



Food and Agriculture
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Government of Malawi

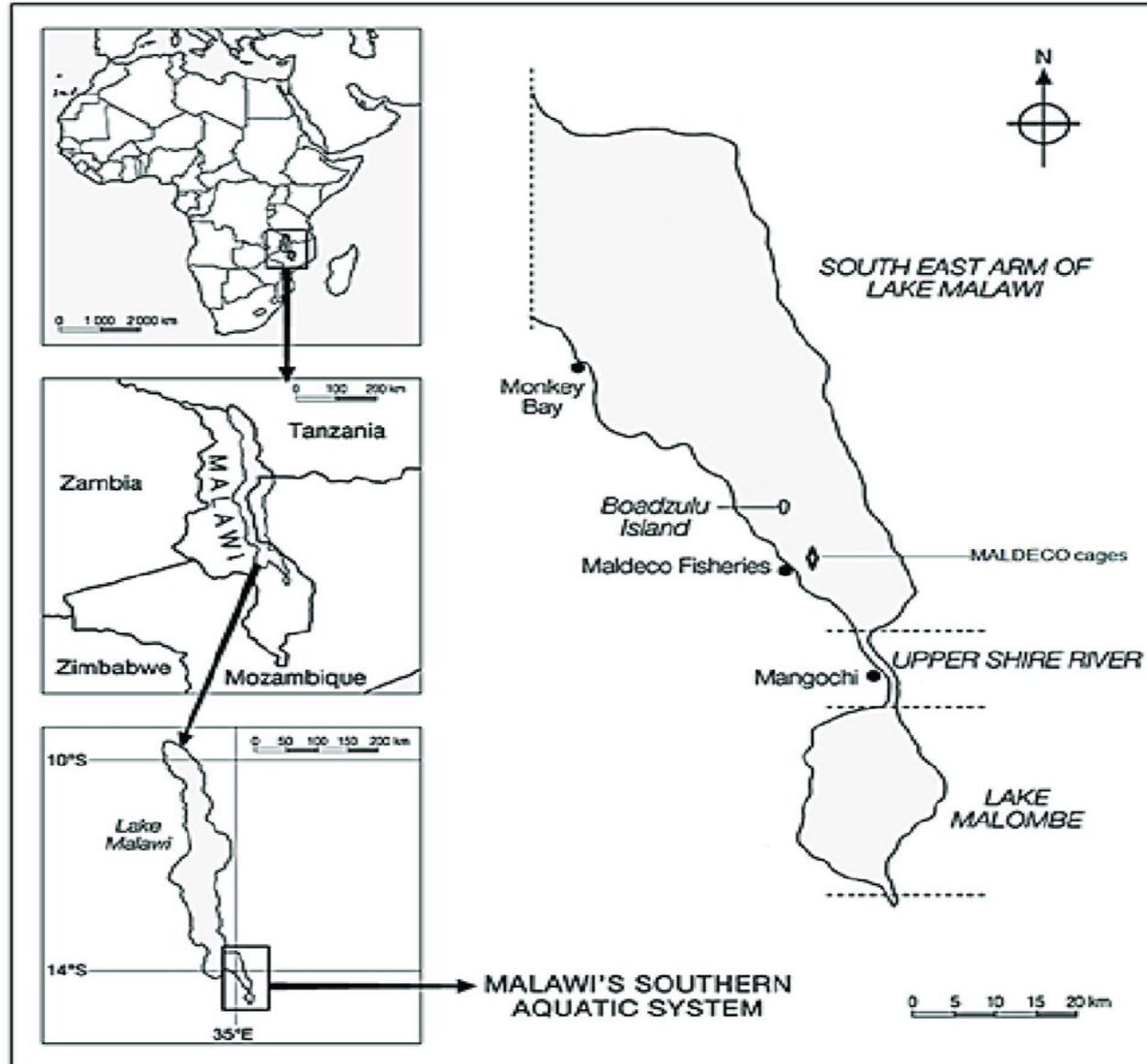
Increasing resilience to climate change in the fisheries sector in Malawi with Focus on Lake Malombe

