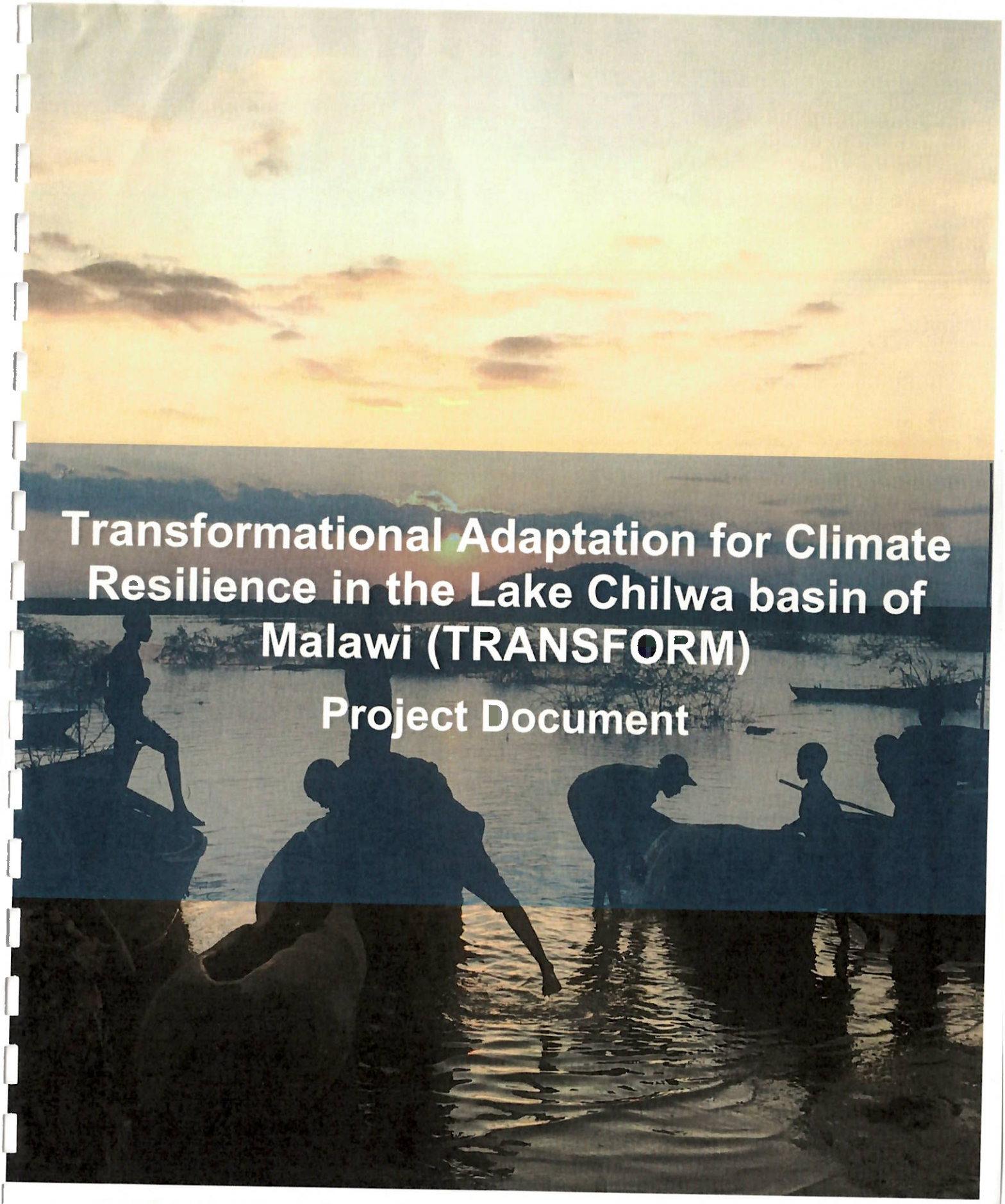


# Transformational Adaptation for Climate Resilience in the Lake Chilwa basin of Malawi (TRANSFORM)

## Project Document

*Government of Malawi*

**United Nations Development Programme**

**Project Document template for projects financed by LDCF**

| | | |
|---|---|---|
| **Project title:** Transformational Adaptation for Climate Resilience in Lake Chilwa basin of Malawi (TRANSFORM) | | |
| **Country:** Malawi | **Implementing Partner (GEF Executing Entity):** Department of Environmental Affairs (DEA) of the Ministry of Natural Resources and Climate Change | **Execution Modality:** Full National Implementation Modality (NIM) |
| **Contributing Outcome (UNDAF/CPD, RPD, GPD):** UNDAF Pillar 3: Inclusive and Resilient Growth. Outcome 7: By 2030, Households have increased food and nutrition security, equitable access to healthy ecosystems and resilient livelihoods | | |
| **UNDP Social and Environmental Screening Category:** *Substantial* | **UNDP Gender Marker: 2** | |
| **Atlas Award ID:** Project ID: 00143963 | **Atlas Project/Output ID:** Output ID: 00131872 | |
| **UNDP-GEF PIMS ID number:** PIMS 6608 | **GEF Project ID number:** 10777 | |
| **LPAC meeting date:** *this date must be before the expected CEO endorsement date* 10 June 2023 | | |
| **Last possible date to submit to GEF:** *10th February 2023* | | |
| **Latest possible CEO endorsement date:** *10 June 2023* | | |
| **Project duration in months:** 60 | | |
| **Planned start date:** *this is defined as the expected project document signature date. Equivalent to Expected Implementation Start noted in CEO endorsement request.* ***Project document signature must occur no later than 6 months of GEF CEO endorsement of this project.*** *25 March 2025* | **Planned end date:** *this is defined as the planned date of operational closure. Equivalent to Expected Completion Date noted in CEO endorsement request.* *25 March 2029* | |
| **Expected date of Mid-Term Review:** *mandatory to add date.* ***This must be within 36 months of CEO endorsement.*** *This is not required for MSPs or EAs* *25 September 2026* | **Expected date of Terminal evaluation:** *mandatory to add date.* ***Note TE should be completed 3 months prior to the operational closure (planned end date).*** *Not required for EAs.* *25 September 2029* | |
| **Brief project description:** In the Lake Chilwa basin in southern Malawi, local communities are increasingly affected by the impacts of climate change. Since the 1960s, Malawi has experienced an increase in annual temperatures, prolonged dry seasons, increasingly variable rainfall patterns and more frequent heavy rainfall events. These climatic changes have been particularly acute in the Lake Chilwa basin | | |

| |
|---|
| where they have contributed to a rise in the intensity and frequency of climate hazards such as droughts and floods associated with: i) a decline in the capacity of ecosystems in the basin to regulate the hydrological cycle; ii) a decrease in Lake Chilwa's water levels; and iii) a reduction in the productivity of fisheries and rainfed agriculture. To reduce the vulnerability of communities surrounding the lake to the adverse effects of climate change, the TRANSFORM project will strengthen the resilience of livelihoods through Ecosystem-based Adaptation (EbA) and financing of sustainable, climate-resilient enterprises. Specific interventions implemented under TRANSFORM will include: i) enhancing the capacity of communities and institutions to plan, implement and monitor EbA interventions that build the adaptive capacity of the basin; ii) improving small-scale producers' access to lucrative markets for climate-resilient products and value chains through diversification of product/service offerings and alternative livelihoods, as well as by enhancing access to microfinance, social protection and insurance; and iii) facilitating the adoption of alternative and climate-resilient livelihoods. These interventions will see more robust and coordinated relationships between the private sector and small-scale producers, facilitated by concessional financing, improved infrastructure and technologies, thereby enabling a long-term resilience building and vulnerability reduction in the Lake Chilwa basin and across the rest of Malawi. |

| **FINANCING PLAN** | |
|---|---|
| LDCF | USD 4,416,210 |
| UNDP TRAC resources[1] *(only if included in the Total Budget and Work Plan for this specific GEF project)* | USD 1,750,000[2] |
| Confirmed cash co-financing to be administered by UNDP *(only if included in the Total Budget and Work Plan for this specific GEF project))* | |
| **(1) Total Budget administered by UNDP** | **USD 6,166,210** |
| | |
| **Total confirmed co-financing to this project not administered by UNDP** *(provide one lump sum only. This can include other UNDP projects administered by UNDP, GEF resources administered by other GEF Agencies etc.). Do not break-out by co-financing partner)* | USD 21,451,000 |
| **(3) Grand-Total Project Financing** | **USD 25,867,210** |

**TURES:**

*IF THE PROJECT DOCUMENT IS **IN FRENCH OR SPANISH, THE FINAL PROJECT DOCUMENT MUST BE CLEARED BY** THE RTA BEFORE SIGNATURE.*

| | | |
|---|---|---|
| **Signature:** | **Agreed by Government Development Coordination Authority[3]** | **25/03/2024** BETCHANI TCHERENI |
| **Signature:** | **Agreed by Implementing Partner[4]** | **25/03/2024** MNREC DR. YUSUF MKUNGULA |
| **Signature:** Fenella Frost | **Agreed by UNDP[5]** | **25/03/2024** |

[1] This is not a mandatory requirement.

[2] *UNDP total cash co-finance is $2,000,000, but only $1,750,000 is included in the TBWP. The other $250,000 is an in-kind contribution which will be utilized to support UNDP's oversight role. .*

[3] *Other evidence of government agreement may be accepted in lieu of a signature, unless the programme country government requires a signature.*

[4] *Not required when UNDP is the implementing partner (i.e. DIM implementation modality). If a UN Agency or an IGO is the implementing partner, and has signed a SBEAA wi UNDP, then the Government Development Coordination Authority, UNDP and UN Agency (or IGO) sign the project document. If an IGO or UN Agency is the implementing partne and has NOT signed a SBEAA with UNDP, then the Government Development Coordination Authority, UNDP sign the project document and attached it to the Project Cooperatic Agreement to be signed by the UN AGY/IGO and UNDP. If a CSO/NGO is the implementing partner, the Government Development Coordination Authority and UNDP sign th project document and attached it to the Project Cooperation Agreement to be signed by the CSO/NGO and UNDP. CSO/NGO does not sign the Project Document.*

[5] *For NIM projects this is the Resident Representative. For DIM projects in a single country this is the Resident Representative. For global, regional DIM projects this is the Hea of the lead Unit (as per the Department of the project. For example, regional project managed by Regional Hub, Head of Regional Hub will sign; global project managed NCE-V it is the NCE-VF Executive Coordinator).*

*Government of Malawi*
United Nations Development Programme

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**Acronyms**

| | |
|---|---|
| FSP | Full Sized Project |
| GEF | Global Environment Facility |
| GEFSEC | Global Environment Facility Secretariat |
| MSP | Medium Sized Project |
| PIF | Project Identification Form |
| PIR | GEF Project Implementation Report |
| POPP | Programme and Operations Policies and Procedures |
| PPG | Project Preparation Grant |
| STAP | GEF Scientific Technical Advisory Panel |
| BPPS NCE | Bureau for Policy and Programme Support, Nature, Climate and Energy |

## I. EXECUTIVE SUMMARY

Rural communities in the Lake Chilwa basin, located in southern Malawi, depend primarily on the basin's abundant natural resource base to support their livelihoods. However, climate change has negatively impacted the region, acting as a threat multiplier to exacerbate the existing baseline challenges present in these communities. These climatic changes — observed across Malawi since the 1960s — include an increase in annual temperatures, prolonged dry seasons, increasingly variable rainfall patterns, and more frequent heavy rainfall events, all of which have contributed to a rise in the intensity and frequency of climate hazards, such as drought and floods. In addition, there has been a noticeable increase in the frequency and magnitude of storms in the country, corresponding to intensified wind speeds and rainfall that compound the impacts of floods. Projections show that these observed trends will become more severe in line with the changing climate.

Increasing temperatures have accelerated the rate of evapotranspiration in the Lake Chilwa basin. This phenomenon, combined with variable precipitation patterns, disrupts the hydrological cycle of the basin, decreases lake levels, and reduces the productivity of fisheries and rainfed agriculture. With their livelihoods at risk, climate change-induced impacts push local communities beyond their traditional coping mechanisms. Instead, they have resorted to maladaptive land-use practices that degrade soils and vegetation, such as the expansion of agricultural fields into marginal areas to offset declining crop productivity, as well as the exploitation of forest resources to obtain fuel wood and produce charcoal. This behavioural shift has reduced the service capacity of surrounding ecosystems to regulate the hydrological cycle. In particular, bare and compacted soils (a consequence of land degradation) do not have the structural integrity to regulate water flow, causing a reduction in groundwater recharge and the baseflow of rivers and streams that feed the lake — particularly during droughts and dry spells. The degraded state of soils also exacerbates the impacts of floods, which have become more prevalent with more intense rainfall events in the area. These impacts further degrade soils through extensive erosion, and damage infrastructure and agricultural land. The climate change-induced reduction of hydrological regulation has also impacted the frequency at which Lake Chilwa dries up. Although, historically, the lake has dried periodically through natural processes, this phenomenon has become more regular in recent decades, with marked negative impacts on community livelihoods and the local economy. Ultimately, climate change severely impacts the health and well-being of vulnerable communities in the Lake Chilwa basin, reducing income and food security and driving the negative cycle of degradation. Without intervention, these challenges are expected to heighten under future climate change conditions, further decreasing the climate resilience of local communities in Zomba, Phalombe and Machinga.

The Government of Malawi (GoM) is committed to addressing the impacts of climate change across the country and has supported the implementation of numerous projects and initiatives in the Lake Chilwa basin aimed at reducing climate vulnerability of local communities. It also acknowledges the need to incorporate climate resilience into improved natural resource management plans across the country, made evident through the development and ratification of climate-responsive national policies and strategies (Section II.8). Several barriers to adaptation have, however, greatly inhibited the long-term sustainability of these interventions (Section II.6). These barriers notably include limited: i) technical and financial capacity among communities for the adoption of alternative livelihoods; ii) knowledge and skills among subsistence farmers and fisherfolk of value-addition practices for agricultural and fisheries products; iii) social accountability systems and community capacity to enforce environmental regulations; iv) technical and institutional capacity among communities for environmental and natural resource management, as well as implementing EbA measures; v) access to finance and markets for climate-resilient products by MSMEs and the informal sector; and vi) investment and support from private sector and other value chain actors towards adaptation, as well as generally limited private sector engagement with small-scale producers to build climate resilience along key value chains.

The long-term preferred solution to the stated problem is to reduce the impacts of climate change on the most vulnerable communities in the Lake Chilwa basin by catalysing a shift away from natural resource degradation and limited livelihood opportunities towards large-scale implementation of EbA, widespread adoption of alternative livelihoods and securing long-term sources of financing for climate change adaptation. This will enable a sustainable, cross-sectoral transformation of the overarching climate resilient development trajectory of the Lake Chilwa basin through interventions that build adaptive capacity while also contributing to reducing the country's greenhouse gas emissions and promoting the delivery of ecosystem service.

The preferred solution will also enable the lessons learned from the Lake Chilwa basin to be upscaled across the country through policy measures and private sector engagement that create green jobs particularly among small, medium and micro enterprises — thereby contributing to recovery from Covid-19 economic damages. The main interventions for achieving the preferred solution in the basin will include: i) enhancing the capacity of communities and institutions to plan, implement and monitor EbA interventions that build the adaptive capacity of the basin; ii) improving small-scale producers' access to lucrative markets for climate-resilient products and value chains through diversification of product/service offerings and alternative livelihoods, as well as by enhancing access to microfinance, social protection and insurance; and iii) facilitating the adoption of alternative and climate-resilient livelihoods.

These interventions will see more robust and coordinated relationships between the private sector and small-scale producers, facilitated by concessional financing, improved infrastructure and technologies. These interventions will be framed under three interconnected Components[6], namely: i) Enhancing financing and investment in adaptation options and climate-resilient enterprises in the Lake Chilwa basin, with potential for upscaling to other regions of Malawi; ii) Implementation of EbA and sustainable climate-resilient livelihoods; and iii) Strengthening the enabling environment for upscaling of initiatives aimed at climate-resilient development across Malawi.

Beyond its primary objective of maintaining environmental sustainability in the context of climate change in the Lake Chilwa basin, the proposed project design will contribute to institutional, social and economic sustainability of interventions and their impacts beyond the project lifespan. Institutional sustainability will be ensured by addressing the institutional needs of local leadership, Village Natural Resource Management Committees (VNRMCs), Beach Village Committees (BVCs) and other custodians of natural capital, thereby ensuring that they are adequately capacitated to address the impacts of climate change across the basin. Institutional sustainability will also be ensured through the development of an EbA Plan for the entire Lake Chilwa basin that will enable a coordinated approach to EbA across the three target districts. Social sustainability will be ensured by: i) emphasising stakeholder participation in the project design; ii) promoting the use of community-based resilience analysis (CoBRA) for the selection of appropriate adaptation actions in target communities, which will ensure stakeholder buy-in into any interventions implemented on the ground; and iii) conducting a national awareness programme on EbA and climate resilient investment opportunities. Finally, the economic sustainability of the proposed project interventions will be ensured by targeting critical areas for value chain development that will contribute to enhancing community climate resilience, reducing unsustainable natural resource use and providing long-term economic opportunities for communities. These interventions will be complemented by training programmes that will be delivered to communities and MSMEs in target communities, thereby ensuring that sustainable, climate-resilient development is catalysed across the Lake Chilwa basin.

The proposed TRANSFORM project will build on and coordinate with existing initiatives aimed at coping with current climate change within the Lake Chilwa basin (as described in detail in Section II.7). Specifically, TRANSFORM will leverage LDCF resources for the implementation of initiatives aimed at catalysing private sector financing to develop climate-resilient value chains, enhanced market linkages, and thereby incentivising business and investment opportunities for climate resilience in the project target areas. The most notable ongoing initiative that TRANSFORM project will align with is the project entitled 'Malawi climate-resilient and sustainable capture fisheries, aquaculture development and watershed management project (SFAD-WM)'[7]. TRANSFORM will build on interventions of the SFAD-WM through: i) developing EbA plans for the Lake Chilwa basin, building on Watershed Management Plans (WMPs) developed under SFAD-WM to identify climate change vulnerability and ecosystem degradation hotspots and outlining EbA interventions for climate-resilient livelihoods (Outcome 2); ii) capacity building for EbA interventions (Outcome 2); iii) increasing market access and value chain enhancement for fishing and agricultural commodities (Outcome 2), as well as enhancing the scalability of interventions under SFAD-WM through the establishment of a private sector funded climate financing facility (Outcome 1); iv) establishment of a knowledge management hub for storing and managing lessons learned and best practices for upscaling beyond the Lake Chilwa basin (Outcome 3).

[6] Section IV.1 presents detailed descriptions of the project Outcomes, Outputs and activities.

[7] Department of Fisheries. 2019. Sustainable Fisheries, Aquaculture Development and Watershed Management Project: Executive summary. Available at: https://www.afdb.org/fr/documents/malawi-sustainable-fisheries-aquaculture-development-and-watershed-management-project-esmf-summary

# II. DEVELOPMENT CHALLENGE

## II.1. COUNTRY CONTEXT

### *II.1.1. Geographic and Environmental Context*

Country Overview

The Republic of Malawi is a landlocked country located along the southernmost region of the East African Rift Valley System[8]. The country spans a total area of ~118,400 km$^2$ and is bordered by the United Republic of Tanzania to the north and northeast, Mozambique to the east, south and southwest and Zambia to the west. Malawi experiences a continental wet and dry climate, with seasonal variation considerably influenced by the northward and southward seasonal migration and intensity of the Inter-tropical Convergence Zone (ITCZ)[9], resulting in two main seasons: i) a cool, dry season from May–September, with an average temperature of 13°C; and ii) a hot, wet season from October–April, with an average temperature of 30–35°C. The climate also varies geographically, greatly influenced by bit altitude and proximity to Lake Malawi[10]. These geographic variations are influenced by the country's four major agro-ecological zones, which are characterised by their elevation[11]. These regions and their corresponding climates are listed below.

- The Lower Shire Valley region in the south of the country (200 masl) is defined by a semi-arid climate with an average of ~500 mm of rainfall per annum and temperatures ranging from 23–26°C
- The Lakeshore Plain and Upper Shire Valley (200–600 masl) have similar climate to the Lower Shire Valley Region.
- The Plateau (1,000–1,350 masl) ranges between semi-arid to sub-humid, with an average rainfall of ~500 mm per year. Temperatures range between 20–28°C.
- The Highlands (>1,350 masl) have a sub-humid climate, with an average rainfall of ~3,000 mm per year and temperatures between 13–15°C[12].

The natural vegetation Malawi varies along the climate gradient described above, and form four major ecoregions, including: i) Lake Malawi, a freshwater lake ecosystem; ii) the Central Zambezian Miombo woodlands, which comprises tropical and subtropical grasslands, savannas and shrublands; iii) the Southern Rift Montane Forest-Grassland mosaic[13] comprising montane grasslands and shrublands; and iv) the Eastern Miombo Woodlands, where tropical and subtropical grasslands, savannas and shrublands characterise the ecoregion[14]. The diversity and productivity of these ecosystems — combined with Malawi's favourable climate — has resulted in the conversion of much of the country's land area to agriculture. Approximately 60% of the land area is used for agricultural activities and 24% supports forested areas. The remaining ~16% is divided between urban and rural areas and natural vegetation. Most of the population (~80% of people) engage in subsistence farming and are substantially dependent on agriculture[15].

Lake Chilwa basin

Lake Chilwa is a shallow, endorheic[16], moderately saline lake situated in a tectonic depression, and is surrounded by marshes and flood plains. The transboundary lake is located in the southeast of Malawi on the eastern border between Malawi and Mozambique, with a total watershed area spanning ~8,350 km$^2$ — 68% of which is located in Malawi and 32% in Mozambique (Figure 1). It is the second largest lake in Malawi, with an area of ~2280 km$^2$ that fluctuates annually and seasonally.

[8] The East Africa Rift Valley System (EARS) is a developing diverging plate boundary in East Africa, with the Somalian plate pulling away from the rest of the continent that comprises the Nubian plate.

[9] The ITCZ is a low-pressure belt in the Congo Basin caused by high-pressure belts that form over the Atlantic and Indian Oceans. These belts interact with other phenomena, such as the Congo Air Boundary, which is in turn affected by sea surface temperature (SST) anomalies. Source: Malawi's Third National Communication to the UNFCCC (2021).

[10] Ministry of Natural Resources and Climate Change. 2021. The third National Communication of the Republic of Malawi to the Conference of the Parties (COP) of the United Nations Framework Convention on Climate Change. Available at: https://climateknowledgeportal.worldbank.org/country/malawi/climate-data-historical

[11] Ibid.

[12] Ibid.

[13] Ecosystems where tree-dominated and grass-dominated patches form a mosaic.

[14] World Atlas. Ecological regions of Malawi. Available at: https://www.worldatlas.com/articles/ecological regions of malawi.html#:~:text=Freshwater%20ecoregions%20in%20Malawi%20are,and%20Zambezian%20and%20Mopane%20woodlands

[15] Pensulo. 2020. Malawi's farmers battle armyworms. *Africa Renewal*. Available at: https://www.un.org/africarenewal/web-features/malawi%E2%80%99s-farmers-battle-armyworms#:~:text=Most%20Malawians%2C%2080%20per%20cent,buy%20necessities%20for%20their%20families.

[16] The lake does not flow out into a river or into the ocean

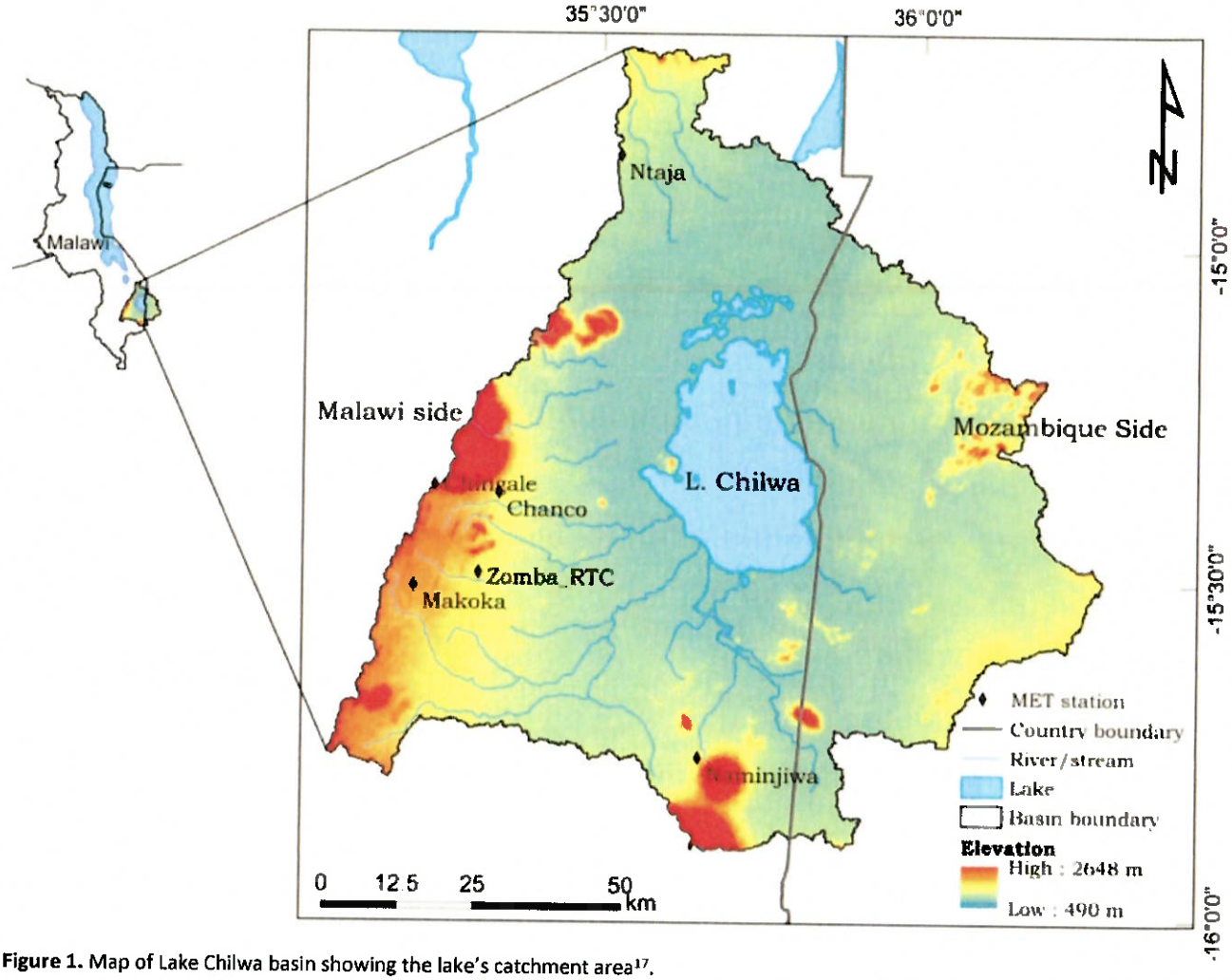



**Figure 1.** Map of Lake Chilwa basin showing the lake's catchment area[17].

The lake has a radial drainage pattern with streams converging from the surrounding watershed, mostly from the mountains in Zomba and Mulanje districts. The altitude of the basin ranges from 500 masl close to lake shores to ~2,650 masl around mountainous areas. [18] Administratively, the Malawian portion of the Lake Chilwa basin is divided into three districts, namely: i) Machinga in the north; ii) Phalombe in the south; and iii) Zomba in the west. Lake Chilwa[19] and its surrounding wetlands are of substantial conservation value, supporting considerable biodiversity, including an abundance of bird and fish species[20]. This rich foundation of natural resources supports the livelihoods of ~1.5 million people, who rely on local fish and land resources for the fisheries and agricultural sectors[21]. Local forest resources are also used to generate most of the population's energy in the form of firewood and charcoal, as well as several non-timber forest products (NTFPs) such as honey, edible and medicinal plants, and fodder[22]. Historically, Lake Chilwa contributed more than 30% of Malawi's fish catches.However, this percentage declined to 20% in the 1990s. By 2012, it was reported that the lake had been producing ~20% of Malawi's fish catches annually[23] and we assume this similar trend has continued into the future because there are no data available thereafter. The reduced productivity of Lake Chilwa's fisheries sector is largely the consequence of climate change and land degradation — which have contributed to the lake's declining water levels in recent decades — and exacerbated by unsustainable fishing practices[24]. As a result of low productivity of the lake's fisheries sector, food and livelihood

[17] Ibid.
[18] Kambombe. O. Ngongondo. C. Eneya. L. Monjerezi. M. Boyce. C. 2021. Spatio-temporal analysis of droughts in the Lake Chilwa basin, Malawi.
[19] Lake Chilwa is a listed Ramsar site and a designated Man and Biosphere (MAB) Reserve.
[20] UNESCO. Lake Chilwa Wetland Biosphere Reserve, Malawi. Available at: https://en.unesco.org/biosphere/africa/lake-chilwa
[21] Njaya, F et al. (2011) The natural history and fisheries ecology of Lake Chilwa, southern Malawi. Journal of Great Lakes Research 37 (2011) pg. 15–25. Available at: https://www.researchgate.net/publication/251590706_The_natural_history_and_fisheries_ecology_of_Lake_Chilwa_southern_Malawi
[22] Chanyenga, T.F. Non-wood forest products in Malawi. Available at: https://www.fao.org/3/x6692e/X6692E01.htm#TopOfPage
[23] Inter Press Service (IPS). 2012. Livelihoods drying up on Malawi's Lake Chilwa. Available at: http://www.ipsnews.net/2012/08/livelihoods-drying-up-on-malawis-lake-chilwa/
[24] Statement by Malawi's assistant director of fisheries. 'Everything is changing': the struggle for food as Malawi's Lake Chilwa shrinks. Global development. The Guardian. Available at: https://www.theguardian.com/global-development/2021/aug/30/everything-is-changing-struggle-for-food-as-malawis-lake-chilwa-shrinks

security are influenced by crop farming. This dependence, however, increases agricultural expansion into marginal areas (refer to section II.2 for detail on this process).

As indicated by the trends described above, natural resource availability and agricultural production are largely influenced by changes in climate conditions. Droughts, floods and heatwaves, for example, have the potential to: i) affect water availability and quality; ii) result in poor crop yields or total crop failure; iii) increased incidences of chronic illnesses such as malaria, cholera, dysentery and malnutrition; iv) considerably reduce hydroelectricity generation capacity; v) low fish production and loss of biodiversity; and vi) reduced forest productivity, land degradation and loss of soil fertility, as well as forest fires. The high dependence of the local population on agriculture and fisheries means that the three target districts are among the most vulnerable areas in Malawi to climatic changes that adversely impact agricultural productivity — particularly droughts, floods and heatwaves. Details on non-climate drivers of vulnerability are presented in Section II.2, and the impacts of climate change are discussed in Section II.3.

**Geographic and climate profile of the target districts**

Located on the plateaus in the southern region of Malawi, the climate of the Lake Chilwa basin is consistent with semi-arid to sub-humid climate in the medium altitude plateaus, which is tropical wet and dry, with annual temperatures varying between 21°C and 24°C (Malawi's varying agro-ecological zones are described above). The region experiences a distinct wet and dry season, receiving most of its annual precipitation (~80%) during the wet season between November and April. The area also receives sporadic winter (May–August) rainfall, which occurs as a result of the influx of cool and moist south-easterly winds that blow in from the Indian Ocean through Mozambique[25]. Overall, the Lake Chilwa basin receives an average rainfall of between 1,100 and 1,600 mm per year. A large portion of this precipitation is concentrated in the Zomba and Mulanje Mountains. In contrast, average rainfall in the lowland plains is expected to be as low as 700 mm. Each of the three district is described in considerable detail in the sub-sections below.

*Machinga District*

Machinga District covers a total land area of 3,771 km$^2$. It is located between Lakes Chilwa, Chiuta and Malombe. It shares borders with Mangochi district in the north, Zomba district to the south, Balaka district in the west and Mozambique in the east (Figure 2)[26]. Machinga District generally experiences warm to hot temperatures ranging from 14–22°C in the winter months and 22–33°C in summer. Recent changes in rainfall patterns have shifted the start of the rainy season by a month, which now starts in November and peaks in over January and February. In addition to seasonal variations, precipitation patterns in the district are influenced by topography, with the highlands typically receiving high rainfall compared with low-lying areas. Agriculture is the main livelihood activity in Machinga — ~70% of the population are dependent on agriculture for their livelihood — which is reflected in the large portion of land in the district is used for agricultural purposes (~57%), with the remainder divided between settlements and woodlands (~32%) and protected areas (~11%).

[25] Kambombe, O., Ngongondo, C., Eneya, L., Monjerezi, M., Boyce, C. 2021. Spatio-temporal analysis of droughts in the Lake Chilwa basin, Malawi. *Theoretical and Applied Climatology*.

[26] Machinga District Council. 2017. Socio-Economic Profile 2017 - 2022. Available at: https://www.integrationpoint.mw/content/machinga-district-council-socio-economic-profile-2017-2022-2023

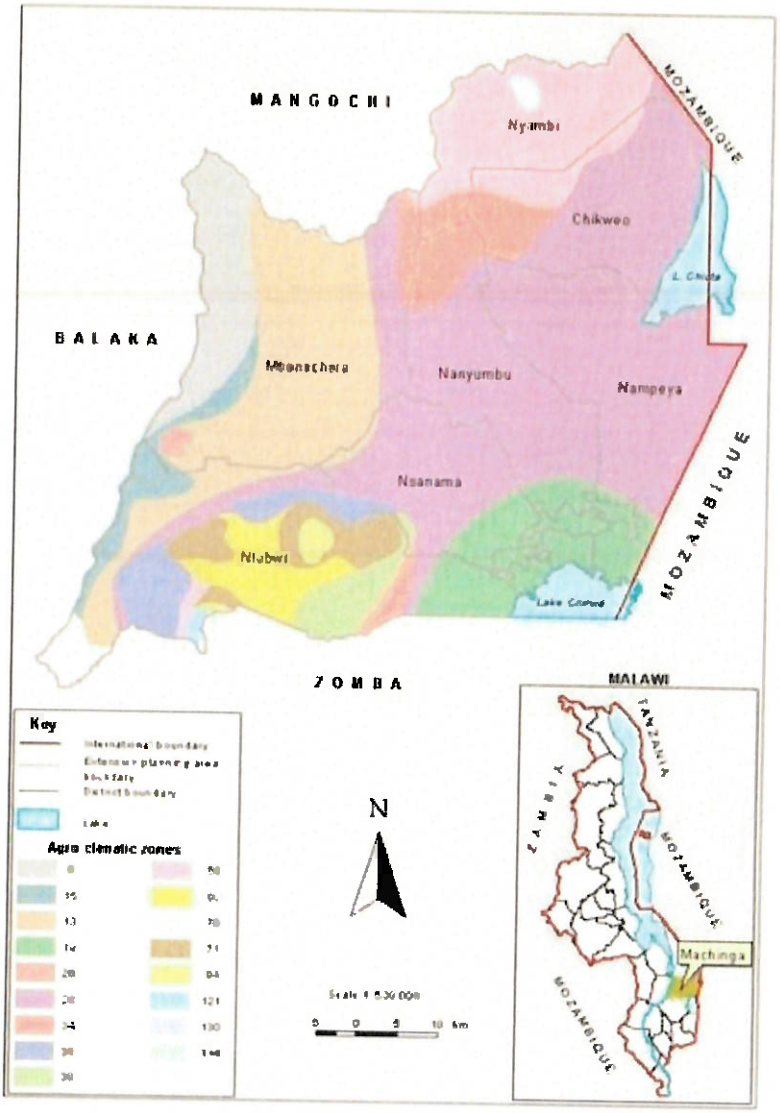



**Figure 2.** District map of Machinga[1].

*Zomba District*

Zomba District is a relatively large district, with a total land area of 2,580 km$^2$, representing 3% of the total area of Malawi[27] (Figure 3). The district shares boundaries with Machinga district to the north, Balaka district to the northwest, Mulanje and Phalombe to the south, Chiradzulu and Blantyre to the south-west, and Mozambique to the east. The average elevation of Zomba District ranges from ~2,085 m on the plateau to ~627 m at Lake Chilwa. Zomba has a tropical climate with three main seasons: cold-dry, hot-dry and hot-wet. Annual rainfall varies from 600–1,500 mm from west to east, with more rainfall tending to fall on the eastern face of the Zomba Plateau which is exposed to the winds that distributes precipitation in Malawi. The warmest months occur during late fall to early summer between September and November (28–30°C). Temperatures are expected to drop to ~10°C during winter between June and July. Agriculture is the largest land use in the district followed by settlements and forestry.

[27] Zomba District. 2017. Socio-Economic Profile 2017-2022. Available at: https://www.integrationpoint.mw/content/zomba-district-socio-economic-profile-2017-2022

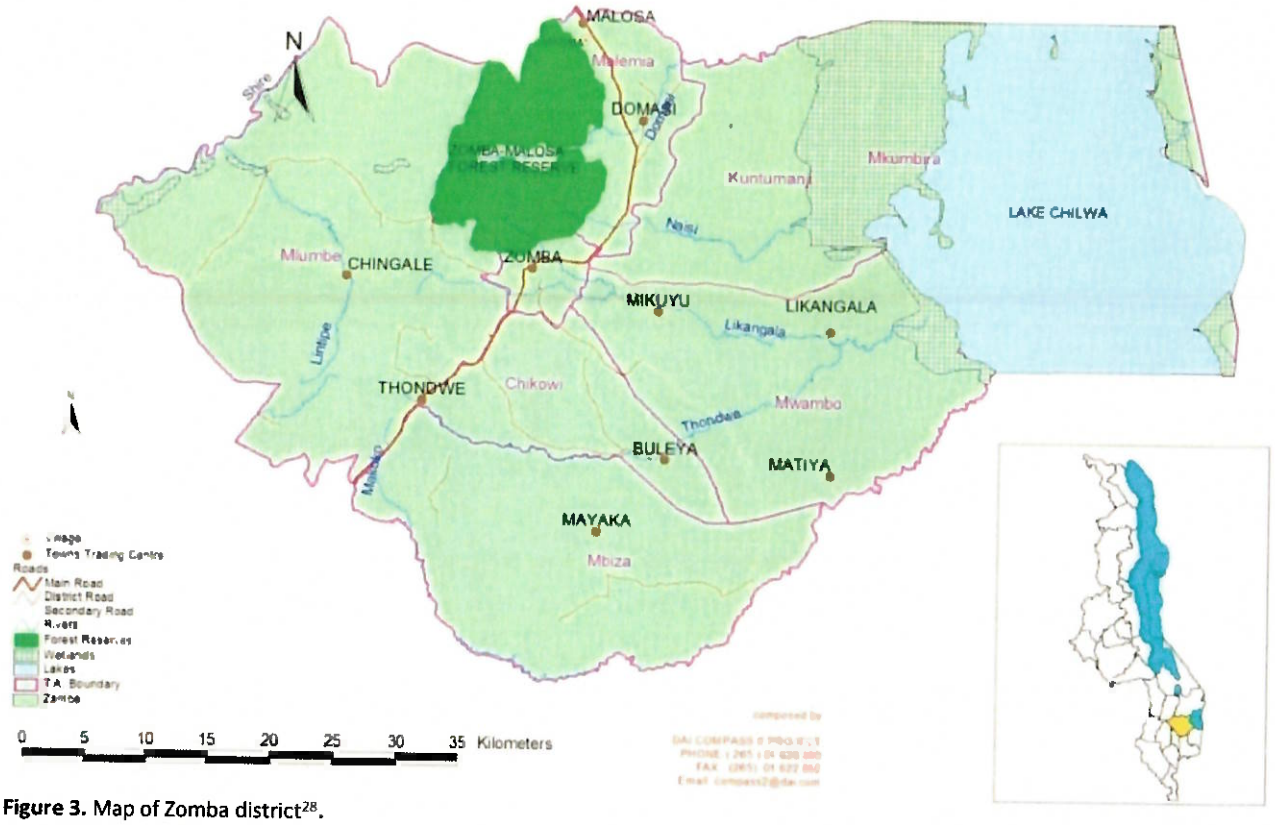



**Figure 3.** Map of Zomba district[28].

*Phalombe District*

Phalombe District[29] (Figure 4) covers an area of ~1,394 km$^2$, with elevation ranging between 700–2200 masl[30,31], and has a population of ~450,000[32]. The district is bordered by Lake Chilwa in the north, Zomba District in the west, Mozambique in the east and Mulanje and Thyolo districts in the south. The majority of land in Phalombe District (~90%) supports agriculture and human settlements, with the remaining area (8.5%) comprising marshlands and forests — both natural reserves and plantations. This steep topography makes the district vulnerable to flash floods during the rainy season, during which time many villages become inaccessible[33]. Phalombe has a tropical climate with two main seasons, namely: i) the wet season which extends from November to April, with the average ~700–1200 mm rainfall distributed unevenly across the district — falling mainly in mountainous areas; and ii) the dry season between May and October. Maximum temperatures during the summer months range between ~28°C–39°C while minimum temperatures average between 18°C–20°C[34].

[28] Zomba District. 2017. Socio-Economic Profile 2017-2022.
[29] Malawi Plus. Phalombe District. Available at: https://malawiplus.com/phalombe/
[30] *Elevation of Phalombe,Malawi Elevation Map, Topography, Contour* (no date). Available at: https://www.floodmap.net/Elevation/ElevationMap/?gi=924206
[31] Taulo, J.L., Mkandawire, R.W. and Gondwe, K.J. 2008. Energy Policy Research Baseline Study for Mulanje and Phalombe Districts. Available at: http://conrema.org/wp-content/uploads/2018/01/Energy-Policy-Research-Baseline-Study-J.L.-Taulo.pdf
[32] Knoema. No date. Phalombe – Malawi. Available at: https://knoema.com/atlas/Malawi/Phalombe
[33] IRC. Socio-economic and gender assessment of water and sanitation programme in Malawi: a case of Thyolo, Phalombe and Karonga Districts: draft report. Available at: https://www.ircwash.org/resources/socio-economic-and-gender-assessment-water-and-sanitation-programme-malawi-case-thyolo
[34] Taulo, J.L., Mkandawire, R.W. and Gondwe, K.J. 2008. Energy Policy Research Baseline Study for Mulanje and Phalombe Districts. Available at: http://conrema.org/wp-content/uploads/2018/01/Energy-Policy-Research-Baseline-Study-J.L.-Taulo.pdf

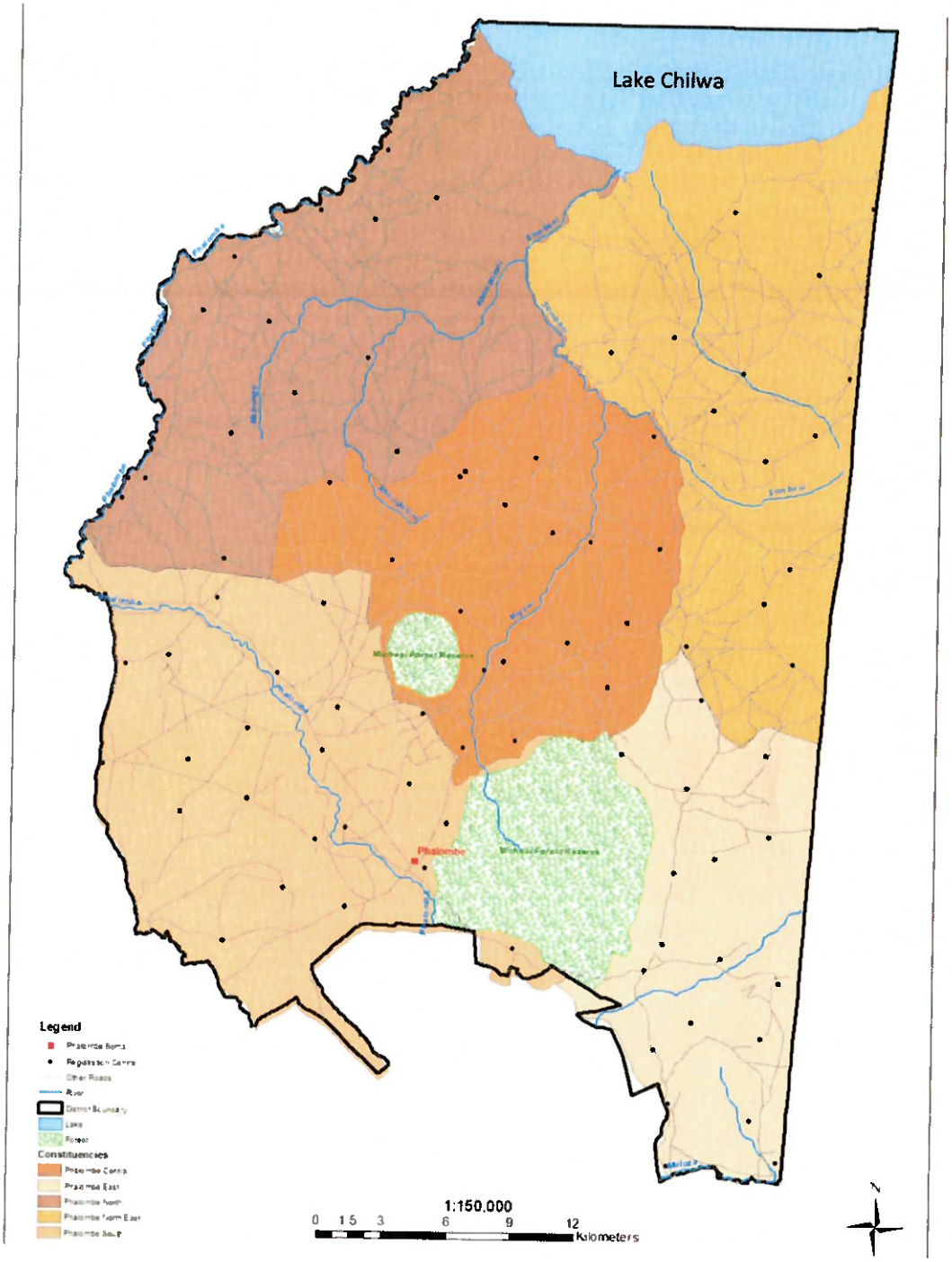



**Figure 4.** District map of Phalombe District[35].

*II.1.2 Social and demographic context*

Malawi's population has increased rapidly in recent years, from ~13 million in 2008 to ~17.5 million in 2018[36]. This ~2.9% growth rate — recorded between population censuses — is more than three times the global average of 0.9%[37]. Malawi's rapidly growing population is most prominent in the Southern Region, where the TRANSFORM target districts are located. With growth rates increasing from 2%–3.7% between censuses (Figure 5) and a population density of ~250 persons per km$^2$, it was considered the most densely

[35] Malawi Electoral Commission. 2022. Maps – District. Available at: https://mec.org.mw/wp-content/uploads/2019/04/Phalombe-1.png
[36] National Statistical Office.2019. Malawi Population and Housing Census Report 2018. Available at: http://www.nsomalawi.mw/images/stories/data_on_line/demography/census_2018/2018 Malawi Population and Housing Census Main Report.pdf.
[37] The World Bank. 2022. Population growth (annual %) - Malawi. Available at: https://data.worldbank.org/indicator/SP.POP.GROW?locations=MW

populated region in Malawi in 2018[38]. The Lake Chilwa basin exhibits this same trend, with districts in the area comprising between ~200–400 persons per square kilometre[39,40]. Phalombe is the most densely populated of the three target districts, followed by Zomba and Machinga[41]. The average population growth across the three districts is ~35%. Notably, after considerable growth since 2008, Zomba City in Zomba District currently has a higher population density (~2,500 inhabitants per square kilometre) than the country's capital city, Lilongwe (~2,400 inhabitants per kilometre squared)[42]. Despite this increased density, Malawi remains a predominantly rural country with few urban areas.

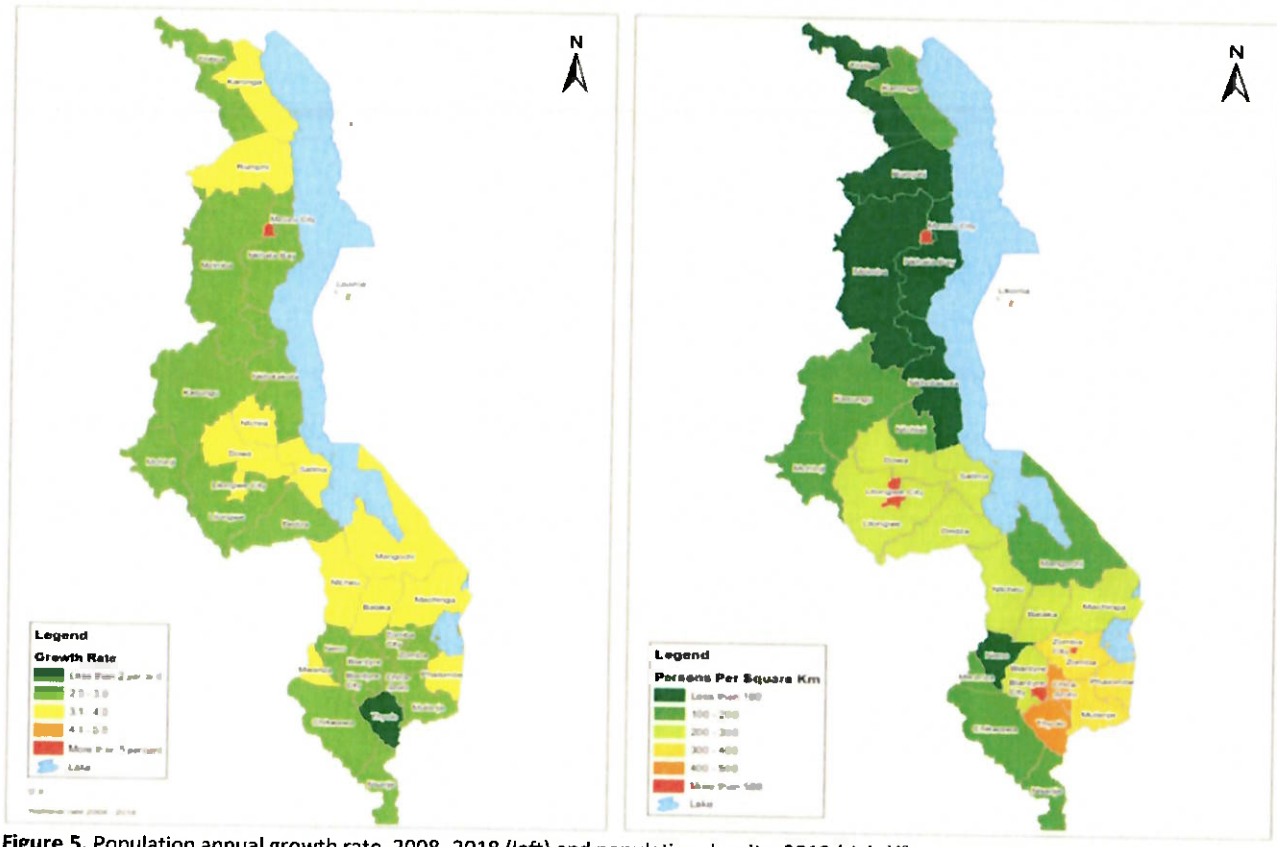



**Figure 5.** Population annual growth rate, 2008–2018 (left) and population density, 2018 (right)[43].

Development challenges

Malawi is considered a Least-developed Country, ranking 174th out of 189 in the Human Development Report, with a Human Development Index (HDI) of 0.483[44] and a Gross National Income (GNI) of US$ 1.035 per capita[45]. Poverty is a considerable challenge in the country, with 52% of the population living below the poverty line (US$231 per year), 20% of which live in extreme poverty (~US$123 per year). Cases of both poverty and extreme poverty are more prevalent in rural areas than urban areas. This trend is consistent in the target districts, where 50–100% of people live under the national poverty line: 50–75% of the populations in Machinga and Zomba live in poverty, and Phalombe District has a poverty rate of 75%[46]. Malawi's growing population is characterised by a heavy burden of disease, evidenced by high child and adulthood mortality rates and the prevalence of diseases such as tuberculosis, malaria, HIV/AIDS, and other diseases that are common in tropical climates. Cholera is an endemic disease in Malawi, with regular outbreaks during the wet season. In the Lake Chilwa region, insufficient potable water sources and poor sanitation in crowded areas contribute

[38] National Statistical Office.2019. Malawi Population and Housing Census Report 2018. Available at: http://www.nsomalawi.mw/images/stories/data_on_line/demography/census_2018/2018 Malawi Population and Housing Census Main Report.pdf.
[39] Ibid.
[40] The density range described here is for rural areas in the Lake Chilwa basin. Zomba City is the only urban area in the Lake basin and houses ~2500 persons per km$^2$.
[41] National Statistical Office. 2019. Malawi Population and Housing Main Report. Available at: http://www.nsomalawi.mw/images/stories/data_on_line/demography/census_2018/2018 Malawi Population and Housing Census Main Report.pdf
[42] Ibid.
[43] Ibid. f
[44] UNDP. 2020. The Next Frontier: Human Development and the Anthropocene. In Human Development Report 2020. Available at: http://hdr.undp.org/en/2020-report
[45] With Purchasing Power Parity (PPP)
[46] IFPRI Key Facts Series: Poverty. (2019).

to cholera outbreaks. In a recent cholera outbreak in 2009–2010, 1,171 cholera cases were registered, and 21 deaths were reported. Notably, incidences of cholera were higher among fishermen.

