, contributing the National DRM Strategies and plans, and EW4All	**Objective 1.1.** Improve impact-based forecasts and risk-based warnings **Objective 1.2.** Improve accuracy of and lead time for forecasts and warnings **Objective 1.3.** Modernize weather and climate monitoring and information systems and services
Goal 2. Deliver targeted weather and climate services in support of socioeconomic sectors, and climate change information contributing to national and international obligations, including the Malawi Vision 2063 and associated Sustainable Development Goals	**Objective 2.1.** Develop new targeted and improve existing weather and climate services and climate change information to support socioeconomic sectors **Objective 2.2.** Develop outreach activities that are inclusive (of youth and women) to

	assist with public weather services and with decision-making, knowledge, and preparedness for extreme weather and climate events **Objective 2.3.** Establish and operationalize the implementation mechanism for the National Framework for Water and Climate Services **Objective 2.4.** Mainstream climate change resilience in various sectors and in national developmental agendas
Goal 3. Strengthen capacity for Climate Change Science and Information for Evidence-Based Decision-Making for climate risk management and adaptation planning	**Objective 3.1.** Strengthen capacity for climate change science, modelling and projection to inform climate risk management and adaptation planning at national and sub-national levels. **Objective 3.2.** Strengthen integration and application of climate change information into sectoral planning and decision-making **Objective 3.3.** Enhance national research and innovation capacity in climate change science and data analytics
Goal 4. Leverage science and technology through the application of innovative approaches for improved weather services, climate services, and climate change information	**Objective 4.1.** Use scientific and technological tools for improving weather and climate information services **Objective 4.2.** Use digital tools for improving the dissemination of weather forecasts, advisories, and warnings **Objective 4.3.** Enhance research and modeling capabilities to improve the accuracy, reliability, and usability of weather forecasts and climate prediction
Goal 5. Strengthen international and national stakeholder engagement and PPPs for sustainability of investments and improved weather services, climate services, and climate change information	**Objective 5.1.** Develop and operationalize robust user interface platforms **Objective 5.2.** Formalize international and national stakeholder and academia engagement mechanisms to improve

	weather services, climate services, and climate change information **Objective 5.3.** Develop and institutionalize PPPs to improve the sustainability of investments and services
Goal 6: Strengthen and sustain the institutional capacity of DCCMS as the authoritative voice to effectively deliver its mandate including early warning services	**Objective 6.1.** Strengthen the regulatory framework, policies, and business model of DCCMS **Objective 6.2.** Implement QMS to help achieve ISO certification of DCCMS aviation services **Objective 6.3.** Strengthen human capacity, expertise, and skills **Objective 6.4.** Modernize DCCMS building infrastructure **Objective 6.5.** Establish and operationalize a 24/7 National Forecasting and Warning Operations Unit to ensure continuous monitoring, generation, and real-time updating of weather, climate, and hydrological warnings, thereby enhancing early action and disaster preparedness across all sectors

Source: DCCMS.

Numerous activities and sub-activities must be achieved in order to meet these objectives. These are contained within the "live" DCCMS Operational Plan.

For each goal and associated objective, the live operational plan also includes a description of the milestones and targets and specifies the activities required each year to achieve them. This information will assist in setting, monitoring, and evaluating DCCMS performance.

4. Risk Assessment

Picture 2 Stormy clouds Building Mtakataka - Dedza. Photo : Fatsanawo Dzingomvera

Table 2 shows the key risks associated with the implementation of the Strategic Plan that have been identified, along with the mitigation strategies for each risk.

Table 2. Identified Risk: Likelihood of Occurrence and Potential Impact

Risk	Likelihood of occurrence	Potential impact: Rating	Potential impact: Description	Mitigation strategies	Responsible entity
Political	Possible	Medium	Shifting government priorities or leadership changes may affect alignment with national strategies (DRM Strategy 2016, Vision 2063) or delay policy support for impact-based forecasting systems.	Mandate is included in the Meteorological law. Maintain close engagement with relevant ministries, departments, and agencies; participate in national coordination platforms; align strategies with national goals.	Director of DCCMS; Ministry Planning Unit
Operational	Possible	Medium/ High	Failure to meet stakeholders' needs, limitations in modernization of infrastructure (e.g., Objectives 1.3, 5.4), and failure to implement 24/7 forecast operations (Objective 5.5) could reduce service delivery effectiveness.	Define and track milestones and targets in the Operational Plan; implement QMS; conduct functional review of DCCMS, including roles and responsibilities/ reorganization; establish clear procurement plans; secure backup systems and build redundancies.	Director of DCCMS; QMS quality manager; deputy directors; human resources manager
Human resource	Likely	High	Implementation may be hindered by unclear definition of recruitment and retention of staff and the required competencies to deliver under the Strategic Plan, skills gaps (in AI, modeling, and ICT tools [Objectives 3.1–3.3]), and	Advocate for recruitment; reorganize DCCMS and implement the human resources plan; develop recruitment and training plan; implement continuous training (Objective 5.3); engage with academia; introduce mentorship programs; use twinning arrangements with regional/international agencies.	Director of DCCMS; human resources manager; capacity Development Unit

