Lake Malawi-Malombe Case Study

Session objectives

After this session you will be able to:

- Recognize how Malawi has adopted EAFm principles and moved towards EAFm (case study)
- Determine where your country is at in moving towards EAFm
- Identify challenges your country faces in moving towards EAFm

1. Good governance

2. Appropriate scale

3. Increased participation

4. Multiple objectives

5. Cooperation & coordination

6. Adaptive management

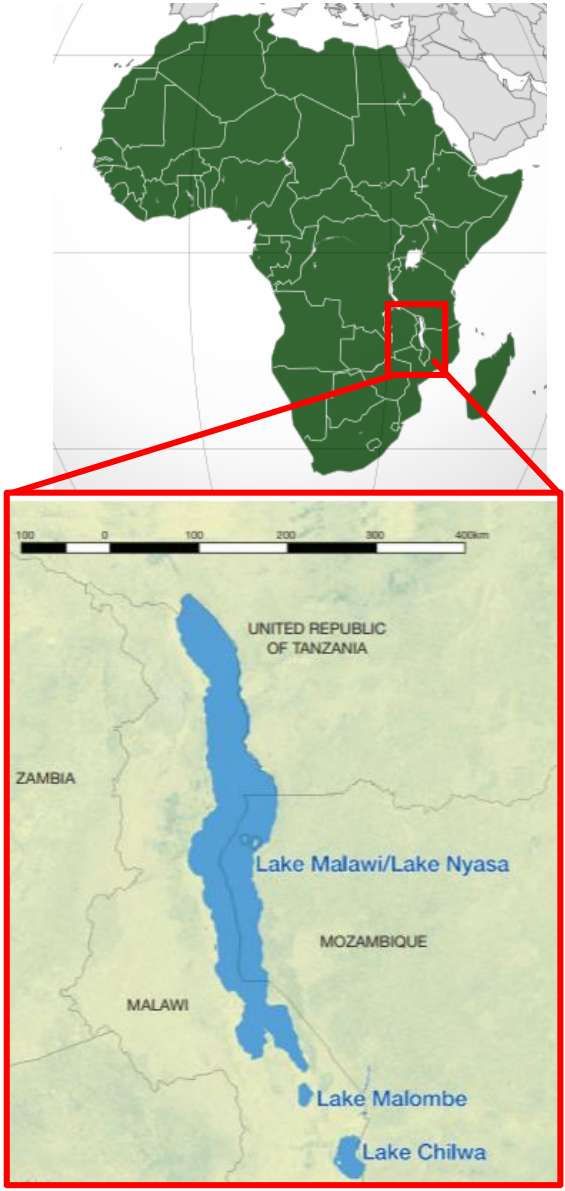
7. Precautionary approach

Overview: Lake Malawi-Malombe case study

For several decades, Malawi has been moving towards increasing community participation in fisheries co-management

The session will discuss how:

- fisheries management, laws and policies have moved toward EAFm
- seven EAFm principles are becoming adopted into fisheries management



Source: Kolding et al.(2019).Freshwater small pelagic fish and fisheries in major African lakes and reservoirs in relation to food security and nutrition

Introduction

This presentation describes EAFm trends for three parts of the southern Lake Malawi system

- SE and SW arms of the main Lake
- Lake Malombe, which lies to the south
- the connecting channel, known as the Upper Shire

Ecology: Lake Malawi

- Lake Malawi, known as Lake Nyasa (Tanzania), Lago Niassa (Mozambique)
  - Southernmost of the African Great Lakes in Rift Valley
  - Surface area 29 600 km^2
  - 4th largest fresh water lake (volume), 9th largest (area)
- 706m deep at its deepest point.
  - Far south of the lake is shallower < 200m deep
- Evaporation = 80% of the water loss from the lake
  - considerably more than Shire River outflow at southern end
- Water layers stratified and do not mix

Ecology: Lake Malawi (*cont.*)

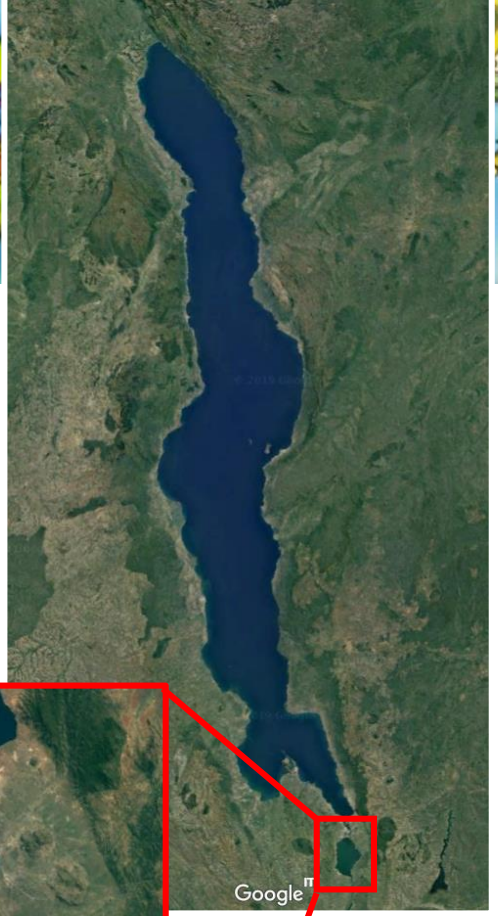
- SE and SW arms diverse ecosystems : rocky areas, submerged and emergent aquatic vegetation, small islands, and flooded zones
- Important breeding areas/habitats
  - Submerged and emergent vegetation
  - Tributaries flowing into the SE arm and lake - Cyprinid and *clarias* catfish species migrate upstream to spawn in rainy season
  - Shallow water, shoreline: Usipa reported to breed in waters 1-2m deep, along shore of the SW (Morioka & Kaunda 2005)