GCP /MLW/053/LDF

2020 International Forum on the Effects of Climate Change on Fisheries & Aquaculture

25–26 February 2020

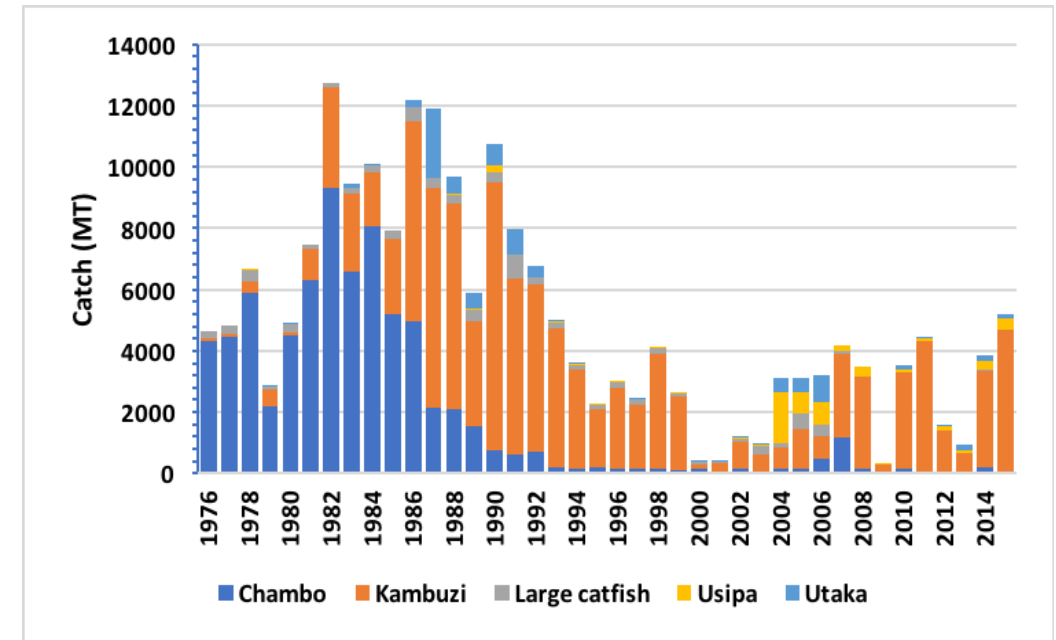
Lake Malombe Catchment Area



- Connected to SEA of Lake Malawi through upper Shire River
- The lake is about 390 Km² in area and averages 5m in depth
- Research revealed 19% reduction in the lake's overall area between 1973 and 2008 (Dulanya et al. 2013) owing to climate variation
- The fishing villages confined within narrow strips of land along the lake on both sides with a high population density averaging 500/km²