*II.1.3 Institutional context*

Malawi has been an independent state since 1964. It is a unitary presidential republic with a multi-party system, with a current constitution that was enacted in 1994. The government is divided into executive, legislative and judicial branches. The executive branch is headed by the president, who, together with the first vice president[47], is elected every five years. Malawi's three major administrative zones (north, central and south) comprise 28 districts, 250 traditional authorities and 110 wards. The Ministry of Local Government and Rural Development is responsible for coordinating the delivery of national development agendas with local authorities. Every local government area is divided into wards, defined as smaller areas in which a democratically elected individual represents ward members at council meetings[48]. Districts are represented by a District Council, who is the local planning authority required to prepare local development plans according to national development frameworks[49]. Further detail on Malawi's administrative regions and districts, as well as information on traditional leadership structures and governance, is presented in Appendix 1 to the Project Document.

Natural resource governance in the Lake Chilwa basin

Natural resource management in Malawi is overseen by the Ministry of Natural Resources and Climate Change. The mandate of this ministry is to ensure the sustainable utilisation of energy, minerals, forestry and wildlife resources for the development of Malawi. The Environmental Management Act of 2017 provides a coordinated legal framework for environmental protection and the management, conservation and sustainable use of natural resources. Malawi's high population density and the over-dependence of rural communities on natural resources are recognised as the primary causes of environmental degradation in this Act. It includes substantive law enforcement mechanisms, such as: i) the establishment of the Malawi Environmental Protection Authority (MEPA), which is the main agency for environmental affairs; ii) accountability and institutional arrangements; iii) local community participation; iv) the establishment of an environmental tribunal; v) environmental and social impact assessments, monitoring and auditing; vi) environmental protection orders; and vii) administrative penalties and offences. There are three main policies that guide environmental management, namely: i) the Fisheries Conservation and Management Act, which pertains to the regulation, conservation and management of fisheries; ii) the Forestry Act of 1997, which supports participatory forest management, research, education, protection and rehabilitation, as well as international cooperation; and iii) the National Parks and Wildlife Act, which consolidates laws relating to their management. Community-based natural resource management is formally adopted as a management approach in the Forestry Policy and Act of 1996 and 1997 by the Department of Forestry, and the Fisheries Act by the Department of Fisheries.

In the Lake Chilwa basin, as in other parts of Malawi, many common-pool resources[50] are regulated by groups through collective land ownership in accordance with local traditions[51]. Decentralised local governance structures, such as, *inter alia*, Area Development Committees (ADCs), Village Development Comittees (VDCs), Village Natural Resources Management Committees (VNRMC), Beach Village Committees (BVCs) and Traditional Authorities (TAs) are involved in the co-management of natural resources[52]. The VNRMC is a committee elected at the village level to represent the people's interests, acting as a point of liaison in dealings with forestry extension workers and government officials. These committees provide an organisational structure for the articulation and representation of the interests of local communities in the management of forests and other natural resources. Similar to VNRMCs, the Beach Village Committees (BVCs) represent persons engaged in fisheries-related activities and act as liaisons with government officials in fisheries and are legally vested in enforcing fishery regulations[53]. These institutions' main responsibilities are conflict resolution, establishing regulation for resource use, monitoring and policing, nursery management and silviculture in forestry and fisheries. There are several VNRMCs and BVCs around the Lake Chilwa basin that collaborate under VDCs. This decentralised model of natural resource management has had mixed results in sustainable resource management[54].

[47] The President is expected to appoint a second Vice President, who should be from a different party.
[48] GoM. 2013. Guidebook on the Local Government System in Malawi.
[49] Ibid.
[50] Common-pool resources are goods available to everyone, such as fresh water from a river, fish from a water body, or fruit in a forest.
[51] Nagoli J & Chiwona-Karltun L. 2017. Uncovering Human Social Networks in Coping with Lake Chilwa Recessions in Malawi. *Journal of Environmental Management.* 192: 134–141.
[52] Ibid.
[53] Ibid.
[54] Njaya FJ. 2009. Governance of Lake Chilwa common pool resources: evolution and conflicts. Development Southern Africa 26(4).

*II.1.4 Economic context*

Malawi is classified as a low-income country, with a total GDP of ~US$12 billion and a GDP per capita of ~US$637 in 2020, ranking 181 out of 190 countries[55]. Agriculture is the main contributor to the country's GDP (~23%), followed by the wholesale and trade, and manufacturing industries[56]. The agriculture sector (which includes forestry and fisheries) comprises ~80% of Malawi's total labour force. The country's GDP has varied considerably over the last two decades, largely influenced by inconsistent agricultural productivity, which is dependent on rainfall. Abnormal rainfall patterns resulting in localised droughts and flooding in 2001, for example, reduced the GDP by ~5%[57]. In contrast, favourable weather conditions in 2003 and 2004 improved overall agricultural production, boosting the GDP of the sector and benefiting related industries, including processing, manufacturing and trade sectors. Figure 6 below highlights the fluctuating GDP over the last two years.

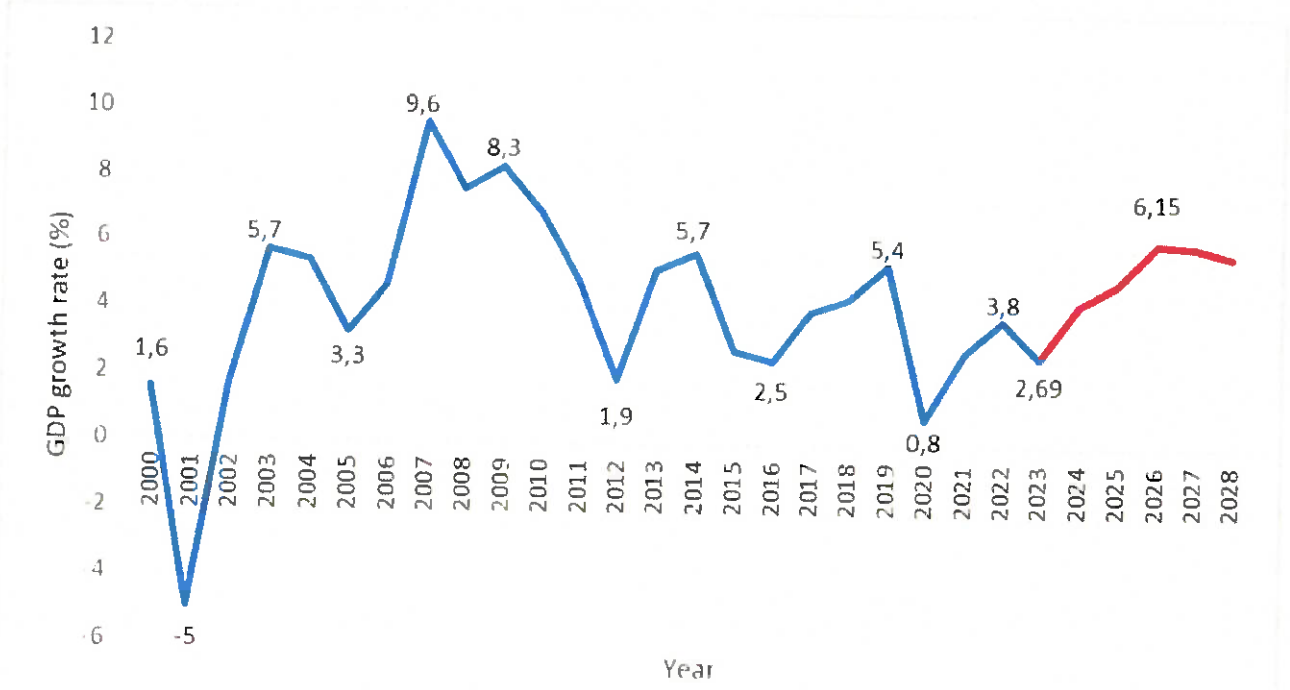



**Figure 6.** GDP growth rates over the last two decades. Data for the period between 2000–2021 are estimated values (blue) , and data for the period after 2021 are predicted values (red)[58].

The impact of the Covid-19 pandemic slowed economic growth from 5.7% (2019) to ~1.5% (2020) — later reduced by a further ~0.8%[59] — which was the lowest registered growth rate since the 2001 recession. Given the low tax base and susceptibility to domestic supply and international demand shocks, foreign aid has constituted a considerable portion of government expenditure. Over 40 multilateral and bilateral development partners — such as USAID, the World Bank, the Global Fund, the European Union and, more recently, China — have contributed an average of ~40% of the national budget over the last decade. One of the major factors inhibiting economic and industrial growth in Malawi is constrained energy supply. Primary energy supplies of the country consist of hydropower, biomass, petroleum products and coal. However, the effectiveness of power supply generated by these energy sources is threatened by: i) rising energy and electricity demand; ii) insufficient power generation capacity; iii) increasing high oil import bills; iv) minimal investment in new power generation units; v) high transmission and distribution costs and transmission losses; vi) heavily subsidised pricing; vii) insufficient investment in alternative energy sources; and viii) minimal access to modern electricity. In addition, the widening gap between electricity demand and supply is being exacerbated by urbanisation, population growth and rural electrification. The resultant constrained energy system experiences frequency blackouts and brownouts[60], constraining industrial production and deterring foreign investment.

[55] World Bank. Malawi – Data. Available at: https://data.worldbank.org/country/MW
[56] Government of Malawi. 2021. Ministry of Economic Planning & Development and Public Sector Reforms. 2, 1–11.
[57] World Bank. Malawi – Data. Available at: https://data.worldbank.org/country/MW
[58] Statista. Malawi - Gross domestic product (GDP) growth rate 2027. Available at: https://www.statista.com/statistics/520527/gross-domestic-product-gdp-growth-rate-in-malawi/
[59] United Nations Malawi. 2020. Annual Report for UN Malawi. Available at: https://malawi.un.org/en/125017-2020-annual-report-un-malawi
[60] An intentional or unintentional drop in voltage in the power supply system. Intentional brownouts are used for load reduction in an emergency.

Economic context of the Lake Chilwa basin

The agricultural sector is the main economic contributor in the Lake Chilwa basin, with a large proportion of the population engaged in agricultural activities to some degree. Tobacco is the major cash crop, although maize is the most predominant crop grown for local consumption and is grown by ~80% of smallholder farmers[61]. Crop yields across the districts remain relatively low because of poor agricultural practices, low inputs of improved seed and fertiliser, erratic rainfall, disease outbreaks, low soil fertility and low uptake of improved and modern agricultural technologies[62]. As a result, food security remains a challenge in the basin. Employment rates remain reasonably high in all of the districts, and each displaying a similar break down of their labour force. On average, ~66% of the population are employed — in either the formal or informal economy — and active in the economy, ~11% are active in the economy but are unemployed and ~23% are not active in the economy at all (Labour force composition in the Lake Chilwa Basin.Table 1).

**Table 1.** Labour force composition in the Lake Chilwa Basin[63].

| District | Total population (number of people) | Economically inactive (%) | Economically active | |
|---|---|---|---|---|
| | | | Employed population (%) | Unemployed population (%) |
| Machinga | 345,044 | 25 | 64 | 11 |
| Phalombe | 211,424 | 23 | 66 | 11 |
| Zomba | 377,535 | 22 | 68 | 10 |

Economic activities in the target districts

In Machinga, ~70% of the district population derive considerable portions of their livelihoods, employment and incomes from agricultural activities. Maize, rice, sorghum, ground nuts, cowpeas, pigeon peas, cotton, tobacco, cassava and sweet potatoes make up the major crops cultivated in the district. To adapt to reduced agricultural productivity in Machinga, farmers have begun to practise intercropping, where a major crops are interplanted with other minor crops to overcome challenges of small landholding size. Conservation technologies associated with soil health and water supply are also promoted. Fishing is also a major livelihood source for people of Machinga, with ~4,000 people directly engaged in fishing as gear owners and crew, and more than 5000 people working in fish processing, transportation and marketing. The number of people engaged in the fishery value chain fluctuates yearly depending on water surface area, which is a major determinant of fish productivity. Fish production from Lake Chilwa in Machinga is estimated at between ~3700–6000 tonnes per year, valued at ~US$ 1,5 million[64]. Most of the human resources migrate out of Phalombe to Central and Northern regions to farm on tobacco estates. Of those that remain in the district, ~80% are employed in the agricultural sector, with ~10% engaged in petty trading and provision of other services. Professional and technical services make up ~8% of the workforce, with the remaining population (~2%) engaged in several other occupations. Major crops grown among smallholder farmers include maise, rice, sorghum, groundnuts, cassava, and sweet potatoes. Fishing and aquaculture are primary livelihood activities for the people of Phalombe which is home to several natural water bodies such as Lake Chilwa and the Mpoto Lagoon. In 2008, the district registered ~294 metric tons of fish in the first half of the year. In addition, the district also practices aquaculture with 167 farmers harvesting ~2 metric tons of fish in the 2007–2008 season.[65]

In Zomba, agriculture is the main economic activity, with ~80% of the district population deriving considerable portions of their livelihoods, employment and incomes from agricultural activities. The major crops produced in Zomba are maise, rice, tobacco, cassava, cotton, sweet potato and ground nuts. The majority of cultivated land in the district is used for maise (~56%). In Zomba, to achieve sustainable agricultural production and productivity, investments into climate-smart agriculture and sustainable land and water management are encouraged. Fish is one of the most affordable and widely accessible sources of animal protein and contributes to the nutritional needs of most of the people in Zomba district. Fisheries contribute substantially to the local economy and employment of the district with the value of landed fish increasing from MK 1 billion (9,200 metric tonnes of fish) in 2010/2011 to

[61] Malawi - Agricultural Sector | Privacy Shield. (n.d.). Available at: https://www.privacyshield.gov/article?id=Malawi-agricultural-products
[62] Ibid.
[63] National Statistical Office. 2019. Malawi Population and Housing Census Report 2018. Available at: http://www.nsomalawi.mw/images/stories/data_on_line/demography/census_2018/2018 Malawi Population and Housing Census Main Report.pdf.
[64] Machinga District Council. 2017. Machinga District Council Socio-Economic Profile 2017 - 2022. Available at: https://www.integrationpoint.mw/content/machinga-district-council-socio-economic-profile-2017-2022
[65] Taulo, J.L., Mkandawire, R.W. and Gondwe, K.J. 2008. Energy Policy Research Baseline Study for Mulanje and Phalombe Districts.

~MWK 4 billion (~US$ 5 million) in 2014/2015, which amounts to ~2,000 metric tonnes of fish. There are more than 600 fish farmers in Zomba district producing, on average, ~60 metric tons of fish valued at ~MWK 50 million.[66]

**II.2 Problem statement**

In the Lake Chilwa basin in southern Malawi, local communities are increasingly affected by the impacts of climate change. Since the 1960s, Malawi has experienced an increase in annual temperatures, prolonged dry seasons, increasingly variable rainfall patterns and more frequent heavy rainfall events. These climatic changes have been particularly acute in the Lake Chilwa basin where they have contributed to a rise in the intensity and frequency of climate hazards such as droughts, floods and heatwaves associated with: i) a decline in the capacity of ecosystems in the basin to regulate the hydrological cycle; ii) a decrease in Lake Chilwa's water levels; and iii) a reduction in the productivity of fisheries and rainfed agriculture. Climate change is negatively impacting the Lake Chilwa basin in southern Malawi, acting as a threat multiplier that combined with non-climate drivers of ecosystem decline collectively weaken the resilience of communities who rely on natural resource-based livelihoods such as agriculture and fisheries.

As climate change impacts intensify, these communities are pushed beyond the limits of traditional coping mechanisms, instead resorting to maladaptive practices that degrade ecosystems that regulate the hydrological cycle — including wetlands, which have already declined by ~80% in recent decades[67]. These practices include the expansion of agricultural fields into marginal areas to offset declining crop productivity, and the exploitation of forest resources for fuel wood and charcoal production. The increasing demand of the basin's growing population for energy and agricultural land is causing perpetuating unsustainable land management strategies. Such practices include the expansion of agricultural fields into marginal areas to offset declining crop productivity, and the exploitation of forest resources for fuel wood and charcoal production. This degradation results in areas of bare and compacted soil that do not have the structural ecological integrity to regulate the flow of water, causing a reduction in groundwater recharge and the baseflow of rivers and streams feeding into the lake — particularly during droughts and dry spells. Although Lake Chilwa has historically dried periodically through natural processes, the frequency of drying has increased in recent decades because of the decreased baseflow and increased evapotranspiration — particularly during heat waves. Moreover, the increased rates of surface water runoff associated with degradation, combined with increases in the intensity of rainfall events as a result of climate change, have exacerbated the prevalence and impacts of flooding in the basin, causing considerable damage to infrastructure and agricultural land, as well as extensive erosion and the loss of valuable topsoil. Ultimately, climate change severely impacts the health and wellbeing of vulnerable communities in the Lake Chilwa basin, reducing income and food security and driving the negative cycle of degradation.

A comprehensive overview of the abovementioned challenges is shown in the Problem Tree (Figure 7) and described in more detail in the sections below. Further detail to substantiate the TRANSFORM project's problem description, adaptation logic and the overall project strategy can be viewed in Annex 24: Technical detail and implementation guidance.

[66] Zomba District Council. 2017. Zomba District Socio-Economic Profile 2017-2022. Retrieved April 5, 2022, from Available at: https://www.integrationpoint.mw/content/zomba-district-socio-economic-profile-2017-2022

[67] Simmance, F.A., et al., 2022. A photovoice assessment for illuminating the role of inland fisheries to livelihoods and the local challenges experienced through the lens of fishers in a climate-driven lake of Malawi. Ambio, 51(3), pp.700-715.

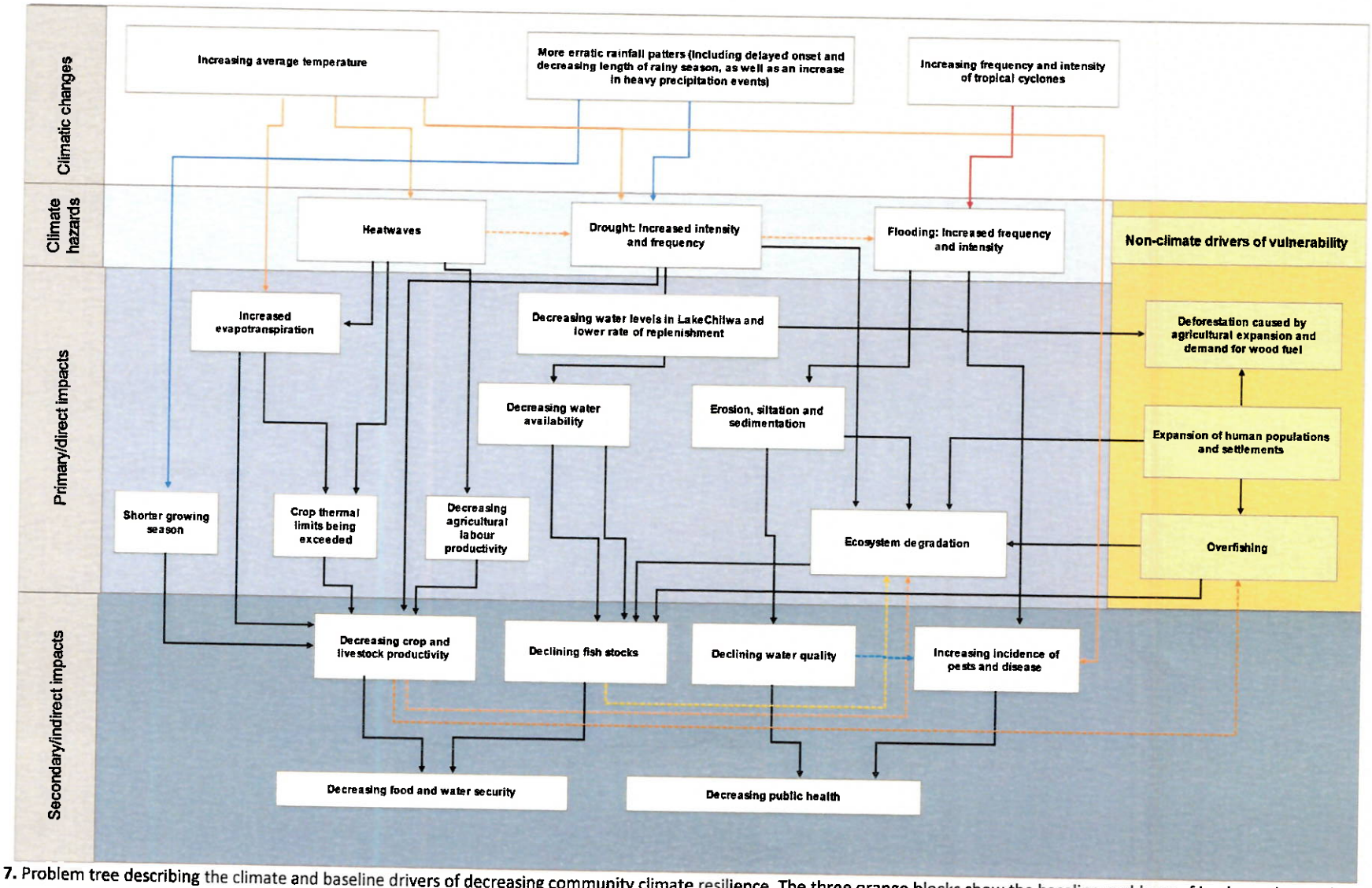



**Figure 7.** Problem tree describing the climate and baseline drivers of decreasing community climate resilience. The three orange blocks show the baseline problems of land-use change, human population demands and overfishing and how they interact with climate change impacts through ecosystem degradation.

### II.3. Causes and baseline drivers of decreasing climate resilience in the Lake Chilwa basin

The gradual decline of ecosystem services in the Lake Chilwa basin – specifically those related to the hydrological cycle – is considered the primary baseline challenge underpinning the climate change vulnerability of local communities. Driven largely by unsustainable land use management, the shifts in the hydrological cycle across the basin have increased the frequency at which the lake periodically dries up, with these increased drying events surpassing the coping capacity of traditional adaptive measures. With insufficient resources to support local livelihoods, the impact of resource extraction in local ecosystems has increased, often resulting in the degradation of forest and wetland ecosystems. The negative impact of this degradation is exacerbated by climate change, resulting in a negative loop that locks communities in a state of climate vulnerability. The immediate, underlying and root causes[68] of land degradation in the Lake Chilwa basin are described in the subsections that follow, and summarised in Figure 8 below.

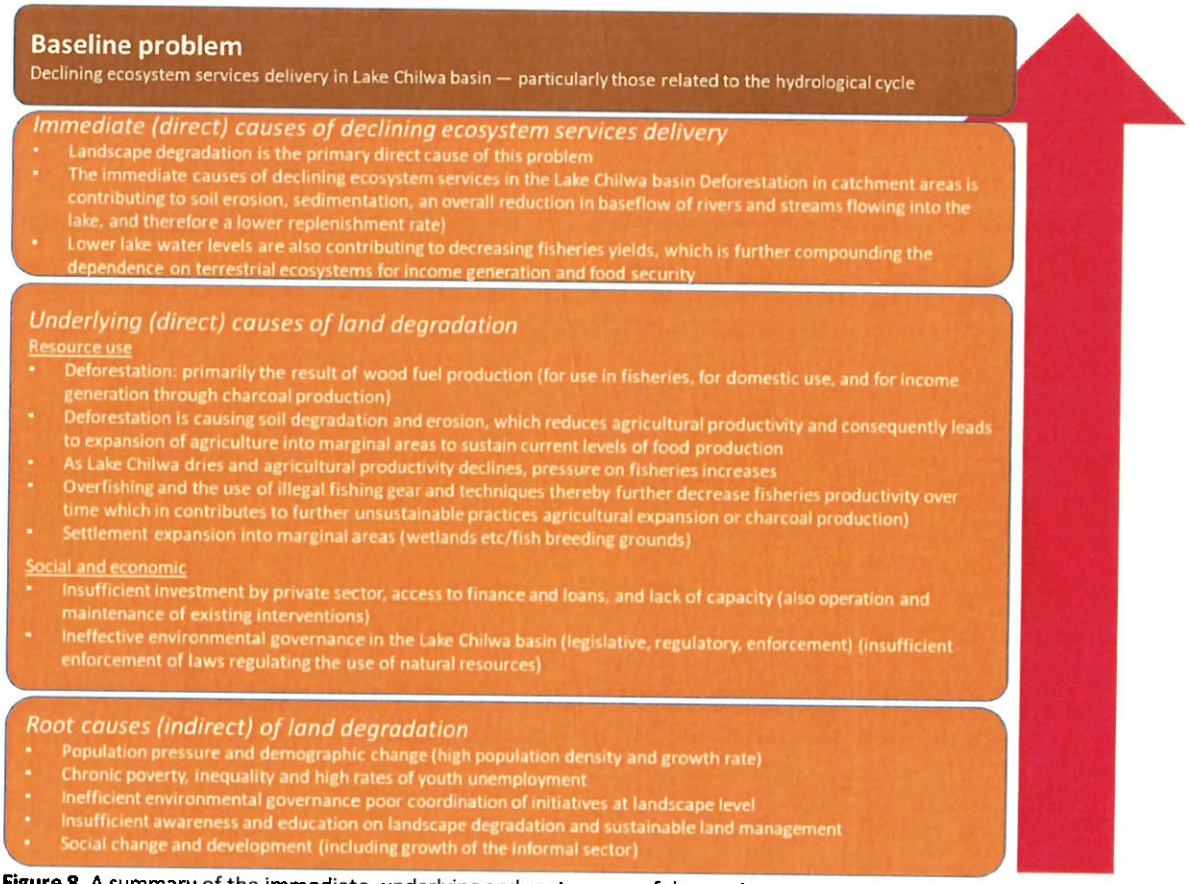



**Figure 8.** A summary of the immediate, underlying and root causes of decreasing ecosystem services in the Lake Chilwa basin.

[68] Immediate causes are the recognizable and quantifiable effects of ecosystem degradation. Underlying causes refer to resource use practices and social and economic dynamics that drive the immediate causes. Root causes are linked to the underlying socio-economic drivers that are related to the macroeconomy, demography, and power structures.

*II.3.1 Immediate causes of declining ecosystem services delivery in the Lake Chilwa basin*

Lake Chilwa is considered a shallow lake, with an average depth of ~2 m. The lake's water levels are regulated by inflow from several perennial rivers, ranging from ~1,177 CM during the wet season to ~294 CM in the dry season (Figure 9)[69,70,7172] The volume of water discharged into the lake has decreased in recent decades as a result of the ecosystem's reduced capacity to regulate waterflows, largely in response to unsustainable land-use practices, such as deforestation and wetland encroachment.

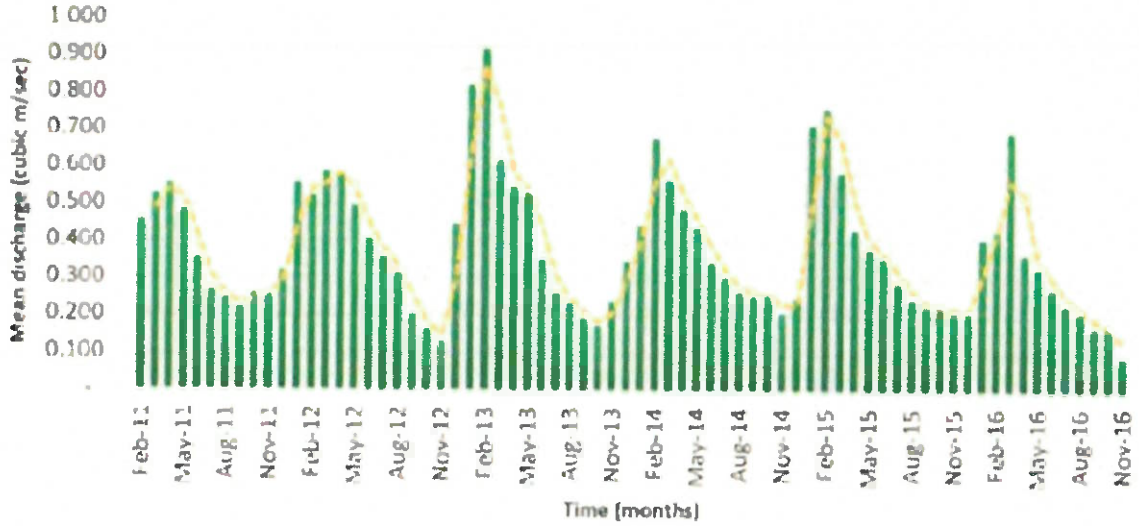



**Figure 9.** Average river discharge into Lake Chilwa between 2011-2016, with peak discharge corresponding to peak rainfall.

Large-scale deforestation is considered the primary cause of land degradation in the catchment areas of the Lake Chilwa basin. As with the rest of the country, the basin has lost a considerable portion of its forests since the 1990s, with certain species harvested to extinction – even in protected areas like the Malosa Forest Reserve, where 28 tree species have been completely removed[73]. The reduced vegetation layer as a result of deforestation and forest degradation reduces soil stability and water infiltration and increases surface runoff, thereby reducing the overall groundwater availability and the baseflow of water into Lake Chilwa[74]. In addition, the reduced soil stability increases the risk of soil erosion, which negatively impacts the productivity of the agricultural and fisheries sectors[75,76]. In addition to deforestation, wetland areas in the Lake Chilwa basin have decreased considerably in recent years from 2,400 km$^2$ to 1,750 km$^2$. The degradation of these critical ecosystems is largely driven by the encroachment of agricultural fields, particularly during drier periods where water levels recede, enabling the cultivation of wetlands[77,78]. The consequent loss of habitat,

[69] McCartney, M. 2007. Technical note: Hydrology of the Lake Chilwa wetland, Malawi. Report on GEF Project on Wetlands in South Africa. Available at: https://cgspace.cgiar.org/handle/10568/39667

[70] Chiotha SS et al. 2017. Lake Chilwa basin Climate Change Adaptation Programme: Impact 2010–2017. LEAD SEA Publications, Zomba, Malawi. Available at: https://cepa.rmportal.net/Library/climate-change/lake-chilwa-basin-climate-change-adaptation-programme-impact-report-2010-2017

[71] McCartney, M. 2007. Technical note: Hydrology of the Lake Chilwa wetland, Malawi. Report on GEF Project on Wetlands in South Africa. Available at: https://cgspace.cgiar.org/handle/10568/39667

[72] Chiotha SS et al. 2017. Lake Chilwa basin Climate Change Adaptation Programme: Impact 2010–2017. LEAD SEA Publications, Zomba, Malawi. Available at: https://cepa.rmportal.net/Library/climate-change/lake-chilwa-basin-climate-change-adaptation-programme-impact-report-2010-2017

[73] Tembo C, Wilson J, Njaya F, Chilima C, Mphepo G, Kayambazinbthu D. Biodiversity in the Lake Chilwa basin: Status and use and governance of fish, forests and birds (pg. 161–179)

[74] Annual average surface water runoff in the Lake Chilwa basin is estimated to be 220mm.

[75] Chiotha, S.S., Likongwe, P.J., Sagona, W., Mphepo, G.Y., Likoswe, M. Tsirizeni, M.D., Chijere, A. and Mwanza, P. (2017). Lake Chilwa basin Climate Change Adaptation Programme: Impact 2010 – 2017. LEAD SEA Publications, Zomba, Malawi. Available at: https://cepa.rmportal.net/Library/climate-change/lake-chilwa-basin-climate-change-adaptation-programme-impact-report-2010-2017

[76] Fisheries and Oceans: Pacific Region. 2000. Effects of sediment on fish and their habitat. Available at: https://waves-vagues.dfo-mpo.gc.ca/Library/255660.pdf

[77] Sofasi, SB. 2007. Conservation and management of degraded Lake Chilwa Wetland and its threatened waterbird species in Zomba, Malawi. Available at: https://ruffordorg.s3.amazonaws.com/media/project_reports/09.08.05%20Detailed%20Final%20Report.pdf

[78] Kafumbata D, Jamu D & Chiotha S. 2014. Riparian ecosystem resilience and livelihood strategies under test: lessons from Lake Chilwa in Malawi and other lakes in Africa. *Philosophical Transactions of the Royal Society. Biological Sciences.* 369: 20130052. Available at: https://www.academia.edu/25431778/Africa_test_lessons_from_Lake_Chilwa_in_Malawi_and_other_lakes_in_Riparian_ecosystem_resilience_and_livelihood_strategies_under_Audio_Supplement_

combined with the reduced waterflow into Lake Chilwa, increased rates of evaporation under hotter conditions, and the increasing frequency of drying periods, negatively affect the fisheries sector. These impacts are illustrated by the considerable decline in productivity between 1970 and 2015, where catch decreased from ~15,000 to ~5,000 tonnes per annum (Figure 10). In particular, the reduced lake size and ongoing wetland encroachment have reduced available habitat for fish spawning, thereby reducing the overall fish stocks. Additional factors contributing to fish population decline include: i) high soil erosion rates, which increase sedimentation deposits and siltation, as well as deposits of pollutants from proximate agricultural fields into the lake; ii) the use of illegal fishing gear, which affects fish sanctuaries and the re-population of fish stocks; and iii) invasive aquatic vegetation species, such as mesquite and water hyacinth, which impact the lake's water chemistry and invertebrate biodiversity[79].

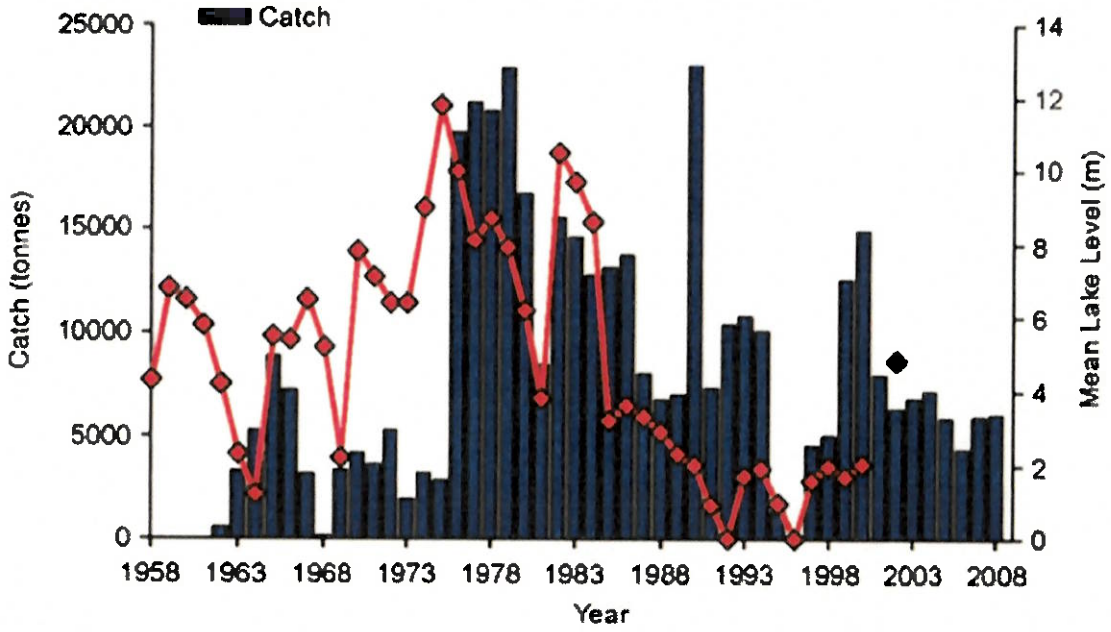



**Figure 10.** Water levels and total fish production in Lake Chilwa[80].

### *II.3.2 Underlying causes of land degradation in the Lake Chilwa basin*

Drivers of deforestation, forest degradation and wetland encroachment

While deforestation in the Lake Chilwa basin is caused by a complex set of interacting underlying baseline factors, local demand for wood fuel is one of the largest drivers of forest clearing. With the limited financial capacity to source energy-efficient technologies, communities rely on wood fuel for basic household activities, such as cooking and heating. This wood is often extracted from local ecosystems in an unsustainable manner, resulting in deforestation and forest degradation. Wood fuel is also a major component of the fisheries sector, where it is used to smoke fish as a method of preserving catch — in 2018, ~6,500 tonnes of wood fuel was used by the fisheries sector in Lake Chilwa for this purpose[81]. Despite these preservation measures, local communities have reported post-harvest losses of up to 40%, given their limited access to storage facilities[82]. These high rates of loss, in combination with insufficient infrastructure and processing equipment, such as energy-efficient smoking kilns and solar fish driers, have caused fishing communities to become highly dependent on wood fuel for the preservation and preparation of fish. The increasing demand for charcoal is an additional challenge in the basin, contributing considerably to deforestation in the area[83]. Notably, the process of charcoal production is highly inefficient and often requires large areas of forest to be burnt: the conversion rate from wood to charcoal is ~25%, with the more efficient techniques achieving a rate of 15%[84]. In addition to the increased demand for wood fuel, Lake Chilwa's increasing

[79] Tembo C et al. Biodiversity in the Lake Chilwa basin: Status and use and governance of fish, forests and birds (pg. 161–179)
[80] Jamu, D et al. 2011. Challenges to sustainbale management of lakes in Malawi. *Journal of Great Lakes Research*. 37:3–14 Available at: https://www.researchgate.net/publication/251590713_Challenges_to_sustainable_management_of_the_lakes_of_Malawi
[81] UNESCO. 2018. Lake Chilwa Wetland Biosphere Reserve, Malawi. Available at: https://en.unesco.org/biosphere/africa/lake-chilwa
[82] Makawa Z., Kaunda E. and Kapute F. 2019. Wood utilization efficiency and acceptability of fried and smoked fish from lake Malawi. *African Journal of Food, Agriculture, Nutrition and Development*, *19*(2): 14432–14457.
[83] Chanyenga T, Wilson J, Njaya F, Chilima C, Mphepo G, Kayambazinthu D. 2018. Biodiversity in the Lake Chilwa basin: Status and use and governance of fish, forests and birds. In: Socio-Ecological Resilience to Climate Change in a Fragile Ecosystem. Eds: Chiotha S, Jamu D, Nagoli J, Likongwe P, and Chanyenga T.
[84] Girard P. 2002. *Charcoal production* and use in Africa: what future? *Unasylva* 211(53)

population places pressure on local ecosystems to support the development of new settlements[85]. Forests are either cleared to make way for new developments or used for construction material, such as where wood fuel is used to produce burnt bricks and to use in brick kilns.

The expansion of agriculture into marginal areas is another major contributor to deforestation, forest degradation and wetland encroachment in the Lake Chilwa basin. Although commercial farming is limited in the area, small-scale subsistence farming is a large component of most rural livelihoods. Land use for agricultural practices has, however, begun to encroach into marginal land and protected areas in recent years, leading to the considerable degradation of local ecosystems. In particular, the increased rate of lake drying has made wetlands on the lake's boundary accessible to encroachment for extended periods. This phenomenon caused the decline of wetland area from 2,400–1,750 km$^2$ between the 1970s and 2005, with natural vegetation cleared to accommodate expanding subsistence agriculture[86,87]. The expansion of agricultural land has been driven by: i) population growth, with more individuals engaging in subsistence agriculture; and ii) the overall decreasing productivity of agricultural land as a result of reduced ecosystem service capacity and the impacts of climate change. Ecosystem services that support agricultural productivity, such as soil health and pollination services, have been severely impacted by unsustainable land use. However, with limited alternatives, locals continue to engage in these activities to counter the impacts of ecosystem decline, such as agricultural expansion into natural ecosystems where conditions support improved productivity. This negative cycle, whereby increasing populations and unsustainable land management promote the continued exploitation of natural resources, increases the vulnerability of local communities to climate change. It also reduces the wetland ecosystem's capacity to recover after a drying event, despite having evolved to do so periodically[88].

### *II.3.3. Root causes and baseline drivers*

Population pressure and chronic poverty

Despite the improvements in non-income dimensions of poverty in Malawi, monetary poverty remains pervasive at 50.2%, and particularly prevalent in rural areas. Moreover, incidences of ultra-poverty[89] increased from 22.4—25% between 2005 and 2015[90]. Agriculture constitutes the 'backbone' of the Malawian economy, contributing considerably to economic growth. However, the agricultural sector has been volatile and frequently surpassed by population growth, with shrinking farm sizes unable to support the country's high population density[91]. The development of the country's economy has been further constrained by, *inter alia*, low export revenue, inadequate resource planning and allocation, as well as unsustainable natural resources management — resulting in natural resource decline and land degradation[92]. Slow economic development in Malawi consequently inhibits socio-economic development, making the country's population vulnerable to external economic, climate-related and public health impacts, such as the Covid-19 pandemic. Most people in the districts surrounding the Lake Chilwa basin live in chronic poverty: Machinga (~62%), Phalombe (~63%) and rural Zomba (~49%)[93]. As a result, a substantial proportion of rural households depend mainly on fish and forest resources to support their livelihoods, which places considerable pressure on natural resources to support local household livelihood security. Historically, where traditional ecosystem knowledge guided resource extraction principles and communities comprised small population sizes, natural resource replenishment is likely to have sustained livelihoods sufficiently. However, the gradual loss of cultural knowledge and the increasing demand for resources to support the growing population have led to large-scale, unsustainable land use practices, such as deforestation and wetland encroachment, that impact the integrity and productivity of both terrestrial and aquatic ecosystems in the region. This relationship, whereby the increased dependence on natural resources and chronic poverty

[85] GoM. 2010. State of Environment and Outlook Report.
[86] Sofasi SB. 2007. Conservation and management of degraded Lake Chilwa Wetland and its threatened waterbird species in Zomba, Malawi. Available at: https://ruffordorg.s3.amazonaws.com/media/project_reports/09.08.05%20Detailed%20Final%20Report.pdf
[87] Kafumbata D, Jamu D, Chiotha S. 2014. Riparian ecosystem resilience and livelihood strategies under test: lessons from Lake Chilwa in Malawi and other lakes in Africa. Phil Trans. R. Soc
https://www.academia.edu/25431778/Africa_test_lessons_from_Lake_Chilwa_in_Malawi_and_other_lakes_in_Riparian_ecosystem_resilience_and_livelihood_strategies_under_Audio_Supplement
[88] Ibid.
[89] This refers to the inability to barely meet basic needs. An ultra-poor population is typically food insecure, has low literacy levels, experience health challenges and have few to no assets.
[90] Government of Malawi. 2017. The Malawi Growth and Development Strategy (MGDS) III (2017–2022). Available at: https://malawi.un.org/sites/default/files/2020-04/Malawi-Growth-and-Development-Strategy-MGDS-III-2017-2022%20%28low%20res%29.pdf
[91] Malawi Economic Development Document, July 2017. Available at: https://www.imf.org/~/media/Files/Publications/CR/2017/cr17184.ashx
[92] Government of Malawi. 2017. The Malawi Growth and Development Strategy (MGDS) III (2017–2022). Available at: https://malawi.un.org/sites/default/files/2020-04/Malawi-Growth-and-Development-Strategy-MGDS-III-2017-2022%20%28low%20res%29.pdf
[93] Urban Zomba has lower proportion of people living in poverty (~13%) than rural Zomba.

elicits unsustainable resource extraction and ecosystem decline, contributes to the positive feedback loop of vulnerability in the Lake Chilwa basin.

Insufficient funding for sustainable landscape management

Private sector investment is severely limited in the Lake Chilwa basin. In particular, the absence of a suitable enabling environment for the development of micro, small and medium enterprises (MSMEs) and poorly developed value chains and market linkages are some of the major factors inhibiting private investment. MSMEs, for example, have limited access to microfinance products, which inhibits their income potential. In addition, underdeveloped road and transportation networks across the Lake Chilwa basin increase the cost and risk of business operations, further disincentivising private investment. This challenge is heightened during the rainy season when the existing roads become almost entirely impassable. Public funding for sustainable land use management in the Lake Chilwa basin is also limited. The need to increase budgetary resource allocation to ecosystem conservation and sustainable natural resource management programmes has been noted in Malawi's State of Environment and Outlook Report[94]. However, Malawi's Department of Forestry (DoF) has insufficient financial and staff capacities to effectively execute sustainable land management strategies, reform sector regulation or develop a sustainable commercial wood fuel sector[95]. In addition, the national mandate to shift from wood fuels to alternative energy options has disincentivised resource allocation to the DoF despite the growing need for wood fuel during this transitionary period[96]. The fisheries sector has also received minimal financial input, receiving only 1.45% of public environment expenditure.

Regional coordination and governance challenges at the district level

Management of the region's natural resource base has been ineffective as a result of shortfalls in coordinated governance, financial and technical capacity, and regulation enforcement. In particular, insufficient legislative, regulatory and enforcement practices ensuring environmental conservation have made Lake Chilwa's natural resources vulnerable to anthropogenic pressures — despite the Lake's international status as a biodiversity hotspot. In addition, although a wetland management plan was drawn up in 1998 to protect the Lake's resources, conservation efforts in the area are limited[97]. These legislative and regulatory gaps are largely the result of the country's constrained institutional capacity, particularly at the district level, where funding does not filter down to lower levels of government[98]. Attempts to co-manage natural resources between government institutions and local communities have not been successful in Lake Chilwa basin[99]. Several factors might have contributed to this outcome, including, *inter alia*, insufficient financial incentives and inadequate enforcement by the Forestry Department. In addition, while there are arrangements for the co-management of fisheries resources between local communities and GoM institutions, these have not received local community buy-in and are perceived as 'top-down' directives. The insufficient management of these fisheries resources is further constrained by limited resources to effectively monitor and enforce co-management arrangements, resulting in non-compliance with environmental regulations. The limited governance capacity to enforce laws designed to protect forests and fisheries is made evident through the continued overexploitation of natural resources through unsustainable land use practices in the Lake Chilwa basin, such as deforestation, wetland encroachment and overfishing[100].

The GoM has made considerable progress in introducing effective fisheries policies and management practices. However, the GoM's capacity to adequately enforce these regulations has been insufficient, with limited enforcement mechanisms and incentives to reverse maladaptive practices. This issue is compounded by the minimal buy-in from fishery-dependent communities, who believe their interests have not been appropriately represented in governance plans[101]. Although well-intended, many policies and regulations are not widely understood at the community level, partly because they are written in complex English[102]. Limited efforts to bridge this communication gap have contributed to the inability of authorities to effectively implement wood fuel production and transportation regulations[103]. In addition to government protection, indigenous knowledge plays a critical role in biodiversity and ecosystem conservation. Historically, fisheries in the Lake Chilwa basin have been managed by traditional leaders, chiefs and elders, who are responsible for enforcing customary laws regarding natural resource use. However, with the introduction of new settlers and traders,

[94] GoM. 2010. State of Environment and Outlook Report.
[95] World Bank. 2019. Malawi Country Environmental Analysis. Available at: doi:10.1596/31326
[96] Ibid.
[97] Sofasi SB. 2007. Conservation and management of degraded Lake Chilwa Wetland and its threatened waterbird species in Zomba, Malawi.
[98] Calow R. 2021. Catchment protection management in Malawi: A review. BRACC Discussion Paper.
[99] There is no baseline information on the forest reserve before the co-management programmes were implemented in Zomba-Malosa Forest Reserve, cf. Chinangwa L., Pulli A., & Hockley N. 2017. Impact of forest co-management programs on forest conditions in Malawi. *Journal of Sustainable Forestry*, 36(4), 338–357.
[100] GoM. 2021. The Third National Communication of the Republic of Malawi to the Conference of the Parties (COP) of the United Nations Framework Convention on Climate Change (UNFCCC). Available at: https://unfccc.int/documents/268340
[101] Ibid.
[102] World Bank. 2019. Malawi Country Environmental Analysis. Available at: doi:10.1596/31326
[103] Ibid.

Lake Chilwa has become an ethnically diverse and heterogeneous community, with a subsequent gradual loss of local traditional knowledge and cultural practices. Moreover, the increasing commercialisation of the Lake Chilwa fishery resulting from the high population growth rate in the basin is eroding traditional practices that could effectively help manage the lake's natural resource base.

Education and formulation of values

Some of the most important challenges affecting the implementation of biodiversity plans include: i) insufficient public awareness of the importance of biodiversity to livelihood resilience; and ii) insufficient community participation in biodiversity management. As a result, many communities are unawareof the fact that their livelihood activities are harmful to their surrounding ecosystem, nor do they fully understand the correlation between land degradation and natural resource productivity. The GoM recognises that environmental education and public awareness play a crucial role in improving people's understanding of the value of ecosystems and the importance of conservation, illustrated by the development of the National Environment and Climate Change Communication Strategy (NECCCS). However, community knowledge of ecosystem benefits remains minimal, with few people understanding the consequences of environmental degradation and how unsustainable land management practices limit national development[104,105]. The limited awareness can largely be attributed to low literacy levels, minimal public education and awareness programmes, and the ineffective implementation of communication strategies[106].

### II.4. Climate hazards and climate change

*II.4.1. Overview of observed and projected climatic changes*

Considerable changes in both temperature and rainfall have occurred across Malawi since the 1960s[107]. These changes (detailed in the subsections below) include: i) a general increase in average annual temperatures across the country; and ii) increasingly variable precipitation patterns — characterised by erratic rainfall, more frequent and prolonged dry spells, and a delayed and shorter rainy season. Concurrently, the frequency and intensity of storms, tropical cyclones and anti-cyclones have increased, which coincides with the increased occurrence of high-intensity rainfall events[108]. These climatic changes and their associated impacts are projected to intensify under future climate conditions. In the sections below, the observed and projected trends in temperature, precipitation and extreme climate events are analysed at three geographical scales, namely the: i) regional level — Southern Africa; ii) national level — Malawi; and iii) local level — Southern Region, and Lake Chilwa basin specifically. Additionally, information is provided on the additional impacts of climate change — particularly in relation to the baseline problem described in the preceding section — as well as climate change hotspots in the project's target districts.

Temperature: Observed trends

**Regional:** Southern Africa has already been severely affected by climate change, with average annual surface temperatures in the region increasing by 1.04–1.44°C between 1961 and 2015[109]. An analysis of temperature trends over a different period (1980–2018) also shows an increase of temperatures by 0.15°C per decade — based on four GCMs, namely CRU, ERA5, MERRA2 and JRA-55[110]. The general increase in average temperature is linked to a rise in the number of annual heat waves and a decrease in the occurrence of cold extremes — such as frost days — across the region[111]. In addition, the rising temperatures across Southern Africa have caused an increase in the surface temperature of water bodies across the region by ~0.1–0.3°C per decade[112].

**National:** In Malawi, a rising average annual temperature trend has also been observed (Figure 11 below). Between 1960 and 2006, average annual temperature increased at an average rate of ~0.2°C per decade, resulting in an overall increase of 0.9°C during this period[113]. Increasing temperatures have been most prevalent between December and February, with the least change occurring

[104] Government of Malawi. 2015. National Biodiversity Strategy and Action Plan II 2015-2025. Available at: https://cepa.rmportal.net/Library/government-publications/national-biodiversity-strategy-and-action-plan-ii-2015-2025/view
[105] Ibid.
[106] Ibid.
[107] GOM. Third National Communication to the UNFCCC. Available at https://unfccc.int/sites/default/files/resource/TNC%20report%20submitted%20to%20UNFCCC.pdf
[108] Ibid.
[109] IPCC. 2021. AR6 Regional Fact Sheet Africa: available at: https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Africa.pdf
[110] Engdaw, M.M., Ballinger, A.P., Hegerl, G.C. and Steiner, A.K., 2022. Changes in temperature and heat waves over Africa using observational and reanalysis data sets. *International Journal of Climatology*, *42*(2), pp.1165-1180.
[111] IPCC. 2021. AR6 Regional Fact Sheet Africa: available at: https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Africa.pdf
[112] Ibid.
[113] GOM. Third National Communication to the UNFCCC. Available at https://unfccc.int/sites/default/files/resource/TNC%20report%20submitted%20to%20UNFCCC.pdf

between September and November[114]. There has been an observed increase in the frequency of hot days[115] and nights in all months, while the frequency of cold days and nights has decreased in all months apart from September to November[116].

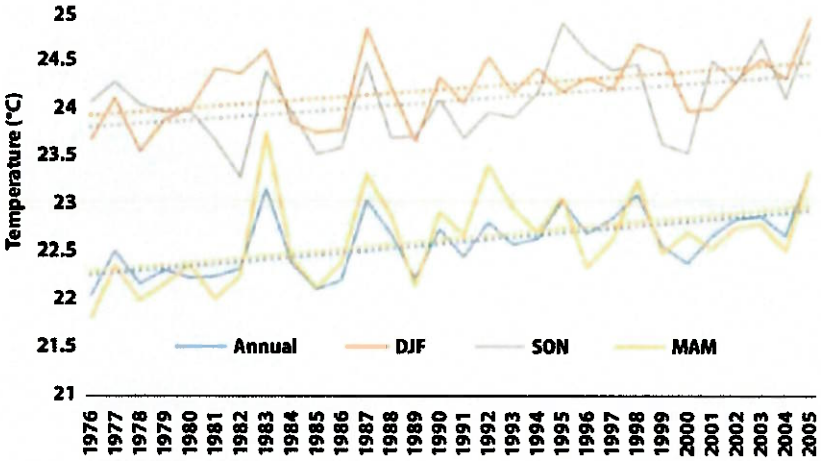



**Figure 11.** Observed annual and seasonal temperature across Malawi (1976–2005) [117]. The figure shows the linear increasing trend of 0.02°C per year across three seasonal periods, namely March–May and September–November.