Risk	Likelihood of occurrence	Potential impact: Rating	Potential impact: Description	Mitigation strategies	Responsible entity
			lack of capacity to run 24/7 operations.		
Legal	Unlikely	High	Delays in legal and regulatory reform and unclear mandates and duplications (Objective 5.1) undermine DCCMS's authority and institutional clarity; lack of clarity surrounding the legal mandate leads to missed opportunities and prevents implementation of cost recovery.	Mandate is included in the law. Conduct legal reviews; implement policy revisions/reforms; coordinate closely with Ministry of Justice and Office of President and Cabinet.	Director of DCCMS; Legal Unit
Financial	Likely	High	Effective implementation of the Strategic Plan, NFWCS, and QMS may be hindered; unpredictable funding and insufficient investment for operation and maintenance, full technical upgrades, and outreach (Objectives 1.3, 2.2, 3.1) may affect DCCMS's delivery of services.	Work closely with ministers and Parliamentary Committee of Climate Change to advocate for additional funding; liaise with minister of finance; monitor budget allocations; develop multi-donor financing mechanisms; form PPPs (Objective 4.3); implement cost recovery; integrate DCCMS's needs in national budget cycles.	Director of DCCMS; Finance Section; donor liaison officer

Source: DCCMS.

Extreme						
High		4	2	3 and 5		
Medium			1			1. POLITICAL Risk 2. OPERATIONAL Risk 3. HUMAN RESOURCE Risk 4. LEGAL Risk 5. FINANCIAL Risk
Low						
Negligible						
Potential Impact ⇧ Likelihood of occurance ⇨	Remote	Unlikely	Possible	Likely	Probable	
% Ranges	0-10%	>10-25%	>25-50%	>50-90%	>90-100%	

Colour	Ratings	Description
	Low risk area	Minor risks and low consequences that may be managed by routine procedures
	Medium risk area	Medium risk that are likely to arise or have serious consequences requiring attention
	Medium-high risk area	Major risks that are likely to arise or have serious consequences requiring urgent attention or investigation
	High risk area	Extreme risk that are likely to arise and have potentially serious consequences requiring urgent attention

4. Financing the Strategic Plan

The financing for this Strategic Plan comes primarily from the Government of Malawi and development partners. However, for the period covered by the plan, additional funding will be required. To supplement existing funding sources, a new business model for DCCMS will be developed, one that includes PPPs and establishes cost recovery and cost-sharing mechanisms.

The budget profile is shown in
Table 3 and is broadly mapped against each of the five goals for the period 2025 to 2030. During 2023/2024, the direct budget funding from the Government of Malawi was approximately MK 209,508,324 (approximately US$124,546). As noted, the financing and investment over the 2025–2019 period will be enhanced to enable the institutional and country-level strengthening detailed previously.

From 2025 onward, the financing to deliver against DCCMS goals will increase due to several factors (including increase of staffing, improved technology, operation and maintenance costs) and from different sources (i.e. government and various developing partners).

Table 3. Financing Profile, 2025–2030 (MK)

		2025	2026	2027	2028	2029	Total (2025–2029)
		DCCMS direct budget in Million (MWK)	DCCMS direct budget Million (MWK)	DCCMS direct budget Million (MWK)	DCCMS direct budget Million (MWK)	DCCMS direct budget Million (MWK)	DCCMS direct budget Million (MWK)
GOAL 1	Deliver improved early warning services to enhance safety and resilience in Malawi, contributing the National DRM Strategies and plans, and EW4All	30,000	50,000	60,000	50,000	90,000	280,000
GOAL 2	Deliver targeted weather and climate services in support of socio-economic sectors and climate change information contributing to the national and international obligations, including the Malawi Vision 2063 and associated Sustainable Development Goals	180,000	500,000	600,000	700,000	800,000	2780,000
GOAL 3	Strengthen capacity for Climate Change Science and Information for Evidence-Based Decision-Making for climate risk management and adaptation planning	150,000	300,000	500,000	400,000	600,000	1950,000
GOAL 4	Leverage science and technology through the application of innovative approaches for improved weather and climate services, and climate change information	200,000	250,000	300,000	350,000	400,000	1500,000
GOAL 5	Strengthen international and national stakeholder engagement and public-private-partnerships (PPP) for sustainability of investments and improving weather and climate services, and climate change information	50,000	80,000	90,000	90,000	110,000	420,000
GOAL 6	Strengthen and sustain the institutional capacity of DCCMS as the authoritative voice to effectively deliver its mandate including early warning services	400,000	500,000	600,000	700,000	800,000	3000,000
TOTAL		1010,000	1680,000	2150,000	2290,000	2800,000	9930,000

Source: DCCMS.

5. Monitoring and Evaluation

As noted previously, an interactive "live" Operational Plan will show more specific details related to the activities required to meet the goals and objectives set out in this Strategic Plan. For monitoring and evaluation of progress related to activities and objectives, the Operational Plan will define key performance indicators, milestones, and targets.

The full description of the M&E as well as the Operational Plan are separate from this document.

Monitoring: The monitoring of progress against the strategic objectives will take numerous forms, but in essence, heads of departments/divisions will track progress against specific activities assigned to them, either individually or as a collective, with overarching monitoring by deputy directors and the DCCMS director. The specific indicators and targets are shown on the Operational Plan.

Evaluation: Evaluation will take place during individual meetings between the heads of departments/divisions, deputy directors, and the DCCMS director, which will occur monthly. In addition, full team meetings of heads will review and discuss remedial actions if progress toward targets is not on track.

Reporting: There will be annual reporting to the Government of Malawi.

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