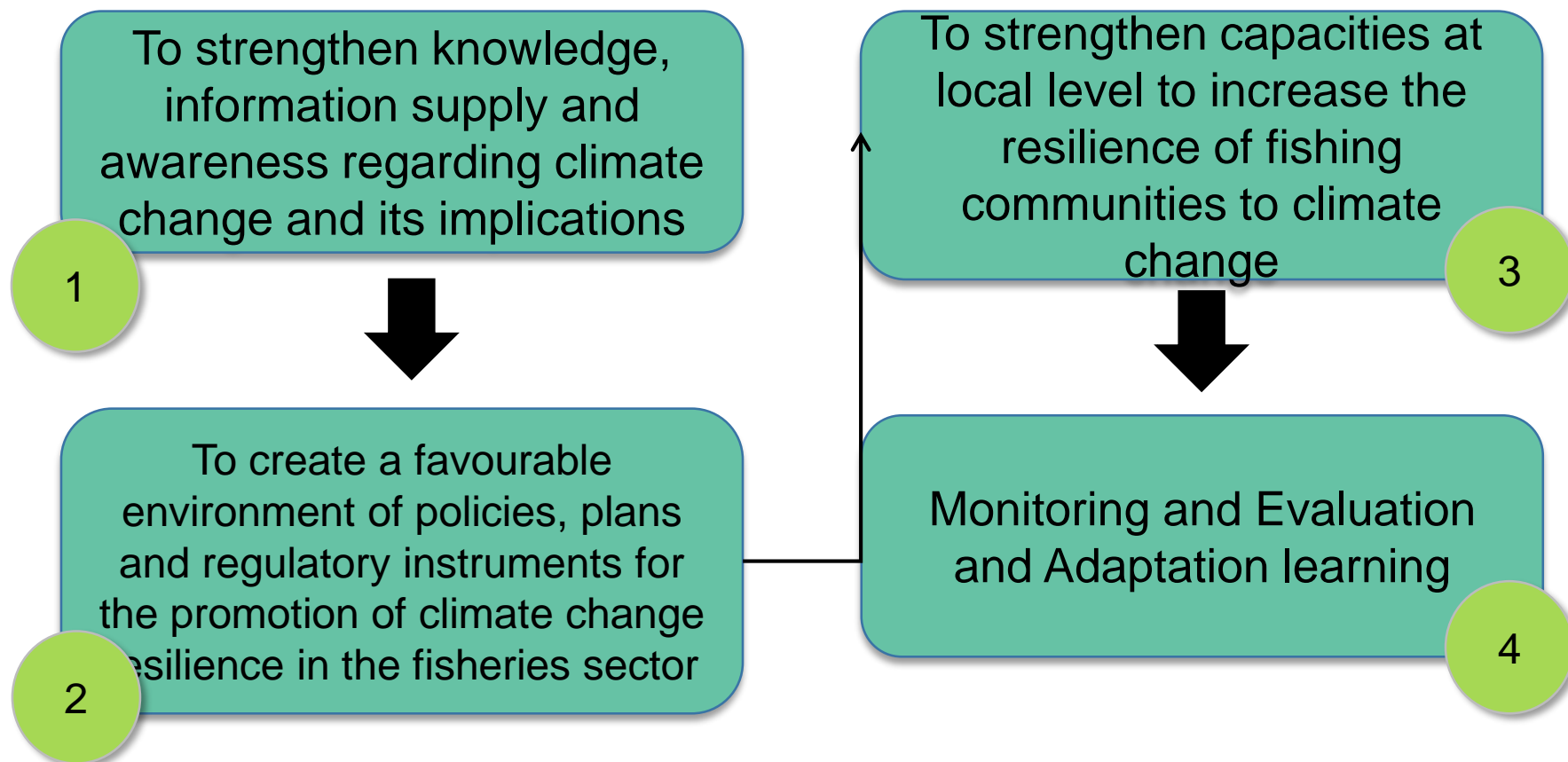
Status of Lake Malombe

- Lake substrate dominated by snails suggesting pollution due to sediment loads, nutrient inputs and contaminants from anthropogenic activities





The project is addressing these Components





Improvement and adaptation of the governance of the capture fisheries of Lake Malombe

Restoration of habitats in Lake Malombe to facilitate recovery of wild populations

Promoting the role of climate-proofed aquaculture to contribute to diverse and resilient livelihood strategies

Support to diverse, pro-poor livelihood systems featuring efficient management of water resources in order to improve CC resilience

MAJOR OUTCOMES



Detailed Vulnerability and Disaster Risk Assessments (VDRAs) of fishing communities around Lake Malombe

Online repository for digital climate information
<http://www.malawifisheries.com>

Early Warning System for extreme weather events in place

Monitoring, Compliance and Surveillance system improved (VMS, patrols etc)