**Local:** Observations on temperature changes in the Southern Region[118] are in alignment with observations for the rest of the country, as well as with the regional trends observed across Southern Africa. While downscaled climate data for the Lake Chilwa basin is limited, existing data show that there has already been an increasing trend in average temperature of the basin[119] — from a mean average temperature of 22.0°C between 1961 and 1970, to 22.6°C in the period 1991–2000[120]. Despite the data limitations in this area, the trends in rising temperatures have been further confirmed by anecdotal evidence and through the observations of local communities who have reported crop losses across the lake basin caused by higher temperatures as a result of increased evapotranspiration and crop thermal limits being reached.

Temperature: Projected trends

**Regional:** In Southern Africa, average annual temperatures are projected to rise at a faster rate than the global average[121] — by up to 1.5 times the global average[122]. In large parts of the interior of the region, considerably warmer temperatures are projected (Figure 12 below), with average temperatures continuing to rise. Specifically, there is high confidence that by 2035, increases in mean annual temperature of up to and 1.0°C will occur over the region under RCP4.5, and by up to 2.1°C by 2065 under the same scenario[123]. Projections indicate with high confidence that, under future climate conditions, the observed increases in heat waves and decreasing trends in cold extremes will continue across Africa — including the eastern and southern parts of the continent[124].

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[114] Ibid.

[115] Days with maximum temperatures above 30°C

[116] GOM. Third National Communication to the UNFCCC. Available at https://unfccc.int/sites/default/files/resource/TNC%20report%20submitted%20to%20UNFCCC.pdf

[117] Climate and Development Knowledge Network. 2017. Future climate projections for Malawi. Available at: https://futureclimateafrica.org/wp-content/uploads/2017/10/2772_malawi_climatebrief_v6.pdf

Climate and Development Knowledge Network. 2017. Future climate projections for Malawi. Available at: https://futureclimateafrica.org/wp-content/uploads/2017/10/2772_malawi_climatebrief_v6.pdf

uthern-region/" \hhttps://www.malawiproject.org/malawis-southern-region/

[119] Kambombe, O.C., 2018. *Impact of climate variability and land use change on stream flow in Lake Chilwa basin, Malawi* (Doctoral dissertation, Egerton University).

[120] Warnatzsch, E.A. and Reay, D.S., 2019. Temperature and precipitation change in Malawi: Evaluation of CORDEX-Africa climate simulations for climate change impact assessments and adaptation planning. Science of the Total Environment, 654, pp.378-392.

[121] IPCC. 2021. AR6 Regional Fact Sheet Africa: available at: https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Africa.pdf

[122] Eriksen, S., O'Brien, K. and Rosentrater, L. (2008) 'Climate change in eastern and southern Africa'.

[123] IPCC. 2021. AR6 Regional Fact Sheet Africa: available at: https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Africa.pdf

[124] Ibid.

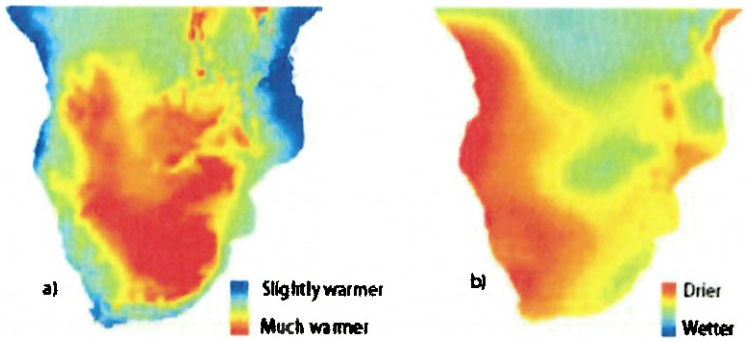



**Figure 12.** Projected climate change in terms of temperature (a) and precipitation (b) across Southern Africa[125].

**National:** Climate projections for Malawi are reflective of the regional pattern described above, and there is strong consensus the rising trend in temperature will continue under future climate conditions[126]. that further warming will occur under future climate conditions. Climate projections under both RCP4.5 and RCP8.5 indicate further increases in average annual temperatures across the country, with mean annual surface air temperatures expected to rise by 1.1–3°C by 2060, and 1.5–5°C by 2090[127]. The table below shows the projected temperature increases for five different regions of Malawi for the periods 2011–2040, 2041–2070, and 2071–2100. These temperature projections were generated using downscaled General Circulation Models (GCMs)[128] — based on two[129]. The multi-model ensemble of GCMs indicate that some regions of the country will experience a temperature increase of up to 4.2°C by the end of the century under RCP8.5[130].

**Table 2.** Temperature scenarios for different regions of Malawi[131].

| **Location** | **Near Century Period: 2011–2040.** | **Mid Century Period: 2041–2070.** | **End of Century Period: 2071–2100.** |
|---|---|---|---|
| Lower Shire Valley | 0.03°C–0.04°C increase | 1.4°C–2.8°C increase | 2.5°C–4.2°C increase. |
| Shire Highlands | 0.034°C increase (Jun–Dec[132]) | 1.0°C increase | 1.5°C–2.4°C increase |
| Central Areas | 0.7°C–0.9°C increase | 1.3°C increase | Uncertain increase |
| Lakeshore Areas | 0.8°C–0.9°C increase | 1.5°C–2.0°C increase | 2.5°C–3.0°C: increase |
| Northern Areas | 0.2°C–0.9°C increase | 1.4°C–1.9°C increase | 1.7°C–2.3°C increase |

The rising average temperatures discussed above will be characterised by a faster increase in minimum temperatures than maximum temperatures[133]. Concurrently, the incidence of extreme temperatures is also projected to become more common in Malawi. Figure 13 shows the projected increase in the number of days per year above 30°C across Malawi according to each of the 34 GCMs described above[134]. The graph shows that the majority of GCMs predict an increase in the number of days each year with high temperatures,

[125] Taylor, W.A., Lindsey, P.A., and Davies-Mostert, H.T. 2016. An assessment of the economic, social and conservation value of the wildlife ranching industry and its potential to support the green economy in South Africa. Available at: https://www.researchgate.net/publication/293958705_An_assessment_of_the_economic_social_and_conservation_value_of_the_wildlife_ranching_industry_and_its_potential_to_support_the_green_economy_in_South_Africa

[126] GOM. Third National Communication to the UNFCCC. Available at https://unfccc.int/sites/default/files/resource/TNC%20report%20submitted%20to%20UNFCCC.pdf

[127] Republic of Malawi. 2011. The Second National Communication of the Republic of Malawi to the Conference of the Parties (COP) of the United Nations Framework Convention on Climate Change (UNFCCC). Available at: https://unfccc.int/resource/docs/natc/mwinc2.pdf

[128] GOM. Third National Communication to the UNFCCC. Available at https://unfccc.int/sites/default/files/resource/TNC%20report%20submitted%20to%20UNFCCC.pdf

[129] Ibid. f

[130] Climate and Development Knowledge Network. 2017. Future climate projections for Malawi. Available at: https://futureclimateafrica.org/wp-content/uploads/2017/10/2772_malawi_climatebrief_v6.pdf

[131] GOM. Third National Communication to the UNFCCC. Available at https://unfccc.int/sites/default/files/resource/TNC%20report%20submitted%20to%20UNFCCC.pdf

[132] **Projections indicate that higher temperatures will occur primarily during this period.**

[133] GOM. Third National Communication to the UNFCCC. Available at https://unfccc.int/sites/default/files/resource/TNC%20report%20submitted%20to%20UNFCCC.pdf

[134] Climate and Development Knowledge Network. 2017. Future climate projections for Malawi. Available at: https://futureclimateafrica.org/wp-content/uploads/2017/10/2772_malawi_climatebrief_v6.pdf

indicating that associated impacts across the country are likely to occur. Temperatures above the 30°C threshold are associated with an increase in evapotranspiration, as well as higher demand for water in crops, for livestock and for human consumption.

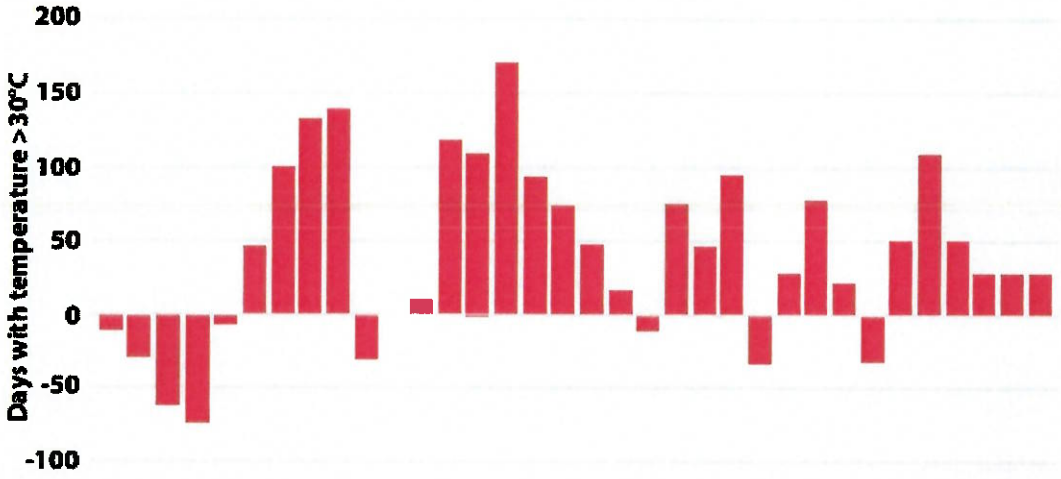



**Figure 13.** GCM projections of changes in the annual number of hot days (more than 30°C) across Malawi for the period 2021–2050, against the baseline period of 1976–2005 (each bar on the x-axis represents one GCM[135].

**Local:** As illustrated in Table 2 above, temperature changes are projected for different areas across Malawi. In the south of the country temperatures are projected to increase by up to 2.8°C by 2070, while temperatures in lakeshore areas, including Lake Chilwa, will rise by up to 3°C by 2100 under a high-emissions scenario[136]. The projected warming in the catchments of Lake Chilwa will reduce the flow of water into the lake (see Section 2.b.2 below for detail on this process). In addition, warming in lakeshore areas will increase evaporation of water from the lake and its surrounding wetlands, thereby resulting in further decreasing water levels.

Precipitation: Observed trends

**Regional:** In Southern Africa, existing evidence indicates a long-term decrease in average precipitation over the region since the 1980s, with the exception of the north-western parts of the region where precipitation has been increasing[137]. However, given the spatial variability of the region, trends in precipitation changes are challenging to observe and more data are needed to support the evidence for an overall decreasing trend in precipitation[138]. While the evidence for a long-term trend in Southern Africa remains inconclusive, there has been a statistically significant delay in the onset of the rainy season across Southern Africa, while in many parts of the region the rainy season has also been ending earlier[139]. This indicates that in many parts of the region, more intense rainfall is occurring over shorter periods of time. Indeed, there has been an observed increase (medium confidence) in the occurrence of high-intensity rainfall[140]. Climate change has been increasing seasonal and interannual precipitation variability, which are already high across Southern Africa and affected by the occurrence of El Niño Southern Oscillation (ENSO)[141]. These events are linked to below-average rainfall which often contributes to the occurrence of droughts in the region[142].

**National:** Statistically significant trend indicating a change in Malawi's annual rainfall remains inconclusive because of limited data, but available evidence suggests that a decreasing trend in annual rainfall has occurred in recent decades across Malawi. There is strong evidence that precipitation patterns have become increasingly erratic across the country (Figure 14 below)[143]. Rainfall patterns in

[135] Ibid.
[136] GOM. Third National Communication to the UNFCCC. Available at https://unfccc.int/sites/default/files/resource/TNC%20report%20submitted%20to%20UNFCCC.pdf
[137] IPCC. 2021. AR6 Regional Fact Sheet Africa: available at: https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Africa.pdf
[138] Conway, D., Van Garderen, E.A., Deryng, D., Dorling, S., Krueger, T., Landman, W., Lankford, B., Lebek, K., Osborn, T., Ringler, C. and Thurlow, J., 2015. Climate and souther Africa's water–energy–food nexus. Nature Climate Change, 5(9), pp.837-846.
[139] IPCC. 2007.I Forth Assessment Report on climate change. Available at: http://www.ipcc.ch/publications_and_data/ar4/syr/en/contents.html
[140] IPCC. 2021. AR6 Regional Fact Sheet Africa: available at: https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Africa.pdf
[141] a climate phenomenon that has the ability to change the global atmospheric circulation, which in turn, influences temperature and precipitation across the globe Conway, D., Van Garderen, E.A., Deryng, D., Dorling, S., Krueger, T., Landman, W., Lankford, B., Lebek, K., Osborn, T., Ringler, C. and Thurlow, J., 2015. Climate and southern Africa's water–energy–food nexus. Nature Climate Change, 5(9), pp.837-846.
[142] Climate and Development Knowledge Network. 2017. Future climate projections for Malawi. Available at: https://futureclimateafrica.org/wp-content/uploads/2017/10/2772_malawi_climatebrief_v6.pdf
[143] GOM. Third National Communication to the UNFCCC. Available at https://unfccc.int/sites/default/files/resource/TNC%20report%20submitted%20to%20UNFCCC.pdf

Malawi are considered some of the most unpredictable in Africa, and anecdotal observations indicating that rainfall across the country has become progressively less reliable in recent decades[144]. Local communities across the country have reported that rainfall has become increasingly unpredictable, describing the rainy season as becoming delayed, inconsistent and short[145]. The 2011–2012 rainy season, for example, was expected to start in October/November of 2011, but instead only started in December and ended in February 2012 (short of the expected end in April). Moreover, the rainfall of this season was erratic and interrupted by frequent dry spells, which had a notable impact of natural resource-based livelihoods, shortening the growing season and reducing crop productivity[146].

**Local:** In line with the situation across Malawi, rainfall trends are not clear from the limited data on the Lake Chilwa basin. However, available evidence suggests that a decreasing rainfall trend has been observed in the Lake Chilwa basin in recent decades, as well as increasingly unpredictable rainfall patterns causing shortened rainy seasons and increased drought conditions[147]. Observations from the basin indicate that there has been a shift in the threshold level of low rainfall that leads to drying of the lake — a trend that is linked to increasing temperatures that causes higher rates of evaporation. Specifically, average rainfall below 1000 mm[148] is now likely to cause a recession of the lake[149]. This trend is particularly severe during the occurrence of El Niño Southern Oscillation (ENSO), as it exacerbates climate extremes. While not every ENSO causes a reduction in annual rainfall in the basin, these events strongly affect rainfall variability (heavier rainfall and longer dry spells), thereby affecting rates of run-off, groundwater infiltration, and stream flow into the lake.

Precipitation: Projected trends

**Regional:** Precipitation projections for Southern Africa are uncertain and existing data show no clear trend in average precipitation under future climate conditions[150,151]. However, the region is expected to experience more erratic rainfall and shifting rainfall patters which will coincides with a projected increase in aridity, fire conditions, wind speeds and the frequency of high-intensity rainfall events[152]. These climatic changes are expected to be worsened under future climate conditions and particularly during the occurrence of El Niño events — a phenomenon linked to lower than average rainfall conditions in Southern Africa. Projections indicate that at a global average temperature increase by 1.5°C extreme El Niño events are likely to double in frequency, indicating a high likelihood of further increasing rainfall variability being exacerbated by the phenomenon across the region.[153]

**National:** Projections showing precipitation trends in Malawi are inconclusive, as highlighted in Figure 14 below which shows a time series of annual rainfall in Malawi for 34 CMIP5 models, from the 1950s to 2090. The uncertainty regarding changing average rainfall is also apparent in Figure 15, which shows that 38% of the 34 GCMs used project a reduction in annual rainfall by the end of the century, with the remaining 62% predicting wetter conditions within this same period. Of the 34 models used, 19 project changes by 2030 of less than ~5%, whereas the projected changes are considerably larger by the 2070s. Over half (58%) of these models showed that the region is projected to become drier by the 2070s.[154] These results suggest that, although a decline annual average precipitation across the country cannot be confirmed with the available data, precipitation variability will continue to intensify.

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[144] Ibid.

[145] Jørstad, H. and Webersik, C., 2016. Vulnerability to climate change and adaptation strategies of local communities in Malawi: Experiences of women fish processing group in the Lake Chilwa basin.

[146] Ibid.

[147] Kambombe, O., Ngongondo, C., Eneya, L., Monjerezi, M. and Boyce, C., 2021. Spatio-temporal analysis of droughts in the Lake Chilwa basin, Malawi. *Theoretical and Applied Climatology*, *144*(3), pp.1219-1231.

[148] Average rainfall in the basin is between 900–1,600 mm, and varies according to elevation. Source: McCartney, M., 2007. Technical Note: Hydrology of the Lake Chilwa wetland, Malawi.

[149] Kambombe, O., Ngongondo, C., Eneya, L., Monjerezi, M. and Boyce, C., 2021. Spatio-temporal analysis of droughts in the Lake Chilwa basin, Malawi. Theoretical and Applied Climatology, 144(3), pp.1219-1231.

[150] IPCC. 2021. AR6 Regional Fact Sheet Africa: available at: https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Africa.pdf

[151] Conway, D., Van Garderen, E.A., Deryng, D., Dorling, S., Krueger, T., Landman, W., Lankford, B., Lebek, K., Osborn, T., Ringler, C. and Thurlow, J., 2015. Climate and souther Africa's water–energy–food nexus. *Nature Climate Change*, *5*(9), pp.837-846.

[152] IPCC. 2021. AR6 Regional Fact Sheet Africa: available at: https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Africa.pdf

[153] Climate and Development Knowledge Network. 2017. Future climate projections for Malawi. Available at: https://futureclimateafrica.org/wp-content/uploads/2017/10/2772_malawi_climatebrief_v6.pdf

[154] Ibid.

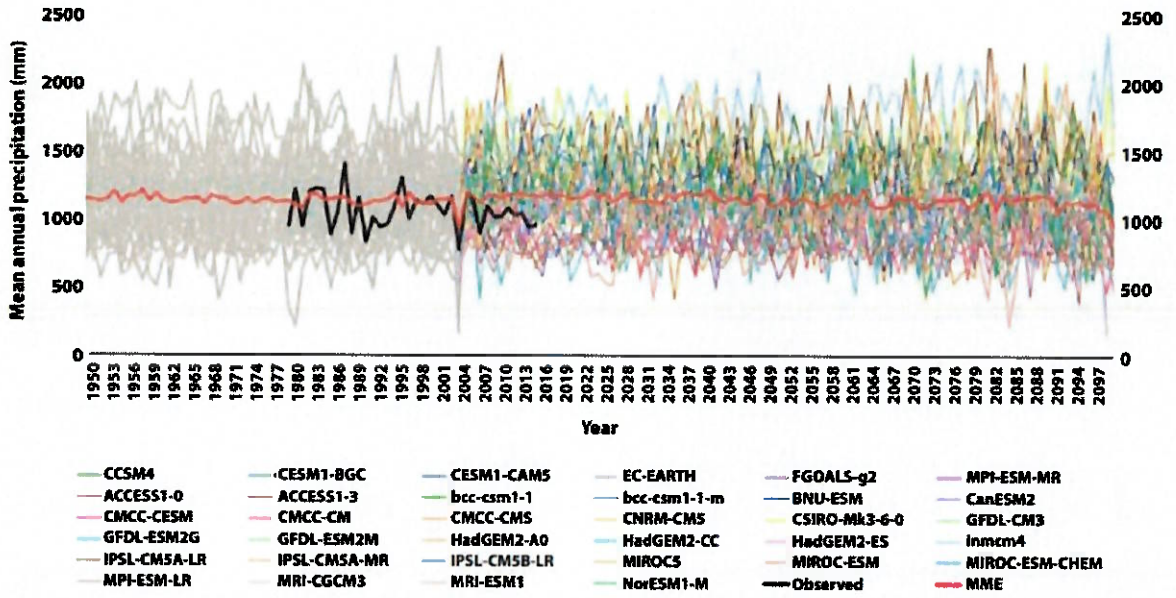



**Figure 14.** Time series of annual rainfall in Malawi for the 34 CMIP5 models. The black line shows the observations for the period 1981–2016, while the bold red line shows the ensemble mean for the period 1950–2099[155].

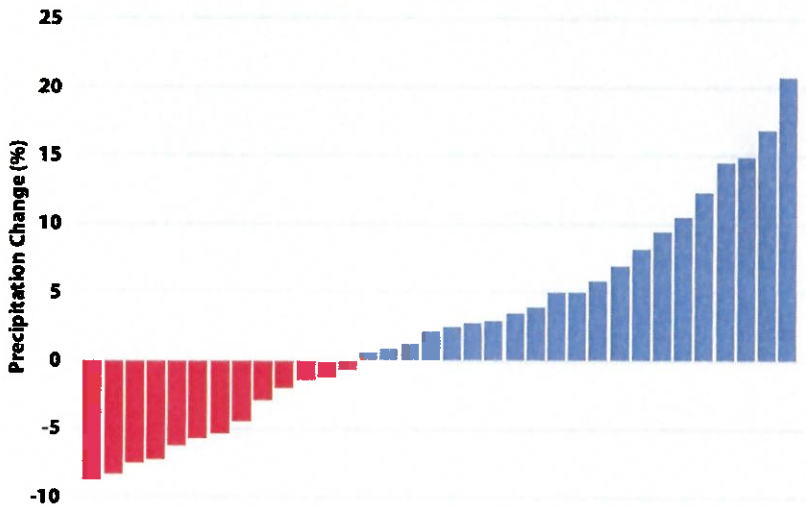



**Figure 15.** Annual mean rainfall change (%) across Malawi for 2021–2050, projected by 34 GCMs as shown on the x-axis (against 1976–2005 baseline) [156]. Each vertical bar on the graph represents one GCM, with red indicating decreasing precipitation and blue indicating increasing precipitation.

While there is limited certainty regarding projected changes in average annual precipitation, there is a considerable degree of certainty that rainfall variability and shifting seasonal rainfall patterns will increase under future climate change conditions[157]. Specifically, there is strong agreement between GCMs (85%) that the overall number of rainfall days will decrease (Figure 16) while the amount of rainfall per rain day (rainfall intensity) will significantly increase (Figure 17)[158]. Further detail on projected rainfall for different regions across Malawi under future climate change is presented in Table 3 below.

[155] Ibid.
[156] Climate and Development Knowledge Network. 2017. Future climate projections for Malawi. Available at: https://futureclimateafrica.org/wp-content/uploads/2017/10/2772_malawi_climatebrief_v6.pdf
[157] GOM. Third National Communication to the UNFCCC. Available at https://unfccc.int/sites/default/files/resource/TNC%20report%20submitted%20to%20UNFCCC.pdf
[158] Climate and Development Knowledge Network. 2017. Future climate projections for Malawi. Available at: https://futureclimateafrica.org/wp-content/uploads/2017/10/2772_malawi_climatebrief_v6.pdf

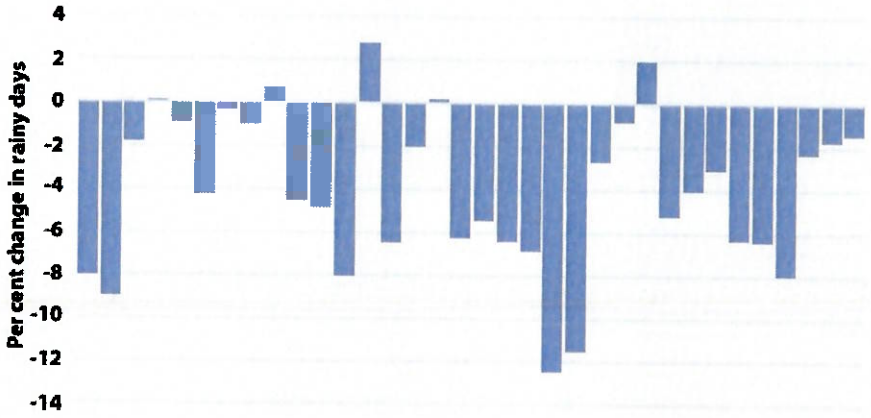



**Figure 16.** The projected change (%) in mean number of rainy days per year for Malawi for 2021–2050 against the 1976–2005 baseline, using an ensemble of GCMs[159]. The bars on the x-axis each represents one GCM.

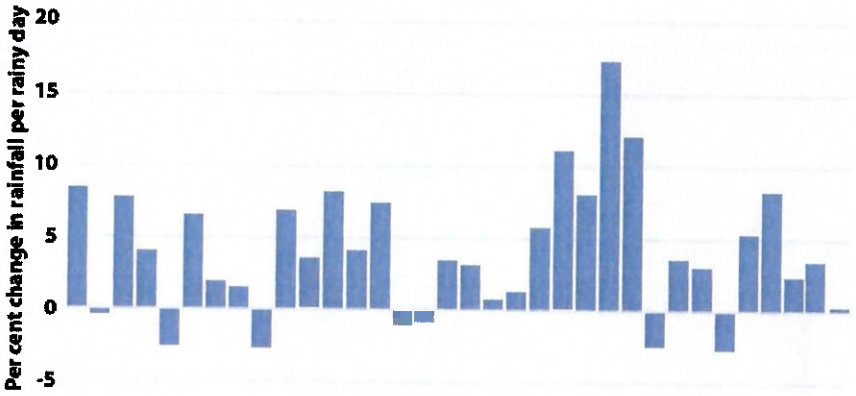



**Figure 17.** The projected change (%) in annual mean number of wet days for Malawi (mean rainfall per rainy day) for 2021–2050 against the 1976–2005 baseline[160]. The bars on the x-axis each represents one GCM.

**Local: Table 3** shows the changes in precipitation projected for different parts of Malawi. Under future climate conditions, projections indicate a decrease in rainfall of up to 15% in areas adjacent to the Lake Chilwa basin such as the Lower Shire Valley and up to 25% in the Shire Highlands. Concurrently, lakeshore areas — including those adjacent to Lake Chilwa — will experience a general decrease in rainfall of up to 60% towards 2100. In addition to this projected decreasing trend in average annual rainfall, the increasing rainfall variability and shifting precipitation patterns projected across Malawi — in combination with landscape degradation caused by baseline drivers such as deforestation — will contribute to higher rates of run-off and lower rates of groundwater infiltration in Lake Chilwa's catchment areas. Consequently, there will likely be a further decrease in baseflow of rivers and streams flowing into Lake Chilwa during the dry season, resulting in lower rates of replenishment. Concurrently, the higher rates of run-off linked to high-intensity rainfall will increase the incidence of flooding in the basin.

**Table 3.** Precipitation scenarios for different regions of Malawi[161].

| Location | Near Century Period:2011–2040. | Mid Century Period: 2041–2070 | End Century Period: 2071–2100 |
|---|---|---|---|
| Lower Shire Valley | 800 mm–1000 mm: mean rainfall. | January rainfall to increase by 8% while summer will be drier by 3% to 5%. | Rainfall to decrease by about 15%. |

[159] Ibid.
[160] Climate and Development Knowledge Network. 2017. Future climate projections for Malawi. Available at: https://futureclimateafrica.org/wp-content/uploads/2017/10/2772_malawi_climatebrief_v6.pdf
[161] GOM. Third National Communication to the UNFCCC. Available at https://unfccc.int/sites/default/files/resource/TNC%20report%20submitted%20to%20UNFCCC.pdf

| | | | |
|---|---|---|---|
| Shire Highlands | 1000 mm–1200 mm: mean rainfall. | Winter rainfall to increase by 15% while summer rainfall will decrease by 10%. | Summer rainfall to decrease by 25%. |
| Central Areas | 800 mm–1100 mm: mean rainfall. | October to December rainfall to decrease by 10% to 22%. | October to December rainfall to decrease by 20% to 56%. |
| Lakeshore Areas | March to April rainfall will increase by 5% to 25%. | Winter rainfall will decrease by 65%. | There will be a general decrease in rainfall by 60%. |
| Northern Areas | Increase in rainfall by 3% to 8% during the period January to April. | October to December rainfall to decrease by 10% to 36%. | Rainfall to decrease by 56%. |

Extreme climate events and climate hazards: Observed trends

**Regional:** Southern Africa has historically been a water-stressed region, experiencing high rainfall variability associated with the occurrence of droughts and floods. This situation is steadily being exacerbated by the changing climate, with these climate hazards increasing in frequency and intensity across the region in recent decades. In East Southern Africa (ESAF) where Malawi is located, rising temperatures and erratic rainfall have already caused an observed increase in the frequency of agricultural, ecological and meteorological drought, along with associated climate hazards such as heat waves and wildfires[162,163]. The likelihood of severe droughts is now three times higher than during the first half of the 20th Century[164,165]. The frequency of drought in the basin is also leading to a higher risk heatwaves and wildfires[166]. Since the second half of the 20th Century, heatwave duration and intensity have increased over Southern Africa. Projections indicate heatwave events will increase by 2.5 per season[167]. Along with the increase in droughts and associated hazards such as wildfire and heatwaves, there has been an increase in the frequency of heavy precipitation events and associated fluvial flooding across the region[168]. While high-intensity rainfall is mostly associated with increasingly variable patterns of precipitation across the region, pluvial and fluvial flooding have been further exacerbated by the occurrence of tropical cyclones which form in the south-western Indian Ocean. The impacts of droughts and floods are intensified during the occurrence of the ENSO events. For example, the most severe El Niño event in 35 years occurred between 2015 and 2016, resulted in multiple droughts as well as extreme precipitation that caused some of the most damaging floods observed in half a century. This event was linked to exceptionally warm sea surface temperatures in the Indian Ocean, a reduction in rainfall across Southern Africa by ~24%[169]. The 2015 floods affected ~1.1 million people by displacing ~230,000 people and causing 106 deaths and severe food insecurity in Southern Africa[170].

**National:** In line with the trends observed in Southern Africa, rising temperatures and shifts in rainfall patterns have contributed to an increase in the frequency and intensity of climatic hazards across Malawi, including droughts and floods. Since 1960, seven major droughts have occurred in Malawi, with their intensity increasing over the years. 19 large floods have also occurred in the country during this period, and as with droughts, they have been increasing in severity and frequency. While droughts and floods in Malawi are mostly related to increasingly variable rainfall, climate change is also increasing the frequency and intensity of tropical cyclones. The most recent event in Malawi — Tropical Cyclone Idai — occurred in 2019, affecting approximately one million people. The cyclone caused floods that affected multiple districts across the country, which led to damages and losses totalling ~US$220 million, with ~US$157 million in damages alone. In addition to the direct impacts of floods on housing, these events most severely affect the agricultural sector. Figure 18 shows the total recovery needs by subsector after the occurrence of Idai, which provides an overall indication of the scale of financial damages caused by an event of this magnitude[171]. In addition to direct impacts of the cyclone, the event also indirectly affected education and productive subsectors. The effect of this single event, therefore, not only disrupted the

[162] Eriksen, S., O'Brien, K. and Rosentrater, L. (2008) 'Climate change in eastern and southern Africa'.
[163] IPCC. 2021. AR6 Regional Fact Sheet Africa: available at: https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Africa.pdf
[164] Including the 2015–2017 drought in the Western Cape Province, and the ongoing drought in the Eastern Cape Province of South Africa.
[165] IPCC. 2021. AR6 Regional Fact Sheet Africa: available at: https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Africa.pdf
[166] IPCC, 2021: Climate Change 2021: The Physical Science Basis. Contribution Of Working Group I To the Sixth
[167] Greenpeace. 2020. Weathering the storm: Extreme weather events and climate change in Africa. Available at: https://www.greenpeace.org/static/planet4-africa-stateless/2020/11/b6e9a1fa-weathering-the-storm-extreme-weather-events-and-climate-change-in-africa-grl-trr-04-2020-high-res.pdf
[168] IPCC. 2021. AR6 Regional Fact Sheet Africa: available at: https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Africa.pdf
[169] Greenpeace. 2020. Weathering the storm: Extreme weather events and climate change in Africa. Available at: https://www.greenpeace.org/static/planet4-africa-stateless/2020/11/b6e9a1fa-weathering-the-storm-extreme-weather-events-and-climate-change-in-africa-grl-trr-04-2020-high-res.pdf
[170] IPCC, 2021: Climate Change 2021: The Physical Science Basis. Contribution Of Working Group I To The Sixth
[171] GoM, 2015. Malawi 2019 floods post disaster needs assessment report (PDNA).

education of millions of students, but also negatively affected the ability of adults to generate an income because of damage to their livelihoods, and their inability to sell their produce at market as a result of damage to infrastructure.

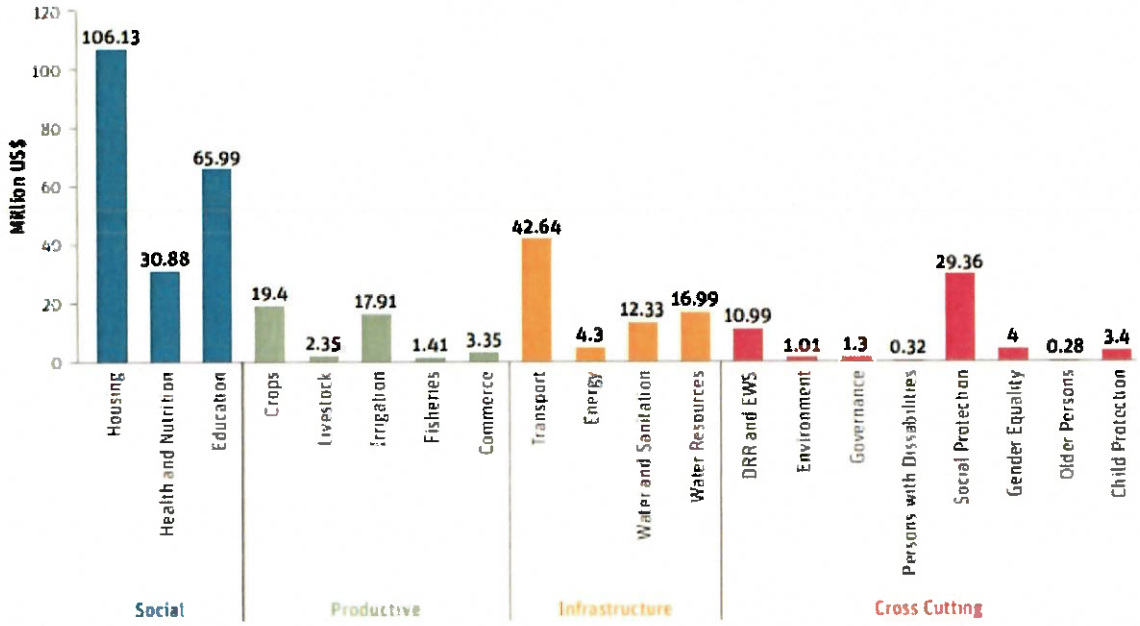



**Figure 18.** Total recovery needs by subsector as a result of Cyclone Idai (in million US$)[172].

**Local:** The trends observed across Southern Africa and Malawi reflective of the situation in the Lake Chilwa basin. The close proximity of the Southern Region of Malawi to neighbouring countries that are being affected by intensifying storms is indicative of the situation in the Lake Chilwa basin. Anecdotal evidence suggests that intense storms in the basin have become more frequent in recent years, thereby accelerating the flooding already happening as a result of increasingly erratic rainfall patterns. The basin, as elsewhere in Malawi is also directly affected by droughts which are reported to have intensified in recent years. Existing evidence suggests that based on Standard Precipitation Index (SPI) and Standard Precipitation Evaporation Index (SPEI) measurements, this trend is more strongly linked to rainfall variability than to increasing temperature, as all episodes of lake drying have been preceded by low rainfall amounts. However, given the increasing evaporation caused by higher atmospheric and lake water temperatures, lake drying will continue to become more frequent and droughts are likely to further accelerate the trends in landscape degradation[173].

Extreme climate events and climate hazards: Projected trends

**Regional:** Under future climate conditions, Southern Africa is projected to become increasingly dry, with more frequent and intense droughts — particularly from 2050 onward[174]. This trend has already become apparent in several countries in the region, including Madagascar and South Africa[175]. Projections indicate that a global average temperature rise above 2°C will likely coincide with a doubling in the frequency and duration of meteorological drought across Southern Africa (medium confidence)[176]. In eastern parts of the region, drier conditions are projected to facilitate an increased occurrence of droughts, with associated hazards, such as wildfires, also expected to increase. Indeed, projections indicate (high confidence) that there will be a further increase in aridity and fire weather conditions across the region. Droughts and wildfires cause a reduction in vegetative cover and consequently more surface water lost as run-off, which contributes to flooding. Given that rainfall variability will also increase, extreme rainfall will further contribute to the flooding problem. The impacts of extreme rainfall will be further exacerbated by the occurrence of tropical cyclones, which form in the south-western Indian Ocean. Projections indicate that the overall number of cyclones to develop in the southern Indian Ocean

[172] Ibid.
[173] Kambombe, O., Ngongondo, C., Eneya, L., Monjerezi, M. and Boyce, C., 2021. Spatio-temporal analysis of droughts in the Lake Chilwa basin, Malawi. Theoretical and Applied Climatology, 144(3), pp.1219-1231.
[174] Greenpeace. 2020. Weathering the storm: Extreme weather events and climate change in Africa. Available at: https://www.greenpeace.org/static/planet4-africa-stateless/2020/11/b6e9a1fa-weathering-the-storm-extreme-weather-events-and-climate-change-in-africa-grl-trr-04-2020-high-res.pdf
[175] IPCC, 2021: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change
[176] Ibid.

will decrease by ~26% under future climate conditions[177], there will be an increase in the intensity of cyclones that do form[178]. Specifically, there will be a higher number of high-intensity (Category 4 and 5) cyclones compared with the baseline period of 1982–2005[179].

**National:** Projections indicate that there will be an increase in the frequency at which tropical cyclones make landfall over central and northern Mozambique. Given the proximity of Malawi — and particularly the Southern Region — to Mozambique, tropical cyclones making landfall will likely affect both country[180]. As a result, the frequency and intensity of pluvial and fluvial flooding is expected to increase, along with associated impacts such as soil erosion and sedimentation of waterways[181]. These patterns will be further exacerbated during ENSO events which are associated with extreme weather patterns across Southern Africa, as described in the sections above[182].

**Local:** As noted above, temperatures are projected to increases in highland areas in Lake Chilwa basin while there will also be projections indicate a decrease in rainfall of up to 25% in these areas — mostly during the summer rainfall season. Collectively, these climatic changes will cause higher rates of evapotranspiration in forests of Lake Chilwa's catchments. The consequent moisture loss will cause a shift in the type of these forests from their current state to 'dry' and 'very dry' by mid-century and end-century, respectively[183]. The projected climate shifts in the area are likely to contribute to a reduction in the amount of water flowing into Lake Chilwa, thereby compounding the decreasing rate of the Lake's replenishment, which is already hindered by baseline landscape degradation caused by deforestation[184].

*II.4.2 The impacts of climate change in the Lake Chilwa basin*

Malawi's vulnerability to climate impacts is reflected in its high annual ranking on the Climate Change Vulnerability Index (CCVI)[185], as well as in its persistent low annual ranking (174 out of 189 countries) on the Human Development Index (HDI)[186]. As described in the sections above, this vulnerability is the result of interconnected climatic and non-climatic phenomena, and particularly a high proportion of the rural population (85%) that is dependent on natural resource-based livelihoods such as climate-sensitive rainfed agriculture on smallholder farms[187]. Because of this high proportion, environmental degradation typically occurs in conjunction with demographic pressures such as high population growth — particularly in the Lake Chilwa basin, which has the highest population density in the country and communities directly dependent on natural resources from the lake and its catchments. The reliance of these growing communities on the resource base exacerbates the extent of land degradation in the area. This, in turn, creates a feedback loop that contributes to declining livelihood productivity, which places further pressure on the natural resource base. Recent droughts have exacerbated this feedback loop and impacted a large proportion of the country's population by decreasing their food and water security. Across the country, 98% of farmers reported that their agricultural activities were affected by drought (in 2011). In 2017, ~6.5 million people (~40% of the country's total population) were directly affected by the adverse impacts of drought — particularly through a decline in food security. While these impacts are most strongly experienced by subsistence and smallholder farmers, food security across the country is threatened by the occurrence of droughts and the supply shocks they cause.

In addition to droughts, climate change is also increasing the frequency of floods across Malawi. Floods that occurred in 2015, for example, required recovery and reconstruction of ~US$335 million (equivalent to ~5% of GDP at the time). In the agriculture sector, the overall impact of the 2015 floods was compounded by the delayed onset of rains[188] which caused a shortened growing season and impeded crop production and recovery in subsequent years. The floods directly caused a 30% decline in maize production across the country, which was compounded by a drought that followed that caused food insecurity for 20% of the c'untry's population[189]. Floods and droughts are therefore impacting the overall economy of Malawi, which is highly reliant on agriculture. Since such a large

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[177] Using a multimodel ensemble of CMIP5 models for RCP4.5.

[178] Greenpeace. 2020. Weathering the storm: Extreme weather events and climate change in Africa. Available at: https://www.greenpeace.org/static/planet4-africa-stateless/2020/11/b6e9a1fa-weathering-the-storm-extreme-weather-events-and-climate-change-in-africa-grl-trr-04-2020-high-res.pdf

[179] IPCC, 2021: Climate Change 2021: The Physical Science Basis. Contribution Of Working Group I To The Sixth

[180] Ibid.

[181] IPCC. 2021. AR6 Regional Fact Sheet Africa: available at: https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Africa.pdf

[182] GOM. Third National Communication to the UNFCCC. Available at https://unfccc.int/sites/default/files/resource/TNC%20report%20submitted%20to%20UNFCCC.pdf

[183] Ibid.

[184] Ibid.

[185] More information available at: https://www.maplecroft.com/risk-indices/climate-change-vulnerability-index/

[186] More information available at: http://hdr.undp.org/en/content/human-development-index-hdi

[187] IFRC. 2021.Climate change impacts on health: Malawi Assessment. Available at: https://www.climatecentre.org/wp-content/uploads/RCRC_IFRC-Country-assessments-MALAWI-3.pdf

[188] occurring a month later than the annual average

[189] GOM. Third National Communication to the UNFCCC. Available at https://unfccc.int/sites/default/files/resource/TNC%20report%20submitted%20to%20UNFCCC.pdf

proportion of the country is involved in agriculture, any sudden disruption to their production has the potential to directly affect food prices and availability across the rest of the country.

Although climate change is affecting vulnerable communities across Malawi, climate impacts are particularly severe in the Southern Region. In the Lake Chilwa basin, the complex cycle of baseline drivers of declining ecosystem services delivery occurring in the basin is being accelerated by climate change — through slow-onset events such as droughts, as well as the direct impacts of sudden onset events such as floods and tropical cyclones. Population pressures such as high population density and poverty rates are contributing to unsustainable natural resource use, causing a decrease in the delivery of ecosystem services such as the regulation of the hydrological cycle. Not only is situation adversely affecting the climate resilience of local communities, but the impacts of climate change are directly contributing to the degradation of the natural environment within the lake and in its catchments, thereby accelerating and intensifying the baseline drivers. In the sections below, more detail is provided on the key impacts of climate change in the Lake Chilwa basin.

Decreasing water levels in Lake Chilwa

In recent decades, the key impact of climate change on the ecosystem of Lake Chilwa and its catchments has been the general decline in the lake's water level, as well as a decrease in the rate at which it is being replenished[190]. Lake Chilwa has dried completely on numerous occasions in the last century, including in 1903, 1913–16, 1922, 1934, 1943–48, 1967, 1973, 1975 and 1995–96 (the last time was in 2018), its capacity to recover from these events is decreasing[191]. Moreover, although refilling of Lake Chilwa can occur in as little as one year, it normally takes approximately two to three years to refill[192]. However, this refilling of the lake is contingent upon the adequate infiltration of groundwater in its forested catchment areas and stable baseflow of rivers and streams flowing into the lake — particularly during the dry season. When the lake's levels decrease, fish stocks can take several years to recover, which disrupts fishing commu'ities' livelihoods for extended periods, forcing them to resort to unsustainable livelihood practices[193]. The effective recovery of fish stocks depends on the management of remnant pools in the perennial rivers and streams that feed into the lake[194]. The health of the freshwater ecosystem within the lake itself is therefore directly affected by landscape degradation and the additional impacts of climate change in the basin.

Drying of the lake affects women living in the basin in particular, as fish processing is their primary income-generating activity and dependent on reasonably priced fish — a factor influenced on the supply of fish and therefore stocks within the lake. A decline in fish stocks increases competition between fisherfolk and consumers for the remaining fish, driving up prices and reducing women's income potential from fish processing. In response to the unpredictability of Lake Chilwa's water levels and productivity, communities have developed diversified, mobile, and often unsustainable livelihoods which contribute to deforestation and land degradation in catchment areas— including charcoal production. These livelihoods become more prevalent as fisheries yields decrease in the lake and food security decreases as a result, compelling communities to increase their reliance on other livelihood options. Climate change-related temperature rise and erratic rainfall is causing an increasing frequency of drying episodes in Lake Chilwa by intensifying and accelerating the baseline drivers of landscape degradation described in Section 2.a above. This includes impacts of unsustainable agriculture, which often results in expansion of farms into marginal lands. Agricultural yields are already decreasing across the Lake Chilwa basin because of landscape degradation.

Changes in ecosystem structure and characteristics

In addition to decreasing water levels and landscape degradation in catchment areas causing siltation within Lake Chilwa, its productivity is also affected directly by climate change through rising temperatures are negatively affected biodiversity[195]. There is already a considerable risk of ecosystem collapse in Lake Chilwa, particularly as a result of declining fish resources and unsustainable fishing practice[196]. This risk is intensified by climate change through further decreasing water levels and lower rates of replenishment, as well as warming of the lake. Results suggest that under RCP4.5 and 8.5, water temperatures in Lake Chilwa will increase by an average of 2.6°C and 4.7°C, respectively[197]. While the surface temperatures of lakes across Africa are increasing, the full range and

[190] Jørstad, H. and Webersik, C., 2016. Vulnerability to climate change and adaptation strategies of local communities in Malawi: Experiences of women fish processing group in the Lake Chilwa basin.
[191] Ibid.
[192] Ibid.
[193] Ibid.
[194] Ibid.
[195] GOM. Third National Communication to the UNFCCC. Available at https://unfccc.int/sites/default/files/resource/TNC%20report%20submitted%20to%20UNFCCC.pdf
[196] USAID. 2016. Malawi Climate Change Fact Sheet. Available at: https://www.usaid.gov/malawi/fact-sheets/malawi-climate-change-fact-sheet#:~:text=Climate%20change%20affects%20countries%20across,to%20climate%20change's%20negative%20consequences
[197] Republic of Malawi. 2011. The Second National Communication of the Republic of Malawi to the Conference of the Parties (COP) of the United Nations Framework Convention on Climate Change (UNFCCC). Available at: https://unfccc.int/resource/docs/natc/mwinc2.pdf

extent of impacts associated with climate change are not well understood. Research conducted in other lakes in Africa such as Lake Tanganyika indicates that lake warming can reduce the cycling of nutrients from the lake's depths, as well as primary production in the water[198,199]. Given the observed declines in both fisheries and livestock productivity, increasing average water temperatures will have further implications for fisheries productivity and therefore pressure on natural resources in its catchments under future climate conditions[200]. Dwindling fish resources — in combination with high population growth and unemployment — will lead to additional competition in fisheries, and likely an increase in conflict within and between local communities, as well as between traditional fisherfolk around Lake Chilwa and those moving into the area from elsewhere in Malawi. Climate change-induced ecosystem decline and the will, therefore, increase the vulnerability of subsistence farmers and fisherfolk by further decreasing their food and livelihood security[201].

Agricultural productivity and food security

In the Lake Chilwa basin, as elsewhere in the country, climate change is threatening the productivity of the agriculture sector and, therefore, the food security of vulnerable communities — particularly through the increasing incidence of droughts and the general increasing drying trend observed across the basin. A general decline in productivity has already been recorded in both the crop and livestock sectors in recent decades. Eight localised and short-duration droughts have occurred since the 1980s — including in 1986/87, 1993/94, 1996/97, 1997/98, 2001/02, 2004/05, 2005/06 and 2007/08. These droughts adversely affected crop yields[202] and caused severe food shortages — particularly in rural areas[203]. The impact of droughts on crop productivity was observed in 2001/02 when drought conditions caused a ~20% reduction in total crop yields across the Southern Region, consequently leading to severe food insecurity[204]. Agricultural decline — in conjunction with the lake's drying — is also contributing to a rapid decrease in the productivity of fisheries. This is occurring because of the growing inability of communities to produce adequate crop yields in the lake's catchment areas, which leads to the intensification of unsustainable land-use practices and further land degradation. The consequent decline in crop yields causes an overdependence of local communities on fish from the lake and increases competition for other aquatic resources. For example, there has been an observed increase in the clearing of reeds in riparian and coastal areas of Lake Chilwa — which are critical fish spawning habitats[205] — further impacting the replenishment of fish stocks. As noted in Section 2.a above, catches in the lake have already decreased considerably since the 1970s, from ~15,000 tonnes/yr to ~5,000 tonnes in 2014[206].

The slow recovery of fish stocks in recent years has also been exacerbated by an increase in the use of illegal fishing gear such as mosquito nets. The use of such indiscriminate equipment causes juvenile fish to be captured along with adults, thereby preventing juveniles from reaching maturity and the stock from growing to the size at which the breeding population is large enough to sustain maximum sustainable yield (MSY)[207]. The declining fish stocks in Lake Chilwa is causing impacts beyond the lake basin for Malawi as a whole. Fish catches in Lake Chilwa comprise a sizeable percentage of the total amount of fish caught within Malawi, at an annual contribution (~20% on average, but reaching up to 27% in some years[208]). In addition, a large proportion of agricultural produce is sourced from the lake's catchment areas. For example, 50% of the rice produced in Malawi is grown in the Lake Chilwa basin. As a result, the decreasing productivity of agriculture and fisheries in the area is causing a rapid decline in food security, both in the districts surrounding Lake Chilwa, and across Malawi[209].

Under future climate conditions, the projected reduction and increasing variability of rainfall in the Lake Chilwa basin — in combination with higher temperatures and decreasing soil fertility — will continue to adversely affect crop yields[210]. This is particularly true for the maize crop, which makes up a large proportion of the total agricultural production in the area. The consequent food insecurity will be exacerbated by a further decline in fisheries yields as a result of climate-induced changes to ecosystems in the basin. In addition to

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[198] Thiery, W., *et al*. 2015. The Impact of the African Great Lakes on the Regional Climate. *J. Climate*, 28.

[199] Ibid.

[200] Ibid..

[201] Ibid.

[202] especially where dry conditions occurred during the reproductive stages of crop growth.

[203] GOM. Third National Communication to the UNFCCC. Available at https://unfccc.int/sites/default/files/resource/TNC%20report%20submitted%20to%20UNFCCC.pdf

[204] Ibid. f

[205] Kafumbata, D., Jamu, D. and Chiotha, S., 2014. Riparian ecosystem resilience and livelihood strategies under test: lessons from Lake Chilwa in Malawi and other lakes in Africa. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *369*(1639), p.20130052.

[206] Ibid.

[207] the maximum catch that can be extracted from a population of fish in the long term. Pauly, D., 2014. What's maximum sustainable yield? Available at: https://oceana.org/blog/whats-maximum-sustainable-yield/

[208] Chiwaula, L., Jamu, D., Chaweza, R. and Nagoli, J., 2012. The structure and margins of the Lake Chilwa fisheries in Malawi: a value chain analysis. WorldFish. Available: http://pubs.iclarm.net/resource_centre/WF_3164.pdf

[209] Maloya, H., 2001. Community-Based Natural Resources Management - the case of Lake Chilwa Wetland, Malawi. Available at: https://www.ramsar.org/news/community-based-natural-resources-management-the-case-of-lake-chilwa-wetland-malawi

[210] GOM. Third National Communication to the UNFCCC. Available at https://unfccc.int/sites/default/files/resource/TNC%20report%20submitted%20to%20UNFCCC.pdf

the direct impacts of higher temperatures and increasingly variable rainfall on food security, climate change will further impact labour productivity. Specifically, warmer temperatures will make it increasingly difficult for farmers to work outside during the day, thereby reducing their ability to produce food.

Direct economic damages

The occurrence of extreme climate events in the Lake Chilwa basin is causing severe impacts on the economic growth in the area. Tropical Cylone Idai provides an example of the scale of damages caused by climate change and the direct impact they have on the economy of the three districts in the basin (namely Zomba, Phalombe and Machinga). The floods caused by this event resulted in severe economic losses and damages in these districts, as shown in Figure 19, Figure 20 and Figure 21 below. None of the three districts are well developed and impacts of this magnitude are severely affecting the development trajectory of all three districts simultaneously. In particular, the concurrent damages to the agriculture and nutrition subsectors are directly affecting the health and wellbeing of local populations through decreased food security and nutrition, while damages in the transportation subsector is indicative of the effects an event such as Cyclone Idai has on value chains and functional operation of businesses.

