

STRENGTHENING CLIMATE INFORMATION AND EARLY WARNING SYSTEMS IN EASTERN AND SOUTHERN AFRICA FOR CLIMATE RESILIENT DEVELOPMENT AND ADAPTATION TO CLIMATE CHANGE – MALAWI

Issues

Malawi is particularly vulnerable to climate change and climate variability. Climate change projections show an increase in mean temperature of between 2 °C and 3 °C by 2050, a decrease in total annual rainfall and water availability and an increase in erratic rainfall events. The combination of increased temperature and reduced rainfall is likely to result in considerable loss of agricultural output and a reduction in the extent of land suitable for rain-fed agriculture. Erratic rainfall and increased temperature will result in more frequent and intense droughts, floods and severe weather – including strong winds and associated storm surges over Lake Malawi. A number of compounding factors including, *inter alia*, a challenging socio-economic context, widespread ecosystem degradation, inappropriate agricultural practices, and limited knowledge of climate change contribute to the vulnerability of Malawi's economy and communities to climate change. There is limited data available to estimate the projected economic costs of climate change to Uganda, but studies from similar African countries suggest a decrease of 1.5–3% in Gross Domestic Product (GDP) per annum under a business-as-usual scenario. The impacts of climate-related hazards in Malawi have already severely disrupted food production and have



Figure 1: Floods affect community livelihoods (photograph courtesy of DODMA).

led to the displacement of communities, loss of life and assets, and an overall reduction of community resilience. In the absence of significant investments in adaptation, the

Project Summary

- Country: Malawi
- Project Budget: US\$ 4,000,000
- Project Funding Source: GEF/LDCF
- Project Co-Financing: US\$ 11,294,907
- Project Period: 2013–2017
- Implementing Partners: Department of Disaster Management Affairs (DoDMA), Office of the President and Cabinet
- Target Areas: Karonga, Salima, Nkhota-kota, Rumphi, Nkhata Bay, Dedza and Phalombe Districts

negative effects of climate change will undermine years of development assistance and asset accumulation. Malawi's climate information and Early Warning Systems (EWSs) are limited in their ability to monitor and forecast weather conditions, communicate warnings, respond to disasters, and plan for long-onset changes that require transformation in economic development.

Actions

The Government of Malawi (GoM) recognises the fact that socio-economic development will be negatively impacted if the likely impacts of climate-related hazards are not addressed. The objective of the LDCF project is to strengthen the weather, climate and hydrological monitoring capabilities, EWSs and delivery of available information for responding to extreme weather and planning for adaptation to climate change in Malawi. This will be achieved by delivering two integrated and complementary outcomes:

1. Enhanced capacity of the Department of Climate Change and Meteorological Services (DCCMS) and Department of Water Resources (DWR) to monitor and forecast extreme weather, hydrology and climate change.

A sustainable network of synoptic, agro-meteorological and hydrological observation stations will be established under the DCCMS and DWR. Modern forecaster facilities (computers, data storage and networking) will be installed to process and display meteorological and hydrological data.

The raw data will also be integrated and used to forecast weather and climate. Technical capacity to operate and maintain the enhanced hydro-meteorological network will be built within both departments. A protocol and an agreement will be developed, based on existing mandates, to ensure collaboration between the DCCMS and DWR for the management and operation of automatic and manual stations, data handling, water resource assessment and warnings, and communication mechanisms. Furthermore, both departments will benefit from capacity building in order to use the data collected from the modernised weather and climate observation and information management systems to issue reliable weather forecasts and alerts, in particular for floods, droughts and strong winds. This will provide a basis for understanding climate change and for enhancing the effectiveness of existing fragmented EWSs in the country.

2. Efficient and effective use of hydro-meteorological and environmental information for making early warnings and long-term development plans.

This will support the timely sharing and dissemination of relevant weather and climate data and information to users at both the national and district levels. Standard Operating Procedures for disseminating and responding to weather and climate forecasts – including warnings for floods, droughts and severe weather – will be developed through DoDMA and demonstrated in seven disaster-prone districts, namely Karonga, Salima, Nkhota-kota, Rumphu, Nkhata Bay, Dedza and Phalombe. This will enable them to plan for, and respond to, climate change impacts. The use of the Esoko web-based SMS weather forecast platform under the Enhancing Community Resilience Programme (ECRP) has proved successful in three of the LDCF project’s targeted seven priority districts for around 500 farmers and this success will be expanded to the remaining districts. National systems will be linked to existing community-based systems and decentralised observation networks in the country.

Expected Impacts

The project anticipates achieving a significant and measurable reduction in food insecurity and climate vulnerability amongst the local communities in the targeted areas. This will be achieved through installing an automated network of weather measuring equipment that is operated and maintained across the country. The data that will be used to produce information needed to establish the EWSs. The early warning messages will enable small-scale farmers, business owners and vulnerable communities to prepare for rapid-onset climate-related hazards such as floods and storms, as well as slow-onset hazards such as droughts and rainfall variability. The increased availability of climate and weather information will guide a transformational shift in economic development and risk-reduction efforts.

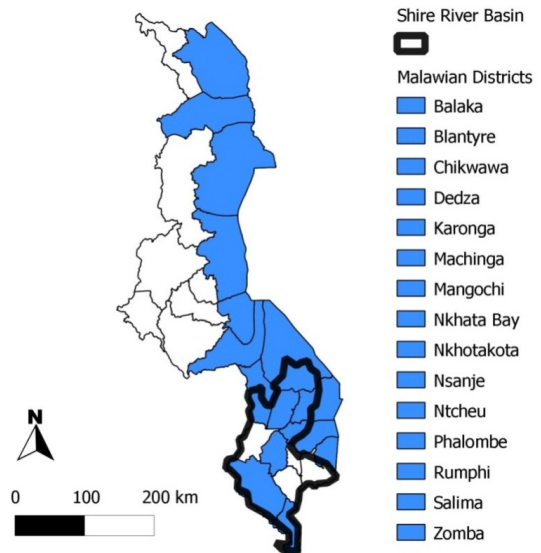


Figure 2: Priority flood-prone and drought-prone districts in Malawi.

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