A number of research studies concluded

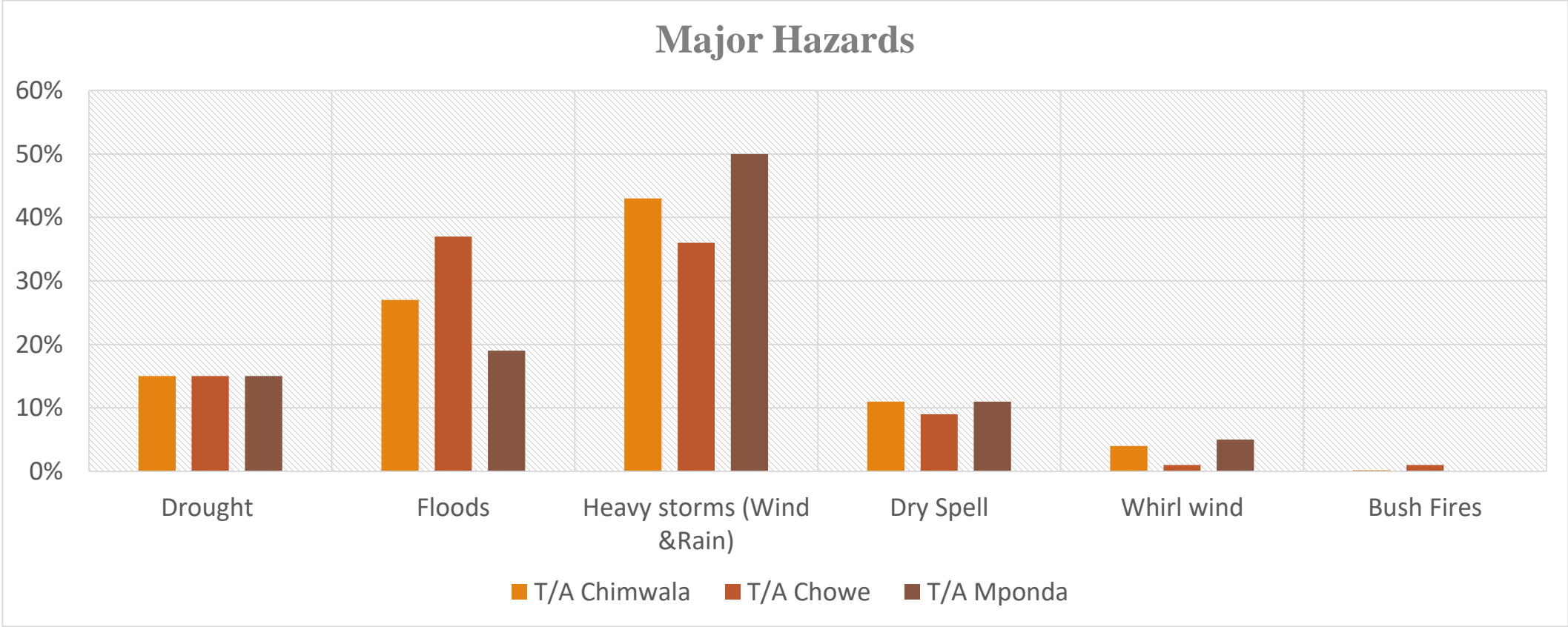
Ecosystem restoration plan in preparation

Management agreements, plans with Fisheries Associations established

Capacity building (EAFm training, VMS, patrol vessel navigation, Beach Village Committee self-financing etc)

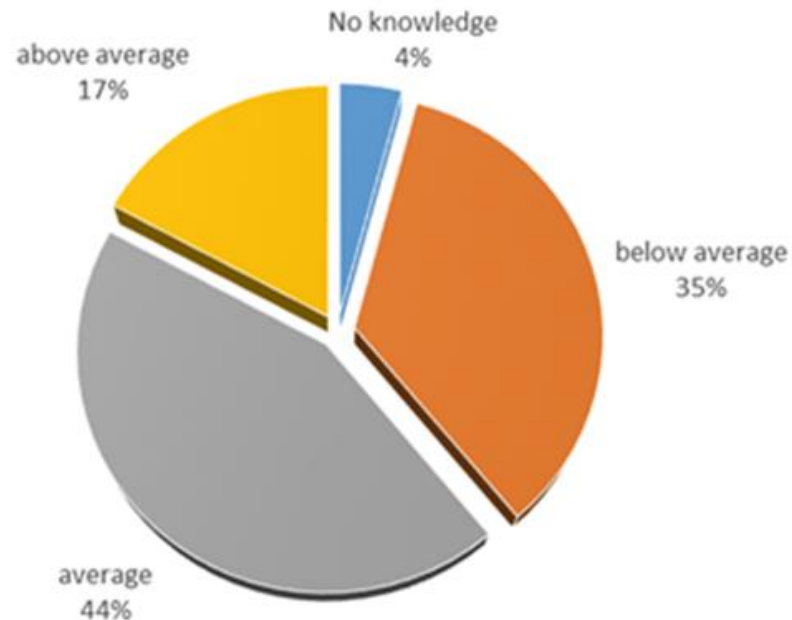
Selected outputs

Lake Malombe Vulnerability and Disaster Risk Assessment



Knowledge on climate change

- 90% of total respondents have heard about CC - of these 35% were rated below average knowledge
- Radio is preferred (55%) medium to receive CC information
- Perceived CC effects were erratic rains, less yields & declining fish catches





Impacts of climate change on Lake Malombe Fishery

HEAVY PRECIPITATION AND RAINFALL

- Increased risk of crops getting washed away
- Increased risk of human drowning
- Poor quality of dried fish resulting in smoking option that uses more firewood
- High run off and catchment erosion
- Reduced access to markets/hospital/school due to road damage