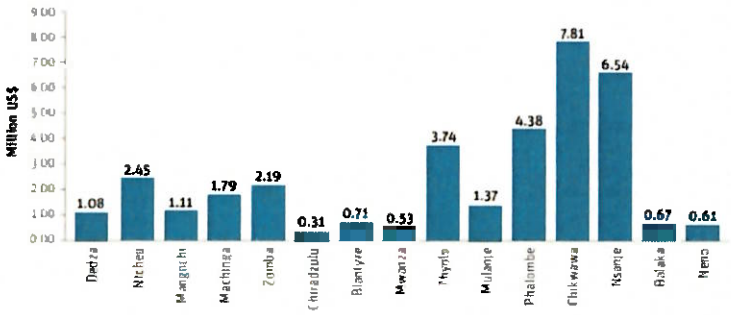



**Figure 19.** Total effects of floods on agriculture in million US$[211].

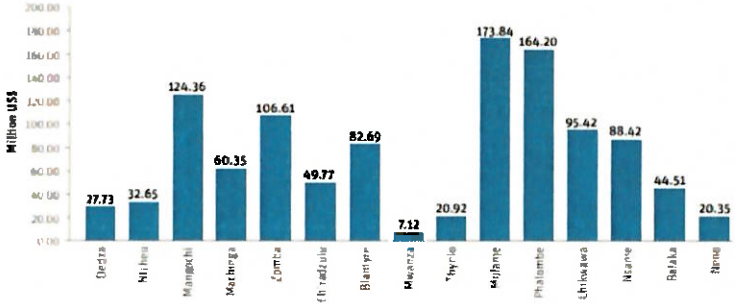



**Figure 20.** Total effects of floods on health and nutrition in million US$[212].

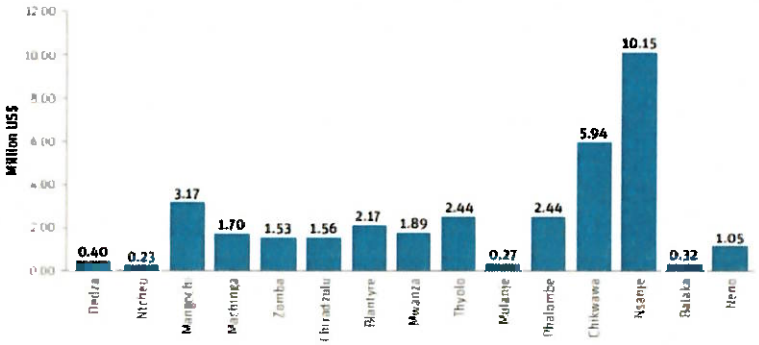



**Figure 21.** Total effects of floods on transportation infrastructure in million US$ [213].

[211] GoM, 2015. Malawi 2019 floods post disaster needs assessment report (PDNA).
[212] Ibid.
[213] Ibid.

Health and wellbeing

Although the direct impacts of droughts and floods are well documented, other negative effects of climatic change in Malawi are challenging to quantify. These additional impacts include: i) an observed increase in outbreaks of pests and diseases since the 1970s — including malaria, cholera and other water-borne diseases[214]; and ii) increasing levels of malnutrition[215,216]. In the Lake Chilwa basin, climate change is adversely affecting the health of vulnerable communities in numerous ways, including: i) injury or death, particularly through flooding and heat waves.; ii) the spread of infectious diseases, such as malaria, schistosomiasis, Lyme disease and dengue fever; iii) impacts on water, sanitation and hygiene (WASH), including water-borne diseases and reduced water quality; and iv) decreasing nutritional health as a result of food insecurity and environmental enteropathy[217]. In addition, under a high-emission scenario, risk factors that influence susceptibility to gastrointestinal will become greater, thereby increasing deaths of children under the age of 15 as a result of from 10.6% (2030) to 14.9% (2050)[218]. Climate change is having particularly severe impacts on vulnerable and marginalised groups. These groups include: i) elderly people[219] who are vulnerable to heat and disaster risk; ii) children — who are affected by *inter alia* malaria[220], diarrhoea and malnutrition[221] iii) female-headed households with limited income security and adaptive capacity; and iv) people living with HIV/Aids, who are vulnerable to food insecurity and malnutrition. Notably, climate change in the Lake Chilwa basin is affecting women by exacerbating existing problems related to sexual and reproductive health (SRH)[222] and malnutrition. Other public health impacts are also caused by climate change, including adversely affected mental health of rural farming communities in the basin[223]. The impacts of climate change on mental health are particularly severe during periods of low rainfall, as well as when households have to grapple with the effects of multiple concurrent climate-related challenges such as when floods are followed by the spread of diseases.

Without intervention, the challenges described above are expected to become heightened under future climate change conditions, further decreasing the climate resilience of local communities and accelerating landscape degradation across the Lake Chilwa basin. The preferred solution to these challenges is summarised in Section II.5 below, with a complete Theory of Change diagram showing the project's approach to overcoming these challenges presented in Section III. Strategy.

**II.5 Preferred solution**

The project's long-term Preferred Solution to addressing the impacts of droughts and floods on vulnerable rural communities in the Lake Chilwa basin is to adopt an integrated, cross-sectoral approach to building climate resilience — underpinned by the large-scale implementation of EbA and widespread adoption of alternative climate-resilient livelihoods and sustainable value chains. This transformative approach will build the natural, human and economic adaptive capacity of vulnerable rural communities, catalysing a shift away from maladaptive practices that degrade natural resources while reducing the country's greenhouse gas emissions. The Preferred Solution will also enable the practices applied and lessons learned from the Lake Chilwa basin to be upscaled across the country through policy and private sector models that create green jobs particularly among small, medium and micro enterprises — thereby contributing to recovery from Covid-19 economic damages. The main interventions for achieving the Preferred Solution in the basin will include: i) enhancing the capacity of communities and institutions to plan, implement and monitor EbA interventions aimed at reducing the impacts of droughts and floods; ii) improving small-scale producers' access to lucrative markets for climate-resilient products and value chains through diversification of product/service offerings and alternative livelihoods, as well as by enhancing access to microfinance, social protection and insurance; and iii) facilitating the adoption of alternative livelihoods. These interventions will see more robust and coordinated relationships between the private sector and small-scale producers, facilitated by

[214] Jørstad, H. and Webersik, C., 2016. Vulnerability to climate change and adaptation strategies of local communities in Malawi: Experiences of women fish processing grou in the Lake Chilwa basin.

[215] WBG. 2020. Country: Malawi. Available at: https://climateknowledgeportal.worldbank.org/country/malawi/impacts-agriculture

[216] Jørstad, H. and Webersik, C., 2016. Vulnerability to climate change and adaptation strategies of local communities in Malawi: Experiences of women fish processing grou in the Lake Chilwa basin.

[217] IFRC. 2021.Climate change impacts on health: Malawi Assessment. Available at: https://www.climatecentre.org/wp-content/uploads/RCRC_IFRC-Country-assessments-MALAWI-3.pdf

[218] Ibid.

[219] People aged 65 years or older.

[220] Children are particularly vulnerable to Malaria because unlike adults who grow up in areas where the disease is common, they do not have the necessary immunity.

[221] Climate change is affecting water availability in the area while limited sanitation infrastructure exposes children to environmental enteropathy — a state of intestinal inflammation caused by exposure to poor sanitation and hygiene which is linked to malnutrition, even when adequate food supply is available. Source:

[222] By causing a change in the dynamics and risk of negative maternal health Outcomes, and increasing the prevalence of forced child marriages, human trafficking, sexual exploitation and gender-based violence. Available at: https://www.climatecentre.org/wp-content/uploads/RCRC_IFRC-Country-assessments-Malawi_Final3.pdf#page=20&zoom=100,0,0

[223] IFRC. 2021.Climate change impacts on health: Malawi Assessment. Available at: https://www.climatecentre.org/wp-content/uploads/RCRC_IFRC-Country-assessments-MALAWI-3.pdf

concessional financing, improved infrastructure and technologies. The legal formalisation of institutions and the roles of stakeholders in climate change adaptation and capacity-building processes will also emerge from these interventions.

## II.6. Barriers

Despite ongoing efforts to address the environmental, social and economic challenges described above, several challenges could still pose a potential threat to the long-term achievement of the preferred solution. These barriers are described in the subsections below.

*Barrier 1: Limited financial capacity among communities for the adoption of alternative sustainable and climate-resilient livelihoods*

The climate-resilient alternative livelihood options being developed at small scale in the Lake Chilwa basin could potentially be scaled up. However, their adoption has been limited by the low financial capacity among communities, which prevents their adoption of alternative, climate-resilient livelihoods. In particular, communities in the basin do not have the financial resources to invest in adaptation initiatives, with inadequate access to loans, insurance or social protection to financially sustain their operations. Moreover, the limited access to finance is further compounded by the low level of financial literacy among communities in the basin, which constrains their income potential and prevents them from effectively engaging in the development of sustainable, climate-resilient livelihoods. Overall, the limited financial capacity of vulnerable communities in the Lake Chilwa basin reinforces the impacts of several other barriers to adaptation and poses a challenge to the realisation of the preferred long-term solution.

*Barrier 2: Limited knowledge and skills among subsistence farmers and fisherfolk of value-addition practices for agricultural and fisheries products*

Most livelihoods in the Lake Chilwa basin comprise subsistence agriculture and fishing, with minimal knowledge and information available to promote their expansion. Specifically, local communities do not have the skills to develop agricultural and fishery value chains or maximise the value of their products — including post-harvest value-addition practices, such as food processing and storage. This barrier is compounded by the constrained financial resources described in Barrier 1, which limit the uptake of value-addition practices. The low adoption of value-addition services is illustrated by the high rate of post-harvest losses in lake catches and staple agricultural crops. Communities' limited knowledge on preventing these losses compromises the quality of harvested products, reducing the market value of commodities and the likelihood of purchase by other value chain actors. There remains a general need to increase the availability of knowledge on climate change adaptation in the basin, not only for use by subsistence farmers and fisherfolk, but for decision makers and local leaders as well. Existing projects are already generating climate change data from the basin, although its accessibility remains limited.

*Barrier 3: Limited social accountability systems and community capacity to enforce environmental regulations*

Although the Government of Malawi (GoM) has gazetted protected fishery areas by declaring conservation and harvest reserves in designated areas across the country, both central and local government have limited resources to effectively monitor and enforce the national guidelines. As a result, noncompliance with environmental regulations and encroachment into protected areas remains a considerable challenge — particularly in the Lake Chilwa basin. The limited extent of monitoring and enforcement means that there is insufficient social accountability in terms of the use of natural resources in and around Lake Chilwa.

In the fisheries sector, the GoM has introduced a licensing system that only allows a fixed number of participants in the sector. However, administering this system is a challenge with a dispersed and often mobile fisherfolk fleet. While the system has successfully limited the entry of large-scale operators, it has been less effective with artisanal[224] and subsistence fisherfolk who are commonly the main inhabitants of lakeshore communities (and highly climate vulnerable). Because many community members lack adequate alternative livelihood options to overcome the challenges presented by climate change, there is growing pressure on the natural resource base. Moreover, even where climate-resilient livelihoods have been developed, the absence of a basin-wide approach to adaptation means that communities who sustainably manage their immediate environment remain exposed to pressures from outside elements, such as individuals illegally cutting down indigenous vegetation to produce charcoal. There is, therefore, a need to address both the limited livelihood opportunities available to communities and the insufficient enforcement of environmental regulations across the Lake Chilwa basin. Enforcement of environmental regulations should be enhanced by developing a more mobile and technologically advanced monitoring and reporting system.

*Barrier 4: Limited technical and institutional capacity among communities for environmental and natural resource management, as well as planning and implementing EbA measures*

Limited technical and institutional capacity for self-regulation and natural resource management in local communities prevents their meaningful participation in the management of fisheries, forests and wetlands. Central to the persistence of this barrier is the: i) limited technical capacity of district-level institutions to coordinate and support community-based climate adaptation; and ii) widespread prevalence of knowledge gaps, particularly on relevant, locally appropriate skills and techniques in EbA planning. As a

[224] In the context of the proposed GEF project, artisanal farmers and fisherfolk are referred to as individuals who generally practice non-mechanised, subsistence-based livelihood activities as opposed to formally registered enterprises who operate on larger, more commercial scales.

result, there is an insufficient transfer of knowledge between stakeholders, with institutional fragmentation preventing meaningful community engagement on the ground.

As lake, forest and wetland resources decline because of climate change and continued overexploitation, community livelihoods are becoming increasingly unproductive. Moreover, as the population density in the area increases[225], more households are having to share fewer resources. Despite the existence of structures at the village level intended to enhance natural resource management (including BVCs and VNRCs),

While structures exist at village level to enhance natural resource management, such as BVCs and VNRCs, community engagement with associated catchment-level initiatives that ensure the effectiveness of gazetted legislation for fisheries in particular is limited. This prevents local communities from self-regulating and reduces compliance with existing regulations. There is a general scarcity of technical knowledge (both among communities and extension services) on implementation of these practices for starting the new ventures. The management of natural resources is also adversely affected by communities' limited capacity to plan, implement, monitor, evaluate and maintain EbA interventions. In turn, this exacerbates resource degradation as unsustainable land-use practices continue in the absence of effective EbA.

*Barrier 5: Limited access to finance and markets for climate-resilient products by MSMEs and the informal sector*
Currently, communities within the Lake Chilwa basin have limited access to commercial finance from banks and microfinance institutions. There are many factors contributing to this barrier, including the perception among MFIs that demand for financial products in these areas is low, and that the costs of providing credit to communities in remote rural areas are therefore too high. Since the microfinance industry in Malawi has not yet matured and has primarily been concentrated in the northern parts of the country, the number of individuals and MSMEs in the south with a credit record is low compared with the north, increasing the perception by MFIs that investment in these areas is too costly and risky. The limited access to finance and markets for climate-resilient products is restricting the ability of MSMEs to expand their operations, improve packaging and marketing of their produce, and thereby accessing markets for the sale of their harvested fishing and agricultural commodities. This constrains their ability to adopt alternative, climate-resilient livelihoods as they are unable to benefit from local and regional demand for high-quality commodities such as pre-packaged agricultural products and dried or cured fish. As a result, the development of micro-, small- and medium-sized enterprises (MSMEs), particularly those dependent on natural resources, is constrained within the project target area. In addition to limited access to finance, communities also have insufficient access to insurance products — including crop insurance, and potentially also disaster risk insurance, although this does not yet exist in Malawi. Given the vulnerability of MSMEs in the basin to climate hazards, insurance provides a buffer for these enterprises to sustain their operations after the occurrence of an extreme event — particularly sudden-onset events such as storms and floods. Detail on the contributing factors to limited finance and market access is presented in Annex 24: Technical detail and implementation guidance.

*Barrier 6: Limited investment and support by private sector and other value chain actors towards adaptation, as well as generally limited private sector engagement with small-scale producers*
Within the Lake Chilwa basin there is minimal interaction between the commercial entities across the value chain and local, small-scale producers such as smallholder farmers and fisherfolk. As described under Barrier 5 above, this results from producers' inability to access markets for the sale of their commodities, products and services. Given the limited capacity of producers to engage in value-adding activities (such as post-harvest processing), commercial entities are not attracted to investing in associated value chains, as they are perceived not to be profitable. In the Lake Chilwa basin, private sector investment is limited because of several factors, including: i) the high costs associated with accessing smallholders who are not organized and exercising collective bargaining power, and therefore do not generate economies of scale needed to keep prices competitive; ii) products are not value-added and do not meet requirements and standards necessary for access to high-value markets; and iii) limited information and information sharing between actors along the value chains on available products and markets.

**II.7. Baseline analysis**
The TRANSFORM project has been developed to complement and upscale two existing UNDP projects, namely the ADAPT Plan project and the TRANSFORM Bridging Project. The transformational approach to climate change adaptation that TRANSFORM promotes is based on a key lesson learned from these projects, namely the need to focus on the entire lake basin as an interconnected ecosystem that should be managed in an integrated way, at landscape level. While projects such as the ADAPT Plan, Climate Proofing and TRANSFORM Bridging Project were successful in their individual elements in terms of reducing climate impacts on targeted communities, the interventions were spread over a wide geographic area and did not catalyse the integrated basin-wide

[225] Please refer to Section 1b. Project Map and Coordinates for detailed information on population and population density figures for each target district.

transformation that has since been identified as critical for adaptation. The TRANSFORM project has been designed specifically to achieve this objective, with the TRANSFORM project providing a blueprint for upscaling to areas within the Lake Chilwa basin not specifically targeted by the project, as well as to other parts of Malawi. In addition to the ADAPT Plan and Bridging Project, the TRANSFORM Project has been designed to upscale best practices from another key project, namely the Lake Chilwa Basin Climate Change Adaptation Programme (LCBCCAP). This project has been concluded in 2017, but given its basin-wide approach it promoted, it highlighted several gaps, barriers and potential areas of intervention to enable a truly transformational approach which have been considered in the TRANSFORM project strategy.

Several recent and ongoing initiatives within Malawi have been designed to address baseline developmental challenges, climate hazards and barriers. These initiatives, however, do not adequately account for the additional impact presented by future climate change conditions, which limits their long-term effectiveness. Despite this limitation, these initiatives represent a baseline to which the proposed LDCF project will provide additional finance to address climate change and promote adaptation. The proposed TRANSFORM project will build on existing initiatives aimed at coping with current climate change and using natural resources sustainably and with equity within the Lake Chilwa basin and result in innovative outcomes to ensure a transformative shift in concessional funding for climate-resilient development in Malawi. Specifically, TRANSFORM will leverage LDCF resources for the implementation of initiatives aimed at catalysing private sector financing to develop climate-resilient value chains, enhanced market linkages, and thereby incentivising business and investment opportunities for climate resilience in the project target areas. The table below provides a summary of the baseline projects the proposed project will build on, as well as the project outcomes that will provide climate change additionality.

**Table 4.** Baseline projects and initiatives in alignment with the proposed project.

| Project title | Implementation period | Cost | GEF Agency/Executing entity | Project summary | LDCF project additionality to the baseline |
|---|---|---|---|---|---|
| GEF/LDCF-financed projects | | | | | |
| Malawi climate-resilient and sustainable capture fisheries, aquaculture development and watershed management project (SFAD-WM)[226] | 2020–2025 | US$ 18,986,210[227] | MoAIWD/AfDB | This project is providing support toward sustainable fisheries in Malawi through community led and climate-smart watershed management. It is a sub-component of a larger AfDB project being implemented in Malawi targeting several ecosystems. The key components of the project are: i) sustainable capture fisheries and watershed management; ii) aquaculture development; iii) fish value chain strengthening; and iv) project coordination, monitoring and evaluation. | The proposed LDCF project will build on interventions of the SFAD-WM through: i) developing EbA plans for the Lake Chilwa basin, building on Watershed Management Plans (WMPs) developed under SFAD-WM to identify climate change vulnerability and ecosystem degradation hotspots and outlining EbA interventions for climate-resilient livelihoods (Outcome 2); ii) capacity building for EbA interventions (Outcome 2); iii) increasing market access and value chain enhancement for fishing and agricultural commodities (Outcome 2), as well as enhancing the scalability of interventions under SFAD-WM through the establishment of a private sector funded climate financing facility (Outcome 1); iv) establishment of a knowledge management hub for storing and managing lessons learned and best practices for upscaling beyond the Lake Chilwa basin (Outcome 3). |
| Non-GEF projects | | | | | |

[226] Department of Fisheries. 2019. Sustainable Fisheries, Aquaculture Development and Watershed Management Project: Executive summary. Available at: https://www.afdb.org/fr/documents/malawi-sustainable-fisheries-aquaculture-development-and-watershed-management-project-esmf-summary

[227] GEF. Malawi climate resilient and sustainable capture fisheries, aquaculture development and watershed management project. Available at: https://www.thegef.org/projects-operations/projects/10411

| | | | | | |
|---|---|---|---|---|---|
| Enhancing the Resilience of Agro-Ecological Systems (ERASP)[228] | 2017–2023 | US$ 94,552,963[229] | MoAIWD/IFAD | The project aims to improve the sustainable management and governance of ecosystems to ensure continued provisioning of ecosystem goods and services in Malawi. Additionally, ERASP will safeguard the long-term productive potential of critical food systems in response to the changing social and economic needs of rural populations. This will be achieved through joint natural resource management at landscape level by developing catchment management plans and establishing catchment management committees, provisioned for under Malawi's Water Resources Act. | The proposed TRANSFORM project will build on this project by: i) enhancing the productivity of agricultural landscapes and fisheries in Malawi through the development of the EbA plan under Component 1; ii) avoiding duplication by ensuring that the plans for natural resource management under the TRANSFORM project are developed for different areas in the country, subsequently benefitting communities not exposed to the ERASP project (Outcome 3); iii) making use of a knowledge management hub for planning, implementing and monitoring EbA (Outcome 3). |
| African Forest Landscape Restoration Initiative (AFR100)[230] | 2020–2030 | US$ 23.5 million | MoNRCC/FAO | In 2016, under the African Forest Landscape Restoration Initiative, Malawi committed to restoring 4.5 million ha of forest by 2030.The restoration interventions under this project will be implemented as part of the 'Large-scale Forest Landscape Restoration in Africa', a regional project that will target four countries — Rwanda, Kenya, Cameroon and Malawi — for forest landscape restoration. | The proposed GEF TRANSFORM project will complement this initiative by contributing to the restoration of forests and other ecosystems critical to livelihood and food security in Malawi, thereby enhancing the climate resilience of vulnerable local communities. This will be achieved through the development of the EbA plan which will ensure that future reforestation in the Lake Chilwa basin and the rest of Malawi is coordinated at landscape level, and that investments in EbA are implemented in an integrated, cross-sectoral manner. |
| UNDP Growth Accelerator[231] | 2019–2026 | Between US$ 10,000–US$ 40,000 per entrepreneurial venture[232]. | UNDP/mHub (lead technical organisation) /Growth Africa (supporting technical organization) | The UNDP Growth Accelerator programme is a business acceleration programme for youthful high-impact post-revenue businesses looking to grow and scale, developed by UNDP's Private Sector Development Programme (PSDP). The programme supports entrepreneurs in co-financing, mentorship and technical assistance. | This programme is the platform upon which the Sustainable Climate Finance Facility in the proposed TRANSFORM project will be developed. The SCCF will stimulate public and private sector investments for MSMEs, with a new CCA funding window opened under Component 1 for energy (briquette |

[228] International Fund for Agricultural Development (IFAD). 2017. Enhancing the resilience of Agro-ecological Systems Project (Global Environment Facility — Integrated Approach Pilot). Available at: https://www.thegef.org/projects-operations/projects/9138

[229] GEF. Food-IAP: Enhancing the resilience of Agro-ecological systems (ERASP). Available at: https://www.thegef.org/projects-operations/projects/9138

[230] The African Forest Landscape Restoration Initiative. Available at: https://afr100.org/content/about-us

[231] UNDP. Growth Accelerator Malawi. Available at: https://growmalawi.org/

[232] Ibid.

| | | | | | |
|---|---|---|---|---|---|
| | | | | | production), ecotourism, and staple food grains/high-value food products. The proposed project will build on the work of the Growth Accelerator by upscaling the initiative through the provision of technical assistance and strengthening of the micro-finance industry for innovation in climate resilient livelihoods, enterprises and technologies (Output 2). |
| Build Malawi Window[233] | 2021–2031 | Target capitalization of US$ 35 million; US$ 8.25 million raised. | Bamboo Capital Partners' BUILD Fund | The Build Malawi Window is aimed at helping Malawi realize its development Vision 2063 by providing opportunities for the country's economy to grow in a green and inclusive manner. The Build Malawi Window will support businesses with loans, equity and technical assistance. It provides technical assistance to businesses both before and after investment to improve quality of their growth and SDG impact as well as reduce associated risks and costs. The programme aims to: i) create 3,000 jobs (30% minimum for women and youth); ii) integrate 75,000 small-scale producers into investees' supply chain; iii) increase participating small-scale producers' income by 30%; iv) expand fiscal space with aggregated income taxes of US$ 19.3 million; and v) strengthen 15 supply chains. The BUILD Fund is operational after being incorporated in Luxembourg under the Bamboo Capital Partners' BUILD Fund architecture and capitalized with the first loss tranche. The Fund has pre-screened companies is expected to execute its first investments in 2022[234]. | The proposed project will enable upscaling of the BUILD Fund Malawi through the SCCF by stimulating public and private sector investments for MSMEs. The proposed project will also create jobs, increase small-scale producers' income and strengthen supply chains (Outcome 1). |
| Titukulane project (USAID)[235] | 2019–2024 | US$ 75 million[236] | CARE, Emmanuel International, International | The project aims to facilitate the implementation and ensure effectiveness of the Malawi National Resilience Strategy (NRS). The main objective of the project is sustainable, equitable, and resilient food | The proposed TRANSFORM project will build on the Titukulane project by: i) developing district-specific EbA plans and implementing sustainable climate-resilient |

[233] UNDP. Build Malawi Window: A specialised structured blended finance vehicle for agribusiness. Available at: https://sdginvest.jointsdgfund.org/proposals/build-malawi-window-specialized-structured-blended-finance-vehicle-agribusiness

[234] UNDP. Build Malawi Window: A specialised structured blended finance vehicle for agribusiness. Available at:https://sdginvest.jointsdgfund.org/proposals/build-malawi-window-specialized-structured-blended-finance-vehicle-agribusiness

[235] USAID. Titukulane project. Available at: https://pdf.usaid.gov/pdf_docs/PA00WM23.pdf

[236] USAID & CARE. Titukulane. Available at: https://careclimatechange.org/wp-content/uploads/2019/03/MLW-Titukulane-2021-Aug.pdf

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| | | | Food Policy Research institute (IFPRI), National Smallholder Farmers Association of Malawi (NASFAM), Save The Children and WaterAid. | and nutrition security for ultra-poor and chronically vulnerable households and communities in Mangochi and Zomba districts in Malawi. It has 3 core purposes: i) increased diversified, sustainable, and equitable incomes for ultra-poor, chronically vulnerable households, women and youth; ii) improved nutritional status among children under five years of age, adolescent girls, and women of reproductive age; and iii) increased institutional and local capacities to reduce risk and increase resilience among poor and very poor households in alignment with the NRS. | livelihoods in target communities through the provision of training (including at least 50% women) and start-up inputs (such as beekeeping equipment), and development of partnerships with local suppliers and value chain service providers (through technical advisory services) (Output 2). |
| Social Support for Resilience Programme Food and Nutrition for Resilience (SoSuRe FUTURE)[237] | 2021–2027 (will continue to be in the new programming period 2021-2027) | USD 9 million (for 2021–2023) | European Union, with partners Government of Malawi (Ministry of Gender, Social Welfare and Community Development) Irish Aid, Christian Aid, Concern Worldwide and United Purpose | The objective is to reduce poverty through increasing resilience among the most vulnerable households in Malawi targeting ~68,000 Social Cash Transfer Programme beneficiaries (10% poorest households in Malawi) in Mulanje and Zomba districts. | The proposed TRANSFORM project will enable upscaling of interventions under the SoSuRe FUTURE project by supporting enhanced access to microfinance, insurance and social protection measures under Component 1. |
| Breaking the cycle of hunger: Building resilience Malawi country strategic plan | 2019–2023 | US$ 619,800,513 | World Food Programme | This plan is a five-year strategy to help Malawi better coordinate national efforts to tackle hunger, improve nutrition and reduce vulnerability to food insecurity and malnutrition — particularly that related to gender and age — and to strengthen resilience to recurrent shocks. The plan focuses on the following strategic outcomes: i) crisis response and refugees which is deeply connected to the remaining outcomes; ii) evidence generation and scale-up of shock-responsive social protection; iii) nutrition-sensitive programming addressing malnutrition; iv) a | The proposed TRANSFORM project will build on this plan by enhancing coordination on climate change adaptation in the Lake Chilwa basin, thereby supporting the Plan's goal of improving coordination of national efforts to address hunger. Second, TRANSFORM will enhance food security in the Lake Chilwa basin while also promoting access to social support measures. These interventions will complement WFP's goals developing |

[237] EU. Social support for resilience programme (SoSuRe). Available at: https://www.gtai.de/resource/blob/25680/3fba3039530900ff73c0a3a3f3f8e3c8/pro201711065019-data.pdf

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|---|---|---|---|---|---|
| | | | | sustainable food systems approach to supporting smallholders, especially women; and v) supply chain and service provision activities to build public and private sector capacity to respond to emergencies. | sustainable food systems. Finally, lessons learned, best practices and other information generated by the WFP project will be collated as part of the TRANSFORM project's knowledge management hub, thereby enhancing potential for upscaling of both initiatives. |
| Climate Smart Enhanced Public Works Programme | 2022–2024 | US$ 128 million | National Local Government Finance Committee (NLGFC); World Bank; GIZ | The EPWP is being implemented across 10 distrcit councils (including Phalombe), focusing on integrated watershed management, and covering sub-projects such as land resources conservation, afforestation, environmental protection, road infrastructure, and sustainable livelihoods. | The TRANSFORM project's activities will be directly linked to the projects implemented under the EPWP. For example, restoration, sustainable livelihoods, value chain and market linkage interventions under TRANSFORM will be complementary to sub-projects in Phalombe district focussing on environmental protection, road construction and afforestation projects implemented under EPWP. |

## II.8. National strategies and plans

The Government of Malawi (GoM) acknowledges the need to incorporate climate resilience into improved natural resource management plans across the country, made evident through the development and ratification of climate-responsive national policies and strategies. The proposed project will support these policies and strategies through the provision of sustainable funding for Ecosystem-based Adaptation (EbA) initiatives that catalyse climate change adaptation. The national policies, plans and strategies that align with the proposed project are outlined in the subsections below, with detailed descriptions provided in Appendix 1.

The National Climate Change Management Policy (NCCMP, 2016)[238]

The purpose of the National Climate Change Management Policy (NCCMP) is to guide the implementation of activities that alleviate the socio-economic impacts associated with climate change by reducing greenhouse gas emissions and improving community resilience through sustainable livelihoods. The NCCMP is intended to address several challenges that have hindered the effective implementation of actions against climate change, including: i) insufficient domestic budgetary allocations; ii) limited enforcement to minimise climate change drivers; iii) insufficient national policy addressing climate change; iv) uncoordinated formulation, implementation and monitoring of response actions; and v) insufficient technical capacity and skills in climate change management. The proposed project will align with this policy by prioritising enhanced financing (Component 1) — from increased national budgetary allocation, a Climate Change Management Fund, increased access to international climate financing, and private sector investments — and by the implementation of EbA activities (Component 2) that will increase community resilience through the creation of sustainable livelihoods in districts surrounding the Lake Chilwa basin.

National Forest Policy (NFP, 2016)[239]

The National Forest Policy (NFP) was initially approved in 1996 and revised in 2016. The overarching goals of the NFP are to improve the protection and conservation of forests and expand the provisioning capacity of these ecosystems, thereby contributing to the sustainable development of the country. The Policy's goals are structured around the need to address several challenges that were identified through the 1996 NFP implementation, namely: i) low community participation in forest management; ii) poor forest governance and management structures; iii) insufficient forest law enforcement; and iv) and an insufficient knowledge network. The proposed project will bolster the effective implementation of the NFP by promoting the conservation of forests by the provision of alternative sustainable livelihoods through EbA activities (Component 2) that will reduce pressure on over-utilised forest resources.

The National Meteorological Policy (NMP, 2019)[240]

The National Meteorological Policy (NMP) was developed by the Ministry of Natural Resources Energy and Mining in conjunction with international and domestic NGOs, United Nations (UN) Agencies and development partners. The aim of the Policy is to: i) establish appropriate strategies and legislative frameworks enabling the provision of readily accessible, timely and accurate weather and climate services; and ii) improve the technical capacity of the meteorological sector. The proposed project aligns with the Policy and by supporting the provision of accurate and timely weather and climate information. Specifically, a Knowledge Management Hub will be developed (Outcome 3) to enhance community disaster preparedness and prevent loss and damage to livelihoods.

The National Energy Policy (NEP, 2018)[241]

The National Energy Policy (NEP) was implemented in 2018 by the Ministry of Natural Resources and Climate Change with the aim of enhancing access to affordable, reliable, sustainable, efficient and modern energy services. The Policy comprises two long-term goals, including: i) enhancing the energy sector by facilitating the establishment of a competitive private sector-driven energy supply industry; and ii) facilitating a shift from a biomass-dependent energy sector to one with a high modern energy Component, including renewable and non-renewable energy sources, as well as reliable distribution grids. The proposed project will support the NEP's goals of developing a robust energy sector that is less reliant on biomass by rolling out alternative energy sources in the Lake Chilwa basin.

The National Disaster Risk Management Policy (NDRMP, 2015)[242]

The National Disaster Risk Management Policy (NDRMP) was implemented in 2015 — developed by the Ministry for Disaster Management Affairs in conjunction with international and domestic NGOs, UN Agencies, development partners, civil society organisations and local communities. The Policy aims to ensure that Disaster Risk Management (DRM) is mainstreamed in the policies and developmental plans of the country's economic sectors — including, *inter alia*, the agricultural, fisheries and forestry sectors —

[238] GoM. 2016. National Climate Change Management Policy - Malawi. Available at: https://reliefweb.int/sites/reliefweb.int/files/resources/NCCM-Policy-Final-06-11-2016.p
[239] GoM. 2016. Malawi Government National Forest Policy. Available at: http://www.unpei.org/sites/default/files/dmdocuments/Malawi Government National Forest Policy June 2016.pdf
[240] GoM. 2019. National Meteorological Policy. Department of Climate Change and Meteorological Services. Available at: www.metmalawi.com
[241] GoM. 2019. National Energy Policy. Available at: https://rise.esmap.org/data/files/library/malawi/Renewable%20Energy/Supporting%20Documentation/Malawi_National%20Energy%20Policy%202018.pdf
[242] GoM. 2015. National Disaster Risk Management Policy 2015. Department of Disaster Prevention and Mitigation. Available at: https://reliefweb.int/

to facilitate sustainable development and reduce the impact of natural and anthropogenic disasters. The proposed project will complement the efforts of the NDRMP by providing the districts surrounding Lake Chilwa with important disaster risk and early warning information through the Knowledge Management Hub developed under Component 3.

The National Fisheries and Aquaculture Policy (NFAP, 2016–2021)[243]

The National Fisheries and Aquaculture Policy (NFAP) was implemented in 2016–2021 by the Ministry of Agriculture, Irrigation and Water Development and the Department of Fisheries. The NFAP aims to support the overall productivity of the fisheries sector through the promotion of sustainable resource use and aquaculture development. The proposed project will support the goals of the NFAP by promoting EbA activities that facilitate the sustainable use of fish resources (Component 2) and by enhancing the availability of information regarding sustainable fishery resource use and successful aquaculture practices through the Knowledge Management Hub (Component 3).

The National Resilience Strategy (NRS, 2018–2030)[244]

The main goal of the National Resilience Strategy (NRS; 2018–2030) is to assess and establish approaches to break the cycle of food insecurity and poverty in Malawi. There are two assumptions that underpin the NRS, namely: i) extreme climate events — while characteristic of the region — do not need to result in loss of life and livelihoods; and ii) despite the observed increase in the frequency and severity of these events, their impacts will be less severe if challenges regarding resource development are addressed in a coordinated and multi-sectoral manner. In addition, the NRS states that the response to successive climate events affecting vulnerable people needs to shift from reactive to proactive, thereby preventing the impacts of climate change from undermining livelihood opportunities by pre-emptively increasing climate resilience. The project aligns with and supports the NRS's goal to 'break the cycle of food insecurity and poverty' in Malawi through the implementation of EbA interventions that increase climate resilience in the communities of the Lake Chilwa basin (Component 2) and across the country (Component 3).

Malawi Renewable Energy Strategy (MRES, 2017)[245]

The Malawi Renewable Energy Strategy (MRES) aims to enable country-wide access to renewable energy while improving the sustainability of the country's biomass energy production. The Strategy recognises the need to transition to a modern, sustainable energy sector with the capacity to supply energy effectively across the country, boost the economy and protect the country's natural resource base. The MRES, therefore, aims to facilitate the implementation of renewable energy sources — such as novel energy technologies, off-grid solutions and improved energy storage and grid management — to facilitate this transition. The project will contribute to the goals of the MRES by reducing the need for biomass for energy, thereby reducing deforestation in the Lake Chilwa basin.

The National Biodiversity Strategy and Action Plan II (NBSAP, 2015–2025)[246]

The National Biodiversity Strategy and Action Plan II (NBSAP) — implemented by the Environmental Affairs Department — aims to sustainably conserve, protect and manage biodiversity and share the ecosystem benefits accumulated through these efforts equally and equitably across the nation. The goals of the NBSAP include: i) improving institutional capacity and knowledge on biodiversity issues; ii) mainstreaming biodiversity conservation into sectoral and local development policies and plans; iii) reduced direct pressures on biodiversity, through the protection and restoration of degraded ecosystems and the implementation of biodiversity management; iv) increased biodiversity by safeguarding ecosystems, species and genetic diversity; and v) enhanced ecosystem service provision to Malawian citizens. The proposed projects will complement the mandate of the NBSAP II and contribute to addressing these challenges through EbA activities. In particular, the project will improve technical capacity for the adoption of EbA-informed sustainable livelihoods in the Lake Chilwa basin (Component 2), thereby reducing habitat degradation and the unsustainable exploitation of biodiversity. Moreover, project initiatives will be scaled up across Malawi, increasing the overall impact of project initiatives and facilitating the sustainable management of biodiversity (Components 1 and 3).

The National Forest Landscape Restoration Strategy (NFLRS, 2016)

The National Forest Landscape Restoration Strategy (NFLRS) is being collaboratively implemented in between 2016–2030 by the public and private sectors, traditional authorities and other local community organisations[247]. The NFLRS aims to contribute to the following

[243] GoM. 2016. National Fisheries and Aquaculture Policy (NFAP). Available at: https://leap.unep.org/countries/mw/national-legislation/national-fisheries-and-aquaculture-policy-nfap

[244] GoM. 2018. National Resilience Strategy. Available at: https://www.unicef.org/malawi/reports/national-resilience-strategy

[245] GoM. 2017. Malawi Renewable Energy Strategy. Available at: https://www.energy.gov.mw/1008-2/

[246] GoM. 2015. National Biodiversity Strategy and Action Plan. Available at: https://www.cbd.int/doc/world/mw/mw-nbsap-v2-en.pdf

[247] GoM. 2017. National Forest Landscape Restoration Strategy. Ministry of Natural Resources, Energy and Mining. Available at: https://afr100.org/sites/default/files/Malawi_NFLR_Strategy_FINALv2.pdf

National Development Goals: i) improve food security and increase energy resources[248], facilitating increased climate resilience; ii) improve water quality and supply; iii) conserve and restore biodiversity; iv) ensure gender equity and equality in access to, ownership and control of productive resources; and v) alleviate poverty. The proposed project will complement the goals of the NFLRS by promoting the restoration of forest landscapes and decreased use of forest resources through EbA interventions (Component 2).

The National Charcoal Strategy (NCS, 2017–2027)[249]

The National Charcoal Strategy (NCS) was first implemented in 2017 by the Department of Forestry (DoF) and the Department of Energy Affairs (DoEA) in collaboration with several other government departments, including, *inter alia*, the Department of Environment, Ministry of Finance, Economic Planning and Development, and the Ministry of Industry, Trade and Tourism. The vision of this strategy is to: i) achieve a climate-resilient Malawi, with a sufficient supply of affordable, safe and reliable energy sources; ii) halt and reverse deforestation; and iii) facilitate a shift to modern energy sources for cooking and heating. The pillars that underpin the NCS include: i) promoting the use of alternative household fuels; ii) adopting fuel-efficient cookstoves; iii) increasing sustainable wood production for biomass energy; iv) enforcing laws and regulations that prevent illegal charcoal production; v) promoting legal and licensed charcoal production, transport and sale; vi) sustainably enhancing the livelihoods of Malawians; and vii) collecting and compiling — by an exchange of ideas, experiences, innovations and 'best practices' among key stakeholders — evidence-based information associated with behaviour changes and increased adoption of sustainable methods of cooking and heating while ensuring the information is readily available. The proposed project's contribution to ongoing efforts to transition from charcoal as one of the main energy sources are directly aligned with the objectives of the Strategy and will alleviate the impacts of deforestation in the Lake Chilwa basin.

The National Climate Change Investment Plan (NCCIP, 2013-2018)[250]

The National Climate Change Investment Plan (NCCIP) was implemented by the Ministry of Environment and Climate Change Management's Environmental Affairs Department and identified the priority investment areas to promote climate change management in Malawi. These areas include: i) adaptation, which includes Integrated Water Management Plans (IWMP), agriculture production to improve community resilience, climate-proofing of infrastructure development and enhanced DRM; ii) mitigation, which involves enhanced REDD+, improved waste management, pollution control programmes and energy-saving technology programmes; iii) research, technology development and transfer, including climate change adaptation and mitigation technology development, adaptation and mitigation technology transfer; and iv) capacity development, such as developing knowledge, skills, materials and infrastructure to enhance climate response, as well as the establishing coordination and resource mobilisation mechanisms. Investment in climate change intervention is limited in the following areas: i) capacity development; ii) technology development; iii) research and systematic observation; mitigation technology; and iv) adaptation. The proposed project will bridge these identified gaps by promoting investment in capacity and technology development associated with climate adaptation, specifically through the Sustainable Climate Change Fund (SCCF).

The National Agriculture Investment Plan (NAIP, 2018)[251]

The National Agriculture Investment Plan (NAIP) was implemented by government agencies, civil society, farmers' organisations, the private sector and developmental partners with the objective of supporting sustainable agricultural transformation to facilitate economic growth within the agricultural sector. The desired Outcomes of this Plan are to increase income for farming households, increase agricultural exports and improve food and nutrition security for Malawian citizens. As the implementation vehicle for the National Agricultural Policy (NAP), the NAIP places emphasis on the need for strengthened implementation capacity and coordination of relevant actors. The proposed project will align and complement the NAIP's efforts to achieving these objectives by promoting investment in the agricultural sector and financing critical agricultural activities through the SCCF. The proposed project thereby increases the adaptive capacity and resilience of the agricultural sector.

Environmental Management Act (2017)[252]

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[248] Forest landscape restoration and management support directly energy resources availability through increasing the supply of locally-managed and sustainable fuel wood sources, and indirectly by decreasing soil runoff and consequently sedimentation in hydropower infrastructure.

[249] GoM. 2017. Malawi National Charcoal Strategy (2017–2027). Ministry of Natural Resources, Energy and Mining. Available at: https://www.fao.org/forestry/energy/catalogue/search/detail/en/c/1305657/

[250] GoM. 2013. National Climate Change Investment Plan. Ministry of Environment and Climate Change Management, Environmental Affairs Department. Available at: http://extwprlegs1.fao.org/docs/pdf/mlw190674.pdf

[251] GoM, 2018. National Agriculture Investment Plan. Available at: https://www.scotland-malawipartnership.org/assets/resources/National_Agricultural_Investment_Plan_2018_Final_Signed.pdf

[252] GoM. 2017. Environment Management Act. Available at: https://www.ecolex.org/details/legislation/environment-management-act-2017-no-19-of-2017-lex-faoc169354/

The Environmental Management Act of 2017 concerns the conservation and management of the natural ecosystems in Malawi, with a specific focus on genetic resources. The Act establishes the Environment Protection Authority and institutional arrangements for environmental management, as well as principles for environmental planning, assessments, audits and monitoring. The development of this Act promoted several other new developments, including: i) the establishment of the Malawi Environmental Protection Authority (MEPA); ii) the provision of the right to a clean and healthy environment for every person and the imposition of a duty upon people to safeguard and enhance the environment[253]; iii) the provision of the right to access environmental information to all that should be provided by lead agencies, private sector and NGOs promptly; and iv) the introduction of the Strategic Environmental Assessment as a legal requirement. TRANSFORM is aligned the Environmental Management Act as it proposes to advance natural resource use and management practices with participation from the local community as well as to their benefit.

[253] GoM. 2017. Environment Management Act. Available at: https://www.ecolex.org/details/legislation/environment-management-act-2017-no-19-of-2017-lex-faoc169354/

## III. STRATEGY

### III. 1. Proposed project approach

The objective of the TRANSFORM project is to address the problem of decreasing livelihood resilience and increasing climate vulnerability of rural communities living in the Lake Chilwa basin to the impacts of droughts and floods by addressing the barriers described in Section II.6. The project's transformative approach is underpinned by the large-scale implementation of ecosystem-based adaptation (EbA) at the landscape level and the support for the widespread adoption of alternative climate-resilient livelihoods and value chains that build the natural, human and economic capacity of vulnerable rural communities to adapt to climate change. The project will overcome the barriers to adaptation described above, thereby catalysing a sustainable, cross-sectoral transformation of the overarching development trajectory in the basin. The three project Components that will support the project's overall objective are listed below[254].

The project's proposed approach is an integrated, cross-sectoral approach to building the climate resilience of the target communities, thereby enabling a transformation of the overarching development trajectory in the basin. This approach will comprise three areas of intervention and will involve:

- enhancing public and private sector investment in and strengthening linkages for upscaling sustainable, climate-resilient enterprises.
- reducing the vulnerability of communities in target districts to climate change through EbA and sustainable climate-resilient livelihoods; and
- strengthening enabling environment for planning, implementing and monitoring EbA.

As temperature and rainfall changes in the Lake Chilwa basin continue to impact the viability of natural resource-based livelihoods of local communities, TRANSFORM will disrupt the adverse cycle of increasing climate change vulnerability and landscape degradation. This will be achieved by initiating a paradigm shift away from maladaptive and unsustainable land use practices — which impede adaptation-enhancing ecosystem service delivery within the lake and its catchments — towards a climate-resilient development pathway where communities are incentivised to conserve the natural resources on which their livelihoods depend. In particular, the project will adopt a basin-wide EbA approach that uses nature-based solutions and climate-resilient livelihood practices to strengthen the capacity of ecosystems to deliver critical services required to support community climate resilience.

The main interventions proposed to achieve the abovementioned objectives in the target area include: i) strengthening ecosystem capacity to deliver critical services through catchment and wetland restoration, thereby reducing the climate vulnerability of local communities; ii) enhancing the capacity of communities and institutions to plan, implement and monitor EbA interventions; and iii) improving small-scale producers' access to value chains and markets through the promotion of sustainable livelihoods, diversification of product and service offerings and improved access to microfinance. These proposed interventions will enable robust and coordinated relationships between the private sector and small-scale producers, resulting in strengthened market linkages that benefit from, and incentivise the uptake of sustainable livelihood practices. The project will ensure the sustainability of interventions that directly address the climate change adaptation needs of local communities and enable upscaling beyond the target areas by: i) catalysing additional public and private sector investment in adaptation initiatives; and ii) facilitating increased collaboration and coordination between different development initiatives in the Lake Chilwa basin. In the long term, the project will scale up best practices and lessons learned from the target areas across the rest of the country through enhanced knowledge management, as well as policy measures and private sector engagemet that create green jobs, particularly among micro, small and medium enterprises (MSMEs). This will be achieved through engagement with the UNDP Growth Accelerator Platform which will be leveraged for the establishment of a Climate-Resilient Financing Facility (CRFF) under the National Climate Change Fund (NCCF). This will enable upscaling of climate change adaptation interventions across the entire country. In addition to addressing the direct climate adaptation needs of vulnerable communities, these initiatives will contribute to economic recovery of vulnerable communities impacted by the Covid-19 pandemic, particularly those located in the Lake Chilwa basin. The TRANSFORM project will build on and coordinate with existing initiatives aimed at coping with current climate change within the Lake Chilwa basin (as described in detail in Section II.7). Specifically, TRANSFORM will leverage LDCF resources for the implementation of initiatives aimed at catalysing private sector financing to develop climate-resilient value chains, enhanced market linkages, and thereby incentivising business and investment opportunities for climate resilience in the project target areas. The most notable ongoing initiative that TRANSFORM project will align with is the project entitled 'Malawi climate-resilient and sustainable capture fisheries, aquaculture development and watershed management project (SFAD-WM)' . TRANSFORM will build on interventions of the SFAD-WM project by developing an overarching EbA plan for the

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entire Lake Chilwa basin that incorporates and synthesizes existing Watershed Management Plans (WMPs) developed for individual watersheds in each of the three districts as part of SFAD-WM (detailed in Section II.7)[255]. These to identify climate change vulnerability and ecosystem degradation hotspots and outlining EbA interventions for climate-resilient livelihoods (Outcome 2); ii) capacity building for EbA interventions (Outcome 2); iii) increasing market access and value chain enhancement for fishing and agricultural commodities (Outcome 2), as well as enhancing the scalability of interventions under SFAD-WM through the establishment of a private sector funded climate financing facility (Outcome 1); iv) establishment of a knowledge management hub for storing and managing lessons learned and best practices for upscaling beyond the Lake Chilwa basin (Outcome 3).

The above Components form part of the proposed project's Theory of Change, which is shown in Figure 22 below. This diagram is followed by specific details on the project's Components and how the proposed project's Outcomes and Outputs will support the GEF's CCA focal area objectives.

[255] The Watershed Management Plans (WMPs) developed under the SFAD-WM project each focus on a single watershed

*Theory of change diagram*

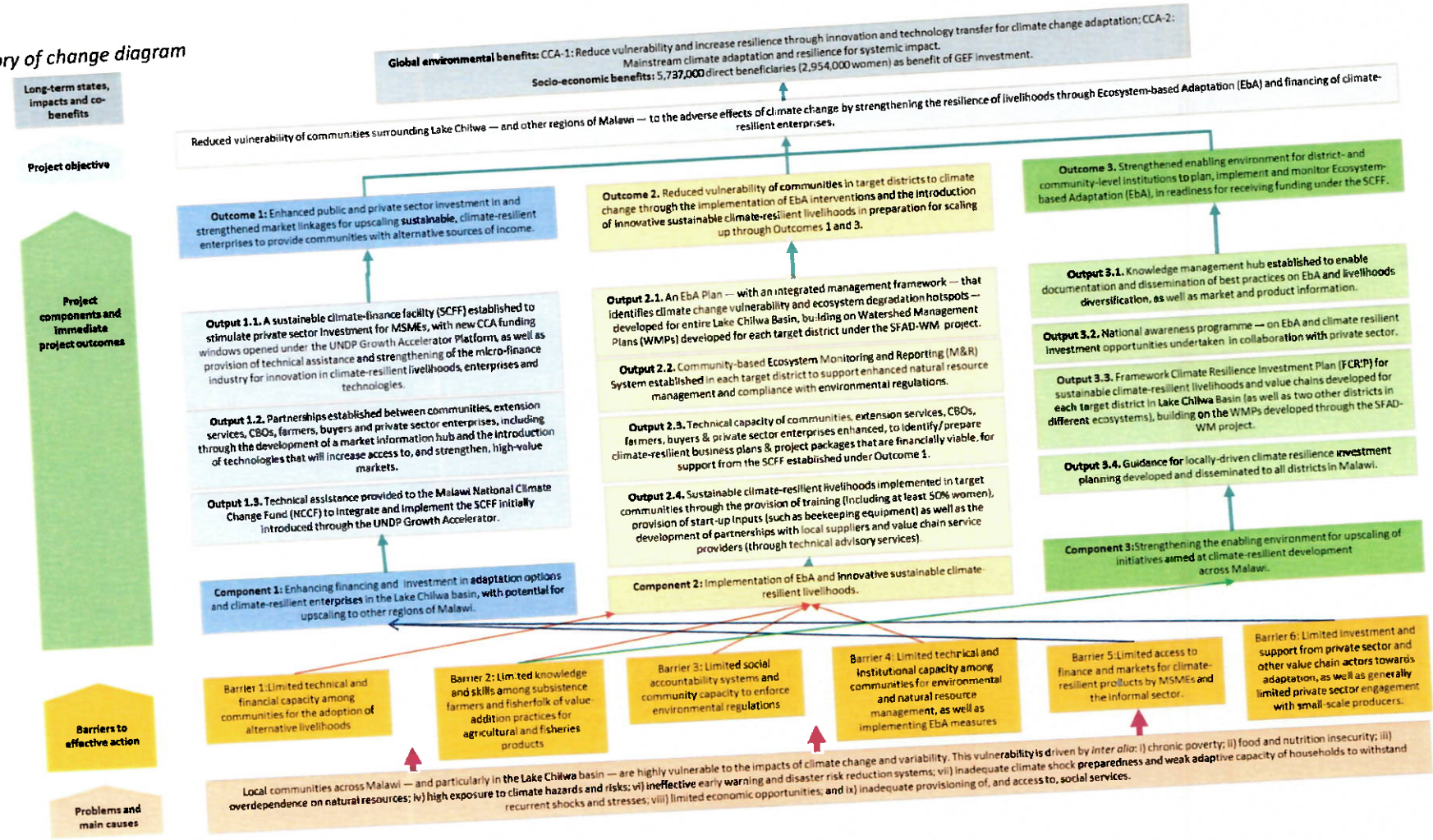



**Figure 22.** Theory of change diagram.

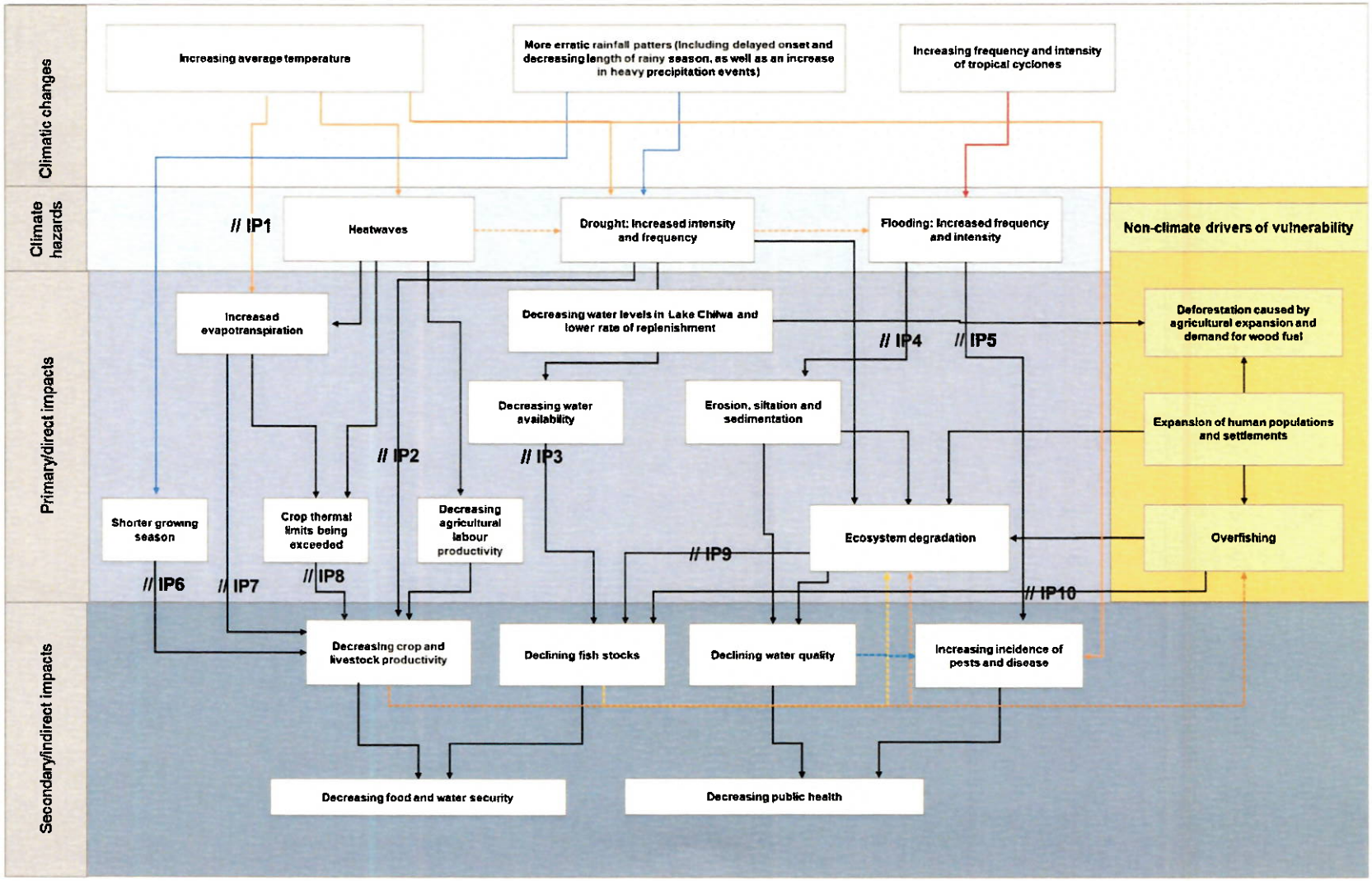



**Figure 23.** Solution tree for the proposed project, indicating the targeted impact pathways (labelled IP1–IP12) that the project interventions will disrupt, indicated with (//).

*Components of the project*

Component 1: Enhancing financing and investment in adaptation options and climate resilient enterprises in the Lake Chilwa basin, with potential for upscaling to other regions of Malawi

Component 1 of the proposed project will unlock financing for climate resilient investments and private sector engagement in the Lake Chilwa basin and beyond. To achieve this, the proposed project under Component 1 will design and operationalise a sustainable climate financing facility (SCFF) under UNDPs Growth Accelerator Programme (GAP). Specifically, a funding window will be established and financial products provided under the GAP for climate-resilient business development. In addition, technical assistance will be provided to the National Climate Change Fund (NCCF) for the absorption of SCFF assets. The enhanced availability of financial resources for adaptation under this Component will be complemented by private sector investment into climate-resilient enterprises will be enhanced, specifically for: i) climate-resilient agricultural value chain development for staple food grains and high value products; ii) sustainable briquette productions to reduce the impacts of illegal charcoal making and provision of alternative income generation opportunities away from wood fuel production; and iii) sustainable ecotourism ventures that are not only climate-proof, but also incentivize the protection and restoration of natural ecosystems. Finally, access to microfinance, insurance and social protection will be enhanced to further catalyse climate-resilient business development in the Lake Chilwa basin. As a multifaceted approach will be adopted, beneficiaries will extend beyond formally registered businesses to include both artisanal producers as well as aspiring young and/or female entrepreneurs. These interventions will be complemented by the establishment of a market information hub which will benefit entrepreneurs and MSMEs through improved access to information. The interventions under Component 1 will be further complemented by a knowledge management hub which will be developed under Component 3 of the proposed project. Component 1 will address: i) Barrier 1: Limited financial capacity among communities for the adoption of alternative sustainable and climate-resilient livelihoods; ii) Barrier 5: Limited access to finance and markets for climate-resilient products by MSMEs and the informal sector; and iii) Barrier 6: Limited investment and support by private sector and other value chain actors towards adaptation, as well as generally limited private sector engagement with small-scale producers

Component 2: Reduced vulnerability of communities in target districts to climate change through Ecosystem-based Adaptation (EbA) and sustainable climate-resilient livelihoods

Component 2 of the proposed project will involve the implementation of Ecosystems-based Adaptation (EbA) interventions and livelihoods diversification — including support for managing and restoring ecosystems and strengthening linkages between vulnerable communities and high value chains. The project will enable communities to drive the implementation of EbA interventions and enhance the quality and availability of the natural resource base which forms the foundation of their adaptive capacity. Component 2 will include the implementation of on-the-ground on EbA interventions, including nature-based solutions such as catchment and wetland restoration. These proposed EbA and restoration activities are closely linked to livelihoods and private sector development activities proposed under Component 1, since the economic sectors identified for livelihoods and private sector development, such as sustainable briquette production, climate resilient agricultural value chains and eco-tourism, are closely inter-linked with EbA/restoration activities. The EbA approach will involve a holistic approach to climate adaptation and resilience by increasing the effectiveness of ecosystem provisioning (soil conservation) and regulating (water) services, which will reduce climate change impacts and enhance the resilience and productivity of agricultural systems. As a result, the resilience of agricultural systems to climate change will be increased and therefore the food and nutrition security of the communities living in the Lake Chilwa basin will be strengthened.

Interventions under Component 2 will include enhancing the technical capacity of local entrepreneurs for the identification and preparation of climate-resilient business plans and project packages, in alignment with the strengthened private sector engagement enabled under Component 1. Finally, EbA plans will be developed for each of the target districts to enable a coordinated response to climate change within districts. Coordination of EbA activities across the three districts will be further strengthened through the inclusion of an integrated management framework that links the three separate EbA plans, thereby ensuring a basin-wide approach to climate change adaptation. The interventions implemented under Component 2 of TRANSFORM will build on interventions of the SFAD-WM through: i) developing EbA plans for the Lake Chilwa basin, building on Watershed Management Plans (WMPs) developed under SFAD-WM to identify climate change vulnerability and ecosystem degradation hotspots and outlining EbA interventions for climate-resilient livelihoods (Outcome 2); ii) capacity building for EbA interventions (Outcome 2); and iii) increasing market access and value chain enhancement for fishing and agricultural commodities (Outcome 2). Activities implemented under Component 2 will contribute to addressing: i) Barrier 3: Limited social accountability systems and community capacity to enforce environmental regulations; and ii) Barrier 4: Limited technical and institutional capacity among communities for environmental and natural resource management, as well as planning and implementing EbA measures

Component 3: Strengthening the enabling environment for upscaling of initiatives aimed at climate-resilient development across Malawi.

Under Component 3, the enabling environment for upscaling of initiatives aimed at climate-resilient development across the Lake Chilwa basin and the rest of Malawi will be strengthened. This strengthened enabling environment will be realised by improving the access of the local communities, private sector entities, as well as policy and decision makers to information regarding: i) best practices on the implementation of EbA and diversified climate-resilient livelihoods; and ii) market information — collected through the information hub developed under Component 1. In addition, the knowledge management hub developed under Component 3 will ensure that the lessons learned, and the knowledge generated from the TRANSFORM project are stored effectively — as well as those generated from other projects in the Lake Chilwa basin. These existing projects are already generating data on climate change from the basin, but access to the available data remains limited. Also under Component 3, a Framework Investment Plans for sustainable, climate-resilient livelihoods and value chains will be developed for each district in Lake Chilwa basin (?). These plans will be developed in line with existing district planning frameworks and the EbA plans (developed under Component 2), thereby linking financing catalysed by the SCFF (Component 1) with restoration and livelihood interventions (Component 2). Combined, these proposed interventions — namely enhanced planning, implementation, monitoring and financing of EbA — will create an enabling environment for the replication of project initiatives in other areas of Malawi. Activities implemented under Component 2 will contribute to addressing: i) Barrier 1: Limited financial capacity among communities for the adoption of alternative sustainable and climate-resilient livelihoods; Barrier 2: Limited knowledge and skills among subsistence farmers and fisherfolk of value-addition practices for agricultural and fisheries products; and ii) Barrier 6: Limited investment and support by private sector and other value chain actors towards adaptation, as well as generally limited private sector engagement with small-scale producers.

**III.2. Assumptions**

The long-term sustainability and success of the proposed project's objectives and Outcomes is dependent on several assumptions being met. Assumptions for the long-term success of the project's overarching objective of transformative change are listed below.

- Baseline projects and initiatives (detailed in Section II.8: Baseline Analysis) that the proposed project will build on and complement will adequately address baseline drivers to ecosystem degradation and climate hazard vulnerability.
- State and non-state actors at all levels will continue to implement the proposed project's exit strategy.
- Human resources trained through the project's capacity development interventions are retained and operational in the partner institutions, and institutional knowledge will be maintained in the long term.

The main assumptions at the project Outcome level are listed below.

**Outcome 1**

- Collaboration with financial institutions on the provision of micro-finance will continue beyond the project's lifespan
- There will be sufficient uptake of micro-finance products by local community members and MSMEs to make these interventions commercially viable for future private sector investment

**Outcome 2**

- Stakeholders at all levels will adopt and implement EbA plans developed by the project.
- Flood and drought defence interventions implemented will be effective against future climate change conditions, which may be worse than predicted.
- Proposed livelihood options and value chains will be adopted and scaled up by communities beyond the targeted communities.

**Outcome 3**

- The knowledge generated under the Knowledge Management Hub will be effectively used by district- and community-level institutions to plan, implement and monitor EbA interventions.
- Proposed livelihood options and value chains will be successfully scaled up by communities beyond the targeted areas as a result of the improved availability of knowledge.
- There will be sufficient interest beyond the Lake Chilwa basin in climate-resilient planning for successful upscaling of TRANSFORM across the country.

**III.3. Contributions to GEF focal areas**

The proposed TRANSFORM project is aligned with two climate change-related LDCF Focal Areas detailed in the '*Updated Results Architecture for Adaptation To Climate Change Under The Least Developed Countries Fund And The Special Climate Change Fund (2018-2022)*'. Details on how the project aligns with these focal areas are provided below.

Focal area CCA-1: Reduce vulnerability and increase resilience through innovation and technology transfer for climate change adaptation

The proposed project will enhance the climate resilience of local communities and enable them to adapt to climate change. This will be achieved through innovative EbA interventions and diversified livelihood options (Component 2), as well as through the implementation of climate-resilient infrastructure. The livelihood activities proposed under the TRANSFORM project have been carefully selected for their climate change adaptation potential (e.g., briquette production that will reduce pressure on forests, which will contribute to improved baseflow in rivers and ultimately the stabilisation of Lake Chilwa's water levels under conditions of recurrent droughts). In turn, livelihoods benefit while reducing deforestation. Crops selected for support under SCFF are drought resistant and will enable farmers to maintain sufficient yields under drought conditions. Simultaneously, the SCFF will connect farmers growing these climate-resilient crops to markets which will increase their incomes and thereby further contribute to reducing pressure on forests and fish stock in the lake.

The introduction of technology for improved agricultural irrigation systems and water-harvesting at the household level will further complement the livelihood interventions introduced under TRANSFORM in addressing the impacts of climate change by building resilience and improving access to water during times of extended droughts. In addition to these livelihood and infrastructure interventions, an enabling environment for the effective implementation of these participatory EbA plans and livelihoods under Component 3 will be created through: i) a Framework Investment Plan — a new and innovative aspect of the proposed project — for sustainable climate-resilient livelihoods and value chains developed under Component 3; and ii) the subsequent design and operationalisation of the sustainable climate finance facility under Component 1. Together, these interventions will increase the adaptive capacity of communities in the Lake Chilwa basin and ensure scalability of ecosystem-compatible livelihoods.

The increased climate resilience discussed above will be complemented by financial literacy training — provided to local communities under Component 1 — and improved access to loans and microfinance for business development. In particular, financial training will enable communities to utilise the financial structures developed under Component 1, access lucrative value chains and thereby improve the climate resilience of their business operations[256]. Improved knowledge of sustainable climate-resilient business operations — in combination with enhanced access to loans, savings and finance — will enable local-level entrepreneurs to develop enterprises that are resilient to the impacts of climate hazards such as droughts and floods, thereby reducing the need to expend limited resources on recovery from these hazards. Farmers and fisherfolk will be able to prepare and respond adequately to extreme climate events, for example by employing climate-resilient agriculture techniques and inputs, thereby enabling food production during dry periods. Access to loans and savings also enable small-scale businesses to expand, which will enhance income generation of local communities and stimulate economic growth across the basin.

Focal area CCA-2: Mainstream climate adaptation and resilience for systemic impact

Cross-sectoral technical capacity for climate change adaptation in Malawi will be developed under Component 2 by including an integrated cross-sectoral management framework within the EbA plans developed under Output 2.1. This framework will enable a coordinated response to natural resource management and climate change adaptation in the Lake Chilwa basin as it will mainstream EbA plans into district planning frameworks. In addition, the proposed linkages between private sector institutions and MSMEs will ensure that climate change adaptation is mainstreamed across the region, specifically as these linkages de-risk investment and increase the climate resilience of MSME operations. Efforts to mainstream climate change adaptation will be further supported by creating an enabling environment for improved climate resilience under Component 2. This environment will be created by providing training to district- and community-level institutions to implement and maintain EbA interventions and climate-resilient livelihoods. As these interventions will be focused on building the capacity of institutions, this approach will contribute to the retention of institutional knowledge on effective adaptive practices within the region

[256] Improved access to credit and savings allows MSMEs to maintain or enhance their livelihood productivity (for example by buying climate-resilient seed), and insurance provides a buffer against climate impacts.

## IV. RESULTS AND PARTNERSHIPS

### IV.1. Expected results[257]

**Component 1. Enhancing financing and investment in adaptation options and climate-resilient enterprises in the Lake Chilwa basin, with potential for upscaling to other regions of Malawi.**

*Outcome 1: Enhanced public and private sector investment in and strengthened market linkages for upscaling sustainable, climate-resilient enterprises to provide communities with alternative sources of income.*

Outcome 1 of TRANSFORM will be characterised by enhanced public and private sector investment in sustainable, climate-resilient enterprises within the target districts through TA, grants, capacity building of private sector enterprises. In addition, the enabling environment will be strengthened for future upscaling of adaptation actions across other parts of Malawi. Adopting a multifaceted approach focussed on the long-term sustainability and replicability of the project's EbA and alternative livelihoods activities will enable the inclusion of artisanal producers and aspiring young entrepreneurs (particularly women) in addition to formally registered businesses. These interventions will be complemented by establishing a knowledge management hub under Component 3, which will enable information sharing between stakeholders to inform the development of similar projects in the Lake Chilwa basin. The Outputs and Activities under Outcome 1 are outlined below, with detailed descriptions provided in Appendix 1.

Output 1.1. A sustainable climate-finance facility (SCFF) established through the UNDP Growth Accelerator Platform to stimulate private sector investment for MSMEs and strengthen the micro-finance industry for innovation in climate-resilient livelihoods, enterprises, and technologies. Under Output 1.1, an innovative financial mechanism — the Sustainable Climate Financing Facility (SCFF) — will be developed to catalyse public and private sector investments in climate-resilient livelihoods and enterprises, thereby incentivising improved ecosystem management and enhancing ecosystem-based adaptation (EbA), addressing barriers 5 and 6. SCFF will essentially be the name given to a single window of call for proposals from private sector entities that will be launched by the ongoing UNDP Malawi's Growth Accelerator (GA) programme for TRANSFORM project. The Growth Accelerator Malawi Programme is a 12-months business acceleration programme for youthful high-impact post-revenue businesses looking to grow and scale. The programme supports entrepreneurs with up to USD 40,000 in co-financing each, Mentorship and Technical Assistance. The funds are unlocked by entrepreneurs by matching the requested amount from the accelerator with 30% of their own funds or from an investment partner. GA programme is implemented by the UNDP Private Sector Engagement programme and would also provide additional resources for Technical Assistance (TA) and capital grants as described in Outputs 1.2 through 1.5 in this section. The proposed structure and implementation is shown in Section *VII. Governance and Management Arrangements*.

The UNDP TRANSFORM project's LDCF resources will be deployed only for provision of TA, training and capacity building for private sector and community engagement as described in this section, with capital grants being provided from UNDP co-finance committed to this project from TRAC resources, and additional TA resources being leveraged from the GA program. TRANSFORM LDCF resources will be used to engage a private sector engagement specialist for first three years of the project, who will be part of TRANSFORM project's PMU and will coordinate activities under Outcome 1 (and Output 2.4, described later) and among all stakeholders of Outcome 1 – TRANSFORM project PMU, UNDP Growth Accelerator (GA 1.0) program and its Service Provider, selected private sector entities/consortia (described under Output 1.2), and the communities.

The following activities will be implemented under Output 1.1.

- Activity 1.1.1. Launch SCFF (single window of call for proposals for TA/co-investment support to private sector enterprises) under the ongoing UNDP Malawi's Growth Accelerator (GA) programme
- Activity 1.1.2. Establish funding windows and financial products for CCA.

*Note on safeguards:*

The Project will execute due diligence of entrepreneurs/projects that request funding and will prioritize the projects that can meet the requirements of UNDP Environmental and Social Standards. One a case-by-case basis, capacity building activities will be organized

[257] A separate annex has been prepared an an Implementation Guide, providing detailed descriptions of activities and sub-activities under each Output.

for community projects that do not have the required capacity but have the potential for high socioeconomic impact. The HACT assessment will further mitigate this issue, which will also be supplemented by ongoing reviews/assessments.

The innovative financial mechanism (Sustainable Climate-Finance Facility - SCFF) to incentivize improved ecosystem management and enhancing ecosystem-based adaptation (EbA) is a new thing in Malawi. For this reason, the environmental and social impact of this program are not well known. During the implementation phase, the Project will undertake a Strategic Environmental and Social Assessment (SESA) for upstream activities in Outcome 1. This SESA will identify social and environmental priorities that will be included in planning and policy processes.

Output 1.2. Partnerships established between communities, extension services, CBOs, farmers, wholesalers and private sector enterprises through the development of a market information hub and introduction of technologies that increase access to and strengthen high-value markets

As a part of Output 1.2, complemented by activities in Output 2.4, TA and capacity building to private sector entities via SCFF will be provided on sustainable briquette production, climate-resilient agricultural and fisheries products (which includes high-value agricultural products, staple grains, fisheries and aquaculture), ecotourism and access to finance. The support for agricultural enterprises will be focused on staple crop production (rice, soya, pigeon peas, sorghum, cassava) and on high-value agricultural products or commercial crop production (fruits, honey, moringa, sunflower, chickpeas, livestock such as goats and pigs) and fisheries (aquaculture/ capture fisheries) in the 3 target districts of this project (Zomba, Machinga, Phalombe).

This output will also focus on provision of capital investments to the private sector via SCFF under the GA platform, funded by UNDP co-finance committed from TRAC resources. A competitive process of single window of call for proposals for selection of private sector entities for partnership (TRANSFORM project window of GA 1.0 for climate resilient livelihood development) will be launched under the existing UNDP Growth Accelerator 1.0 (GA 1.0) for TRANSFORM project, which will aim to receive applications from the private sector requesting for TA, access to markets and funding to develop and implement business models in the 3 target districts with an aim to co-invest in and build profitable business ventures that also have the potential to improve climate resilient livelihoods of rural communities in the 3 target districts of TRANSFORM project. TRANSFORM GEF/LDCF resources will be used to partially pay for UNDP Growth Accelerator (GA 1.0) program and its Service Provider to implement these activities, on a cost-sharing basis between TRANSFORM project budget and UNDP GA1.0 program budget.

Overall, about 12 private sector entities (from among the applicants) will be selected by GA 1.0 program under this TRANSFORM project window in the three target districts. Private sector entities that are eligible to apply for support (TA, co-investment as grants, business development and community mobilization support) under this window will primarily be for-profit entities, with an aim to engage significant number of Micro, Small and Medium sized Enterprieses (MSMEs), Banks, Microfinance Institutions (MFIs), and insurance companies under this output. However, large private corporations are also eligible to apply for technical support to integrate climate resilience in their business operations. In addition, Community Based Organizations (CBOs), Non-Governmental Organizations (NGOs), Agricultural and other types of Cooperatives, SACCOs will also be eligible to apply, albeit as part of a consortium with for-profit MSMEs, larger corporations, Banks, MFIs, insurance companies, since GA program's methodology for private sector engagement has been developed and refined specifically for for-profit private sector entities. Hence, the lead applicant in a consortium – if a consortium approach is taken for making applications under this GA window – will be a for-profit private sector entity. These private sector entities or consortia applying for support under this GA window of call for proposals for TRANSFORM project would already be working – or demonstrate a strong intent to work – in any of the following sectors with a focus on the 3 target districts in Lake Chilwa basin: sustainable briquette production, climate-resilient agricultural and fisheries products (which includes high-value agricultural products, staple grains, capture fisheries and aquaculture), ecotourism and access to financial services and insurance. The UNDP GA program, with its funding resources from UNDP TRAC resources, will offer grants/subsidies to these companies (upto US$ 40,000 per selected private sector entity/consortium, total of ~US$ 500,000). The selected private sector entities/consortia will be expected to co-invest in these projects/businesses with atleast a matching amount of investment from their own capital sources or through a loan from a Bank/SACCO/MFI, which TRANSFORM project can facilitate under this output. The added value that TRANSFORM brings to GAP is uptake of climate resilience by private sector, and cahnneling of finance by banks/SACCOS/MFIs to climate resilient businesses, while GAP provides scope for scaling up this business-driven climate resilience through its main programme to other regions beyond Lake Chilwa. Support to be offered by TRANSFORM project to the selected private sector entities under this Output is summarized in the table below.

| Support Type | Estimated Value or Amount per selected Private Sector Entity/Consortium | Total Amount for 12 selected Private Sector Entities/Consortia | Source of Funding / Support |
|---|---|---|---|
| Specialized business-specific Technical Assistance (TA), training, capacity building, business development support, community mobilization/engagement support, facilitation of access to finance/insurance products | ~US$ 33,000 | ~US$ 400,000 | LDCF budget for TRANSFORM Component 1 budget |
| Optional, additional TA on generic business acceleration support and training **(this is optional – only if requested by private sector entities/consortia)** | ~US$ 30,000 | US$ 360,000 (need-based only) | UNDP Growth Accelerator 1.0 program budget |
| Co-investment (as grants) from TRANSFORM project into existing or new business ventures/ operations of selected private sector entities/consortia that can engage and enhance climate resilient livelihoods of communities in the 3 target districts of Lake Chilwa basin | ~US$ 40,000 | US$ 500,000 | UNDP co-finance (from TRAC resources) to TRANSFORM project |
| Investment from selected private sector entities / consortia as matching investments from their own capital sources | ~US$ 40,000 | US$ 500,000 | Private sector |

Hence, this output 1.2 will leverage about US$ 400,000 of TA/capacity building/business development support from LDCF budget with about US$ 1.36 million (3.4X leverage) of investments from the private sector, UNDP co-finance from TRAC resources and GA 1.0 program budget.

The following activities will be implemented under Output 1.2:

- Activity 1.2.1. TA/capacity building to private sector entities via SCFF on sustainable briquette production, climate-resilient agricultural/ fisheries venture, ecotourism venture and financing climate resilient livelihood activities
- Activity 1.2.2. Provide capital investments to the private sector via SCFF under the GA platform
- Activity 1.2.3. TA to establish partnerships between communities and the private sector
- Activity 1.2.4 Establish a market information hub to enable documentation and dissemination of best practices on livelihood diversification and sustainable climate-resilient enterprises

Output 1.3. Technical assistance provided to the Malawi National Climate Change Fund (NCCF) to integrate and implement the SCFF initially introduced through the UNDP Growth Accelerator.

A National Climate Change Fund (NCCF) has been established, with support from UNDP Malawi, under the Ministry of Environment, Government of Malawi, but it is yet to be operationalized. Standard Operating Procedures (SOP) of NCCF have been established, and a fund manager (an individual) has been identified and deputed by UNDP. The aim of NCCF is to mobilize capital for both climate change mitigation and adaptation investments in Malawi, from both domestic and international sources including GCF for which it plans to apply for accreditation. A domestic carbon levy has been imposed on certain industry sectors and proceeds of this levy is being negotiated as one of the domestic sources of capital for NCCF.

Key thematic areas of investments for NCCF are climate change adaptation, climate change mitigation, training, capacity building, private sector incentives and investments (such as PPP model) and so on. Provisions to provide support to CSOs/civil society working on climate change issues are also being considered. Investment models such as Viability Gap Funding (VGF) to de-risk private sector investments are also being considered. The vision for NCCF is to be semi-autonomous, and hence the fund structure includes Expert Working Group comprising of donors, industry/private sector, CSOs who will be involved in decision making. Learnings from SCFF in Output 1.1 will be applied to NCCF and will be scaled-up to national level in a manner that ensures that private sector engagement and livelihood activities implemented under this project will sustained.

The following activities will be implemented under Output 1.3 and a brief summary of these activities are provided below.

- Activity 1.3.1. Provide technical assistance to NCCF for its capitalization and absorption of SCFF assets.

**Component 2. Implementation of EbA and sustainable climate-resilient livelihoods.**

*Outcome 2: Reduced vulnerability of communities in target districts to climate change through the implementation of EbA interventions and the introduction of innovative sustainable*

Outcome 2 of the proposed project is a reduction in the vulnerability of communities in target districts to climate change because of the implementation of Ecosystems-based Adaptation (EbA) and livelihoods diversification — including support for managing and restoring ecosystems and strengthening linkages between vulnerable communities and lucrative value chains. The project will enable communities in the Lake Chilwa basin to implement EbA interventions and manage the natural resource base on which they depend in a sustainable manner. Outcome 2 will be characterised by a reduction in natural resource exploitation and an increase in the restoration of ecological infrastructure within forests, riparian areas and wetlands. The Outputs and Activities under Outcome 2 are outlined below, with detailed descriptions provided in Appendix 1.

Output 2.1. An EbA Plan — with an integrated management framework that identifies climate change vulnerability and ecosystem degradation hotspots — developed for entire Lake Chilwa basin, building on Watershed Management Plans (WMPs) developed for each target district under the SFAD-WM project.

Under this Output, a participatory cross-sectoral EbA plan — with a focus on building climate resilience in the Lake Chilwa basin at landscape level — will be developed to enable long-term adaptation to climate change across the Lake Chilwa basin. The geographic scope of the plan will be across the entire basin, but specific provisions will be made for the unique needs of each of the three target districts. Specifically, the Plan will build on Watershed Management Plans (WMPs) developed for each target district under the SFAD-WM project. These WMPs are focussed on specific watershed in each district, rather than the basin as a whole. Therefore, the EbA plan under this Output will incorporate the WMPs and will serve as a comprehensive strategic framework to ensure alignment between them. As both the EbA plan and the WMPs are coordinated by the District Councils, their implementation will complementary. The EbA plan will be specifically focussed on women and youth and on promoting gender-responsive Outcomes to ensure long-term sustainability of EbA in the Lake Chilwa basin.

The EbA plan will enable a coordinated approach to climate change adaptation across the Lake Chilwa basin, as it will also include an integrated cross-sectoral management framework to ensure alignment between the individual plans already developed for each target district and existing district planning frameworks, to ensure the effective implementation of EbA across the Lake Chilwa basin. This will ensure that the entire Lake Chilwa basin is managed as a single ecosystem, rather than in the piecemeal, siloed manner that has historically characterised land management in this area. The EbA plan and corresponding interventions implemented under the TRANSFORM project will be complemented by a system for monitoring and report on natural resource management and compliance with relevant environmental regulations (under Output 2.2).

As part of Output 2.1, the development of the EbA plan will be informed by the identification of climate change vulnerability and ecosystem degradation hotspots to be targeted for the implementation of interventions under Component 2 of the project. Potential EbA interventions to be implemented as part of Output 2.1 will include the restoration of riparian areas, wetlands, and catchments will be implemented[258]. To determine priority adaptation actions for each of the identified hotspots, Community-Based Resilience Analysis (CoBRA) will be used to identify in line with national priorities and strategies such as the National Forest Landscape Restoration Strategy (NFLRS). CoBRA will be used for each of the identified hotspots in line with national priorities and strategies such as the National Forest Landscape Restoration Strategy (NFLRS). The primary objectives of CoBRA are to, *inter alia:* i) determine the main characteristics of resilience at community and household levels; ii) assess the community's achievement of actions towards improving their climate resilience; iii) determine which households are more resilient and able to cope with shocks and stresses; and iv) identify priority adaptation actions by assessing the characteristics of climate resilience for a particular community[259]. The CoBRA assessment done under TRANSFORM will follow a standard methodology, as set out in UNDP's CoBRA conceptual framework[260]. The CoBRA assessment will identify climate change hotspots in the target districts, as well as potential ecosystem management interventions that will be implemented as part of Output 2.1 — including the restoration of degraded ecosystems. To ensure the long-term sustainability of these restoration interventions, monitoring and reporting on their progress and success will be undertaken as part of Output 2.2. Given that the sustainability of restoration and enhance ecosystem management is closely linked with governance, the EbA plan will provide a guidance framework for existing institutions such as the District Councils and the Lake Chilwa Basin Trust, And community structures such as BVCs, to plan and manage natural resource use under current and future climate conditions. To achieve this, the TRANSFORM project will provide the initial capital investments required to enable sustainable land management as the project phases out, these institutional structures will continue with their activities, with financial resources provided by the NCCF.

In line with the transformative nature of the proposed project, the EbA plan under this Output will draw on those from the previous GEF project to scale up EbA across the entire basin and deliver community-wide benefits that ultimately have large-scale positive socio-economic and environmental impacts across the entire area. In preparation for the development of the EbA plans described above, district- and community-level institutions — particularly youth and women's groups — will be trained to plan, implement and monitor EbA plans. This will improve the technical capacity of these institutions to enhance community resilience in a gender-sensitive manner. Accordingly, the capacity-building activities will comprise education, information and awareness-raising sessions for priority institutions on the importance of EbA, as well as its relevance to reducing the vulnerability of these institutions. In addition, technical training workshops will be hosted in each district to subsequently enhance the technical capacity of these institutions to plan, monitor and implement EbA — building on the knowledge and understanding augmented by the educational sessions.

This individual and institutional capacity building will ensure the retention of institutional knowledge on EbA within the Lake Chilwa basin, and in turn, reduce the impacts of high staff turnover within institutions such as the Lake Chilwa Basin Trust that may threaten the sustained use of EbA. The retention of institutional knowledge will also be supported by the knowledge-management hub created under Component 3. The capacity-building training will focus on the natural resources within and around the lake and wetlands in the basin, with a specific emphasis on ecosystem services and long-term benefits of, for example, sustainable fishing practices. Training will be provided on the impacts of climate change on natural resources within the lake and surrounding ecosystems, the management and monitoring of these resources, as well as monitoring of climatic and non-climatic impacts to the natural resource base. This training will be supplemented by education on the provisioning of ecosystem services and how to maintain them not only for the benefit of livelihoods but also to reduce the risk of climate hazards on communities.

Following the development of the EbA plan, support will be provided for the implementation of the specific EbA interventions identified, such as the restoration of riparian areas, wetlands, and catchments. This will improve the flow of ecosystem services — including regulation of the hydrological cycle, soil conservation and erosion control — thereby building the climate resilience of communities surrounding the Lake Chilwa basin. Specific EbA-related activities to be implemented in each target district will be identified under Output 2.1 using CoBRA. These EbA interventions will enhance the resilience and productivity of agricultural systems, thereby directly complementing the livelihood interventions implemented under Output 2.4 which will provide opportunities for local communities help to address some of the drivers of ecosystem degradation in the region, such as deforestation caused by unsustainable charcoal production. In particular, improving ecosystem services delivery through EbA interventions will increase the

[258] Ensuring that the project specifically targets women and other marginalised groups within the target villages. Women in particular are vulnerable to the impacts of climate change on fisheries and agriculture.
[259] UNDP. 2014. Community Based Resilience Analysis (CoBRA) Conceptual Framework and Methodology. Available at: https://www.undp.org/sites/g/files/zskgke326/files/migration/nairobi_gc_red/CoBRRA_Conceptual_Framework.pdf
[260] Ibid.

productivity of agricultural areas, and thereby reduce negative impacts on fish stocks. The EbA approach of the TRANSFORM project will restore ecosystem functioning, thereby complementing the shift to more efficient fuel sources introduced under Output 2.4. As noted above, the long-term sustainability of the project's EbA approach will be supported by an M&R system developed under Output 2.2 which will ensure that resources are effectively used and communities comply with the relevant environmental regulations. Activities to be implemented under Output 2.1 are listed below.

- Activity 2.1.1. Develop a gender-responsive EbA plan for the Lake Chilwa basin to enhance coordination between the three target districts and guide the implementation and management of future EbA-related interventions
- Activity 2.1.2. Identify climate change vulnerability hotspots in the target districts for the implementation of EbA and livelihood interventions (including mapping of micro-catchments), building on hotspot mapping undertaken for predecessor projects
- Activity 2.1.3. Train district- and community-level officials from the Lake Chilwa Trust and District Councils on planning, implementing and monitoring the EbA plan, and conduct community-based resilience analysis (CoBRA) to identify priority adaptation actions for each hotspot
- Activity 2.1.4. Develop integrated cross-sectoral management framework to enable a coordinated response to natural resource management and climate change adaptation in the Lake Chilwa basin
- Activity 2.1.5. Implement ecosystem restoration and rehabilitation interventions in identified hotspots, including: i) bamboo planting to stabilize riverbanks and create a buffer zone; ii) restoration of vulnerable and degraded indigenous forest, riparian and wetland ecosystems; iii) development of a communal rangeland management system; iii) construction of truncheons; and iv) development of a fire management system

Output 2.2. Community-based Ecosystem Monitoring and Reporting (M&R) System established in each target district to support enhanced natural resource management and compliance with environmental regulations

Under Output 2.2, an M&R system will be established in support of TRANSFORM's EbA interventions through an integrated approach to the maintenance of ecosystem functioning and thereby provide the ecosystem services upon which vulnerable target communities depend for climate change adaptation. The output is aimed at developing systems that will ultimately ensure the effectiveness of EbA interventions by monitoring and reporting on natural resource management and compliance. In support of TRANSFORM's EbA approach, activities under Output 2.2 will ensure *inter alia*: i) effective and efficient natural resource management under future climate conditions; ii) compliance with relevant regulations aimed at reducing ecosystem degradation and the decreasing delivery of ecosystem services; and iii) eventual self-regulation of communities surrounding Lake Chilwa to maintain and enhance their climate resilience. This will complement the EbA plan to be developed under Output 2.1, providing the means for not only supporting enhanced natural resource management, but also for establishing an evidence base on which EbA plan may be iteratively revised and refined to inform further action. The establishment of the M&R will include a comprehensive valuation of ecosystem services in the project area, informing the baseline upon which M&R will be undertaken, and to determine the contribution of the proposed project's interventions to improving climate resilience in the Lake Chilwa basin over time. The M&R system developed under Output 2.2 will enable compliance with Malawi's regulatory and legal frameworks. Specifically, these will include those regulations focussed on natural resource management as well as those specifically aimed at promoting climate change adaptation. The project will support compliance with laws and regulations related to natural resources management in general, but simultaneously promote compliance and alignment with frameworks developed specifically for climate change adaptation. This will ensure that maladaptation does not occur and that there are synergies between different regulatory frameworks[261].

To complement the development of the M&R system, technical training workshops will be hosted in each district to subsequently enhance the technical capacity of these institutions to plan, monitor and implement EbA — building on the knowledge and understanding augmented by the educational sessions. Training will be provided on the impacts of climate change on natural resources within the lake and surrounding ecosystems, the management and monitoring of these resources, as well as monitoring of climatic and non-climatic impacts to the natural resource base. This training will be supplemented by education on the provisioning of ecosystem services and how to maintain them not only for the benefit of livelihoods but also to reduce the risk of climate hazards on communities. Training will be complemented by the development of user-friendly guidance manuals for use by front-line extension workers. Under Output 2.2, the achievements of previous projects will be augmented by extending M&R responsibilities beyond BVCs to include community institutions around protected areas. Activities to be implemented under Output 2.2 are listed below.

[261] For detail on the legal and institutional context of Malawi, refer to section II. National Stategies and Plans

- Activity 2.2.1. Design and operationalize M&R system (including user-friendly guidance manuals) in line with the EbA plan developed under Activity 2.1.1, and local and district planning frameworks — including Watershed Management Plans (WMPs) developed under the SFAD-WM project
- Activity 2.2.2. Provide training to BVCs, VNRMCs and other village-level organisations on monitoring of land degradation or threats to the target areas' natural resource base (such as the use of illegal fishing nets), as well as on how to measure and report these threats to the relevant authorities
- Activity 2.2.3. Support the deployment of technologies that enable communities to plan, manage and monitor natural resource use more effectively, including GIS-enabled incident-recording devices and unmanned aerial vehicles (UAVs) to provide information to target communities as well as potential entrepreneurs and investors

Output 2.3. Technical capacity of public and private stakeholders enhanced to identify and prepare climate-resilient business plans and financially viable project packages for support from the SCFF

Output 2.3 will strengthen the technical capacity of public and private stakeholders — including communities, extension services, CBOs, farmers, wholesalers and private sector enterprises — to identify and prepare climate-resilient business plans and project packages that qualify for funding support from the SCFF (established under Outcome 1), which will enable local communities to access the financial resources they require to improve the climate-resilience of their operations. This capacity will be strengthened though the development and implementation of a business training programme, which will improve stakeholders' ability to identify, develop and manage climate-resilient businesses, incorporate knowledge on value-addition practices, and assess finances and markets for agricultural products. The business training programme will focus mainly on topics such as: i) financial literacy (a first for most rural areas in Malawi); ii) fund allocation planning; iii) the financial benefits of innovative and energy-efficient technologies; iv) the business application process; v) financial management and investment resources; and vi) micro-finance access and management. Business training will be made available to artisanal farmers, fisherfolk and entrepreneurs, with a focus on empowering women and youth-run enterprises. The enhanced understanding of micro-finance services, access to credit, and business management will encourage the growth of formal enterprises in the Lake Chilwa basin and, in turn, promote the establishment and expansion of financial and credit providers in the area. Increased financial capacity of local communities will enable them to manage their businesses in a more sustainable and efficient manner, thereby reducing incentive to participate in destructive land-use practices, enhancing the capacity of ecosystems to deliver service and, in turn, strengthening their climate resilience. Activities to be implemented under Output 2.3 are listed below.

- Activity 2.3.1. Design and develop a business training programme on the identification, development and management of climate-resilient businesses, tailored specifically to the communities and SMEs in target communities
- Activity 2.3.2. Deliver and conduct training developed in Activity 2.3.1.

Output 2.4. Sustainable climate-resilient livelihoods implemented in target communities through the provision of training (including at least 50% women), provision of start-up inputs (such as beekeeping equipment) as well as the development of partnerships with local suppliers and value chain service providers (through technical advisory services)

Output 2.4 will provide support to vulnerable communities in the 3 target districts of Lakw Chilwa basin — particularly women and youth — to move them from unsustainable, climate-vulnerable livelihoods and income streams to a situation where the adoption of climate-resilient livelihoods is a feasible and readily-available option. Activities under this Output 2.4 will be closely coordinated with activities under Output 1.2, since they are complementary – Output 1.2 will focus on providing TA, business development, community engagement, access to finance and co-investment to the private sector that will aim to build profitable businesses in the 3 target sectors by engaging these vulnerable communities and harnessing their economic productivity potential; whereas Output 2.4 will focus on providing TA, training, capacity building, equipment/energy efficient technologies, access to finance to these vulnerable communities in the three target districts, thereby enabling them to enhance their economic productivity potential, enable them to access financial products and partner with the private sector, thereby supporting them in effectively participating in – and benefiting from – agricultural value chains, sustainable briquette supply chains, eco-tourism value chains, thereby enhancing their income levels and climate-resilience of their livelihoods.

Activities to be implemented under Output 2.4 are listed below.

- Activity 2.4.1. Undertake needs assessment within beneficiary communities (including local leadership, VNRMCs, BVCs and other custodians of natural capital) and at district level to determine the specific adaptation needs of each target community

- Activity 2.4.2. Introduce energy alternatives and energy-efficient technologies (biofuel, efficient stoves, smoking kilns and solar dryers)
- Activity 2.4.3. Enhance social resilience to climate change through climate-resilient agricultural value chain development for staple foodgrains, high-value agricultural products and fisheries
  - Sub-activity 2.4.3.1: Train farmers and fishermen on financial and risk management
  - Sub-activity 2.4.3.2: Facilitate engagement between trained farmers and fisherfolk with providers of financial services and insurance.
- Activity 2.4.4. Support the establishment of sustainable eco-tourism ventures in target areas
- Activity 2.4.5. Provide technical assistance and capacity building in finance and risk management

**Component 3. Strengthening the enabling environment for upscaling of initiatives aimed at climate-resilient development across Malawi.**

*Outcome 3: Strengthened enabling environment for district- and community-level institutions to plan, implement and monitor Ecosystem-based Adaptation (EbA), in readiness for receiving funding under the SCFF*

Under Component 3, the enabling environment required to plan, implement, monitor and finance EbA — in a gender-sensitive manner — will be strengthened. This strengthened enabling environment will be realised by improving the access of the local communities, private sector entities, policy makers and decision makers to information regarding: i) climate-resilient natural resources management — including laws, regulations and incentive systems; ii) best practices on the implementation of diversified livelihoods and EbA; and iii) market information collected through the information hubs developed under Component 1 — including information on legal and financial instruments, taxes and subsidies. In addition, under Component 3, a knowledge management hub will ensure that the lessons learned and the knowledge generated from other projects in the Lake Chilwa basin are stored effectively. This will enable lessons learned and best practices from these projects to be integrated into all future initiatives in the area. Sustainable financing mechanisms will be enabled through the development of Framework Climate Resilient Investment Plans for sustainable, climate-resilient livelihoods and value chains. These financial mechanisms will be developed in line with existing district planning frameworks and the EbA plan (developed under Component 2) and will include provisions for laws, regulations, incentive systems, legal and financial instruments, taxes and subsidies that will facilitate climate resilient investments. Combined, these proposed interventions will create an enabling environment for the implementation of EbA and further development of established value chains, as well as the replication of project initiatives in other areas of Malawi. More information on the specific contributions of the knowledge management hub to planning, implementation, monitoring and finance is discussed under the Output descriptions below.

Output 3.1. Knowledge management hub established to document and disseminate best practices on EbA, livelihoods diversification, and market information

Under this Output, knowledge management and sharing will be enabled through the collection and dissemination of best practices and lessons learned elucidated under the TRANSFORM project, as well as indigenous and traditional knowledge on climate change adaptation techniques used across the Lake Chilwa basin. This will take the form of a knowledge management hub that will serve as a platform for gathering, recording and archiving the successes and areas for improvement regarding project interventions. Communities will be able to share information on enhancing the climate resilience of alternative livelihoods within and between districts, as well as advice on how to improve both the financial viability and environmental sustainability of their business ventures. In addition, an annual event will be hosted by the curating institution of the hub, bringing together local and national stakeholders. These stakeholders will include private sector entities, NGOs, CBOs, government departments, smallholders and MSMEs — as well as universities, and research and higher education institutions to spearhead knowledge generation. Knowledge management activities under this Output will directly complement those implemented under the GEF-funded project entitled Malawi-climate resilient and sustainable capture fisheries, aquaculture development and watershed management project. This will include incorporation of the information system developed under the SFAD-WM project into the TRANSFORM knowledge management hub. Complementarity will be ensured by using existing climate information services, developed under previous projects (including SFAD-WM and LCBCCAP), to inform knowledge management and dissemination specifically for enhanced climate resilience of livelihoods. This will, for example, align with improved fisheries management through knowledge generation about climate risks and vulnerability in the fisheries sector at district level, under the previous GEF fisheries project. To provide a transformative approach, however, the proposed project will ensure the knowledge hub connects all value chain actors, using relevant technologies to establish and strengthen these linkages, as well as enabling communities to access high value markets. Finally, a further novel feature of the proposed project will be the development and integration of an IT-supported PC/smartphone application to drive the use of the hub. The development of the

knowledge management hub will be undertaken in close collaboration with the environmental information education and outreach division of the Environmental Affairs Department (under MoNRCC). Activities to be implemented under Output 3.1 are listed below.

- Activity 3.1.1. Develop practical methodologies for capturing, storing and sharing information on best practices and lessons learned on EbA within the Lake Chilwa basin.
- Activity 3.1.2. Establish a digital knowledge management hub to enable documentation and dissemination of best practices on EbA and livelihoods diversification, as well as market and product information.
- Activity 3.1.3. Collect data on best practices and lessons learned on EbA within the Lake Chilwa basin, including information from Output 2 (EbA and livelihoods), desktop studies and consultations with local stakeholders and similar project developers.
- Activity 3.1.4. Hold workshops in the three target districts to engage with local community members, leaders, private sector entities and other relevant stakeholder on the use of the knowledge management hub and to showcase best practices

Output 3.2. National awareness programme on EbA and climate resilient investment opportunities undertaken in collaboration with private sector

The project will develop an awareness-raising campaign, detailing the elements of media outputs to be used (such as television or radio), the frequency of use and the target audience. Under this Output, sustained awareness will be created among all stakeholders of the benefits of healthy ecosystems achieved through sustainable management practices. Information dissemination platforms and mechanisms — such as policy briefs, infographics and brochures — will also be developed and used to stimulate behavioural change within and beyond the project target areas. Numerous communication channels will be used to target audiences in both the project area and across the country, including exchange visits, capacity building and training, media engagement, printed publications and online outlets. In addition, the faith community will be engaged to ensure buy-in from local communities and effective promotion of the project's objectives. Knowledge products from the project will be disseminated — in accordance with the project's visibility plan — to beneficiaries, development partners and the general public. The project will also use additional platforms to disseminate the project experiences and results, including symposiums, policy dialogues and related forums and networks. Success stories of gender equality and women and youth empowerment will also be profiled. This will, in part, be achieved by raising awareness on the potential economic and social development gains from increasing access of climate-resilient enterprises and alternative livelihoods to high-value markets. Information from the hubs will be fed into a broader knowledge-management hub, which will be developed under Component 3 of the project.

Activities to be implemented under Output 3.2 are listed below.

- Activity 3.2.1. Develop a joint national outreach and awareness programme on EbA and climate resilient investment opportunities (with the SFAD-WM project).
- Activity 3.2.2. Hold district- and community-level workshops — involving key stakeholders such as faith community leaders and other potential champions of the project — in each of the three target districts to raise awareness and disseminate lessons learned from previous initiatives
- Activity 3.2.3. Disseminate printed and online media to raise awareness on EbA as well as targeted messages on how communities use their resources to enable behaviour change
- Activity 3.2.4. Scale up Radio Listener Clubs across Lake Chilwa basin by establishing Learner Groups to act as community education and resource hubs on particular topics related to EbA and sustainable natural resource use.
- Activity 3.2.5. Organise regional study tours and annual 'Lake protection and watershed management' symposia in areas not previously targeted for project interventions.

Output 3.3. Framework Climate Resilience Investment Plan (FCRIP) for sustainable climate-resilient livelihoods and value chains developed for each target district in Lake Chilwa basin (as well as two other districts in different ecosystems), building on the WMPs developed through the SFAD-WM project

Under Output 3.3, Framework Climate Resilience Investment Plan (FCRIP) for sustainable, climate-resilient livelihoods and value chains will be developed for each target district, in line with existing district planning frameworks and the EbA plans also to be developed under TRANSFORM. The development of the FCRIP will be undertaken in a gender-sensitive manner and will include assessments on different investment opportunities, as well as the strengths and weaknesses of different markets. The FCRIP will catalyse a shift towards a scenario where improved linkages between these entities are established. Precedents have already been established in Malawi for the use of investment plans and funds towards climate change adaptation. For example, at a national level the National Climate Change Investment Plan was operationalised in 2014 to ensure that there is increased and coordinated investment in climate

change[262]. In addition, the Strategic Programme for Climate Resilience (2017) includes potential entry points for investment and a framework for attracting financial resources from the private sector, international finance institutions (such as the GEF), national resources, and other financing windows[263]. These strategies and plans will inform the design of the FCRIP under Output 2.2, ensuring they build on previous gains towards attracting external investment for increased climate resilience of livelihoods in Malawi. Novel features of the FCRIP that will transform this Output from a business-as-usual approach will be: i) financial literacy training (which has not been formally conducted in Malawi before); ii) planning for allocation of funds across a wide range of subsectors and business activities; iii) dedication of funds specifically for the adoption of innovative and energy-efficient technologies; iv) accelerated application processes for ventures with demonstrable skills and knowledge of adaptation options; and v) dedicated allocation of a considerable proportion of funds for women and youth-run enterprises. Activities to be implemented under Output 3.3 are listed below

- Activity 3.3.1. Undertake assessment of potential markets and investment opportunities in EbA and sustainable livelihoods in the Lake Chilwa basin.
- Activity 3.3.2. Develop a Framework Climate Resilience Investment Plan (FCRIP) using financial resources from SCFF and strategy for operationalizing the Plan.
- Activity 3.3.3. Support local communities benefitting from diversified livelihoods to access funding from the SCFF through training and awareness raising. local communities benefitting from diversified livelihoods to the SCFF.

Output 3.4. Guidance for locally-driven climate resilience investment planning developed and disseminated to all districts in Malawi

In line with best practices and lessons learned from both the SFAD-WM and TRANSFORM projects, and experiences from the development and implementation of Framework Climate Resilient Investment Plans (FCRIPs) under Output 3.3, guidance on locally-driven climate-resilient investment will be developed and disseminated across Malawi. This guidance will be based on information and knowledge collected within the knowledge management hub developed under Output 3.1, and will be presented in accessible format, including guidance manuals highlighting information on enhancing the climate resilience of agricultural and fisheries-based livelihoods, as well as advice on how to improve both the financial viability and environmental sustainability of business ventures, and international best practices on climate-resilient and sustainable investment opportunities The guidance manuals will include information on best practices and lessons learned collected, processed and packaged through the KMH, in line with the technical methodologies developed under Activity 3.1.1. Success stories of gender equality and women and youth empowerment will also be included in the guidance manuals, to ensure that the benefits of gender-responsive climate resilience investment planning are considered in sustainable future initiatives beyond the Lake Chilwa basin. Activities to be implemented under Output 3.4 are listed below

- Activity 3.4.1. Collate relevant information related to climate resilience investment planning.
- Activity 3.4.2. Draft Guidance Manual for locally driven climate-resilient investment planning and host a validation workshop.
- Activity 3.4.3. Disseminate Guidance Manuals to relevant district staff and community leaders (across all districts in the country?) through print and online systems.