HIGH TEMPERATURES AND LOW PRECIPITATIONS (DROUGHT)

- Reduced moisture in the soil for survival of crops
- Low water levels of Lake Malombe, Upper Shire River and dry rivers around Lake Malombe catchment
- Reduced catches due to low recruitment as emerged vegetation is exposed and no longer provide sanctuary
- Famine will increase pressure on fishery

WIND STORM AND CYCLONES

- Increased damage to property
- Increased accidents on the lake
- Increased post-harvest losses resulting from stranded fishers without ice staying longer on distant beaches
- Increased erosion or damage to coastal infrastructure beaches and other natural features

NON STRUCTURED FIRE IN FARM GARDENS AND HILLS

- Increased coverage of burnt hectares of land, bare hills, soil erosion due to excessive run-off on bare grounds, disturbed habitat, damaged soil texture with impaired water absorption, destruction of crops

Limited capacity to deal with disasters



Climate and environmental monitoring and early warning (EWS) systems



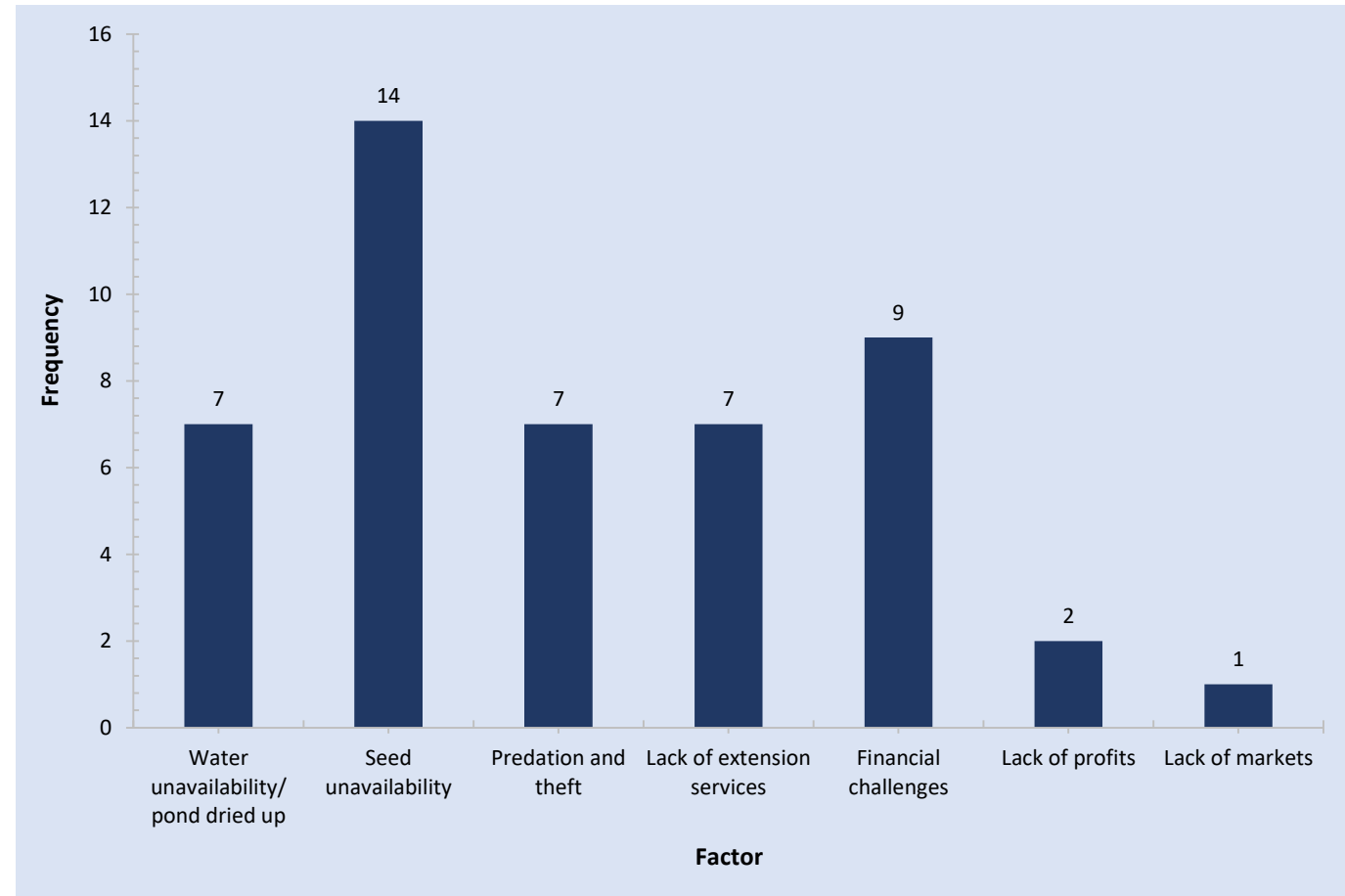
- Collaborating with Department of Climate Change and Meteorological Services - disseminating weather information and early warning messages through a WhatsApp group targeting Beach Village Committee Members (BVCs) – piloting and being monitored
- Consultations with Department of Climate Change and Meteorological Services & Department of Disaster Management ongoing to:
 - Achieve using the existing systems and data in terms of localized early warnings for extreme weather events that occur on shorter time scales.
- Consolidation of data on weather related fatalities on Lake Malombe in for awareness purposes