**IV.2. Partnerships**

*Private sector engagement*

Across Malawi, there is limited investment in initiatives that support adaptation-infrastructure and corresponding technologies, constraining the adaptive capacity of vulnerable communities. Several barriers underpin this investment shortfall, including, *inter alia*, limited: i) institutional and technical capacity; and ii) capital investment. Given the constraints on government resources, it is also essential to engage the private sector to unlock additional investment opportunities for adaptation. However, to date, private sector engagement in adaptation planning has been limited. To overcome this, the proposed project will foster strengthened private sector partnerships to support the development of climate-resilient enterprises at household- and community-levels. Previous projects on climate change adaptation and resilience building in Malawi have emphasised the use of private sector partnerships to ensure effective and efficient implementation of market-based interventions. However, there has been limited progress in engaging the private sector to participate in relevant adaptation activities. This is because private sector investments in interventions related to sustainable livelihoods are primarily concentrated in the northern parts of Malawi (more detail on limited private sector investment and availability of financing for adaptation is provided in Section II.6). This project will bridge that gap by supporting decision-making on planning and investment in EbA and climate-resilient enterprises, risk management, and further encourage the expansion and strengthening of value chains across multiple priority sectors. In the project target area, private sector activity is dominated by small-

[262] UNDP. 2014. Malawi Government launches National Climate Change Investment Plan.
[263] Republic of Malawi. 2017. Strategic Programme for Climate Resilience: Malawi.

and medium-sized enterprises (MSMEs), with larger private sector actors — such as seed companies and retailers — linked to local communities through complex value chains. These value chains will be harnessed and strengthened by project interventions to ensure investments lead to enhanced adaptive capacity, scaling-up and knowledge-sharing.

In addition to enhancing market linkages, the project will raise awareness of the economic and social benefits of increasing the resilience of communities to catalyse investment from the private sector in climate adaptation. This will be achieved by ensuring that relevant stakeholders, including the private sector, are aware of the potential climate change risks and impacts on their operations, as well as the range of available interventions to manage climate-related uncertainties. This will include promoting the uptake of household post-harvest storage facilities, value addition technologies, innovative irrigation systems and small-scale agro-processing facilities such as solar dryers under Output 1.2 (detail provided in Section 2 of Annex 24: Technical detail and implementation guidance). The project will facilitate collaboration between potential investors and community enterprises to develop technologies and enhance investment in alternative livelihoods — using evidence from value chain analysis and best practices in the region. Additional private sector engagement will be ensured through the development of a Sustainable Climate Finance Facility (SCFF) under Component 1. This facility will be used to attract funds from private investors to facilitate investment in innovative climate-resilient livelihoods, enterprises and value chains. Notable Outcomes of the SCFF facility that will induce a transformative shift towards a gender-sensitive, sustainable and climate-resilient development pathway in the Lake Chilwa basin, will include: i) enhancing the climate and financial literacy of artisanal farmers and fisherfolk in the target districts — with a specific focus on women and youth; and ii) enhancing access to micro-finance through, for example, village banks/savings associations (Activity 2.3.2.). As a result, already-established MSMEs will be able to de-risk their activities, diversify their product and service offerings, access new and high value markets and attract external investment. Concurrent provision of technical assistance to upskill entrepreneurs and businesses will also ensure additionality and enhance the resilience of relevant enterprises. Concessional capital and/or grant funding will be made available for MSMEs with enhanced technical capacity and financial literacy to improve the resilience of priority sectors to climate change, including *inter alia* training on sustainable and efficient business operations.

The above activities with be complemented by the integration of lessons learned and recommendations from value chain analyses conducted under the Adapt Plan project which will be used to identify priority areas for further private sector engagement and support. Where necessary, additional value chain analyses will be undertaken under the proposed GEF project to enhance the lessons learned under Adapt Plan. Finally, considering the complexity in engaging the private sector alongside the informal nature of many MSMEs in Malawi, the project will partner with UNDP's Private Sector Development Unit, and other private sector linkage platforms to assist with establishing and maintaining partnerships across and within value chains. Through the private sector engagement strategy, the TRANSFORM project will support investments in adaptation technologies with multiple benefits that extend across communities. By enabling the use of innovative and improved technologies such as drip irrigation systems, as well as increased access to markets and lucrative value chains, communities surrounding the Lake Chilwa will be able to transform their livelihoods from a state of limited adaptive capacity to one that is sustainable and climate resilient. The effectiveness of private sector engagements will be enhanced through the use of the CoBRA adaptation planning tool which will identify appropriate adaptation solutions in the relevant priority sectors that are affected by climate change. For example, in Malawi, the agriculture, water, forestry, energy, and infrastructure sectors have been deemed as highly vulnerable to climate change as well as a priority for adaptation. TRANSFORM will engage with local private sector in the supply and maintenance of adaptation technologies such as for irrigation, cookstoves and other technologies.

| **Co-financing source** | **Co-financing type** | **Co-financing amount** | **Included in project results** | **If yes, list the relevant outputs** |
|---|---|---|---|---|
| Ministry of Natural Resources and Climate Change | In-kind | USD 4,550,000 | No | N/A |
| Zomba District Council | In-kind | USD 500,000 | No | N/A |
| Phalombe District Council | In-kind | USD 300,000 | No | N/A |
| Machinga District Council | In-kind | USD 650,000 | No | N/A |
| Ministry of Finance | In-kind | USD 4,000,000 | No | N/A |
| Ministry of Finance | Parallel | USD 9,451,000 | No | N/A |
| UNDP | Grant | USD 1,7500,000 | Yes | Output 1, Output 2, Output 3 and Output 4 |

| | | | | |
|---|---|---|---|---|
| UNDP | In-kind | USD 250,000 | No | N/A |
| Total | | 21,451,000 | | |

**IV.3. Risks**

| Identified risk | Type | Description | Risk rating, including impact and probability (I and P, rated 1–5)[264] | Proposed mitigation measure(s) |
|---|---|---|---|---|
| Climate shocks and hazards | Environmental | Extreme weather events (such as droughts, floods and hailstorms) at project sites during implementation may damage or destroy EbA activities implemented through the project. | Moderate.<br>P: 3<br>I: 4 | Beneficiaries will be sensitised and capacitated to complement relevant activities with irrigated agriculture.<br><br>The project management team will establish mechanisms to ensure that infrastructure meets the relevant standards to withstand extreme weather events.<br><br>The project will use climate-related information and early warning systems to ensure farming activities are conducted during appropriate periods. |
| Limited alignment and harmony among district councils | Political | The buy-in of district councils will ensure adequate technical support and effective monitoring of interventions. However, the absence of sufficient buy-in will impact the implementation of the project.<br><br>Limited harmony of existing coordination mechanisms results in the duplication of initiatives among relevant stakeholders. This also contributes to undermining opportunities for complementarity. | Moderate.<br>P: 2<br>I: 4 | Consultative meetings to be held to raise awareness, align expectations and encourage participation.<br><br>Strengthen involvement and capacity of district structures in the early stages of project design to ensure alignment among stakeholders.<br><br>The project will use existing district and national coordinating structures and work with responsible parties to address any coordination gaps.<br><br>Ensure ownership of national strategies by working within the framework of decentralised government. |

[264] The risk rating levels include Low, Moderate, Substantial or High (L/M/S/H) and are identified from a Risk Matrix that uses risk impact and probability, rated from 1 (Negligible) to 5 (Extreme).

| Identified risk | Type | Description | Risk rating, including impact and probability (I and P, rated 1–5)[264] | Proposed mitigation measure(s) |
|---|---|---|---|---|
| Staff turnover within the project and at district council | Organisational and technical | Staff may leave the project team and district council during the project lifespan. | Low.<br>P: 1<br>I: 2 | The project management teams will ensure that staff turnover is conducted in an efficient manner with the appropriate stakeholders. In addition, the project team will ensure project records and information management systems are well-organised despite staff turnover. |
| Limited government staff capacity to facilitate project activities. | Organisational and operational | High vacancy rate of extension service positions in councils affects project implementation. | Moderate.<br>P: 3<br>I: 4 | Liaise with relevant ministries to identify ways of filling gaps in technical expertise. |
| Delays in disbursement of funds | Operational | Development partners require appropriate finance mechanisms, and this may result in delays in the disbursement of funds. | Moderate.<br>P:3<br>I:4 | The project management team will ensure that all necessary fiducial processes are established within appropriate timelines, with relevant staff oriented on UNDP finance and administration systems. In addition, existing finance personnel will provide support to the project finance team. |
| Reluctance to mainstream gender equity | Contextual and cultural | Traditional and cultural stereotypes which limit the participation of women in productive activities and positions of authority may be perpetuated during project design and implementation. | High.<br>P: 4<br>I: 4 | Ensure application of Sendai Guidelines on social inclusion.<br>Conduct relevant gender assessments and include considerations of gender dynamics during project design and implementation.<br>Design sub-activities to ensure proportionate participation of women and youth.<br>Ensure proportionate representation of women and youth in relevant committees. |
| Rejection of proposed interventions by communities | Contextual and cultural | Limited consultation and involvement of target communities during the design of the proposed project may result in communities rejecting the proposed interventions. | Moderate.<br>P: 1<br>I: 4 | The project management team will ensure early involvement and extensive consultation of target communities during the development and design of proposed project interventions. |
| Maladaptation of proposed project interventions | Contextual | Proposed interventions may be maladapted if they are not context-specific to each target district. | Moderate.<br>P: 2<br>I: 4 | Ensure in-depth consultative processes with district stakeholders |

| Identified risk | Type | Description | Risk rating, including impact and probability (I and P, rated 1–5)[264] | Proposed mitigation measure(s) |
|---|---|---|---|---|
| Implementation disruptions caused by COVID-19 | Operational and contextual | Measures put in place by Government may delay implementation of planned project activities and may limit community participation. Also, COVID-19 disruptions on value chains may affect market access by local communities | Moderate.<br>P: 2<br>I: 4 | Build synergies between project activities with COVID-19 recovery. Support project partners (government, local authorities) with diversified communications approaches that can be used under COVID-19 disruptions. Ensure realistic timeframes and budgets are set to take into account COVID-related challenges. Design the project to support broader resilience building. |
| COVID-19 response measures that are counter-resilience building | Technical | Measures to respond and recover from COVID-19, supported and financed by other actors such as donors, Government, private sector, may promote approaches that are maladaptive, or reinforce reliance on technologies that increase GHG emissions | Moderate.<br>P: 2<br>I: 3 | Design projects to contribute to building back better and greener, and to build resilience and generate greener jobs and incomes. |
| Risk related to financial mechanism | Operational | The innovative financial mechanism (Sustainable Climate-Finance Facility - SCFF) to incentivize improved ecosystem management and enhancing ecosystem-based adaptation (EbA) is a new thing in Malawi. For this reason, the environmental and social impact of this program are not well known. | Moderate<br>P: 4<br>I: 2 | During the implementation phase, the Project will undertake a Strategic Environmental and Social Assessment (SESA) for upstream activities in Outcome 1. This SESA will Identify social and environmental priorities that will be included in planning and policy processes. |

| Identified risk | Type | Description | Risk rating, including impact and probability (I and P, rated 1–5)[264] | Proposed mitigation measure(s) |
|---|---|---|---|---|
| Impact on Key Biodiversity Areas and potential Critical Habitats. | Safeguards | Some of the project activities will be carried out within a Key Biodiversity Area (KBA), the Lake Chilwa basin. | Substantial<br>P: 3<br>I: 4 | Appropriately scoped Environmental & Social Impact Assessments (ESIAs) will be undertaken, and Environmental & Social Impact Management Plans (ESMPs) prepared during the first year of project implementation to further refine risk identification, mitigation and management strategies, as well as to establish a system for monitoring risks.<br>A Biodiversity Action Plan will be included within the ESMP (when relevant) for those actions within the KBA. |
| Concerns or grievances raised by PAP not being properly addressed. | Safeguards | Project-affected people (PAP), might not be able to effectively claim their rights, raise their concerns or file grievances, due to limiting factors and barriers. Such barriers include, but are not limited to, awareness, logistics, language, culture, literacy, and technology. | Moderate<br>P: 3<br>I: 3 | The Project will develop a project-level Grievance Redress Mechanism (GRM) that is proportional, culturally appropriate, accessible, and transparent, and that ensures appropriate protection for claimants, and the Project also will inform the stakeholders about the existence of the mechanism and how to use it. The GRM will help to identify problems and close gaps in a timely and cost-effective manner, avoiding escalation into more entrenched or complex disputes. |
| Violence and human right violations by enforcement personnel (government and community) supported by the project. | Safeguards | Government law enforcement officers could perpetrate abuse, violence and human rights violations against communities. These violations could also be perpetrated by community members enforcing bylaws. | Moderate<br>P: 2<br>I: 4 | The Project will further assess through the ESIA the risks and liability associated with providing support to Government law enforcement and implement measures to mitigate foreseeable negative consequences.<br>The project will follow the UN Human Rights Due Diligence Policy.<br>https://unsdg.un.org/download/397/679 |

**IV.4. Stakeholder engagement and South-South cooperation**

To accelerate and enhance the resilience of local communities in the Lake Chilwa basin, a cross-sectoral, community-based approach is required. Throughout the project design, the proposed project has upheld a participatory approach and conducted stakeholder consultations for all activities, in addition to those that necessarily require the engagement and participation of community members, such as capacity-building, awareness-raising, and resilient livelihood development. Extensive consultations were held in early 2022 during an in-country mission by the project development team to Malawi, as well as in the subsequent months following the mission. During the mission, consultations were held with stakeholders at all levels, including: i) national; ii) district; iii) and community-level. In addition, several high-level workshops were held during the PPG phase, including an extensive government engagement workshop and validation workshop, both of which were aimed at gathering additional information for project design, validating the existing project structure, identifying any additional barriers and preparing government MDAs for the project. A list of the stakeholders consulted during project design is shown in below, with an additional table provided lower down showing relevant stakeholders and their proposed role in the implementation of the project.

The project's consultative process involved series of discussions with representatives from the GoM, as well as entities involved in the provision of micro-finance and other financing to local communities across the country. Community-level consultations undertaken during project development (particularly during the PPG phase and the in-country mission held in May 2022) ensured the representative involvement and engagement of communities and their ownership of the proposed interventions. The primary objectives of the consultations held during the PPG phase were to: i) provide information on the proposed project to relevant stakeholders, particularly those living in target communities; ii) seek feedback on primary issues and concerns at all levels; iii) provide the opportunity for alternatives or objections to be raised; iv) source accurate information and refine project interventions developed during PIF stage; v) gather relevant information on environmental and social safeguards, as well as gender, to ensure the project is effective in its implementation and results. The information gathered during the consultations have been integrated into the project design, and provision made for the involvement of the stakeholders in the project implementation, as described in Table below.

Climate change adaptation and resilience interventions in Malawi require coordinated and cross-sectoral approaches, involving a range of stakeholders from the public, private and non-governmental sectors, particularly women and youth. Under the proposed TRANSFORM project, new technologies and practices will be generated through a system that is supported by public and private sector stakeholders. This approach to adaptation will be self-sustaining and responsive to continuous changes in climate conditions. Women and young people form the foundation of this approach given their vulnerability to climate impacts and the role they play in subsistence agricultural and fisheries. Although young people constitute more than 70% of the total population of Malawi, they have limited access and control over land and other natural resources. They are often marginalised in programmes designed to enable climate-resilient livelihoods as they are considered dependants. However, there is growing engagement of the youth in enterprise development and innovation identification in Malawi that the TRANSFORM project will leverage. Young people offer extensive human resource potential, which will contribute to increasing Malawi's productive capacity and potential towards sustainable economic growth and development. The equitable participation of women, men and youth will be ensured during both project development and implementation to maximise ecosystem adaptation benefits, promote gender equity and equality and promote long-term sustainability of the proposed interventions. The primary project stakeholders and descriptions of their respective roles and responsibilities are summarised in the table below. During the implementation of the project, representatives of relevant ongoing initiatives and projects will be actively involved in natural resource management to enhance their effective and informed collaboration towards climate resilience.

**Table 5.** The project stakeholders consulted during project design and their roles in the project.

| Stakeholder(s) | Role in the project |
|---|---|
| Department of Environmental Affairs<br><br>Ministry of Natural Resources and Climate Change (MoNRCC) | The Department of Environmental Affairs- under the Ministry of Natural Resources and Climate Change (MoNRCC)— will be the Implementing Partner for the project. Consequently, the Ministry will be accountable for project results, as well as for coordination, monitoring and evaluation of project interventions. The Environmental Affairs Department will coordinate and mobilise District Environmental Officers, who will take the operational lead in the target districts. Similarly, the Department of Forestry will support implementation of forestry-related activities. |
| Department of Disaster Management Affairs (DoDMA) | The project will collaborate with the Department of Disaster Management Affairs (DoDMA) on risk-reduction initiatives. In addition, the project will also collaborate with DoDMA's work on identifying areas within the target districts that are particularly vulnerable to the impacts of climate change. This collaborative approach will provide an opportunity for complementarity of efforts, as well as the mainstreaming of disaster risk reduction in district planning and capacity development activities. |
| Department of Economic Planning and Development and Public Service Reforms | The Ministry of Finance — through the Department of Economic Planning and Development — will update existing environmental budgeting guidelines to include climate change adaptation financing. This will ensure the allocation of suitable funds for adaptation efforts in Malawi. |
| Ministry of Agriculture, Water Development and Irrigation | Under the Ministry of Agriculture, Water Development and Irrigation, the Departments of Water Resources and Irrigation and Fisheries will act as the partners responsible for supporting implementation of the related interventions. In addition, the Department of Fisheries will also coordinate complementarity between TRANSFORM and the ongoing SFAD-WM project. |
| Ministry of Local Government and Rural Development | The Ministry of Local Government and Rural Development is the focal point for collaborating with District Councils. This collaborative role will include oversight and coordination of district-level training and capacity-building activities to ensure complementarity with other ongoing climate change-related training at local level. Within the Ministry, the Director of Planning and Development will, *inter alia*, supervise gender-responsive project implementation at the district level. |
| Zomba District Council, Phalombe District Council and | The District Councils (Zomba, Phalombe and Machinga) will be the responsible partners for the implementation of all project Outcomes. The District Development Plans (DDP) for the target districts (excluding that of Phalombe) were revised in the preceding projects. The TRANSFORM project will upscale best practices to the |

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| Machinga District Council | new target areas and provide support in implementing the DDP. The District Councils will also implement the priority adaptation activities, as well as contribute to project level M&E. At the district level, officials from the departments of environment, forestry, water, irrigation, social welfare and community development will be engaged in the implementation of adaptation initiatives. |
| United Nations Agencies | In line with the United Nations' (UN) commitment to "Deliver as One", the project will collaborate and engage with existing UN Agencies in the target districts — including World Food Programme (WFP) and Food and Agricultural Organisation (FAO) for complementarity and efficient resource use. Where possible, the project will support joint planning, implementation and monitoring. |
| NGOs/CBOs | The project will work with active NGOs and CBOs in Malawi, both at a national and district level. These will include: i) Leadership for Environment and Development (LEAD); ii) Lake Chilwa Trust; iii) Action Aid; iv) United Purpose; v) Care International; vi) CADECOM; vii) Red Cross; viii) NASFAM; ix) World Vision; x) Total Land Care; xi) Emmanuel International; xii) Action Aid International; xiii) Save the Children; and xiv) US Aid. Local women's CBOs will be identified to ensure gender equality remains a focus during capacity building in climate change adaptation and resilience interventions. |
| Project beneficiaries at a community level | While all residents in the three districts should benefit from the project as a result of ecosystem-based adaptation (EbA) and management interventions, direct beneficiaries of adaptation interventions and resilience building will be ~10,000 households (3,000 households in Machinga, 4,000 households in Zomba and 3,000 households in Phalombe). The project will be implemented in the following Traditional Authorities (TAs): i) Zomba TAs: Mkumbira, Malemia and Kuntumanji; ii) Machinga TAs: TA Mizinga, Chamba and Nchinguza; and iii) Phalombe TAs: Chiwalo, Jenala and Kaduya. Within the three districts, direct project beneficiaries will be prioritised and selected based on vulnerability, adaptation capacity and extent of dependence on natural resources at the household level. |
| The Lake Chilwa Basin Trust | The Lake Chilwa basin Trust is comprised of relevant stakeholders in the basin that support the coordination and planning across sectors and groups in the basin. Besides the local governance structures, the project will continuously consult on proposed interventions and initiatives with the trust and utilise the platform for cross-district coordination. |
| Forestry Research Institute of Malawi (FRIM) | FRIM conducts forestry-related research to generate novel technologies and provide information for sustainable management, conservation and use of forests/trees and other natural resources. Their stakeholder-oriented approach is aimed at contributing to improving the welfare of the Malawian population. FRIM's expertise will be leveraged to assist in the design and implementation of interventions including afforestation, agroforestry and non-timber forestry products (NTFPs). |
| World Fish Centre | The World Fish Centre is an international, non-profit research organisation with a mission to promote sustainable, productive fisheries and aquaculture to improve food and nutrition security, increase income and improve livelihoods, promote economic growth and protect the environment and natural resources. Their knowledge will be complementary to successful implementation of project activities focused on enhancing the resilience of fishing-related livelihoods. |
| Department for International Development (DFID) | In the last five years, aid from the UK (through the DFID) has played a considerable role in improving health Outcomes in Malawi, contributing to halving child mortality rates and reducing the average number of children per family from six to four. UK aid helps prevent the escalation of humanitarian crises, including hunger and disease brought about by flooding and drought. The proposed LDCF project will leverage the DFID's on-the-ground networks to connect with target beneficiaries to achieve the project's objective of increased climate resilience of local communities. |
| International Fund For Agricultural Development (IFAD) | IFAD is an international financial institution and specialised UN agency based in Italy, operating as the UN's food and agriculture hub. They invest in rural communities, empowering them to increase their food security, improve the nutrition of their families and increase their incomes. IFAD therefore helps rural communities build resilience, expand their businesses and gain autonomy over their own development — providing a knowledge and experience platform to draw from when implementing agricultural-related activities. |
| Malawi Drought Recovery and Resilience Project (MDRRP) | Approved for funding from the World Bank Group from 2016–2021, the objective of the MDRRP is to support the Government of Malawi to meet the immediate food security and livelihood strategy requirements of the communities affected by drought, as well as promote their recovery and resilience. Through a proposed Contingent Emergency Response Component, the project may also provide immediate recovery support to the GoM in the event of an emergency. |
| Agriculture input suppliers | The project will collaborate with several organisations supplying agriculture inputs within Malawi and in the Lake Chilwa basin. These will include *inter alia* Agri-Input Suppliers Association of Malawi (AISAM), Agro-Input Supplies Limited (AISL), National Smallholder Farmers Association (NASFAM), International Centre for Soil Fertility and Agricultural Development (IFDC) and Enterprise Development and Training Agency (EDTA). |
| Micro-finance institutions | By collaborating with micro-finance institutions, the project will enable communities surrounding the Lake Chilwa basin to participate in economic activities and improve their livelihoods. The Malawi Microfinance Network (MAMN) comprises several micro-finance institutions in Malawi, including Foundation for International |

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| | Community Assistance (FINCA) Limited, Malawi Rural Development Fund, MicroLoan Foundation, CARE Malawi, A Self-Help Assistance Program (ASAP) and Malawi Rural Finance Company (MRFC) Limited. |

**IV.5. Gender equality and women's empowerment**

The impacts of climate change are known to disproportionately affect women and girls, compromising their adaptive capacity and livelihoods. Women in Malawi constitute slightly more than half the total population (52%) of ~18.6 million. In 2018, the country had a UN Gender Inequality Index (GII) value of 0.615, ranking 149 out of 162 countries —which indicates high gender inequality in Malawi— as well as a 2019 OECD Social Institutions and Gender Index Score of 41%/High Inequality. Cultural stereotypes contribute to the marginalisation of women and girls in Malawi, particularly with regards to inheritance, divorce, livelihoods, and gender-based violence (GBV). Although the country's Constitution upholds non-discrimination, customary law practices reinforce discriminatory practices against women with regards to ownership and decisions pertaining to land and natural resources. Other factors that may contribute to gender-differentiated land rights include high levels of female illiteracy and women's lack of knowledge on their rights. Consequently, there are higher incidences of poverty in women-headed households (30%), with less adaptive capacity to escape poverty or build resilience to climate change. Advancing gender equality and women's empowerment is essential to address Malawi's widespread inequalities and reduce climate change vulnerability among target communities.

UNDP, in collaboration with the GoM, is focused on developing women leaders and promoting gender equity. In alignment with Malawi's National Gender Policy, the proposed project will identify opportunities to increase women's participation in the project's activities and decision-making processes. The proposed project will target ~60% of women in the three districts to enable their transition to more climate-resilient livelihoods, as well as 5% of youth. Further, the proposed project will monitor and report on gender integration efforts by developing gender-disaggregated and -responsive indicators in the project's logical framework. See Annex 11 (Gender Analysis and Gender Action Plan) for further detail on the gendered context of Malawi and the gender actions for each project Output.

**IV.6. Innovativeness, Sustainability and Potential for Scaling Up**

*Innovativeness*

The innovativeness of the proposed project is centred around the development of novel mechanisms for enhancing public and private sector investment in interventions aimed at enhancing the climate resilience of vulnerable communities living in the Lake Chilwa basin. The primary feature of the project for achieving this objective is the sustainable climate-finance facility (SCFF) established under Component 1 which will stimulate private sector investment in sustainable, climate-resilient livelihoods, enterprises and technologies, thereby ensuring that local communities have alternative sources of income under current and future climate conditions.

The SCFF will involve opening new CCA funding windows under the UNDP Growth Accelerator Platform aimed specifically at activities that not only directly reduce the vulnerability of communities to the impacts of climate change on their livelihoods, but also create incentives for the local population to reduce their reliance on harmful activities that contribute to the degradation of the natural environment within and around the lake.

A related innovative feature of the project is the market information hub that will be developed under Component 1. This hub will enable stakeholders to store and share information on climate-resilient enterprise development, thereby enhancing the potential for success of these enterprises into the future. Local entrepreneurs will be able to access knowledge to build business plans and to access adaptation finance. This interconnectivity will be one of the innovative elements of the project. Information collected in the market information hub will be housed within a broader knowledge management hub which will be established as part of the project to enable documentation and dissemination of best practices on EbA and livelihoods diversification, as well as market and product information. The establishment of the Knowledge Management Hub is a novel feature of the proposed project, as there is currently no such platform in Malawi. Another innovative feature of the TRANSFORM project will be the deployment of technology for monitoring and planning of ecosystems management, such as GIS-enabled incident-recording/reporting devices and unmanned aerial vehicles (UAVs), such as drones, to provide information not only to communities for natural-resource management, but also to potential entrepreneurs and investors.

*Sustainability*

Beyond its primary objective of reducing the vulnerability of communities surrounding Lake Chilwa to the adverse effects of climate change by strengthening the resilience of their livelihoods through Ecosystem-based Adaptation (EbA) and financing of climate-resilient enterprises, the proposed project design will also contribute to ensuring institutional, social and economic sustainability of interventions and their impacts beyond the project lifespan. These project design elements — elaborated on below — will ensure that the proposed interventions are maintained and continue to have impacts beyond the lifecycle of the project.

Institutional Sustainability

The proposed project comprises several interlinked activities for ensuring the institutional sustainability of its interventions. Training will be provided to district- and community-level institutions on planning, implementing and monitoring EbA interventions, which will ensure their long-term involvement. Within beneficiary communities, institutional needs of local leadership, VNRMCs, BVCs and other custodians of natural capital will be assessed, thereby ensuring that they are adequately capacitated to address the impacts of climate change across the basin. Training will also be provided to BVCs and other village-level organisations on monitoring of land degradation or threats to the target areas' natural resource base (such as the use of illegal fishing nets), as well as on how to measure and report these threats to the relevant authorities. Institutional sustainability will also be ensured through the development of an EbA Plan for entire Lake Chilwa basin. This plan will include an integrated management framework that will enable a coordinated approach to EbA across the three target districts. Activities under Component 3 in particular will ensure institutional sustainability by strengthening the enabling environment for district- and community-level institutions to plan, implement and monitor Ecosystem-based Adaptation (EbA)

Social Sustainability

The social sustainability of project interventions has been ensured by emphasising stakeholder participation in the project design. The project has been developed through extensive consultations with relevant stakeholders, including local communities. For the selection of appropriate adaptation actions in target communities, community-based resilience analysis (CoBRA) will be used, which will ensure stakeholder buy-in into any interventions implemented on the ground. To enable the long-term sustainability of these interventions in the target areas, workshops will be held in the three target districts to engage with local community members, leaders, private sector entities and other relevant stakeholder on the use of the knowledge management hub developed under Component 3. Social sustainability will be further ensured by undertaking a national awareness programme on EbA and climate resilient investment opportunities to raise interest in these topics and to ensure continued involvement of stakeholders at all levels.

Economic and financial Sustainability

The economic sustainability of the proposed project interventions has been ensured by targeting critical areas for value chain development that will contribute to enhancing community climate resilience and reducing unsustainable natural resource use while also providing long-term economic opportunities for communities.

A Component of TRANSFORM that will greatly contribute to economic sustainability of the project interventions is investment in value addition and improved market access for livelihoods. As part of the project business identification, development and management training programmes will be delivered to communities and MSMEs in target communities, thereby ensuring that sustainable, climate-resilient development is catalysed across the Lake Chilwa basin.

*Scalability*

The TRANSFORM project has been developed with a specific focus on scalability of its interventions beyond the targeted communities, to the rest of the Lake Chilwa basin and across Malawi. To this end, the project will: i) leverage private sector as a mechanism for scaling up interventions financed using GEF resources; ii) unlock sustainable sources of adaptation finance; and iii) enhance knowledge and awareness of climate change and EbA. The primary enabler for upscaling of TRANSFORM will be the SCFF developed under Component 1 which will enable development of sustainable livelihoods across the basin and unlock financial resources for investment in EbA. Beyond the TRANSFORM project itself, the SCFF will also enhance the scalability of interventions under projects such as SFAD-WM. In addition, the SCFF will include provision of technical assistance provided to the Malawi National Climate Change Fund (NCCF) to integrate and implement the SCFF. The NCCF will be a mechanism that will ensure the long-term availability of financial resources for climate change adaptation across Malawi.

Upscaling of the project's interventions will further be enabled by enhancing the availability and use of climate change-related knowledge and information. Specifically, the knowledge management hub developed under Component 3 will be used by local and national-level decisionmakers when exploring potential climate-resilience development option. It will also be used to store and disseminate information from the market information hub developed under Component 1, which will benefit entrepreneurs and MSMEs beyond the Lake Chilwa basin. As part of the knowledge management hub, technical methodologies will be developed for capturing information on best practices and lessons learned on EbA within the Lake Chilwa basin. This information will be used to develop and disseminate guidance for locally-driven climate resilience investment planning to all districts in Malawi, thereby ensuring that the best practices and lessons learned from the project inform future interventions across the country.

## V. PROJECT RESULTS FRAMEWORK

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| **This project will contribute to the following Sustainable Development Goal(s):** SDG2: Zero Hunger; SDG 5: Gender Equality; SDG8: Decent Work and Economic Growth; SDG10: Reduced Inequalities; SDG11: Sustainable Cities and Communities; SDG12: Responsible Consumption and Production; SDG13: Climate Action; SDG15: Life on Land) | | | | |
| **This project will contribute to the following country Outcome (UNDAF/CPD, RPD, GPD):**<br>*Outcome 1. Rights holders in Malawi access more accountable and effective institutions at the central and decentralized levels that use quality disaggregated data, offer integrated service delivery and promote civic engagement, respect for human rights and the of law.*<br>*Outcome 7. Households have increased food and nutrition security, equitable access to WASH and healthy ecosystems and resilient livelihoods.*<br>*Outcome 8. Malawi has more productive, sustainable and diversified agriculture, value chains and market access.*<br>*Outcome 9. Malawi has strengthened economic diversification, inclusive business, entrepreneurship and access to clean energy.* | | | | |
| | **Objective and Outcome Indicators (no more than a total of 20 indicators)** | **Baseline[265]** | **Mid-term Target[266]** | **End of Project Target** |
| ***Project Objective:***<br><br>To reduce the vulnerability of communities surrounding Lake Chilwa to the adverse effects of climate change by strengthening the resilience of livelihoods through Ecosystem-based Adaptation (EbA) and financing of climate-resilient enterprises in Lake Chilwa, and scaled up to other regions of Malawi | **Mandatory** Indicator 1: direct project beneficiaries disaggregated by gender (individual people)[267] | 0 | Total at MT: 28,000 (11,200 males; 16,800 females), of which 14,000 individuals (5,250 men and 8,750 women) directly benefitting from more resilient physical and natural assets<br>12,250 beneficiaries (4,900 men, 7,350 women) with diversified and strengthened livelihoods and sources of income in the Lake Chilwa basin | Total at TE: 80,000 (31,000 males; 49,000 females), of which<br>40,000 individuals (15,000 men and 25,000 women) directly benefitting from more resilient physical and natural assets<br><br>35,000 beneficiaries (14,000 men, 21,000 women) with diversified and strengthened livelihoods and sources of income in the Lake Chilwa basin |
| | **Mandatory** GEF Core Indicators:<br>*Indicator 2:* Area of land managed for climate resilience (ha) | 0 | 36,300 ha across all targeted districts | 121,000 across all targeted districts |

[265] Baseline, mid-term and end of project target levels must be expressed in the same neutral unit of analysis as the corresponding indicator. Baseline is the current/original status or condition and needs to be quantified. The baseline can be zero when appropriate given the project has not started. The baseline must be established before the project document is submitted to the GEF for final approval. The baseline values will be used to measure the success of the project through implementation monitoring and evaluation.

[266] Target is the change in the baseline value that will be achieved by the mid-term review and then again by the terminal evaluation.

[267] Provide total number of all direct project beneficiaries expected to benefit from all project activities until project closure. Separate the total number by female and male. This indicator captures the number of individual people who receive targeted support from a given GEF project and/or who use the specific resources that the project maintains or enhances. Support is defined as direct assistance from the project. Direct beneficiaries are all individuals receiving targeted support from a given project. Targeted support is the intentional and direct assistance of a project to individuals or groups of individuals who are aware that they are receiving that support and/or who use the specific resources.

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| | *Indicator 3:* Total number of policies/ plans that will mainstream climate resilience | 0 | 1 district-level Lake Chilwa EbA Plans, one for each targeted district | 3 district-level Lake Chilwa EbA Plans, one for each targeted district |
| **Project Component 1** | Enhancing financing and investment in adaptation options and climate-resilient enterprises in the Lake Chilwa basin, with potential for upscaling to other regions of Malawi | | | |
| **Project Outcome[268] 1**<br><br>Enhanced public and private sector investment in and strengthened market linkages for upscaling sustainable, climate-resilient enterprises to provide communities with alternative sources of income. | ***Indicator 5:***<br>Number of private sector entities/consortia engaged/supported in climate resilient activities benefiting from the SCFF | 0 | 12 private sector entities or consortia to be engaged/supported | 12 private sector entities or consortia to be engaged/supported |
| **Outputs to achieve Outcome 1** | *Output 1.1.* A sustainable climate-finance facility (SCFF) established through the UNDP Growth Accelerator Platform to stimulate private sector investment for MSMEs and strengthen the micro-finance industry for innovation in climate-resilient livelihoods, enterprises, and technologies.<br><br>*Output 1.2.* Partnerships established between communities, extension services, CBOs, farmers, wholesalers and private sector enterprises through the development of a market information hub and introduction of technologies that increase access to and strengthen high-value markets<br><br>*Output 1.3.* Technical assistance provided to the Malawi National Climate Change Fund (NCCF) to integrate and implement the SCFF initially introduced through the UNDP Growth Accelerator. | | | |
| **Project Component 2** | Implementation of EbA and Sustainable climate-resilient livelihoods. | | | |
| **Outcome 2**<br><br>Reduced vulnerability of communities in target districts to climate change through the implementation of EbA interventions and the introduction of innovative sustainable climate-resilient livelihoods in preparation for | ***Indicator 7***<br>Number of households adopting alternative livelihoods related to EbA and climate-smart agriculture | 0 | 2,500 households, of which 875 households in Machinga (TA Mizinga, TA Chamba and TA Nchinguza), 750 households in Phalomba (TA Chiwalo, TA Jenala and TA Kaduya), and 875 householdes in Zomba (TA Kumtumanji, TA Malemia and TA Mkumbira) | 10,000 households, of which: 3,500 households in Machinga (TA Mizinga, TA Chamba and TA Nchinguza), 3,000 households in Phalomba (TA Chiwalo, TA Jenala and TA Kaduya), and 3,500 households in Zomba (TA Kumtumanji, TA Malemia and TA Mkumbira) |

[268] *Outcomes are medium-term results that the project makes a contribution towards, and that are designed to help achieve the longer-term objective. Achievement of Outcomes will be influenced both by project Outputs and additional factors that may be outside the direct control of the project.*

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| scaling up through Outcomes 1 and 3. | | | | |
| | **Indicator 8**<br>Number of quarterly community-level M&R reports | 0 | MT: 2, one per quarter | Final: 12, one per quarter |
| **Outputs to achieve Outcome 2** | *Output 2.1.* An EbA Plan — with an integrated management framework that identifies climate change vulnerability and ecosystem degradation hotspots — developed for entire Lake Chilwa basin, building on Watershed Management Plans (WMPs) developed for each target district under the SFAD-WM project.<br>*Output 2.2.* Community-based Ecosystem Monitoring and Reporting (M&R) System established in each target district to support enhanced natural resource management and compliance with environmental regulations.<br>*Output 2.3.* Technical capacity of communities, extension services, CBOs, farmers, buyers and private sector enterprises enhanced, to identify and prepare climate-resilient business plans and project packages that are financially viable, for support from the SCFF established under Outcome 1.<br>*Output 2.4.* Sustainable climate-resilient livelihoods implemented in target communities through the provision of training (including at least 50% women), provision of start-up inputs (such as beekeeping equipment) as well as the development of partnerships with local suppliers and value chain service providers (through technical advisory services). | | | |
| **Project Component 3** | Strengthening the enabling environment for upscaling of initiatives aimed at climate-resilient development across Malawi. | | | |
| **Outcome 3**<br><br>Strengthened enabling environment for district and community-level institutions to plan, implement and monitor Ecosystem-based Adaptation (EbA), in readiness for receiving funding under the SCFF. | ***Indicator 9***<br>Number of district- and community-level institutions (inter alia, private enterprises, CBOs, and CSOs) accessing funding from SCFF for investments identified under district-level FCRIP | 0 | 3 institutions that receive SCFF fundings, 1 per district (Machinga, Zomba and Phalombe).<br><br>1 FCRIP developed for each Lake Chilwa basin district (Machinga, Zomba and Phalombe) supporting one institution in each district to receive SCFF funding | 12 institutions that are receiving SCFF funding, 4 per district (Machinga, Zomba and Phalombe)<br><br>ET: 1 FCRIP developed for each Lake Chilwa basin district (Machinga, Zomba and Phalombe) supporting 4 institutions in each district to receive SCFF funding |
| | ***Indicator 10***<br>Number of communication and knowledge management product packages on plans developed for scaling EbA and climate-resilient investment | 0 | 8, of which<br>1 yearly packages of national outreach and awareness content, which include, *intern alia,* e-brochures, brochures and publications | 19, of which<br>4 yearly packages of national outreach and awareness content, which include, *intern alia,* e-brochures, brochures and publications.<br>4 packages of yearly district-level workshops brochures |

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| | | | 2 packages of yearly district-level workshops brochures<br>1 radio programme with content for a year<br>1 yearly webinar<br>3 district-specific investment Guidance Manuals | 4 radio programme with content for a year<br>4 yearly webinars,<br>3 district-specific investment Guidance Manuals |
| **Outputs to achieve Outcome 3** | *Output 3.1.* Knowledge management hub established to document and disseminate best practices on EbA, livelihoods diversification, and market information<br>*Output 3.2.* National awareness programme on EbA and climate-resilient investment opportunities undertaken in collaboration with the private sector.<br>*Output 3.3.* Framework Climate Resilience Investment Plan (FCRIP) for sustainable climate-resilient livelihoods and value chains developed for each target district in Lake Chilwa basin (as well as two other districts in different ecosystems), building on the WMPs developed through the SFAD-WM project.<br>Output 3.4. Guidance for locally driven climate resilience investment planning developed and disseminated to all districts in Malawi. | | | |

## VI. MONITORING AND EVALUATION (M&E) PLAN

Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the UNDP POPP (including guidance on GEF project revisions) and UNDP Evaluation Policy **The UNDP Country Office is responsible for ensuring full compliance with all UNDP project M&E requirements including project monitoring, UNDP quality assurance requirements, quarterly risk management, and evaluation requirements.**

Additional mandatory GEF-specific M&E requirements will be undertaken in accordance with the GEF Monitoring Policy and the GEF Evaluation Policy and other relevant GEF policies[269]. The M&E plan and budget included below will guide the GEF-specific M&E activities to be undertaken by this project.

In addition to these mandatory UNDP and GEF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed – including during the Project Inception Workshop - and will be detailed in the Inception Report.

**M&E Oversight and monitoring responsibilities:**

Project Coordinator: The Project Coordinator is responsible for day-to-day project management and regular monitoring of project results and risks, including social and environmental risks. The Project Coordinator will ensure that all project staff maintain a high level of transparency, responsibility and accountability in M&E and reporting of project results. The Project Coordinator will inform the Project Board, the UNDP Country Office and the UNDP-NCE RTA of any delays or difficulties as they arise during implementation to ensure the subsequent adoption of appropriate support and corrective measures.

*Project Coordinator*
The Project Coordinator will develop annual work plans based on the multi-year work plan included in Annex 4, including annual Output targets to support the efficient implementation of the project. The Project Coordinator will ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality. This includes, but is not limited to, ensuring the results framework indicators are monitored annually in time for evidence-based reporting in the GEF PIR, and that the monitoring of risks and the several plans/strategies developed to support project implementation (e.g., ESMP, gender action plan and stakeholder engagement plan) occur on a regular basis.

*Project Board*
The Project Board will take corrective action as necessary to ensure the project achieves the desired results. The Project Board will conduct project reviews to assess the performance of the project and appraise the Annual Work Plan for the following year. In the project's final year, the Project Board will conduct an end-of-project review to capture lessons learned and discuss opportunities for scaling up and to highlight project results and lessons learned with relevant audiences. This final review meeting will also discuss the findings outlined in the project Terminal Evaluation (TE) report and the management response.

*Project Implementing Partner*
The Implementing Partner is responsible for providing all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes and is aligned with national systems so that the data used and generated by the project supports national systems. UNDP Country Office: The UNDP Country Office will support the Project Coordinator as necessary, including through annual supervision missions. The annual supervision missions will take place according to the schedule outlined in the annual work plan. Supervision mission reports will be circulated to the project team and Project Board within one month of the mission. The UNDP Country Office will initiate and organise key GEF M&E activities including the annual GEF PIR, the independent mid-term review and the independent terminal evaluation. The UNDP Country Office will also ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality.

The UNDP Country Office is responsible for complying with all UNDP project-level M&E requirements as outlined in the UNDP POPP. This includes ensuring the UNDP Quality Assurance Assessment during implementation is undertaken annually; that annual targets at the Output level are developed, monitored and reported using UNDP corporate systems; the regular updating of the ATLAS risk log; and the updating of the UNDP gender marker on an annual basis based on gender mainstreaming progress reported in the GEF PIR and the UNDP ROAR. Any quality concerns flagged during these M&E activities (such as the annual GEF PIR quality assessment ratings)

[269] See https://www.thegef.org/gef/policies_guidelines

should be addressed by the UNDP Country Office and the Project Coordinator. The UNDP Country Office will retain all M&E records for this project for up to seven years after project financial closure to support ex-post evaluations undertaken by the UNDP Independent Evaluation Office (IEO) and/or the GEF Independent Evaluation Office (IEO). NCE (previously GEF) Unit: Additional M&E and implementation quality assurance and troubleshooting support will be provided by the UNDP-NCE Regional Technical Advisor and the UNDP-NCE Directorate as needed.

**Minimum project monitoring and reporting requirements as required by the GEF:**

Inception Workshop and Report: A project inception workshop will be held within 2 months from the First disbursement date, with the aim to:

a. Familiarize key stakeholders with the detailed project strategy and discuss any changes that may have taken place in the overall context since the project idea was initially conceptualized that may influence its strategy and implementation.
b. Discuss the roles and responsibilities of the project team, including reporting lines, stakeholder engagement strategies and conflict resolution mechanisms.
c. Review the results framework and monitoring plan.
d. Discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E budget; identify national/regional institutes to be involved in project-level M&E; discuss the role of the GEF OFP and other stakeholders in project-level M&E.
e. Update and review responsibilities for monitoring project strategies, including the risk log; SESP report, Social and Environmental Management Framework (where relevant) and other safeguard requirements; project grievance mechanisms; gender strategy; knowledge management strategy, and other relevant management strategies.
f. Review financial reporting procedures and budget monitoring and other mandatory requirements and agree on the arrangements for the annual audit.
g. Plan and schedule Project Board meetings and finalize the first-year annual work plan. Finalize the TOR of the Project Board.
h. Formally launch the Project.

GEF Project Implementation Report (PIR):
The annual GEF PIR covering the reporting period July (previous year) to June (current year) will be completed for each year of project implementation. UNDP will undertake quality assurance of the PIR before submission to the GEF. The PIR submitted to the GEF will be shared with the Project Board. UNDP will conduct a quality review of the PIR, and this quality review and feedback will be used to inform the preparation of the subsequent annual PIR.

LDCF/SCCF Core Indicators:
The LDCF/SCCF Core indicators included as Annex will be used to monitor global environmental benefits and will be updated for reporting to the GEF prior to MTR and TE. Note that the project team is responsible for updating the indicator status. The updated monitoring data should be shared with MTR/TE consultants prior to required evaluation missions, so these can be used for subsequent ground truthing. The methodologies to be used in data collection have been defined by the GEF and are available on the GEF website.

Independent Mid-term Review (MTR):
The terms of reference, the review process and the final MTR report will follow the standard UNDP templates and UNDP guidance for GEF-financed projects available on the UNDP Evaluation Resource Center (ERC).

The evaluation will be 'independent, impartial and rigorous'. The evaluators that UNDP will hire to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. Equally, the evaluators should not be in a position where there may be the possibility of future contracts regarding the project under review.

The GEF Operational Focal Point and other stakeholders will be actively involved and consulted during the evaluation process. Additional quality assurance support is available from the BPPS/GEF Directorate. The final MTR report and MTR TOR will be publicly available in English and will be posted on the UNDP ERC by *25 September 2026*. A management response to MTR recommendations will be posted in the ERC within six weeks of the MTR report's completion.

Terminal Evaluation (TE):
An independent terminal evaluation (TE) will take place upon completion of all major project Outputs and activities. The terms of reference, the evaluation process and the final TE report will follow the standard templates and guidance for GEF-financed projects available on the UNDP Evaluation Resource Center.

TE should be completed 3 months before the estimated operational closure date, set from the signature of the Project Document and according to the duration of the project. Provisions should be taken to complete the TE in due time to avoid delay in project closure. Therefore, TE must start no later than 6 months to the expected date of completion of the TE (or 9 months prior to the estimated operational closure date).

The evaluation will be 'independent, impartial and rigorous. The evaluators that UNDP will hire to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. Equally, the evaluators should not be in a position where there may be the possibility of future contracts regarding the project being evaluated.

The GEF Operational Focal Point and other stakeholders will be actively involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the BPPS/NCE-VF Directorate.

The final TE report and TE TOR will be publicly available in English and posted on the UNDP ERC by *25 September 2029.* A management response to the TE recommendations will be posted to the ERC within six weeks of the TE report's completion.

Final Report:
The project's terminal GEF PIR along with the terminal evaluation (TE) report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the Project Board during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

Agreement on intellectual property rights and use of logo on the project's deliverables and disclosure of information:
To accord proper acknowledgement to the GEF for providing grant funding, the GEF logo will appear together with the UNDP logo on all promotional materials, other written materials like publications developed by the project, and project hardware. Any citation on publications regarding projects funded by the GEF will also accord proper acknowledgement to the GEF. Information will be disclosed in accordance with relevant policies notably the UNDP Disclosure Policy[270] and the GEF policy on public involvement[271].

[270] See http://www.undp.org/content/undp/en/home/operations/transparency/information_disclosurepolicy/
[271] See https://www.thegef.org/gef/policies_guidelines

**Monitoring Plan:** The project results, corresponding indicators and mid-term and end-of-project targets in the project results framework will be monitored by the Project Management Unit annually, and will be reported in the GEF PIR every year, and will be evaluated periodically during project implementation. If baseline data for some of the results indicators is not yet available, it will be collected during the first year of project implementation. Project risks, as outlined in the risk register, will be monitored quarterly.

| Results Monitoring | Indicators | Targets | Description of indicators ~~and targets~~ | Data source/ Collection Methods[272] | Frequency | Responsible for data collection | Means of verification | Risks/Assumptions |
|---|---|---|---|---|---|---|---|---|
| **That Project objective from the results framework** | ***Mandatory Indicator 1***<br>Number of direct project beneficiaries disaggregated by gender (individual people) | MT: 26,250 (10,150 males; 16,100 females), of which<br>14,000 individuals (5,250 males and 8,750 females) directly benefitting from more resilient physical and natural assets<br>12,250 beneficiaries (4,900 males, 7,350 females) with diversified and strengthened livelihoods and sources of income in the Lake Chilwa Basin<br><br>TE: 75,000 (29,000 males; 46,000 females), of which<br>40,000 individuals (15,000 males and 25,000 females) directly benefitting from more resilient physical and natural assets<br><br>35,000 beneficiaries (14,000 males, 21,000 females) with diversified and strengthened livelihoods and sources of income in the Lake Chilwa Basin | The total number of direct beneficiaries (disaggregated by gender) consists of the breakdowns presented on the right. As most beneficiaries receive multiple benefits, the total number is a conservative value based on the activity that is delivered to the most beneficiaries to avoid double counting.<br>Mid-term targets are 35% of end targets. | Consultation process, survey of local communities, training workshop attendance registers. | Annually | Project Manager/<br>M&E officer | Consultation Survey report;<br>Attendance registers | Assumptions:<br>Human resources trained through the project are retained in partner institutions.<br>Future climate change may be worse than predicted, resulting in adaptation interventions being less effective.<br>Livelihoods and value chains are accepted by local communities beyond the project's targeted recipients;<br>Population estimates for 2022 are accurate.<br>•All training programme workshops will be fully attended.<br>Risks:<br>•Limited awareness and engagement with communities and community leaders resulting in insufficient project buy-in.<br>•Conflict or civil unrest may disrupt the delivery of |

| Results Monitoring | Indicators | Targets | Description of indicators ~~and targets~~ | Data source/ Collection Methods[272] | Frequency | Responsible for data collection | Means of verification | Risks/Assumptions |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | interventions to beneficiaries. |
| | *Indicator 2*<br>Area of land managed for climate resilience (ha) | MT:<br>36,300 ha<br><br>ET:<br>121,000 ha, | The area is considered managed for climate resilience if it falls under the EbA plans developed in activity 2.1.1, and may include: i) bamboo planting to stabilize riverbanks and create a buffer zone; ii) restoration of vulnerable and degraded indigenous forest, riparian and wetland ecosystems; iii) rangeland management; iii) truncheons; and iv) fire management | GIS data, site visits, in-field surveys of project implementation area, In field monitoring, Geotagged photos | Every six months | Project Manager, M&E Officer | On-site monitoring reports, geotagged photos | Assumptions:<br>the critical areas for climate-resilient management are correctly identified and available for interventions. |
| | ***Indicator 3***<br>Total number of policies/ plans that will mainstream climate resilience | MT:<br>3 EbA Plans, one per district<br><br>ET:<br>3 EbA Plans, one per district | The EbA plan is for the entire Lake Chilwa Basin, but there must be one for each district, reflecting the district-level | Validation workshop of the EbA plan with all district representatives, community members, BVCs | Once, MT | EbA Plan technical team (IC and NC), Project Manager | Validation workshop report | Assumptions:<br>EbA plans are adopted by local, district and national institutions for transformative land |

[272] Data collection methods should outline specific tools used to collect data and additional information as necessary to support monitoring. The PIR cannot be used as a source of verification.

| Results Monitoring | Indicators | Targets | Description of indicators ~~and targets~~ | Data source/ Collection Methods[272] | Frequency | Responsible for data collection | Means of verification | Risks/Assumptions |
|---|---|---|---|---|---|---|---|---|
| | | | institutions and hotspots to implement options. | and other village-level organisations. | | | | use management and EbA planning in Malawi.<br>Risks:<br>Community buy-in and turnout is positi |
| **Project Outcome 1**<br>Enhanced public and private sector investment in and strengthened market linkages for upscaling sustainable, climate-resilient enterprises to provide communities with alternative sources of income. | *Indicator 5:*<br>Indicator 5:<br>Number of private sector entities/consortia engaged/supported in climate resilient activities benefiting from the SCFF | MT:<br>12 private sector entities or consortia to be engaged/supported<br>ET:<br>12 private sector entities or consortia to be engaged/supported | Observed increase in household income and diversification of livelihood activities.<br>Disaggregation by i) gender,<br>ii) livelihood activities pursued by the household (beekeeping, fisheries, agriculture, briquette production) | Private sector engagement survey developed by M&E Officer. | Annually, starting at Y1Q1 to create a baseline. | Project Manager, M&E Officer | Private sector engagement survey results report | Assumptions:<br>Market linkages will be enough to improve private sector engagement<br>Risks:<br>Other costs may rise and erode private sector engagement, and livelihood gains might go unnoticed. |
| **Project Outcome 2**<br>Reduced vulnerability of communities in target districts to climate change through the implementation of EbA interventions and the introduction of innovative sustainable climate-resilient livelihoods in | *Indicator 7*<br>Number of households granted alternative livelihood start-up inputs | MT: 2,500 households, of which<br>875 households in Machinga (TA Mizinga, TA Chamba and TA Nchinguza),<br>750 households in Phalomba (TA Chiwalo, TA Jenala and TA Kaduya), and<br>875 householdes in Zomba (TA Kumtumanji, TA Malemia and TA Mkumbira)<br>ET:<br>10,000 households, of which: | Necessary inputs identified in Activity 2.4.1., and include climate-resilient seeds), efficient stoves, smoking kilns, and other.<br>At least 50% of beneficiaries household must be women-led<br>Indicator disaggregated per i) target group (inter alia, | Community livelihood survey | Yearly | Project Manager, M&E Officer | Community livelihood Survey report | Assumptions:<br>Alternative livelihood start-up inputs are enough for the adoption of alternative climate-resilient livelihoods across different stakeholder groups. |

| Results Monitoring | Indicators | Targets | Description of indicators ~~and targets~~ | Data source/ Collection Methods[272] | Frequency | Responsible for data collection | Means of verification | Risks/Assumptions |
|---|---|---|---|---|---|---|---|---|
| preparation for scaling up through Outcomes 1 and 3. | | 3,500 households in Machinga (TA Mizinga, TA Chamba and TA Nchinguza),<br>3,000 households in Phalomba (TA Chiwalo, TA Jenala and TA Kaduya), and<br>3,500 households in Zomba (TA Kumtumanji, TA Malemia and TA Mkumbira) | fisheries, farming, beekeeping), ii) household size, and<br>iii) TA and district | | | | | |
| | **Indicator 8**<br>Number of quarterly M&R system reports | MT: 2, one per quarter<br>ET: 12, one per quarter | M&R system reports should be published quarterly, starting Y3Q1 | M&R system report repository / publishing channel | Quarterly | Project Manager, M&E Officer | Published quarterly M&R system report | Assumptions:<br>Stakeholders will come to the training workshops;<br>Participants from different stakeholder categories will participate |
| **Project Outcome 3**<br>Strengthened enabling environment for district- and community-level institutions to plan, implement and monitor Ecosystem-based Adaptation (EbA), in readiness for receiving funding under the SCFF | ***Indicator 9***<br>Number of district and community-level institutions who receive funding from SCFF (*inter alia*, private enterprises, CBOs, CSOs). | MT:<br>4 institutions that receive SCFF fundings, 1 per district.<br><br>ET: 12 institutions that are receiving SCFF funding, 4 per district (Machinga, Zomba and Phalombe) | These institutions may include CBOs, MSMEs, CSOs and must have a degree of formalisation, such as a constitution and a registration under the relevant bodies.<br>Institution must have had participants partake in training offered under activity 2.1.3<br>Funding refers to climate-resilient services and | SCFF documents; training workshop attendance list from activity 2.1.3); institutional documents from Community- and district-level institutions | Annually | Project Manager, M&E Officer | Training workshop report,<br>SCFF quarterly reports;<br>Institutional documents from the relevant institutions | Assumptions:<br>Set of activities under this project outcome ultimately lead a change in capacities and skills that which creates the enabling environment to catalyse further planning, implementation and monitoring of EbA in Malawi.<br><br>Target institutions identified in activity 3.3.1 |

| Results Monitoring | Indicators | Targets | Description of indicators ~~and targets~~ | Data source/ Collection Methods[272] | Frequency | Responsible for data collection | Means of verification | Risks/Assumptions |
|---|---|---|---|---|---|---|---|---|
| | | | products offered by SCFF.<br><br>Indicator disaggregated by i) district, ii) type of institution | | | | | Target population buy-in. |
| **Outcome 3.** Strengthened enabling environment for district- and community-level institutions to plan, implement and monitor Ecosystem-based Adaptation (EbA), in readiness for receiving funding under the SCFF | ***Indicator 10***<br>Number of communication and knowledge management product packages on EbA and climate-resilient investment disseminated | MT: 8, of which<br>1 yearly packages of national outreach and awareness content, which include, *intern alia*, e-brochures, brochures and publications<br>2 packages of yearly district-level workshops brochures<br>1 radio programme with content for a year<br>1 yearly webinar<br>3 district-specific investment Guidance Manuals<br><br>ET: 19, of which<br>4 yearly packages of national outreach and awareness content, which include, *intern alia*, e-brochures, brochures and publications.<br>4 packages of yearly district-level workshops brochures<br>4 radio programme with content for a year<br>4 yearly webinars,<br>3 district-specific investment Guidance Manuals | Communication and KM products packages include:<br>Webpage, Social media accounts<br>Publications, Brochures, Video/Animation<br>Webinars, district level, regional and national workshops conference, radio programmes, and climate resilience investment brochures.<br>Indicator disaggregated by i) stakeholder group (CBO, government staff and other relevant institutions), ii) gender (if applicable), iii) district, and iv) KM product | Survey with KM hub | Quarterly | KM hub officer, M&E officer | Positive receipt emails and letters, webpage statistics, social media statistics, attendance registers, webinars recordings publications produced, Workshop, conference presentations,<br>radio programme scripts and recordings, investment brochure files and hard copies. | Assumptions:<br>EbA Knowledge Management Hub established<br>Knowledge management hub achieves engagement with their target audiences<br>Target audience identified and contact list of target audience developed in activity 3.1.2.<br><br>Risk: |

| Results Monitoring | Indicators | Targets | Description of indicators ~~and targets~~ | Data source/ Collection Methods[272] | Frequency | Responsible for data collection | Means of verification | Risks/Assumptions |
|---|---|---|---|---|---|---|---|---|
| **Project Outcome 1**<br>Enhanced public and private sector investment in and strengthened market linkages for upscaling sustainable, climate-resilient enterprises to provide communities with alternative sources of income. | ***Indicator 5:***<br>Number of households with observed increase in income through the enterprise development and strengthened market linkages associated with the diversification of livelihood of in the target areas. | MT:<br>4,000 households across the three targeted districts, Zomba, Machinga, Phalombe, of which 1,400 households in Machinga (TA Mizinga, TA Chamba and TA Nchinguza),<br>1,200 households in Phalomba (TA Chiwalo, TA Jenala and TA Kaduya), and<br>1,400 householdes in Zomba (TA Kumtumanji, TA Malemia and TA Mkumbira)<br><br>ET:<br>10,000 households have observed income increase at the end of the project, of which:<br>3,5000 households in Machinga (TA Mizinga, TA Chamba and TA Nchinguza),<br>3,000 households in Phalomba (TA Chiwalo, TA Jenala and TA Kaduya), and<br>3,500 householdes in Zomba (TA Kumtumanji, TA Malemia and TA Mkumbira) | Observed increase in household income and diversification of livelihood activities.<br>Disaggregation by i) female- vs male-headed households,<br>ii) livelihood activities pursued by the household (beekeeping, fisheries, agriculture, briquette production) | Income and livelihood survey developed by M&E Officer. | Annually, starting at Y1Q1 to create a baseline. | Project Manager, M&E Officer | Livelihood and income survey results report | Assumptions:<br>Market linkages will be enough to improve household income<br>Livelihood diversification translates into income increase.<br><br>Risks:<br>Other living costs may rise and erode power purchase of households, and livelihood gains might go unnoticed.<br>Surveys are designed to appropriately capture household income, including non-monetary means. |
| **Project Outcome 1**<br>Enhanced public and private sector investment in and strengthened market linkages for upscaling sustainable, climate-resilient | ***Indicator 6:***<br>Number of MSMEs funded by the SCFF. | MT: 4 MSMEs funded by the SCFF per target district (Machinga, Zomba, Phalombe)<br><br>TE: 12 MSMEs funded by the SCFF, 4 per target district. At least two MSMEs youth-led (18-35 years old) and one women-led. | MSMEs that comprise of women and have received funds mobilized by the SCFF operationalised under activity 1.1.1.<br>Disaggregated by i) type of entity | Impact Investment survey prepared by M&E officer | Annually, starting at Y1Q1 to create a baseline. | Project Manager, M&E Officer | Impact Investment survey results report | Assumptions:<br>Women are comfortable in their roles in MSMEs.<br><br>Risks: products and services do not attend to Lake Chilwa basin MSME's needs. |

| Results Monitoring | Indicators | Targets | Description of indicators ~~and targets~~ | Data source/ Collection Methods[272] | Frequency | Responsible for data collection | Means of verification | Risks/Assumptions |
|---|---|---|---|---|---|---|---|---|
| enterprises to provide communities with alternative sources of income. | | | (public and private) ii) MSME activity iii) gender of the MSMEs head, and iv) age of MSME head. | | | | | |
| **Project Outcome 2** Reduced vulnerability of communities in target districts to climate change through the implementation of EbA interventions and the introduction of innovative sustainable climate-resilient livelihoods in preparation for scaling up through Outcomes 1 and 3. | *Indicator 7* Number of households granted alternative livelihood start-up inputs | MT: 2,500 households, of which 875 households in Machinga (TA Mizinga, TA Chamba and TA Nchinguza), 750 households in Phalomba (TA Chiwalo, TA Jenala and TA Kaduya), and 875 householdes in Zomba (TA Kumtumanji, TA Malemia and TA Mkumbira)<br><br>ET: 10,000 households, of which: 3,500 households in Machinga (TA Mizinga, TA Chamba and TA Nchinguza), 3,000 households in Phalomba (TA Chiwalo, TA Jenala and TA Kaduya), and 3,500 households in Zomba (TA Kumtumanji, TA Malemia and TA Mkumbira) | Necessary inputs identified in Activity 2.4.1. and include climate-resilient seeds (heirloom or GMO), efficient stoves, smoking kilns, and other. At least 50% of beneficiaries household must be female-headed.<br><br>Indicator disaggregated per i) target group (inter alia, fisheries, farming, beekeeping), ii) household size, iii) gender of household head, and iv) TA and district | Community livelihood survey | Yearly | Project Manager, M&E Officer | Community livelihood Survey report | Assumptions: Alternative livelihood start-up inputs are enough for the adoption of alternative climate-resilient livelihoods across different stakeholder groups. |
| Project Outcome 3 Strengthened enabling environment for district- and community-level institutions to | *Indicator 9* Number of district and community-level institutions who receive funding from SCFF (*inter alia*, private | MT: 3 institutions that receive SCFF fundings, 1 per district.<br><br>ET: 12 institutions that are receiving SCFF funding, 4 per | These institutions may include CBOs and CSOs (which will include women's organisations in the target districts) as well as MSMEs. Institutions must | SCFF documents; training workshop attendance list from activity 2.1.3); institutional documents from Community- and | Annually | Project Manager, M&E Officer | Training workshop report, SCFF quarterly reports; Institutional documents from the relevant institutions | Assumptions: Set of activities under this project outcome ultimately lead a change in capacities and skills that which creates the enabling |

| Results Monitoring | Indicators | Targets | Description of indicators ~~and targets~~ | Data source/ Collection Methods[272] | Frequency | Responsible for data collection | Means of verification | Risks/Assumptions |
|---|---|---|---|---|---|---|---|---|
| plan, implement and monitor Ecosystem-based Adaptation (EbA), in readiness for receiving funding under the SCFF | enterprises, CBOs, CSOs). | district (Machinga, Zomba and Phalombe) | have a degree of formalisation, such as a constitution and a registration under the relevant bodies.<br>Institution must have had participants partake in training offered under activity 2.1.3<br>Funding refers to climate-resilient services and products offered by SCFF.<br><br>Indicator disaggregated by i) district, ii) type of institution | district-level institutions | | | | environment to catalyse further planning, implementation and monitoring of EbA in Malawi.<br><br>Target institutions identified in activity 3.3.1<br><br>Target population buy-in. |
| **Outcome 3.** Strengthened enabling environment for district- and community-level institutions to plan, implement and monitor Ecosystem-based Adaptation (EbA), in readiness for receiving funding under the SCFF | ***Indicator 10***<br>Number of communication and knowledge management product packages on EbA and climate-resilient investment disseminated | MT: 8, of which<br>1 yearly packages of national outreach and awareness content, which include, *intern alia,* e-brochures, brochures and publications<br>2 packages of yearly district-level workshops brochures<br>1 radio programme with content for a year<br>1 yearly webinar<br>3 district-specific investment Guidance Manuals<br><br>ET: 19, of which | Communication and KM products packages will be gender-responsive and will include:<br>Webpage, Social media accounts<br>Publications, Brochures, Video/Animation<br>Webinars, district level, regional and national workshops conference, radio programmes, and climate resilience | Survey with KM hub | Quarterly | KM hub officer, M&E officer | Positive receipt emails and letters, webpage statistics, social media statistics, attendance registers, webinars recordings publications produced, Workshop, conference presentations,<br>radio programme scripts and recordings, | Assumptions:<br>EbA Knowledge Management Hub established<br>Knowledge management hub achieves engagement with their target audiences<br>Target audience identified and contact list of target audience developed in activity 3.1.2. |

| Results Monitoring | Indicators | Targets | Description of indicators ~~and targets~~ | Data source/ Collection Methods[272] | Frequency | Responsible for data collection | Means of verification | Risks/Assumptions |
|---|---|---|---|---|---|---|---|---|
| | | 4 yearly packages of national outreach and awareness content, which include, *intern alia,* e-brochures, brochures and publications.<br>4 packages of yearly district-level workshops brochures<br>4 radio programme with content for a year<br>4 yearly webinars,<br>3 district-specific investment Guidance Manuals | investment brochures.<br>Indicator disaggregated by i) stakeholder group (CBO, government staff and other relevant institutions), ii) gender (if applicable), iii) district, and iv) KM product | | | | investment brochure files and hard copies. | Risk: |
| **Outcome 3.** Strengthened enabling environment for district- and community-level institutions to plan, implement and monitor Ecosystem-based Adaptation (EbA), in readiness for receiving funding under the SCFF | ***Indicator 11***<br>Number of Framework Climate Resilience Investment Plans (FCRIP) developed | MT: 3 FCRIP for each Lake Chilwa Basin district (Machinga, Zomba and Phalombe)<br><br>ET: 5, two additional FCRIPs for two different districts in different ecosystems | FCRIP must include an investment assessment taken under Activity 3.3.1<br><br>FCRIP will build on the WMPs developed through the SFAD-WM project.<br><br>FCRIP will be gender-responsive and include gender-sensitive activities. | Validation workshop proceedings | Quarterly in Y2, yearly in Y3-5 or until completion. | Project Manager, M&E Officer | Validation workshop report | Assumptions:<br>Investment assessment and FCRIPs are appropriately developed.<br>Risks:<br>Misalignment with SDAF-WM project.<br>Weak engagement with SFAD-WM. |
| ***Add indicators included in gender action plan, stakeholder engagement plan or other monitoring plans as needed.*** | | | | | | | | |

**Table 6.** Monitoring and Evaluation M&E Plan and Budget

| **Monitoring and Evaluation Budget for project execution:**<br>This M&E budget provides a breakdown of costs for M&E activities to be led by the Project Management Unit during project implementation. These costs are represented in the M&E subcomponent of the Results Framework and TBWP and PMC. The oversight and participation of the UNDP Country Office/Regional technical advisors/HQ Units in these M&E activities and in performing standard UNDP M&E requirements are not included as these are covered by the LDCF Fee. In view of the complexities of this project, UNDP is providing an additional budget from its own resources to cover oversight costs at Country Office level, over and above the LDCF Fee, and indicated below | | | |
|---|---|---|---|
| GEF M&E requirements | Primary Responsibility | Indicative costs (US$) | Time frame |
| Inception Workshop and Report | UNDP Country Office, Project Manager and Project Coordinators (one per district) and, M&E Officer | 5,000.00<br>(29% LDCF, 71% UNDP) | Inception Workshop within 2 months of the First Disbursement |
| International Consultants | M&E Officer to implement monitoring and evaluation tasks for project implementation, including facilitating the M&E Inception Workshop, monitoring of GEF core indicators, project results and indicators from other plans | 20,000*5 Years<br>100,000<br>(100% LDCF) | On-going |
| M&E of GEF core indicators and project results framework | M&E Officer, Project Manager and Project Coordinators (one per district) | 100,000<br>(100% UNDP) | Annually and at mid-point and closure. |
| GEF Project Implementation Report (PIR) | Project Manager, UNDP Country Office, UNDP-GED-team and and Project Coordinators (one per district) | N/A | Annually, typically between June-August |
| Monitoring of Social and Environmental Safeguards Screening | Safeguards Officer, Project Manager and Project Coordinators (one per district) | 37,500.00<br>(100% UNDP) | On-going |
| Monitoring of Stakeholder Engagement Plan | Project Manager and Project Coordinators (one per district) | N/A | On-going |
| Monitoring of Gender Action Plan | Gender Officer, Project Manager and Project Coordinators (one per district) | 37,500.00<br>(100% UNDP) | On-going |
| **Supervision missions** | UNDP Country Office, Project team, UNDP-GEF team and independent consultants | 12,500 (100% UNDP) | Annually |
| **Learning missions** | n/a | N/A | As needed |

| **Monitoring and Evaluation Budget for project execution:**<br>This M&E budget provides a breakdown of costs for M&E activities to be led by the Project Management Unit during project implementation. These costs are represented in the M&E subcomponent of the Results Framework and TBWP and PMC. The oversight and participation of the UNDP Country Office/Regional technical advisors/HQ Units in these M&E activities and in performing standard UNDP M&E requirements are not included as these are covered by the LDCF Fee. In view of the complexities of this project, UNDP is providing an additional budget from its own resources to cover oversight costs at Country Office level, over and above the LDCF Fee, and indicated below | | | |
|---|---|---|---|
| GEF M&E requirements | Primary Responsibility | Indicative costs (US$) | Time frame |
| **Independent Mid-term Review (MTR): costs associated with conducting the independent review/evaluation to be commissioned by UNDP not the Implementing Partner or PMU.** | UNDP Country Office, Project team, UNDP-GEF team and independent consultants | 48,000.00<br>(100% LDCF) | *Y3Q2*<br>*June 2025* |
| **Independent Terminal Evaluation (TE): costs associated with conducting the independent evaluation to be commissioned by UNDP not the Implementing Partner or the PMU.** | UNDP Country Office, Project team, UNDP-GEF team and independent consultants | 48,000.00<br>(100% LDCF) | Y5Q3<br>November 2027 |
| **Total LDCF**<br>**Total UNDP**<br>**TOTAL indicative COST** | | **197,449** (~4.5% of LDCF grant)<br>96,051<br>**293,500.00** | |

## VII. GOVERNANCE AND MANAGEMENT ARRANGEMENTS

**Section 1: General roles and responsibilities in the projects' governance mechanism**

Implementing Partner: The Department of Environmental Affairs (DEA), under the Ministry of Natural Resources and Climate Change (MoNRCC) will be the project's Implementing Partner (IP) and is accountable to UNDP for managing the project. The Implementing Partner is the entity to which the UNDP Administrator has entrusted the implementation of UNDP assistance specified in this signed project document along with the assumption of full responsibility and accountability for the effective use of UNDP resources and the delivery of Outputs, as set forth in this document. EAD will be responsible for efficient and effective implementation of project interventions, monitoring, and evaluation. EAD will closely collaborate with UNDP to ensure that project resources are effectively managed and utilised according to UNDP policies and regulations as outlined under NIM. The organisational structure of the IP is shown in Figure 24 below.

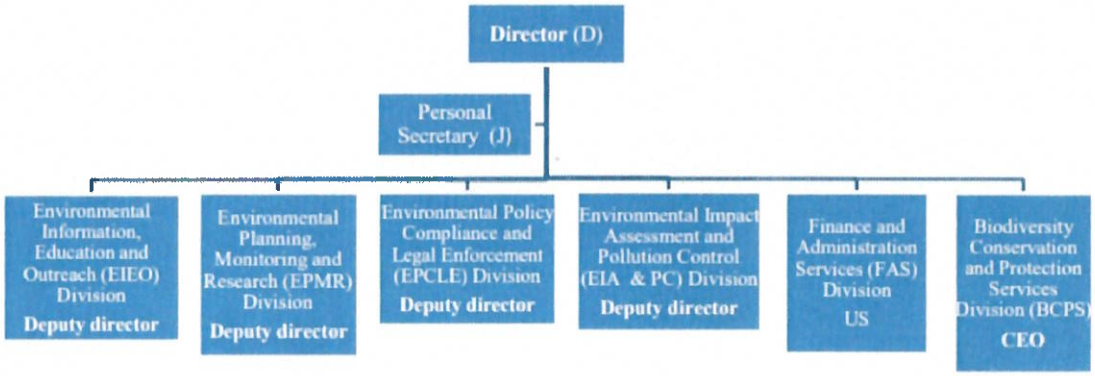



**Figure 24.** Implementing Partner organisational chart.

The Implementing Partner is responsible for executing this project. Specific tasks include:

- Project planning, coordination, management, monitoring, evaluation, and reporting. This includes providing all required information and data necessary for timely, comprehensive, and evidence-based project reporting, including results and financial data, as necessary. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes and is aligned with national systems so that the data used and generated by the project supports national systems.
- Overseeing the management of project risks as included in this project document and new risks that may emerge during project implementation.
- Procurement of goods and services, including human resources.
- Financial management, including overseeing financial expenditures against project budgets.
- Approving and signing the multiyear workplan.
- Approving and signing the combined delivery report at the end of the year; and,
- Signing the financial report or the funding authorization and certificate of expenditures.

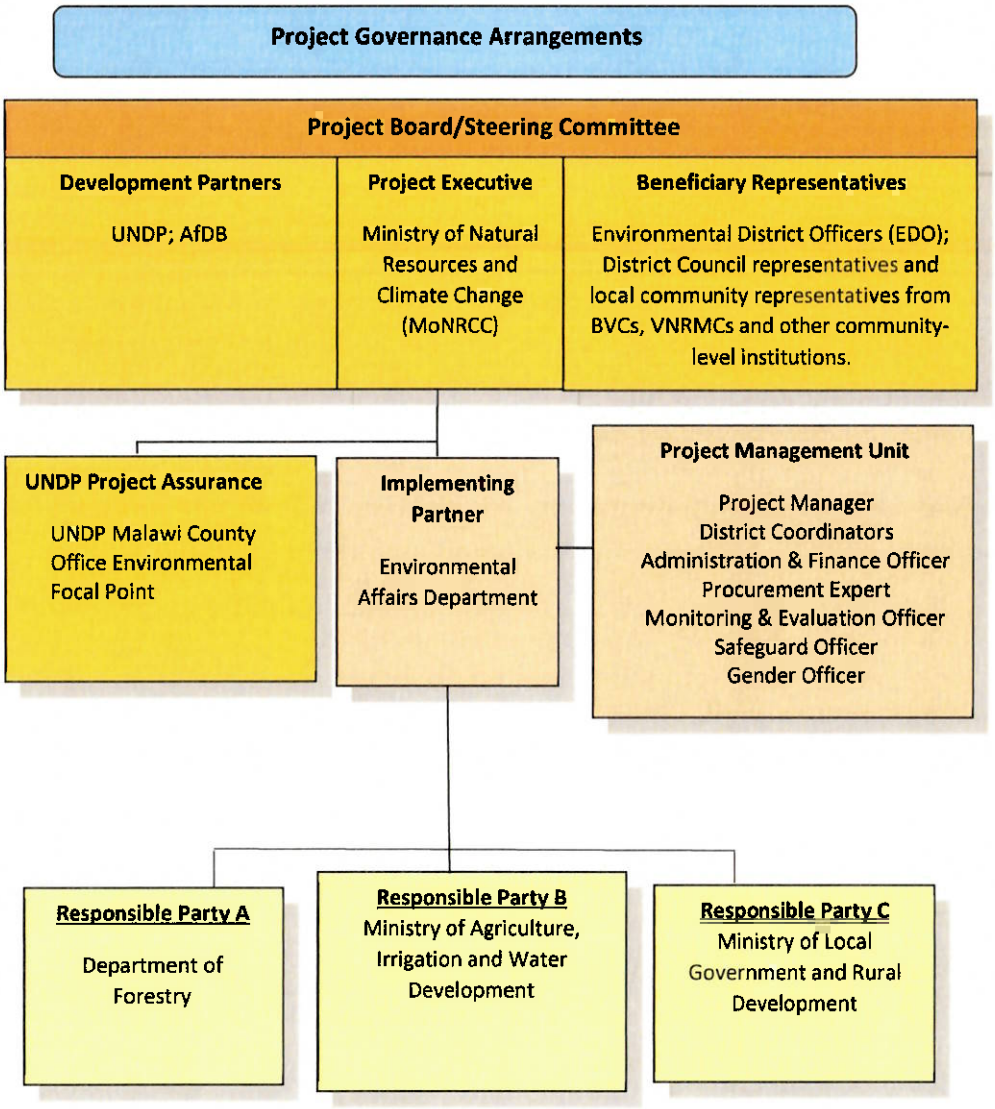
Responsible Parties: The Responsible Parties are the entities to which EAD has entrusted the responsibility for implementing specific project focal areas. These responsibilities differ per Responsible Party and project Component. EAD will collaborate and work closely with the Responsible Parties, which will including: i) Department of Forestry — responsible for the implementation of restoration interventions under Component 2; ii) the Ministry of Agriculture, Irrigation and Water Development — responsible for the implementation of climate-resilient livelihood activities under Component 2; and iii) Ministry of Local Government and Rural Development — responsible for supporting the development of interventions under Component 2. Specific departments that will implement these interventions will include Department of Land Resources, Department of Irrigation, Department of Land Resources Conservation, Department of Agriculture Extension and Advisory Services and Fisheries Department. At district level the project will supervised by the Director of Planning and Development in close consultation with the Project Coordinators.

Project stakeholders and target groups: The composition of the Project Board will include Representative Beneficiaries to ensure that all target groups are represented in the highest governance structure of the project. Capacity-building and training programmes through Outcomes 2 and 3 will enable the Representative Beneficiaries of these groups to be informed about and engage in

Ecosystems-based Adaptation (EbA) practices. This will enable the Representative Beneficiaries to provide the appropriate support to the Project Board while ensuring that the needs and rights of target groups are considered throughout project implementation.

UNDP: UNDP is accountable to the GEF for the implementation of this project. This includes overseeing project execution undertaken by the Implementing Partner to ensure that the project is being carried out in accordance with UNDP and GEF policies and procedures and the standards and provisions outlined in the Delegation of Authority (DOA) letter for this project. The UNDP GEF Executive Coordinator, in consultation with UNDP Bureaus and the Implementing Partner, retains the right to revoke the project DOA, suspend or cancel this GEF project. UNDP is responsible for the Project Assurance function in the project governance structure and presents to the Project Board and attends Project Board meetings as a non-voting member. A firewall will be maintained between the delivery of project oversight and quality assurance performed by UNDP and charged to the GEF Fee and any support to project execution performed by UNDP (as requested by and agreed to by both the Implementing Partner and GEF) and may be charged to the GEF project management costs (Note that UNDP will not provide execution support for this project). The segregation of functions and firewall provisions for UNDP in this case is described in the next section.

**Section 2: Project governance structure**




**Second line of defense**

- Regional Bureau oversees RR and Country Office compliance at portfolio level
- BPPS NCE RTA oversees technical quality assurance and GEF compliance. BPPPS NCE PTA oversees RTA function
- UNDP GEF Executive Coordinator and Regional Bureau Deputy Director can revoke DOA/cancel /suspend project or provide enhanced oversight

The UNDP Resident Representative assumes full responsibility and accountability for oversight and quality assurance of this Project and ensures its timely implementation in compliance with the GEF-specific requirements and UNDP's Programme and Operations Policies and Procedures (POPP), its Financial Regulations and Rules and Internal Control Framework. A representative of the UNDP Country Office will assume the assurance role and will present assurance findings to the Project Board, and therefore attends Project Board meetings as a non-voting member.

A project team consisting of one Project Manager; Procurement Expert, Financer and Admin Officer, Safeguards Officer and Gender Officer and three District Project Coordinators for each of the three districts will be recruited for the day-to-day management of the project. The district project management team will be located at the district council and will also be responsible for coordinating with district stakeholders and coordination structures. A bank account for the project will be opened in all the districts and managed in accordance with UNDP and GEF guidelines through which funds will be transferred to support the implementation of the project and operational support for the project staff. The project staff will work in close collaboration with the District Environment Sub-Committee and DEC.

The project team will facilitate periodic coordination meetings including Inter- District Joint Project Coordinating platform for planning and monitoring between project districts and with relevant stakeholders. The forum will be utilised to foster learning, review progress, share and validate workplans and engage with national stakeholders for their technical contributions. The project team, through the joint forum, will also link with the national coordination structures including the National Technical Committee on Climate Change and the National Steering Committee.

**Section 3: Segregation of duties and firewalls vis-à-vis UNDP representation on the project board:**

As noted in the Minimum Fiduciary Standards for GEF Partner Agencies, in cases where a GEF Partner Agency (i.e. UNDP) carries out both implementation oversight and execution of a project, the GEF Partner Agency (i.e. UNDP) must separate its project implementation oversight and execution duties, and describe in the relevant project document a: 1) Satisfactory institutional arrangement for the separation of implementation oversight and executing functions in different departments of the GEF Partner Agency; and 2) Clear lines of responsibility, reporting and accountability within the GEF Partner Agency between the project implementation oversight and execution functions. In this case, UNDP is only performing an implementation oversight role in the project vis-à-vis its role in the project board and in the project assurance function and therefore a full separation of project implementation oversight and execution duties has been assured.

**Section 4: Roles and Responsibilities of the Project Organization Structure:**

a) **Project Board:** All UNDP projects must be governed by a multi-stakeholder board or committee established to review performance based on monitoring and evaluation, and implementation issues to ensure quality delivery of results. The Project Board (also called the Project Steering Committee) is the most senior, dedicated oversight body for a project.

   The **Project Board** will comprise the National Steering Committee on Environment, Natural resources, and Climate Change, who will provide policy guidance for the project as proposed by the well-established National Climate Change Technical Committee which has its own procedures and processes which should not be duplicated by the creation of additional structures. The NCCTC will provide technical direction of the project, and it will play a critical role in project monitoring and evaluations by quality assuring these processes and products, and using evaluations for performance improvement, accountability, and learning. It ensures that required resources are committed and arbitrates on any conflicts within the project or negotiates a solution to any problems with external bodies. In addition, it approves the appointment and responsibilities of the Project Manager. Based on the approved Annual Work Plan, the NCCTC can also consider and approve the quarterly plans (if applicable) and approve any essential deviations from the original plans.

The two main (mandatory) roles of the project board are as follows:

1) **High-level oversight of the execution of the project by the Implementing Partner** (as explained in the "Provide Oversight" section of the POPP). This is the primary function of the project board and includes annual (and as-needed) assessments of any major risks to the project, and decisions/agreements on any management actions or remedial measures to address them effectively. The Project Board reviews evidence of project performance based on monitoring, evaluation and reporting, including progress reports, evaluations, risk logs and the combined delivery report. The Project Board is responsible for taking corrective action as needed to ensure the project achieves the desired results.
2) **Approval of strategic project execution decisions of the Implementing Partner** with a view to assess and manage risks, monitor and ensure the overall achievement of projected results and impacts and ensure long term sustainability of project execution decisions of the Implementing Partner (as explained in the "Manage Change" section of the POPP).

**Requirements to serve on the Project Board**:

- ✓ Agree to the Terms of Reference of the Board and the rules on protocols, quorum and minuting.
- ✓ Meet annually; at least once.
- ✓ Disclose any conflict of interest in performing the functions of a Project Board member and take all measures to avoid any real or perceived conflicts of interest. This disclosure must be documented and kept on record by UNDP.
- ✓ Discharge the functions of the Project Board in accordance with UNDP policies and procedures.
- ✓ Ensure highest levels of transparency and ensure Project Board meeting minutes are recorded and shared with project stakeholders.

**Responsibilities of the Project Board**:

✓ Consensus decision making:
- The project board provides overall guidance and direction to the project, ensuring it remains within any specified constraints, and providing overall oversight of the project implementation.
- Review project performance based on monitoring, evaluation and reporting, including progress reports, risk logs and the combined delivery report.
- The project board is responsible for making management decisions by consensus.
- In order to ensure UNDP's ultimate accountability, Project Board decisions should be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition.
- In case consensus cannot be reached within the Board, the UNDP representative on the board will mediate to find consensus and, if this cannot be found, will take the final decision to ensure project implementation is not unduly delayed.

✓ Oversee project execution:
- Agree on project manager's tolerances as required, within the parameters outlined in the project document, and provide direction and advice for exceptional situations when the project manager's tolerances are exceeded.
- Appraise annual work plans prepared by the Implementing Partner for the Project; review combined delivery reports prior to certification by the implementing partner.
- Address any high-level project issues as raised by the project manager and project assurance.
- Advise on major and minor amendments to the project within the parameters set by UNDP and the donor and refer such proposed major and minor amendments to the UNDP BPPS Nature, Climate and Energy Executive Coordinator (and the GEF, as required by GEF policies);
- Provide high-level direction and recommendations to the project management unit to ensure that the agreed deliverables are produced satisfactorily and according to plans.
- Track and monitor co-financed activities and realisation of co-financing amounts of this project.
- Approve the Inception Report, GEF annual project implementation reports, mid-term review and terminal evaluation reports.
- Ensure commitment of human resources to support project implementation, arbitrating any issues within the project.

✓ Risk Management:
- Provide guidance on evolving or materialized project risks and agree on possible mitigation and management actions to address specific risks.
- Review and update the project risk register and associated management plans based on the information prepared by the Implementing Partner. This includes risks related that can be directly managed by this project, as well as contextual risks that may affect project delivery or continued UNDP compliance and reputation but are outside of the control of the project. For example, social and environmental risks associated with co-financed activities or activities taking place in the project's area of influence that have implications for the project.
- Address project-level grievances.

✓ Coordination:
- Ensure coordination between various donor and government-funded projects and programmes.
- Ensure coordination with various government agencies and their participation in project activities.

**Composition of the Project Board**: The composition of the Project Board must include individuals assigned to the following three roles:

1. **Project Executive:** This is an individual who represents ownership of the project and chairs (or co-chairs) the Project Board. The Executive usually is the senior national counterpart for nationally implemented projects (typically from the same entity as the Implementing Partner), and it must be UNDP for projects that are direct implementation (DIM). In exceptional cases, two individuals from different entities can co-share this role and/or co-chair the Project Board. If the project executive co-chairs the project board with representatives of another category, it typically does so with a development partner representative. The Project Executive is: Dr. Winford Masanjala, Principal Secretary, Ministry of Finance and Economic Affairs. *MoNRCC*

2. **Beneficiary Representative(s):** Individuals or groups representing the interests of those groups of stakeholders who will ultimately benefit from the project. Their primary function within the board is to ensure the realization of project results from

the perspective of project beneficiaries. Often representatives from civil society, industry associations, or other government entities benefiting from the project can fulfil this role. There will be multiple beneficiary representatives in the Project Board. The Beneficiary representative (s) is/are: Environmental District Officers (EDO); District Council representatives; local community representatives; the Lake Chilwa Basin Trust, relevant NGOs such as LEAD and the University of Malawi. The project board will also include a private sector and SME umbrella body.

3. **Development Partner(s):** Individuals or groups representing the interests of the parties concerned that provide funding, strategic guidance and/or technical expertise to the project. The Development Partner(s) is/are: African Development Bank (AfDB); UNDP.

b) **Project Assurance:** Project assurance is the responsibility of each project board member; however, UNDP has a distinct assurance role for all UNDP projects in carrying out objective and independent project oversight and monitoring functions. UNDP performs quality assurance and supports the Project Board (and Project Management Unit) by carrying out objective and independent project oversight and monitoring functions, including compliance with the risk management and social and environmental standards of UNDP. The Project Board cannot delegate any of its quality assurance responsibilities to the Project Manager. Project assurance is totally independent of project execution.

A designated UNDP representative holding the project assurance role is expected to attend all board meetings and support board processes as a non-voting representative. It should be noted that while in certain cases UNDP's project assurance role across the project may encompass activities happening at several levels (e.g., global, regional), at least one UNDP representative playing that function must, as part of their duties, specifically attend board meeting and provide board members with the documentation required to perform their duties. The UNDP representative playing the main project assurance function is/are UNDP *CO Programme Officer or Monitoring & Evaluation Officer to designate appropriate individual.*

c) **Project Management – Execution of the Project:** The Project Manager (PM) (also called project coordinator) is the senior most representative of the Project Management Unit (PMU) and is responsible for the overall day-to-day management of the project on behalf of the Implementing Partner, including the mobilization of all project inputs, supervision over project staff, responsible parties, consultants, and sub-contractors. The project manager typically presents key deliverables and documents to the board for their review and approval, including progress reports, annual work plans, adjustments to tolerance levels and risk registers.

A designated representative of the PMU is expected to attend all board meetings and support board processes as a non-voting representative.

The primary PMU representative attending board meetings is: *The Project Manager*

The Project Manager will be based at the Environmental Affairs Department in Lilongwe, working under the technical direction of the Director of Environmental Affairs and will coordinate closely with the Programme Manager of the National Climate Resilience Programme to ensure that synergies and efficiencies are secured. The Project Manager will report to the Director of Environmental Affairs and to the Portfolio Manager for Resilience and Sustainable Growth at UNDP Malawi Country Office. It is anticipated that this contract will initially be for one year and pending assessment, may be renewed for an additional period. The Project Manager will work under the technical direction of the Director of Environmental Affairs and will coordinate closely with the other Managers implementing other UNDP programmes to ensure that synergies and efficiencies are secured.

*Implementation and management of Sustainable Climate Finance Facility*

The SCFF has been designed specifically to enable private sector involvement in climate change adaptation in Malawi. To achieve this objective, and to meet the technical requirements of working with private sector, the SCFF has to be established under a specialised platform. The SCFF will leverage UNDP's Growth Accelerator (GA) platform, which is essentially a type of partnership supported by UNDP but has own service provider and operational structure independent from the GoM's internal processes.

The overall goal is for the SCFF to be managed on transitional basis under the GA until the technical capacity is built within the Environmental Affairs Department (EAD) to eventually integrate the SCFF into the National Climate Change Fund (NCCF). Currently, the UNDP GA has the technical expertise required to transfer knowledge and expertise to NCCF but, to facilitate this process of transition, the EAD will be involved initially only as part of learning and implementation, rather than throughout the process of vetting potential private sector entities that qualify for funding. The SCFF will initially be operationalised under the UNDP GA, but will

eventually be housed in NCCF and managed by EAD. The involvement of EAD in the UNDP GA as part of learning and knowledge dissemination will enable private sector involvement to also be integrated as part of NCCF. It should be noted that the UNDP GA's service provider will play the primary role in operationalising the SCFF, but the GA will serve as a learning platform that will enable EAD to be gradually involved as part of the transition of the SCFF to the NCCF.

The SCFF to be established through the UNDP Growth Accelerator Platform will be implemented and managed as described in the table below. This structure is also shown in Table below the table.

**Table 6.** Implementation and management of the SCFF under the UNDP Growth Accelerator Platform.

| Action | Funding source | Method |
|---|---|---|
| Technical Assistance (training, capacity building, community engagement, business development support | GEF budget Component 1 | Will be implemented by Executing Agency (Department of Environmental Affairs under the Ministry of Natural Resources and Climate Change) |
| Launch of Call for Proposals, Evaluation, Selection, Management and Reporting of private sector entities | GEF budget Component 1 | Will be implemented by Executing Agency through UNDP Growth Accelerator program's Service Provider (Fund Manager) under a Responsible Party (RP) Arrangement with Executing Agency |
| Disbursement of grants (up to US$ 40,000 per selected private sector entity) as matching investments for private sector entities | UNDP Co-finance from TRAC Resources | Will be disbursed directly by UNDP to selected private sector entities under advice from UNDP Growth Accelerator program's Service Provider (Fund Manager) |

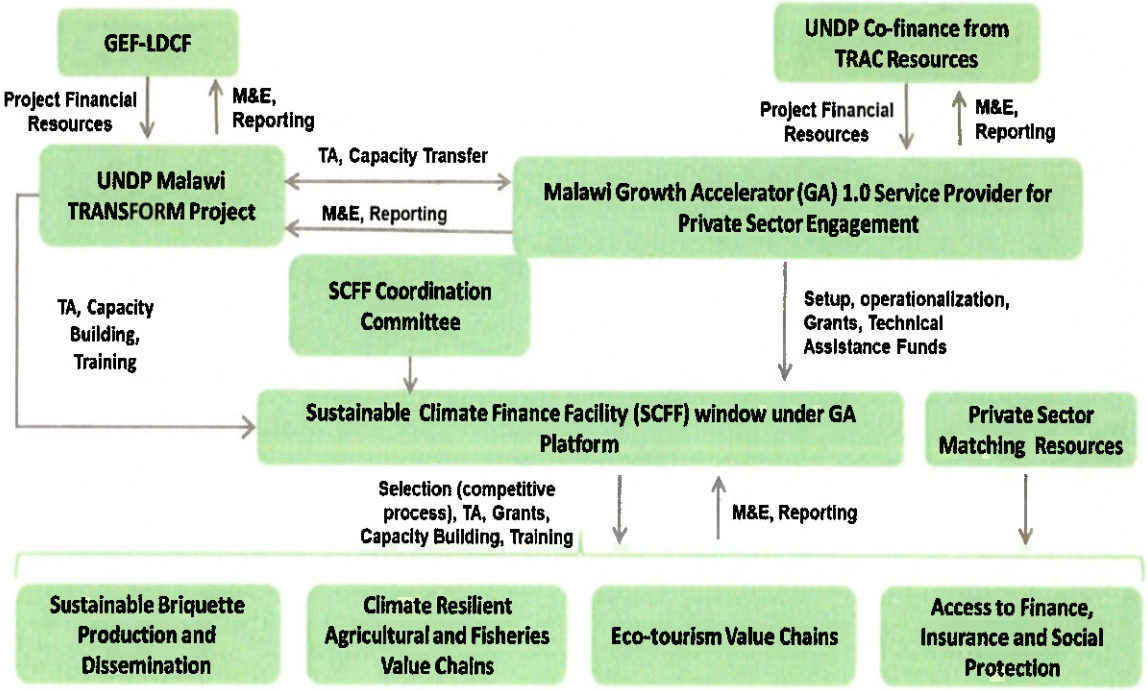



**Figure 25.** UNDP Malawi TRANSFORM Project and Growth Accelerator Engagement Model for SCFF.

## VIII. Financial Planning and Management

The total financing for the project is US$25,867,210. This is financed through an LDCF grant of USD 4,416,210, USD and US$1,750,000 in cash co-financing to be administered by UNDP, and US$250,000 In-kind contribution, which will be utilised to support UNDP's oversight role. An additional co-finance of US$19,451,000 has been committed by Government's Ministry of Natural Resources and Climate Change, Ministry of Finance and District Councils as responsible parties. The Government co-finance includes parallel programmes and projects being implemented by the GoM's Ministry of Finance, government personnel, equipment and office space. UNDP, as the GEF Implementing Agency, is responsible for the oversight of the GEF resources and the cash co-financing transferred to UNDP bank account

**Co-financing**: The actual realization of project co-financing amounts will be monitored by the UNDP Country Office and the PMU on an annual basis in the GEF PIF and will be reported to the GEF during the mid-term review and terminal evaluation process as follows:

**Table 7.** Confirmed co-financing

| Co-financing source | Co-financing type | Co-financing amount |
|---|---|---|
| Ministry of Natural Resources and Climate Change | In-kind | USD 4,550,000 |
| Zomba District Council | In-kind | USD 500,000 |
| Phalombe District Council | In-kind | USD 300,000 |
| Machinga District Council | In-kind | USD 650,000 |
| Ministry of Finance | In-kind | USD 4,000,000 |
| Ministry of Finance | Parallel | USD 9,451,000 |
| UNDP | Grant | USD 1,750,000 |
| UNDP | In-kind | USD 250,000 |
| | **Total** | **USD 21,451,000** |

**Budget Revision and Tolerance**: As per UNDP POPP, the project board may agree with the project manager on a tolerance level for each detailed plan under the overall multi-year workplan. The agreed tolerance should be written in the project document or approved project board meeting minutes. It should normally not exceed 10 percent of the agreed annual budget at the activity level, but within the overall approved multi-year workplan at the activity level. Within the agreed tolerances, the project manager can operate without intervention from the project board. Restrictions apply as follows:

Should the following deviations occur, the Project Manager/IP through UNDP Country Office will seek the approval of the BPPS/NCE-VF team to ensure accurate reporting to the GEF. It is **strongly encouraged** to maintain the expenditures within the approved budget at the budgetary account and at the Component level:

a) Budget reallocations must prove that the suggested changes in the budget will not lead to material changes in the results to be achieved by the project. A strong justification is required and will be approved on an exceptional basis. Budget re-allocations among the Components (including PMC) of the approved Total Budget and Work Plans (TBWP) that represent a value greater than 10% of the total LDCF grant.
b) Introduction of new Outputs/activities (i.e., budget items) that were not part of the agreed project document and TBWP that represent a value greater than 5% of the total LDCF grant. The new budget items must be eligible as per the GEF and UNDP policies.
c) Project management cost (PMC): budget under PMC Component is capped and cannot be increased.

Any over expenditure incurred beyond the available LDCF grant amount must be absorbed by non-GEF/LDCF resources (e.g., UNDP TRAC or cash co-financing).

**Project extensions:** The UNDP Resident Representative and the UNDP-GEF Executive Coordinator must approve all project extension requests. Note that all extensions incur costs and the GEF/LDCF project budget cannot be increased. A single extension may be granted on an exceptional basis and subject to the conditions and maximum durations set out in the UNDP POPP; the project management costs during the extension period must remain within the originally approved amount, and any increase in PMC costs will be covered by non-GEF resources; the additional UNDP oversight costs during the extension period must be covered by non-GEF resources, in accordance with UNDP's guidance set out in UNDP POPP.

Audit: The project will be audited as per UNDP Financial Regulations and Rules and applicable audit policies. Audit cycle and process must be discussed during the Inception workshop. If the Implementing Partner is an UN Agency, the project will be audited according to that Agencies applicable audit policies.

**Project Closure**: Project closure will be conducted as per UNDP requirements outlined in the UNDP POPP. All costs incurred to close the project must be included in the project closure budget and reported as final project commitments presented to the Project Board during the final project review. The only costs a project may incur following the final project review are those included in the project closure budget.

**Operational completion**: The project will be operationally completed when the last UNDP-financed inputs have been provided and the related activities have been completed. This includes the final clearance of the Terminal Evaluation Report (that will be available in English) and the corresponding management response, and the end-of-project review Project Board meeting. Operational closure must happen at the end date calculated by the approved duration after the Project Document signature or at the revised operational closure date as approved in the project extension. Any expected activity after the operational date requires project extension approval. The Implementing Partner through a Project Board decision will notify the UNDP Country Office when operational closure has been completed. At this time, the project should have completed the transfer or disposal of any equipment that is still the property of UNDP.

**Transfer or disposal of assets**: In consultation with the Implementing Partner and other parties of the project, UNDP is responsible for deciding on the transfer or other disposal of assets. Transfer or disposal of assets is recommended to be reviewed and endorsed by the project board following UNDP rules and regulations. Assets may be transferred to the government for project activities managed by a national institution at any time during the life of a project (it is strongly encouraged to be done before the operational closure date). In all cases of transfer, a transfer document must be prepared and kept on file[273]. The transfer should be done before Project Management Unit complete their assignments.

**Financial completion (closure):** The project will be financially closed when the following conditions have been met a) the project is operationally completed or has been cancelled; b) the Implementing Partner has reported all financial transactions to UNDP; c) UNDP has closed the accounts for the project; d) UNDP and the Implementing Partner have certified a final Combined Delivery Report (which serves as final budget revision).

The project will be financially completed **within 6 months of operational closure or after the date of cancellation**. If Operational Closure is delayed for any justified and approved reason, the Country Office should do all efforts to Financially Close the project within 9 months after TE is completed. Between operational and financial closure, the implementing partner will identify and settle all financial obligations and prepare a final expenditure report. The UNDP Country Office will send the final signed closure documents including confirmation of final cumulative expenditure and unspent balance to the BPPS/NCE-VF Unit for confirmation before the project will be financially closed in Atlas by the UNDP Country Office.

Refund to GEF: Should a refund of unspent funds to the GEF be necessary, this will be managed directly by the BPPS/NCE-VF Directorate in New York. No action is required by the UNDP Country Office on the actual refund from UNDP project to the

[273] Source: https://popp.undp.org/_layouts/15/WopiFrame.aspx?sourcedoc=/UNDP_POPP_DOCUMENT_LIBRARY/Public/PPM_Project%20Management_Closing.docx&action=default.