Review of relevant policy and legislation

- Climate Change and other relevant aspects to be covered in district annual plans and budgets
- Ecosystem based Participatory Fisheries Management Plans and By-laws for Lake Malombe Ecosystem
- Capacity building in EAFm instrumental in identifying policy needs/localized training modules under development
- Think tank on climate change in Fisheries and aquaculture sector
 - A coordination and advisory platform where climate related projects will share experiences, challenges and lessons including in annual workshop format

Aquaculture Resilience Plan

- Feasibility study of 35 pond-based aquaculture sites around Lake Malombe catchment having 75 fish ponds
 - 19 sites operational,
 - Current avg. annual yield is 2.1tons/ha
 - Main challenge is drying up of ponds and scarcity of fingerlings
 - Introduction of deep pond technology
 - Small scale cage farming in the upper Shire River/contract farming with Maldeco Aquaculture company



Factors affecting aquaculture around L Malombe

Restoration initiatives

Area	Topics
Fishery	<ul style="list-style-type: none">• Closed season campaign• Protect migratory fish, juvenile/immature fish• Promote establishment of fish sanctuaries and breeding areas• MoU with University of Florida on Lake Malombe restoration plan, data collection & monitoring systems• Eliminate destructive gears and fishing methods<ul style="list-style-type: none">• Modified Nkacha = an illegal gear
Natural Resources Mgt	<ul style="list-style-type: none">• Buffer zone along rivers banks and lake shore• No burning of bush, forests restoration, crop residues or vegetation• Protect hillside forests

Integrated Watershed Management

Kulungwi River micro-catchment

- Covered by three main villages (Somanje, Msauka and Mpembena)
- Kulungwi river (10 km long), perennial, flows into SE Lake Malombe
 - The most sediment generating part of the watershed, **9.9t/ha/yr.**
- Altitude: lake level 475 to >1,000 m





Kulungwi River micro-catchment cont...

- Existing governance structures identified, passive ones revamped in Mpembena and Msauka and non-existent ones established in Somanje i.e., (Village Natural Resource Management Committees and Village Agriculture Committees)
- IWM training done for district staff and community
- Natural regeneration sites identified and verified in all the three villages
- Training in local seed collection done for VNRMCs and seeds were collected locally. The seeds were sown with support from District Forestry Office and facilitating out planting of the seedlings.
- Consolidate joint village level action plans (Agriculture, Forestry, DoF and FiRM PMU)



One of the Hotspots in Somanje village



Hill slope cultivation, River bank cultivation and Charcoal production
Somanje



Challenges

- EAFm yet to be fully comprehended
- Resistance to change leading to low technology adoption
 - e.g. Trust in traditional systems (mistrust scientific data)
- Limited institutional capacity
 - e.g. Inadequate extension service delivery
- Data gaps – need for evidence based policy & decision making
- Corruption

Conclusion

The biggest challenge facing communities around Lake Malombe, Lake Malawi and many inland African lakes is limited capacity for social and economic adaptation strategies to disasters that come as a result of climate change and variability. We should, therefore, strive to build resilience through

Ecosystem Approach to Fisheries Management — that considers interactions between the core fishery and the broader socio-ecological system



THANK YOU FOR LISTENING