## IX. TOTAL BUDGET AND WORK PLAN

| Total Budget and Work Plan | | | |
|---|---|---|---|
| Atlas Award ID: | 00143963 | Atlas Output Project ID: | 00131872 |
| Atlas Proposal or Award Title: | Transformational Adaptation for Climate Resilience in Lake Chilwa Basin of Malawi (TRANSFORM) | | |
| Atlas Business Unit | xxx10 | | |
| Atlas Primary Output Project Title | Transformational Adaptation for Climate Resilience in Lake Chilwa Basin of Malawi (TRANSFORM) | | |
| UNDP-GEF PIMS No. | 6608 | | |
| Implementing Partner | Department of Environmental Affairs under the Ministry of Natural Resources and Climate Change | | |

| Atlas Activity (GEF Component) | Atlas Implementing Agent (Responsible Party[2] , IP or UNDP) | Atlas Fund ID | Donor Name | Atlas Budgetary Account Code[3] | ATLAS Budget Account Description[3] | Amount Year 1 (USD) | Amount Year 2 (USD) | Amount Year 3 (USD) | Amount Year 4 (USD) | Amount Year 5 (USD) | Total (USD) | See BN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **COMPONENT 1:** Enhancing financing and investment in adaptation options and climate-reislient enterprises in the Lake Chilwa basin, with potential for upscaling to other regions of Malawi | **Department of Environmental Affairs under the Ministry of Natural Resources and Climate Change** | **62160** | **LDCF** | 71200 | International consultants | 8,400 | 12,600 | 8,400 | 8,400 | 4,200 | **42,000** | ***1*** |
| | | | | 71300 | Local consultants | 21,700 | 32,550 | 21,700 | 21,700 | 10,850 | **108,500** | ***2*** |
| | | | | 71600 | Travel | 21,540 | 32,310 | 21,540 | 21,540 | 10,770 | **107,700** | ***3*** |
| | | | | 75700 | Trainings, workshops and conferences | 8,540 | 12,810 | 8,540 | 8,540 | 4,270 | **42,700** | ***4*** |
| | | | | 72100 | Contractual services – companies | 110,215 | 112,322 | 22,215 | 14,215 | 12,107 | **271,074** | ***5*** |
| | | | | 71800 | Contractual services – individual | 62,640 | 62,640 | 5,220 | - | - | **130,500** | ***6*** |
| | | | | 72300 | Materials & goods | 688 | 888 | 832 | 688 | 344 | **3,440** | ***7*** |
| | | | | | **sub-total LDCF** | **233,723** | **266,120** | **88,447** | **75,083** | **42,541** | **705,914** | |
| | | **4000** | **UNDP** | 72615 | Micro Capital Grants-Other | - | 120,000 | 240,000 | 140,000 | - | **500,000** | ***8*** |
| | | | | | **sub-total UNDP** | **-** | **120,000** | **240,000** | **140,000** | **-** | **500,000** | |
| | | | | | **Total Component 1** | **233,723** | **386,120** | **328,447** | **215,083** | **42,541** | **1,205,914** | |
| **COMPONENT 2:** | **Department of Environmental Affairs under the Ministry of Natural** | **62160** | **LDCF** | 71200 | International Consultants | 73,500 | - | - | - | - | **73,500** | ***9*** |
| | | | | 71300 | Local Consultants | 59,010 | 78,890 | 3,990 | 1,330 | 1,330 | **144,550** | ***10*** |
| | | | | 71600 | Travel | 37,850 | 66,675 | 4,725 | 1,575 | 1,575 | **112,400** | ***11*** |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Implementation of EbA and sustainable climate-resilient livelihoods | **Resources and Climate Change** | | | 75700 | Training, Workshops and Confer | 38,900 | 80,850 | 21,600 | 7,200 | 7,200 | **155,750** | ***12*** |
| | | | | 72300 | Materials & goods | 894 | 370,195 | 364,900 | 364,406 | 364,405 | **1,464,800** | ***13*** |
| | | | | 72100 | Contractual Services - Company | 90,000 | 20,000 | 8,000 | 6,000 | 6,000 | **130,000** | ***14*** |
| | | | | 72200 | Equipment and Furniture | - | 389,500 | 60,000 | - | - | **449,500** | ***15*** |
| | | | | 72305 | Agri & Forestry Products | 93,900 | 140,850 | 140,850 | 46,950 | 46,950 | **469,500** | ***16*** |
| | | | | | **sub-total LDCF** | **394,054** | **1,146,960** | **604,065** | **427,461** | **427,460** | 3,000,000 | |
| | | **4000** | **UNDP** | 71600 | Travel | 3,000 | - | - | - | - | **3,000** | ***17*** |
| | | | | 75700 | Training, Workshops and Confer | - | 5,250 | - | - | - | **5,250** | ***18*** |
| | | | | 72300 | Materials & goods | 5,000 | 114,424 | 114,424 | 114,424 | 114,424 | **462,696** | ***19*** |
| | | | | | **sub-total UNDP** | 8,000 | **119,674** | **114,424** | **114,424** | **114,424** | 470,946 | |
| | | | | | **Total Component 2** | **402,054** | **1,266,634** | **718,489** | **541,885** | **541,884** | **3,470,946** | |
| **COMPONENT 3**<br><br>**Strengthening the enabling environment for upscaling of initiatives aimed at climate-resilient development across Malawi.** | **Department of Environmental Affairs under the Ministry of Natural Resources and Climate Change** | **62160** | **LDCF** | 72200 | Equipment and Furniture | - | 30,000 | - | - | - | **30,000** | ***20*** |
| | | | | 74200 | Audio Visual&Print Prod Costs | - | - | - | 17,500 | 17,500 | **35,000** | ***21*** |
| | | | | 71600 | Travel | 1,750 | 18,300 | 1,050 | 1,050 | 1,050 | **23,200** | ***22*** |
| | | | | 72100 | Training, Workshops and Confer | 12,950 | 34,888 | 12,388 | 14,637 | 14,637 | **89,500** | ***23*** |
| | | | | 72300 | Materials & Goods | 50 | 4,838 | 37 | 188 | 187 | **5,300** | ***24*** |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 72100 | Contractual Services - Company | 30,000 | 35,250 | 5,250 | 10,250 | 40,250 | 121,000 | 25 |
| | | | | | **sub-total LDCF** | **44,750** | **123,276** | **18,725** | **43,625** | **73,624** | **304,000** | |
| | | **4000** | **UNDP** | 71600 | Travel | - | - | - | **525** | **525** | **1,050** | 26 |
| | | | | 72300 | Materials & Goods | - | 1,200 | 1,200 | 1,200 | 1,200 | **4,800** | 27 |
| | | | | 72100 | Contractual Services - Company | 30,000 | 40,500 | 10,500 | 10,500 | 10,500 | **102,000** | 28 |
| | | | | 72100 | Training, Workshops and Confer | - | 15,750 | 15,750 | 15,750 | 15,750 | 63,000 | 29 |
| | | | | | **sub-total UNDP** | **30,000** | **57,450** | **27,450** | **27,975** | **27,975** | **170,850** | |
| | | | | | **Total Component 3** | **74,750** | **180,726** | **46,175** | **71,600** | **101,599** | **474,850** | |
| **COMPONENT 4** | **Department of Environmental Affairs under the Ministry of Natural Resources and Climate Change** | **62160** | **LDCF** | 71200 | International consultants | 20,000 | 20,000 | 20,000 | 20,000 | 20,000 | 100,000 | 30 |
| | | | | 72100 | Training, Workshops and Confer | 290 | 290 | 290 | 290 | 289 | 1,449 | 31 |
| **Monitoring and Evaluation** | | | | 72100 | Contractual Services - Company | - | - | 48,000 | - | 48,000 | 96,000 | 32 |
| | | | | | **sub-total LDCF** | **20,290** | **20,290** | **68,290** | **20,290** | **68,289** | **197,449** | |
| | | **4000** | **UNDP** | 71200 | International consultants | 15,000 | 15,000 | 15,000 | 15,000 | 15,000 | 75,000 | 33 |
| | | | | 71600 | Travel | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 | 7,500 | 34 |
| | | | | 72100 | Training, Workshops and Confer | 711 | 710 | 710 | 710 | 710 | **3,551** | 35 |
| | | | | 7230 | Materials & goods | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | **10,000** | 36 |
| | | | | | **sub-total UNDP** | **19,211** | **19,210** | **19,210** | **19,210** | **19,210** | **96,051** | |
| | | | | | **Total M&E** | **39,501** | **39,500** | **87,500** | **39,500** | **87,499** | **293,500** | |
| | | | | 71800 | Contractual Services - Individ | 38,931 | 38,931 | 38,931 | 38,931 | 38,930 | 194,654 | 37 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5. Project management costs** | **Department of Environmental Affairs under the Ministry of Natural Resources and Climate Change** | **62160** | **LDCF** | 72800 | Information Technology Equipmt | 2,462 | - | - | - | - | **2,462** | ***38*** |
| | | | | 71600 | Travel | 435 | 434 | 435 | 434 | 434 | **2,172** | ***39*** |
| | | | | 72300 | Materials & goods | 29 | 29 | 29 | 29 | 29 | **145** | ***40*** |
| | | | | 74100 | Professional Services | 1,883 | 1,883 | 1,883 | 1,883 | 1,882 | **9,414** | ***41*** |
| | | | | | **sub-total LCDF** | **43,740** | **41,277** | **41,278** | **41,277** | **41,275** | **208,847** | |
| | | **4000** | **UNDP** | 71800 | Contractual Services - Individ | 95,470 | 95,469 | 95,469 | 95,469 | 95,469 | **477,346** | ***42*** |
| | | | | 72800 | Information Technology Equipmt | 6,038 | - | - | - | - | **6,038** | ***43*** |
| | | | | 71600 | Travel | 1,066 | 1,066 | 1,065 | 1,065 | 1,066 | **5,328** | ***44*** |
| | | | | 72300 | Materials & goods | 71 | 71 | 71 | 71 | 71 | **355** | ***45*** |
| | | | | 74100 | Professional Services | 4,618 | 4,617 | 4,617 | 4,617 | 4,617 | **23,086** | ***46*** |
| | | | | | **sub-total UNDP** | **107,263** | **101,223** | **101,222** | **101,222** | **101,223** | **512,153** | |
| | | | | **Total Project Management** | | **151,003** | **142,500** | **142,500** | **142,499** | **142,498** | **721,000** | |
| | | | | | **SUB-TOTAL LDCF** | **736,557** | **1,597,923** | **820,805** | **607,736** | **653,189** | **4,416,210** | |
| | | | | | **SUB-TOTAL UNDP** | **164,474** | **417,557** | **502,306** | **402,831** | **262,832** | **1,750,000[1]** | |
| | | | | | **PROJECT TOTAL** | **901,031** | **2,015,480** | **1,323,111** | **1,010,567** | **916,021** | **6,166,210** | |

Budget notes:

| BN | Inputs | Activity | Notes | Qty | Units | Amount (US$) | Years | Value (US$) |
|---|---|---|---|---|---|---|---|---|
| *1* | International Consultant | 1.2.1. | Multiple IC contracts (up to 4) to lead technical assistance, training and capacity building to selected private sector entities/consortia under SCFF: tentatively, each contract to have 15 working days of effort (additional budget for travel, workshop delivery etc. as described in other Budget Notes below).<br>IC Contract 1: TA, training, capacity building on sustainable briquette production; contract to be issued only if at least one of the 12 selected private sector entities for SCFF support operate in sustainable briquette production.<br>IC Contract 2: TA, training, capacity building on agricultural value chain development (agricultural product/commodity sourcing/buying strategy and planning, storage/warehouse development); contract to be issued only if at least one of the 12 selected private sector entities for SCFF support operate in agricultural value chain development.<br>IC Contract 3: TA, training, capacity building on eco-tourism; contract to be issued only if at least one of the 12 selected private sector entities for SCFF support operate in eco-tourism<br>IC Contract 4: TA, training, capacity building on access to finance/insurance products; contract to be issued only if at least one of the 12 selected private sector entities for SCFF support operate in access to finance/insurance products.<br>Each of these contracted ICs will also deliver training and capacity building on investment planning, leveraging co-investments and capital structuring (equity; loans; grants from UNDP co-finance TRAC resources etc.) and supporting technology/equipment procurement to selected private sector entities/consortia under SCFF<br>These ICs will also support Activity 1.2.2 | 60 | days | 700 | 1 | 42,000 |
| *2* | National Consultant | 1.2.1. | Multiple NC contracts (up to 4) to lead technical assistance, training, and capacity building to selected private sector entities/consortia under SCFF: tentatively, each contract to have 15 working days of effort (additional budget for travel, workshop delivery etc. as described in other Budget Notes below).<br>NC Contract 1: Together with IC engaged (Budget Note 1 above) TA, training, capacity building on sustainable briquette production; contract to be issued only if at least one of the 12 selected private sector entities for SCFF support operate in sustainable briquette production.<br>NC Contract 2: Together with IC engaged (Budget Note 1 above) TA, training, capacity building on agricultural value chain development (agricultural product/commodity sourcing/buying strategy and planning, storage/warehouse development); contract | 60 | days | 350 | 1 | 21,000 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | to be issued only if at least one of the 12 selected private sector entities for SCFF support operate in agricultural value chain development.<br><br>NC Contract 3: Together with IC engaged (Budget Note 1 above) TA, training, capacity building on eco-tourism; contract to be issued only if atleastat least one of the 12 selected private sector entities for SCFF support operate in eco-tourism<br>NC Contract 4: Together with IC engaged (Budget Note 1 above) TA, training, capacity building on access to finance/insurance products; contract to be issued only if atleastat least one of the 12 selected private sector entities for SCFF support operate in access to finance/insurance products.<br>Each of these contracted NCs will also deliver training and capacity building on investment planning, leveraging co-investments and capital structuring (equity; loans; grants from UNDP co-finance TRAC resources etc.) and supporting technology/equipment procurement to selected private sector entities/consortia under SCFF<br>These ICs will also support Activity 1.2.2 | | | | | |
| | | 1.2.3. | Multiple NC contracts (expected to be 2 contracts) to lead provision of technical assistance and capacity building on community mobilization and business development support (contracts can be issued to local NGOs/CBOs too, if found appropriate) to selected private sector entities/consortia under SCFF on sustainable briquette production, agricultural value chain development (agricultural product/commodity sourcing/buying strategy and planning, storage/warehouse development), eco-tourism and access to finance/insurance products;<br>NC Contract 1: Planning of community mobilization/engagement training programs and additional one-to-one support post-training to selected private sector entities/consortia – total 125 days of effort spread over 5 years of project implementation duration (additional budget for travel, workshop delivery etc. as described in other Budget Notes below). Contract can be issued to individuals/NGOs/CBOs based locally in the 3 target districts of Lake Chilwa basin to minimize domestic travel budget<br>NC Contract 2: Planning of business development/community-based business model design and development focused training programs and additional one-to-one support post-training to selected private sector entities/consortia – total 125 days of effort spread over 5 years of project implementation duration (additional budget for travel, workshop delivery etc. as described in other Budget Notes below). Contract can be issued to individuals/NGOs/CBOs based locally in the 3 target districts of Lake Chilwa basin to minimize domestic travel budget. | 250 | days | 350 | 1 | 87,500 |
| *3* | Travel | 1.2.1. | IC international travel | 4 | return flight | 2,000 | 1 | 8,000 |
| | | | DSA for IC | 60 | days | 250 | 1 | 15,000 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | DSA for NC | 60 | days | 175 | 1 | 10,500 |
| | | | Local car hire (costed @ US$ 250/day) + travel fuel (costed @ US$ 100/day) during workshop delivery | 12 | days | 350 | 1 | 4,200 |
| | | 1.2.3. | DSA for NC | 300 | days | 175 | 1 | 52,500 |
| | | | Local car hire (costed @ US$ 250/day) + travel fuel (costed @ US$ 100/day) during workshop delivery | 50 | days | 350 | 1 | 17,500 |
| *4* | Training, Workshops and Confer | 1.2.1. | Budget to host 12 1-day workshops (4 per district) for technical assistance to selected private entities under SCFF on sustainable briquette production, agricultural value chain development, ecotourism and access to finance; budgeted as 24 days of effort (12 days of effort for IC and 12 days of effort for NC – same ICs and NCs engaged as described under Budget Notes 1 and 2) @ $700 per day for IC and $350 per day for NC; additional budget for training participants travel, incidentals, food and other workshop related expenses. | 24 | days | 1,050 | 1 | 25,200 |
| | | 1.2.3. | Budget to host 12 2-day workshops (4 per district) for technical assistance to selected private entities under SCFF to develop partnerships between the private entities and CBOs, local communities and value chain actors; budgeted as 50 days of effort (25 days of effort for IC and 25 days of effort for NC – same ICs and NCs engaged as described under Budget Notes 1 and 2) @ $700 per day for IC and $350 per day for NC; additional budget for training participants'/communities' travel, incidentals, food and other workshop related expenses. | 50 | days | 350 | 1 | 17,500 |
| *5* | Contractual services – companies | 1.1.3. | 1 Responsible Party (RP) contract for professional services to design single GA TRANSFORM window of call for proposals (known as SCFF) and the facility under GA program. This service will be provided by GA's selected Service Provider; These services will include (i) planning and launch of GA window for TRANSFORM project (=SCFF) in accordance with the activities and outputs described under Component 1; (ii) setting of criteria together with GA and TRANSFORM project teams for selection (upto 12 private sector entities/consortia will be selected based on criteria) and signing of partnership agreements with private sector entities/consortia; (iii) discussion on needs of private sector entities/consortia and structuring of TA and matching investments as per their needs for each of the 12 selected entities/consortia; (iv) Provision of TA and matching investments (from TRANSFORM project budget, GA budget and UNDP TRAC resources co-finance) for each of these 12 selected entities/consortia; (v) number of training/capacity building programmes, community engagement and business development support and nature and extent of financial and technical support to be offered to selected private sector entities and financial institutions to be planned together with TRANSFORM and GA project teams; and (vi) disbursement of matching investments (from UNDP TRAC co-finance) to selected entities and oversee TA and capacity building activities to 12 selected entities/consortia; (vii) monitoring and reporting on expected outcomes of this GA/TRANSFORM window (=SCFF) costed at US$200,000.00. | 1 | contract | 200,000 | 1 | 200,000 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 1.2.4. | Contractual services for a knowledge management hub on markets, livelihood diversification and sustainable climate-resilient enterprises for four years | 1 | contract | 21,074 | 1 | 21,074 |
| | | 1.3.1. | Contractual services to oversee the operationalization of the NCCF, including selection and training of fund management team, establishment of a donor coordination group, setting up and MR&V system, a fiduciary management system and capitalization of NCCF | 1 | contract | 50,000 | 1 | 50,000 |
| 6 | Contractual services – individual | 1.1.2. | Private Sector Engagement Specialist (Individual Consultant) under TRANSFORM PMU to coordinate activities under Outcome 1 (and Output 2.4, described later) and among all stakeholders of Outcome 1 – TRANSFORM project PMU, UNDP Growth Accelerator (GA 1.0) program and its Service Provider, selected private sector entities/consortia (described under Output 1.2), and the communities. This Specialist will be responsible for overall implementation of activities under Outcome 1 and Outputs 2.3 and 2.4, and will be expected to provide necessary inputs and execution capabilities to ensure GA, TRANSFORM PMU, GA Service Provider, selected private sector entities/consortia, communities and other stakeholders are engaged as necessary and on-time to ensure smooth and timely execution of proposal private sector engagement and livelihood development activities under TRANSFORM project. This Specialist will also be responsible for market information hub related activities and M&E related to Outcome 1 and Output 2.3 and 2.4 activities | 373 | days | 350 | 1 | 130,500 |
| 7 | Materials & goods | 1.2.1. | 36 kits of materials and supplies for the workshops (3 kits per workshop/selected private sector entity/consortia), costed at US$40,00 per kit, for a total of US$1,440.00 for workshops planned under Activity 1.2.1 (Budget Note 4 above) | 36 | kits | 40 | 1 | 1,440 |
| | | 1.2.3. | 50 kits of materials and supplies for 12 2-day community workshops on community mobilization/partnerships/business development for US$40.00 a kit, for a total of US$2,000.00 for workshops planned under Activity 1.2.3 (Budget Note 4 above). | 50 | kits | 40 | 1 | 2,000 |
| 8 | Micro Capital Grants | 1.2.2. | Budget for disbursement of matching capital grants to competitively selected private sector entities/consortia under SCFF; budgeted as ~$40,000 grants per selected private sector entity/consortia for upto 12 selected private sector entity/consortia; disbursement will be the responsibility of RP contract professional service provider (Budget Note 5) of Growth Accelerator program. | 1 | lump sum | 500,000 | 1 | 500,000 |
| 9 | International Consultant | 2.1.1. | IC to oversee EbA Plan development and draft EbA plan with NC and district officers. The EbA plan should include i) an estimate of the area suitable for bamboo planting to stabilize riverbanks and create a buffer zone; ii) estimate of area for restoration of vulnerable and degraded indigenous forest, riparian and wetland ecosystems; iii) a communal rangeland management system; iii) indicated locations for the construction of truncheons; and iv) a fire management system, which inform activity 2.1.5. | 60 | days | 700 | 1 | 42,000 |
| | | 2.1.2. | IC to lead climate change vulnerability assessment in all three districts, including conducting stakeholder consultation with support from NC | 45 | days | 700 | 1 | 31,500 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ***10*** | National Consultant | 2.1.1. | NC to facilitate EbA Plan development and assist IC in conducting stakeholder consultations and the draft the plan. The EbA plan should include i) an estimate of the area suitable for bamboo planting to stabilize riverbanks and create a buffer zone; ii) estimate of area for restoration of vulnerable and degraded indigenous forest, riparian and wetland ecosystems; iii) a communal rangeland management system; iii) indicated locations for the construction of truncheons; and iv) a fire management system, which inform activity 2.1.5. | 60 | days | 350 | 1 | 21,000 |
| | | 2.1.2. | NC to support IC in conducting climate change vulnerability assessment in all three districts, including conducting stakeholder consultations | 45 | days | 350 | 1 | 15,750 |
| | | 2.1.3. | NC will lead the facilitation and report back on EbA training. Training will take place over a two-day workshop in each district (six days total) + two days for workshop report + two days for local travel between districts | 30 | days | 350 | 1 | 10,500 |
| | | | NC will support the facilitation and report back on the EbA planning training. Training will take place over a two-day workshop in each district (six days total) + two days for workshop report + two days for local travel between districts | 30 | days | 350 | 1 | 10,500 |
| | | 2.1.4. | NC to lead the development of an integrated cross-sectoral management framework, including studies such as an institutional capacity assessment to identify gaps and entry points for enhancing cross-sectoral coordination on EbA in the Lake Chilwa basin and stakeholder engagements | 45 | days | 350 | 1 | 15,750 |
| | | | NC to support lead NC in developing integrated cross-sectoral management framework, including studies such as an institutional capacity assessment to identify gaps and entry points for enhancing cross-sectoral coordination on EbA in the Lake Chilwa basin and stakeholder engagements | 45 | days | 350 | 1 | 15,750 |
| | | 2.3.1. | NC to lead the design and the facilitation of the training in business identification, development and management, as well as a workshop report. This NC will also deliver activity 2.3.2, namely facilitate business workshops. | 80 | days | 350 | 1 | 28,000 |
| | | 2.4.1. | NC to lead i) the assessment of existing access to microfinance in each target district, ii) assess the existing scale of production of sustainable charcoal, high-value agricultural products, staple agricultural crops, and assess current skills and capacities of communities regarding the activities in Output 1.3 (inter alia, ecotourism and sustainable charcoal production) | 40 | days | 350 | 1 | 14,000 |
| | | 2.4.5. | NC to prepare, facilitate and report on community training in finance and risk management | 38 | days | 350 | 1 | 13,300 |
| ***11*** | Travel | 2.1.1. | IC's DSA for Zomba city costed @ US$250 per day | 7 | days | 250 | 1 | 1,750 |
| | | | NC's subsistence allowance | 3 | days | 175 | 1 | 525 |
| | | | Return flights for IC | 1 | return flight | 2,000 | 1 | 2,000 |
| | | | Subsistence allowance for NC during 12 days of workshop facilitation and travel between districts | 12 | days | 175 | 1 | 2,100 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Local car hire (costed @ US$ 250/day) + travel fuel (costed @ US$ 100/day) for IC and NC local travel during stakeholder engagement and validation workshop. | 12 | days | 350 | 1 | 4,200 |
| | | 2.1.2. | DSA for IC at US$250 per day | 15 | days | 250 | 1 | 3,750 |
| | | | Subsistence allowance for NC | 15 | days | 175 | 1 | 2,625 |
| | | | One in-country mission for IC for undertaking Activity 2.1.2 | 1 | return flight | 2,000 | 1 | 2,000 |
| | | | Local car hire (costed @ US$ 250/day) + travel fuel (costed @ US$ 100/day) for IC and NC to carry out for climate change vulnerability assessment and stakeholder engagements | 15 | days | 350 | 1 | 5,250 |
| | | 2.1.3. | Car hire and fuel costs for NC travel for training in target districts costed @US$ 250/day + fuel costed @US$ 100/day | 10 | days | 350 | 1 | 3,500 |
| | | | Subsistence rate for two NCs during 10 days of workshop facilitation and travel between districts | 20 | days | 175 | 1 | 3,500 |
| | | | Local car hire costed @US$ 250/day + fuel costed @US$ 100/day for NCs (financed by co-finance) to conduct CoBRA workshops | 20 | days | 350 | 1 | 7,000 |
| | | 2.1.4. | DSA for NCs at US$175 per day | 90 | day | 175 | 1 | 15,750 |
| | | | Car hire for local travel for stakeholder engagement. Stakeholder consultations will take place within 5 days | 5 | days | 350 | 1 | 1,750 |
| | | 2.2.2. | Local travel for PMU to carry activity 2.2.2. Car hire + fuel costed at US$ 250 / day + US$ 100 / day | 12 | days | 350 | 1 | 4,200 |
| | | 2.3.2. | Car hire +fuel for local travel costed @ US$ 250 / day + fuel @ US$ 100 / day | 50 | days | 350 | 1 | 17,500 |
| | | | Subsistence allowance for NCs | 50 | days | 175 | 1 | 8,750 |
| | | 2.4.1. | Car hire (costed @ US$250 / day + fuel (costed @ US$100 / day) for field work of needs assessment | 20 | days | 350 | 1 | 7,000 |
| | | | Subsistence allowance for NCs | 20 | days | 175 | 1 | 3,500 |
| | | 2.4.5. | Subsistence allowance for NC | 30 | days | 175 | 1 | 5,250 |
| | | | Local car hire + travel during workshop delivery, costed @ US$ 250 / day for car hire + US$ 100 / day for fuel | 30 | days | 350 | 1 | 10,500 |
| *12* | Training, Workshops and Confer | 2.1.1. | One-day stakeholder engagement workshop in each district with 30 people. Includes venue hire, catering, and transport. | 3 | worksho ps | 750 | 1 | 2,250 |
| | | | One-day validation workshop in each district | 3 | worksho ps | 750 | 1 | 2,250 |
| | | 2.1.2. | One day validation workshop per district | 3 | days | 750 | 1 | 2,250 |
| | | 2.1.3. | One-day EbA training workshop per district, three districts total | 6 | days | 750 | 1 | 4,500 |
| | | | CoBRA workshops, 2 workshops per district | 6 | days | 750 | 1 | 4,500 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 2.2.2. | One-day workshop for BVC and other village-level organisations training, 2 trainings per district | 6 | days | 750 | 1 | 4,500 |
| | | 2.2.3. | 1 Workshop per district for conference on the use of GIS-eabled incident-recording/reporting devices and UAVs | 3 | days | 750 | 1 | 2,250 |
| | | 2.3.2. | Training in business identification, development and management, 1 day workshop, 10 workshops per district. | 30 | days | 750 | 1 | 22,500 |
| | | 2.4.1. | 2 one-day stakeholder engagement workshop per district | 6 | days | 750 | 1 | 4,500 |
| | | | One validation workshop | 1 | days | 750 | 1 | 750 |
| | | 2.4.2. | Demonstration and capacity building 1-day workshops with technical assistance and safety training for communities and extension workers, 7 per district | 21 | days | 1,000 | 1 | 21,000 |
| | | 2.4.3. | Demonstration and capacity building 1-day workshop on conservation agriculture (CA) and agroforestry practices for community stakeholders, 10 workshops per district | 30 | days | 750 | 1 | 22,500 |
| | | | 1-day capacity building workshop with BVCs on integrated aquaculture and capture fisheries and co-management of fishieres, including extension workers and government stakeholders, 2 workshop per district | 6 | days | 750 | 1 | 4,500 |
| | | 2.4.4. | Capacity building workshop and technical training, 10 per district | 30 | days | 750 | 1 | 22,500 |
| | | 2.4.5. | 1-day workshop for community training in, inter alia, microfinance, business operations, financial management, bookkeeping, risk management, marketing, sales, distributions, installation. 10 workshops per district | 30 | days | 750 | 1 | 22,500 |
| | | Project Implementation partner training | 5 Day workshop o build the capacity of key project implementation partners and equip them with necessary knowledge and tools needed to achieve the Project's objectives effectively and efficiently.<br>Such capacity-building activities should be organized before the implementation of the first activity and should include a combination of the following topics :<br>• UNDP Social and Environmental Standards (SES) and Programming Principles,<br>• Stakeholder Engagement and FPIC (Free Prior and Informed Consent),<br>• UNDP Accountability Mechanism (Grievance Redress Mechanism, SRM, SECU),<br>• Understanding UNDP Project Cycle,<br>• Monitoring and Evaluation of UNDP Projects,<br>• Gender,<br>• Human Rights | 5 | day | 2,500 | 1 | 12,500 |
| *13* | Materials & goods | 2.1.1. | Materials for all 6 workshops: stakeholder engagements and validation per district | 7 | kit | 40 | 1 | 280 |
| | | 2.1.2. | Materials and supplies for validation workshop, one kit per district | 3 | kits | 40 | 1 | 120 |
| | | 2.1.3. | material kits for three two-day EbA training workshops | 3 | kits | 40 | 1 | 120 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | materials for 3x2-day CoBRA workshops | 6 | kits | 500 | 1 | 3,000 |
| | | 2.1.4. | Materials for one stakeholder engagement and one validation workshop per district | 6 | kits | 50 | 1 | 300 |
| | | 2.1.5. | Required materials and supplies for ecosystem restoration and rehabilitation interventions, including clearing of alien vegetation. Cost estimated at @ US$ 1,000 per ha + 10% contingency plan. This may include agricultural and forestry inputs as well as construction materials, inter alia wires, fence, tools and safety equipment. | 1324 | ha | 1,100 | 1 | 1,456,400 |
| | | 2.2.2. | Materials for 1-day workshop | 6 | kit | 50 | 1 | 300 |
| | | 2.2.3. | Materials and supplies for validation workshop, 1 per district | 3 | kits | 25 | 1 | 75 |
| | | 2.3.2. | Materials for workshop, 1 kit per workshop | 30 | kits | 50 | 1 | 1,500 |
| | | 2.4.4. | Materials and supplies for workshops | 30 | kits | 50.16 | 1 | 1505 |
| | | 2.4.5. | Materials and supplies for workshop on finance and risk management | 30 | kits | 40 | 1 | 1,200 |
| ***14*** | Contractual Services - Company | 2.2.1. | Contractual services to design and implement community-based monitoring and reporting system in line with the EbA plan, including a mechanism for the production of quarterly M&R reports. | 1 | contract | 40,000 | 1 | 40,000 |
| | | Strategic Environmental and Social Assessment (SESA) | Strategic Environmental and Social Assessment (SESA) for upstream activities under Outcomes 2, as part of the project's SES strategy. | 1 | contract | 15,000 | 1 | 15,000 |
| | | Strategic Environmental and Social Assessment (SESA), Environmental and Social Impact Assessment (ESIA) and Envrionmental and Social Impact Management Plan (ESMP) | An appropriately scoped Environmental & Social Impact Assessment (ESIA) will be undertaken and an Environmental & Social Impact Management Plan (ESMP) prepared during the first six months of project implementation to further refine risk identification, mitigation and management strategies, as well as to establish a system for monitoring risks. The ESIA will include specialist biodiversity studies to confirm the level of risk to biodiversity and ecosystem services. The ESMP will address the biodiversity risks identified in or near the protected areas and other critical habitats, and management actions will be designed to achieve net gains of those biodiversity values that might be impacted within the Protected Area, including a Biodiversity Action plan The ESMP will also include measures to prevent the introduction of invasive alien species. | 1 | contract | 75,000 | 1 | 75,000 |
| ***15*** | Equipment | 2.2.1. | Monitoring equipment for use in each target districts. The cost includes GPS, office equipment (laptop), water quality testing kits, river gauges, invasive plant | 3 | kits | 40,000 | 1 | 120,000 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | management equipment; biodiversity monitoring equipment (fish monitoring equipment, binoculars, camera traps, field guides etc.) | | | | | |
| | | 2.2.3. | Equipment for demonstration | 3 | kit | 1,500 | 1 | 4,500 |
| | | 2.4.2. | Equipment, inter alia solar fish dryers, smoking kilns and energy-efficient cookstoves, for demonstration and distribution | 65 | kits | 5,000 | 1 | 325,000 |
| 16 | Agri & Forestry Products | 2.4.3. | Seedlings for starting agroforestry nurseries, 15 kits per target district | 45 | kits | 1,000 | 1 | 45,000 |
| | | | Seeds for staple foods, 15 kits per district | 45 | kits | 100 | 1 | 4,500 |
| | | | Improved irrigation equipment, inter alia solar water pumps, drip systems, integrated aquaculture, water reservoirs. 6 equipment kits for each target district | 42 | kits | 10,000 | 1 | 420,000 |
| 17 | Travel | Project Implementation partner training | Travel costs for workshop participants | 1 | kit | 3,000 | 1 | 3,000 |
| 18 | Training, Workshops and Confer | 2.1.4. | One-day workshop per district for stakeholder engagement for district leaders and officials | 3 | days | 750 | 1 | 2,250 |
| | | | One-day validation workshop for all three districts | 3 | days | 1,000 | 1 | 3,000 |
| 19 | Materials & goods | Project Implementation partner training | Materials and supplies for workshop | 1 | lump sum | 5,000 | 1 | 5,000 |
| | | 2.1.5. | Required materials and supplies for ecosystem restoration and rehabilitation interventions, including clearing of alien vegetation. Cost estimated at @ US$ 1,000 per ha + 10% contingency plan. This may include agricultural and forestry inputs as well as construction materials, inter alia wires, fence, tools and safety equipment. | 416.1 | ha | 1,100 | 1 | 457,696 |
| 20 | Equipment and Furniture | 3.2.4. | Radio broadcasting equipment and radios for distribution in target communities | 1 | lump sum | 30,000 | 1 | 30,000 |
| 21 | Audio Visual&Print Prod Costs | 3.4.2. | Guidance Manual print products | 1 | kit | 17,500 | 2 | 35,000 |
| 22 | Travel | 3.1.1. | Travel costs associated with activities carried under Output 3. Car hire and fuel for workshops, costed at US$ 250 / day + US$ 100 / day | 5 | days | 350 | 1 | 1,750 |
| | | 3.2.2. | Car hire and fuel for NC's (funded by co-finance) local travel to facilitate workshops | 4 | days | 350 | 3 | 4,200 |
| | | 3.2.5. | Yearly symposia and regional study tours participants travel costs. | 1 | lump sum | 3,000 | 4 | 12,000 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 3.3.3. | Travel costs associated with activities carried under output 3. Car hire and fuel for workshops, costed at US$ 250 / day + US$ 100 / day | 15 | days | 350 | 1 | 5,250 |
| 23 | Training, Workshops and Confer | 3.1.1. | 3 district-level workshops for methodology development. | 3 | days | 750 | 1 | 2,250 |
| | | 3.2.2. | One 1-day workshop for lessons learnt sharing per target district | 3 | days | 750 | 3 | 6,750 |
| | | 3.2.4. | Workshops for capacity building on Listening Clubs and Learner groups in the target communities. | 15 | days | 750 | 1 | 11,250 |
| | | 3.2.5. | Regional study tours and annual symposia during 4 years (Y2-Y5). Cost of US$ 13,500.00 per yearly symposium for 4 years. | 1 | contract | 13,500 | 4 | 53,500 |
| | | 3.3.3. | Five one-day workshop per district to train and raise awareness in access to SCFF funding. | 15 | days | 750 | 1 | 11,250 |
| | | 3.4.2. | One-day stakeholder engagement workshop for drafting district-specific investment plan per district | 3 | days | 750 | 1 | 2,250 |
| | | | One-day validation workshop per district | 3 | days | 750 | 1 | 2,250 |
| 24 | Materials & Goods | 3.1.1. | Workshop materials | 1 | kit | 50 | 1 | 50 |
| | | 3.2.2. | Materials for workshop | 1 | kit | 50 | 3 | 150 |
| | | 3.2.5. | Materials and supplies associated with regional study tours and yearly symposia. | 1 | kits | 750 | 4 | 3,000 |
| | | 3.3.3. | Workshop materials | 3 | kit | 600 | 1 | 1,800 |
| | | Activity .2.. | Materials for validation workshops | 3 | kit | 100 | 1 | 300 |
| 25 | Contractual Services - Company | 3.2.3. | Contractual services to design, print and disseminate EbA awareness products, including outreach impact reports in partnership with the Knowledge Management Hub. | 1 | contract | 21,000 | 1 | 21,000 |
| | | 3.3.1. | Contractual services to undertake investment opportunities and market assessment.<br>*This company will also undertake activity 3.3.2 and 3.4.1. | 1 | contract | 30,000 | 1 | 30,000 |
| | | 3.3.2. | Contractual services to develop FCRIP for each target district based on activity 3.3.1, including i) the research and development of three district-specific investment plans, ii) the compilation of relevant information related to climate resilience investment planning (activity 3.4.1) iii) draft content for Guidance Manuals (activity 3.4.2.), including stakeholder workshops and a validation workshop under activity 3.4.2. (costed under activity 3.4.2.)<br>*This company will also carry out activity 3.3.1. and 3.4.1. | 1 | contract | 60,000 | 1 | 60,000 |
| | | 3.4.2. | Professional services to develop Guidance Manuals for locally driven climate-resilient investment planning according to FCRIP plan developed under 3.3.2. It will encompass a professional graphic design of the Guidance Manual, including digital and physical distribution versions.<br>*This service requires operational coordination from the organisation that will carry out activities 3.3.1 and 3.3.2. | 1 | contract | 10,000 | 1 | 10,000 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **26** | Travel | 2.4.2. | Car hire and fuel for 4 days for PMU travel between districts for validation workshop, costed @ US$ 250 / day + US$ 100 / day for fuel | 3 | days | 350 | 1 | 1,050 |
| **27** | Materials & Goods | 3.1.4. | Materials for yearly workshops under activity 3.1.4 (US$ 1200,00 per year). | 1 | lump sum | 1,200 | 4 | 4,800 |
| **28** | Contractual Services - Company | 3.1.2. | Contractual services to set up and establish knowledge management hub for the documentation and dissemination on EbA and livelihood diversification best practices, and market and product information (activity 3.1.2), including the development of methodologies for capturing, storing, and sharing information on EbA best practices within the Lake Chilwa Basin (activity 3.1.1.) | 1 | contract | 60,000 | 1 | 60,000 |
| | | 3.2.1. | Contractual services to design and implement a 4-year awareness campaign in collaboration with SFAD-WM project. This should include the design of radio listening clubs and learner group activities in partnership with TAs, BVCs and other relevant groups, which will support activity 3.2.4. | 1 | contract | 42,000 | 1 | 42,000 |
| **29** | Training, Workshops and Confer | 3.1.4. | Seven workshops in the three target districts (21 workshops) per year on the use of the knowledge management hub, costed @ US$750 per workshop | 21 | days | 750 | 4 | 63,000 |
| **M&E subcomponent** | | | | | | | | |
| **30** | Internation al consultants | Measurement of means of verification of project results | M&E Officer to implement monitoring and evaluation tasks for project implementation, including facilitating the M&E Inception Workshop, monitoring of GEF core indicators, project results and indicators from other plans | 1 | contract | 20,000 | 5 | 100,000 |
| **31** | Training, Workshops and Confer | Inception Workshop and Report | Inception workshop and report (29% by LDCF) | 1 | contract | 1,449 | 1 | 1,449 |
| **32** | Contractual Services - Company | Mid-term review (MTR) | MTR - Mid-term review and evaluation, to carry all costs of MTR, incl. inter alia travel and materials | 1 | contract | 48,000 | 1 | 48,000 |
| | | Terminal Evaluation (TE) | TE - Terminal evaluation, to carry all costs of MTR, incl. inter alia travel and materials | 1 | contract | 48,000 | 1 | 48,000 |
| **33** | Internation al consultants | Monitoring of Social and Environmental Safeguards Screenings | Safeguards officer for SES monitoring | 1 | contract | 7,500 | 5 | 37,500 |
| | | Monitoring of Gender Action Plan | Gender Consultant to oversee GAP monitoring | 1 | contract | 7,500 | 5 | 37,500 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 34 | Travel | M&E activities | In-country travel costs associated with M&E activities | 0 | 0 | 1,500 | 5 | 7,500 |
| 35 | Training, Workshops and Confer | Inception Workshop and Report | Inception workshop and report (71% by UNDP) | 1 | contract | 3,551 | 1 | 3,551 |
| 36 | Materials & goods | M&E activities | Materials and supplies associated with M&E tasks | 1 | kit | 2,000 | 5 | 10,000 |
| 37 | Contractual Services - Individ | Project Manager | Project Manager (29% by LDCF) | 12 | months | 869 | 5 | 52,140 |
| | | Machinga District Project Coordinator | Machinga District Project Coordinator (29% by LDCF) | 12 | months | 579 | 5 | 34,760 |
| | | Phalombe District Project Coordinator | Phalombe District Project Coordinator (29% by LDCF) | 12 | months | 579 | 5 | 34,760 |
| | | Zomba District Project Coordinator | Zomba District Project Coordinator (29% by LDCF) | 12 | months | 579 | 5 | 34,760 |
| | | Project Finance and Administrative Assistant | Project Finance and Administrative Assistant (29% by LDCF) | 12 | months | 348 | 5 | 20,856 |
| | | Procurement Officer | Procurement Officer (29% by LDCF) | 12 | months | 2<br>89.6 | 5 | 17,378 |
| 38 | Information Technology Equipmt | Equipment and Supplies | Office computers (6) + printer (1) (29% by LDCF) | 1 | set | 2,462 | 1 | 2,462 |
| 39 | Travel | Travel | Budget available to cover in-country travel costs during project implementation for PMU staff (29% by LDCF) | 1 | bulk | 434 | 5 | 2,172 |
| 40 | Materials & goods | Materials & goods | Office stationery (29% by LDCF) | 1 | kits | 29 | 5 | 145 |
| 41 | Professional Services | Audit | Audit (29% by LDCF) | 1 | contract | 1,883 | 5 | 9,414 |
| 42 | | Project Manager | Project Manager (71% by UNDP) | 12 | months | 2,131 | 5 | 127,860 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Contractual Services - Individ | Machinga District Project Coordinator | Machinga District Project Coordinator (71% by UNDP) | 12 | months | 1,421 | 5 | 85,240 |
| | | Phalombe District Project Coordinator | Phalombe District Project Coordinator (71% by UNDP) | 12 | months | 1,421 | 5 | 85,240 |
| | | Zomba District Project Coordinator | Zomba District Project Coordinator (71% by UNDP) | 12 | months | 1,421 | 5 | 85,240 |
| | | Project Finance and Administrative Assistant | Project Finance and Administrative Assistant (71% by UNDP) | 12 | months | 852 | 5 | 51,144 |
| | | Procurement Officer | Procurement Officer (71% by UNDP) | 12 | months | 710.3 | 5 | 42,622 |
| *43* | Information Technology Equipmt | Equipment and Supplies | Office computers (6) + printer (1) (71% by UNDP) | 1 | set | 6,038 | 1 | 6,038 |
| *44* | Travel | Travel | Budget available to cover in-country travel costs during project implementation for PMU staff (71% by UNDP) | 1 | bulk | 1,066 | 5 | 5,328 |
| *45* | Materials & goods | Materials & goods | Office stationery (71% by UNDP) (71% by UNDP) | 1 | kits | 71 | 5 | 355 |
| *46* | Professional Services | Audit | Audit (71% by UNDP) | 1 | contract | 4,617 | 5 | 23,086 |

## X. LEGAL CONTEXT

**Option a. Where the country has signed the Standard Basic Assistance Agreement (SBAA)**
This project document shall be the instrument referred to as such in Article 1 of the Standard Basic Assistance Agreement between the Government of (country) and UNDP, signed on (date). All references in the SBAA to "Executing Agency" shall be deemed to refer to "Implementing Partner."

This project will be implemented by The Department of Environmental Affairs (DEA), under the Ministry of Natural Resources and Climate Change (MoNRCC) will be the project's Implementing Partner ("Implementing Partner") in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of an Implementing Partner does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, the financial governance of UNDP shall apply.

The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations or UNDP concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

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## XI. RISK MANAGEMENT

**Option a. Implementing Partner is a Government Entity (NIM)**

1. Consistent with the Article III of the SBAA, the responsibility for the safety and security of the Implementing Partner and its personnel and property, and of UNDP's property in the Implementing Partner's custody, rests with the Implementing Partner. To this end, the Implementing Partner shall:
   a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried.
   b) assume all risks and liabilities related to the Implementing Partner's security, and the full implementation of the security plan.

2. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of the Implementing Partner's obligations under this Project Document.

3. The Implementing Partner agrees to undertake all reasonable efforts to ensure that no UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via http://www.un.org/sc/committees/1267/aq_sanctions_list.shtml.

4. The Implementing Partner acknowledges and agrees that UNDP will not tolerate sexual harassment and sexual exploitation and abuse of anyone by the Implementing Partner, and each of its responsible parties, their respective sub-recipients and other entities involved in Project implementation, either as contractors or subcontractors and their personnel, and any individuals performing services for them under the Project Document.
   (a) In the implementation of the activities under this Project Document, the Implementing Partner, and each of its sub-parties referred to above, shall comply with the standards of conduct set forth in the Secretary General's Bulletin ST/SGB/2003/13 of 9 October 2003, concerning "Special measures for protection from sexual exploitation and sexual abuse" ("SEA").
   (b) Moreover, and without limitation to the application of other regulations, rules, policies and procedures bearing upon the performance of the activities under this Project Document, in the implementation of activities, the Implementing Partner, and each of its sub-parties referred to above, shall not engage in any form of sexual harassment ("SH"). SH is defined as any unwelcome conduct of a sexual nature that might reasonably be expected or be perceived to cause offense or humiliation, when such conduct interferes with work, is made a condition of employment or creates an intimidating, hostile or offensive work environment.

5. a) In the performance of the activities under this Project Document, the Implementing Partner shall (with respect to its own activities) and shall require from its sub-parties referred to in paragraph 4 (with respect to their activities) that they, have minimum standards and procedures in place, or a plan to develop and/or improve such standards and procedures in order to be able to take effective preventive and investigative action. These should include policies on sexual harassment and sexual exploitation and abuse; policies on whistleblowing/protection against retaliation; and complaints, disciplinary and investigative mechanisms. In line with this, the Implementing Partner will and will require that such sub-parties will take all appropriate measures to:
   i. Prevent its employees, agents or any other persons engaged to perform any services under this Project Document, from engaging in SH or SEA.
   ii. Offer employees and associated personnel training on prevention and response to SH and SEA, where the Implementing Partner and its sub-parties referred to in paragraph 4 have not put in place its own training regarding the prevention of SH and SEA, the Implementing Partner and its sub-parties may use the training material available at UNDP.
   iii. Report and monitor allegations of SH and SEA of which the Implementing Partner and its sub-parties referred to in paragraph 4 have been informed or have otherwise become aware, and status thereof.
   iv. Refer victims/survivors of SH and SEA to safe and confidential victim assistance; and
   v. Promptly and confidentially record and investigate any allegations credible enough to warrant an investigation of SH or SEA. The Implementing Partner shall advise UNDP of any such allegations received and investigations being conducted by itself or any of its sub-parties referred to in paragraph 4 with respect to their activities under the Project Document, and shall keep UNDP informed during the investigation by it or any of such sub-parties, to the extent that such notification (i) does not jeopardize the conduct of the investigation, including but not limited to the safety or security of persons, and/or (ii) is not in contravention of any laws applicable to it. Following the investigation, the Implementing Partner shall advise UNDP of any actions taken by it or any of the other entities further to the investigation.

   1. The Implementing Partner shall establish that it has complied with the foregoing, to the satisfaction of UNDP, when requested by UNDP or any party acting on its behalf to provide such confirmation. Failure of the Implementing Partner, and each of its sub-parties referred to in paragraph 4, to comply of the foregoing, as determined by UNDP, shall be considered grounds for suspension or termination of the Project.

6. Social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (http://www.undp.org/ses) and related Accountability Mechanism (http://www.undp.org/secu-srm).

7. The Implementing Partner shall: (a) conduct project and programme-related activities in a manner consistent with the UNDP Social and Environmental Standards, (b) implement any management or mitigation plan prepared for the project or programme to comply with such standards, and (c) engage in a constructive and timely manner to address any concerns and complaints raised through the Accountability Mechanism. UNDP will seek to ensure that communities and other project stakeholders are informed of and have access to the Accountability Mechanism.

8. All signatories to the Project Document shall cooperate in good faith with any exercise to evaluate any programme or project-related commitments or compliance with the UNDP Social and Environmental Standards. This includes providing access to project sites, relevant personnel, information, and documentation.

9. The Implementing Partner will take appropriate steps to prevent misuse of funds, fraud or corruption, by its officials, consultants, responsible parties, subcontractors and sub-recipients in implementing the project or using UNDP funds. The Implementing Partner will ensure that its financial management, anti-corruption and anti-fraud policies are in place and enforced for all funding received from or through UNDP.

10. The requirements of the following documents, then in force at the time of signature of the Project Document, apply to the Implementing Partner: (a) UNDP Policy on Fraud and other Corrupt Practices and (b) UNDP Office of Audit and Investigations Investigation Guidelines. The Implementing Partner agrees to the requirements of the above documents, which are an integral part of this Project Document and are available online at www.undp.org.

11. In the event that an investigation is required, UNDP has the obligation to conduct investigations relating to any aspect of UNDP projects and programmes in accordance with UNDP's regulations, rules, policies and procedures. The Implementing Partner shall provide its full cooperation, including making available personnel, relevant documentation, and granting access to the

Implementing Partner's (and its consultants', responsible parties', subcontractors' and sub-recipients') premises, for such purposes at reasonable times and on reasonable conditions as may be required for the purpose of an investigation. Should there be a limitation in meeting this obligation, UNDP shall consult with the Implementing Partner to find a solution.

12. The signatories to this Project Document will promptly inform one another in case of any incidence of inappropriate use of funds, or credible allegation of fraud or corruption with due confidentiality.

    Where the Implementing Partner becomes aware that a UNDP project or activity, in whole or in part, is the focus of investigation for alleged fraud/corruption, the Implementing Partner will inform the UNDP Resident Representative/Head of Office, who will promptly inform UNDP's Office of Audit and Investigations (OAI). The Implementing Partner shall provide regular updates to the head of UNDP in the country and OAI of the status of, and actions relating to, such investigation.

    1. UNDP shall be entitled to a refund from the Implementing Partner of any funds provided that have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document. Such amount may be deducted by UNDP from any payment due to the Implementing Partner under this or any other agreement. Recovery of such amount by UNDP shall not diminish or curtail the Implementing Partner's obligations under this Project Document.

       Where such funds have not been refunded to UNDP, the Implementing Partner agrees that donors to UNDP (including the Government) whose funding is the source, in whole or in part, of the funds for the activities under this Project Document, may seek recourse to the Implementing Partner for the recovery of any funds determined by UNDP to have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document.

    *Note:* The term "Project Document" as used in this clause shall be deemed to include any relevant subsidiary agreement further to the Project Document, including those with responsible parties, subcontractors and sub-recipients.

14. Each contract issued by the Implementing Partner in connection with this Project Document shall include a provision representing that no fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the proposal, have been given, received, or promised in connection with the selection process or in contract execution, and that the recipient of funds from the Implementing Partner shall cooperate with any and all investigations and post-payment audits.

15. Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project, the Government will ensure that the relevant national authorities shall actively investigate the same and take appropriate legal action against all individuals found to have participated in the wrongdoing, recover and return any recovered funds to UNDP.

16. The Implementing Partner shall ensure that all of its obligations set forth under this section entitled "Risk Management" are passed on to each responsible party, subcontractor and sub-recipient and that all the clauses under this section entitled "Risk Management Standard Clauses" are included, *mutatis mutandis*, in all sub-contracts or sub-agreements entered into further to this Project Document.

## XII. MANDATORY ANNEXES

**Annex 1: GEF Budget Template**
*Please refer to separate Excel document*

**Annex 2: GEF execution support letter**
*Not required for a full NIM project*

**Annex 3: Project map and Geospatial Coordinates of project sites**
The project will be implemented in the three districts of Zomba, Phalombe and Machinga, in the south-eastern part of the country. Within the three districts, the total population is 1,911,612[274]. Machinga District has a total land area of 3,582 km$^2$, with a total population of 735,438 and a population density of 205 people per km$^2$. Phalombe District has a total land area of 1, 323 km$^2$ and a population of 429,450, with a population density of 325 people per km$^2$. Zomba District has a total land area of 2,363 km$^2$ and a total population of 746,724. It has a population density of 316 people km$^2$. Figure 26 below shows the project map, indicating the target districts in the Lake Chilwa basin. A detailed map of each district is presented in Annex A.

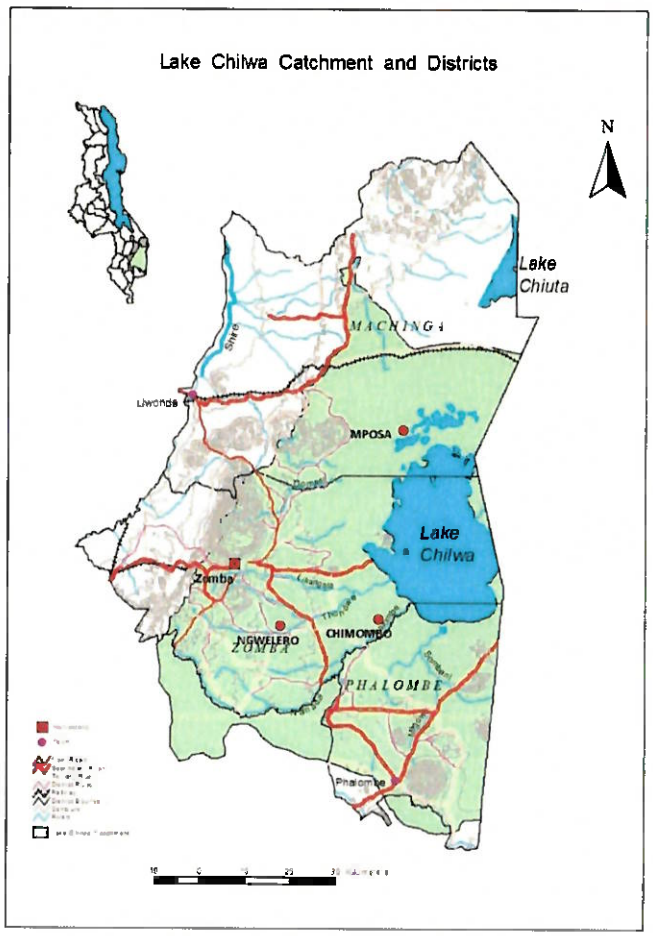



**Figure 26.** Project map indicating the target districts in the Lake Chilwa basin.

**Table 3.** Project locations with geo-referenced information

| Site | geonames.org ID | Brief description |
|---|---|---|

[274] NSO Population and Census Report, 2018

| | | |
|---|---|---|
| Phalombe | https://www.geonames.org/1105842/phalombe-district.html<br>S 15°40'00" E 35°40'00 | Phalombe District has a total land area of 1,323 km² and a population of 429,450 with a population density of 325 people per km². |
| Machinga | https://www.geonames.org/927642/machinga-district.html<br>S 14°56'45" E 35°34'25" | Machinga District has a total land area of 3,582 km² with a total population of 735,438. It has a population density of 205 people per km². |
| Zomba | https://www.geonames.org/923292/zomba-district.html<br>S 15°25'48" E 35°25'06" | Zomba District has a total land area of 2,363 km² and a total population of 746,724. It has a population density of 316 people per km². |

**Annex 4: Multi Year Work Plan**
*Added as separate document*

**Annex 5: Monitoring plan**
*Added as separate document*

**Annex 6: UNDP Social and Environmental Screening Procedure (SESP)**
*Added as separate document*

**Annex 7: UNDP Risk Register**
*Added as separate document*

**Annex 8: Overview of Project Staff and Technical Consultancies**
*Added as separate document*

**Annex 9: Stakeholder Engagement Plan**
*Added as separate document*

**Annex 10: Environmental Social Management Framework (ESMF) and other SES frameworks/plans, if required**
*Added as separate document*

**Annex 11: Gender Analysis and Gender Action Plan**
*Added as separate document*

**Annex 12: Procurement Plan**
*Added as separate document*

**Annex 13: GEF focal area specific annexes**
*Not applicable unless otherwise specified by UNDP CO*

**Annex 14: Additional agreements**
*Not applicable*

**Annex 15: GEF Core indicators**
*Added as separate document*

**Annex 16: GEF 7 Taxonomy**
*Added as separate document*

**Annex 24: Technical detail and implementation guidance**
*Added as separate document*

**Appendix 1: Malawi Financial Sector Overview**

*Added as separate document*