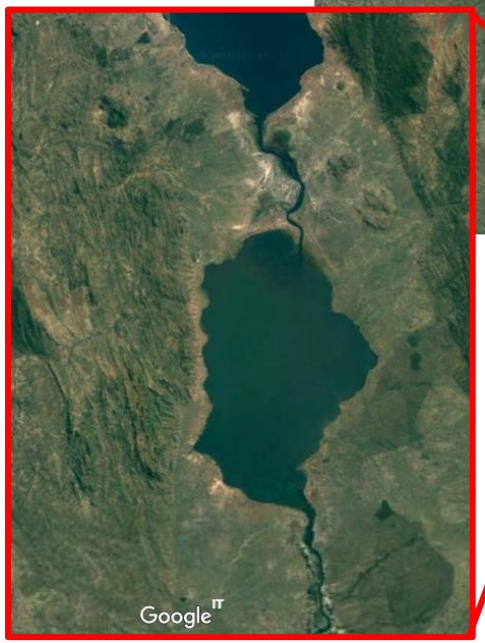
Threats

- unprecedented extreme weather events
- prolonged heavy wind action
- reduced water levels
- extreme low and high temperatures and unpredictable rainfall patterns

Ecology: Lake Malombe

- The third largest water body in Malawi after Lakes Malawi and Chilwa.
  - Surface area = 390km^2 (30km x 15 km)
  - Average depth = 5m.
  - Catchment 3 387km^2
- Bottom substrate is muddy, water is usually turbid
  - Deepest sections follow the path of the original Shire riverbed
  - Shallowest areas are located along the western and south-eastern shoreline





Ecology: Lake Malombe (*cont.*)

- Important breeding areas/habitats
  - Vegetation within Lake Malombe and Upper Shire important formany species including *Oreochromis karongae*
  - River inlets/outlets and shallower sections of the lake important nursery habitat
  - Many Lake Malombe fish use remaining emergent and submerged aquatic vegetation areas, and river inlets and outlets during their juvenile and adult stages

Threats

- In recent years dense beds of submerged and emergent aquatic vegetation reduced.
- Affected Chambo stocks by reducing the available breeding habitat

Fisheries: Artisanal Fisheries of Lake Malawi

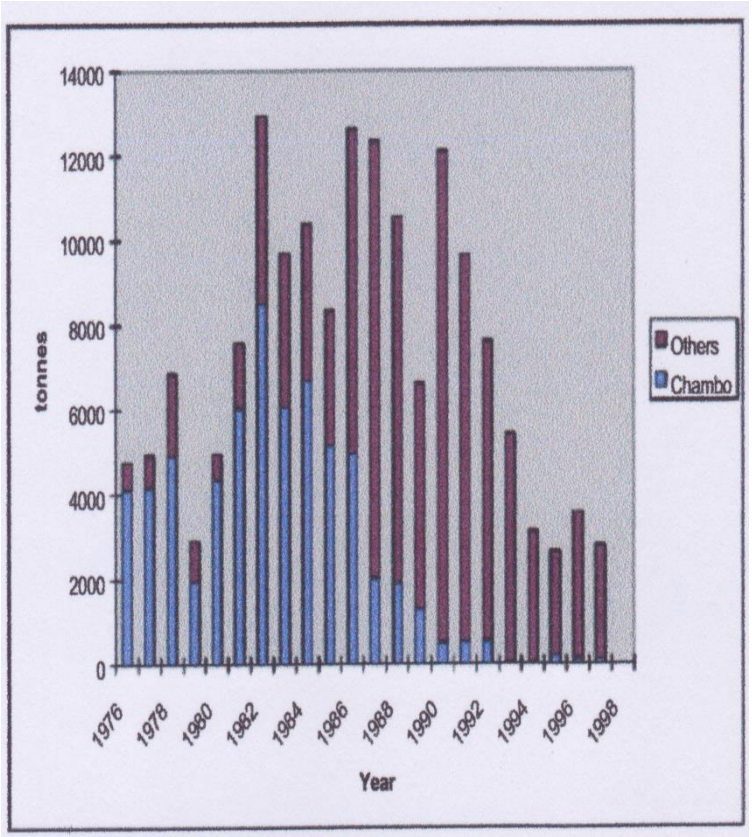
- Artisanal fisheries contribute 85 – 90 % of total fish landings
- Multi species/multi gear fishery
- Annual fish catch in Southern Lake Malawi
  - 1970-1980 Chambo dominated catches (declined in the early 1990's)
  - Catch 22 000 metric tonnes (2007 – 2011)
  - Declined to 18 000 tonnes (2012 – 2015)
  - 3 fish groups now dominate catches (Haplochromines, Usipa and Mlamba)
- Fisheries under pressure:
  - open access
  - increasing local population
  - few options for alternative livelihoods outside of fishing.
  - environmental degradation.
  - boom in the construction of resorts

Fisheries: Commercial Fisheries of Lake Malawi

- Trawling and purse seining (‘ring nets’) in southern part of Lake Malawi.
  - By 2016, 32 pair-trawlers & 8 stern-trawlers (catches dominated by haplochromine cichlids)
- Decline in annual landings from >3 000 tonnes (mid-1980s) to <1 000 tonnes (present)
  - increased commercial fishing effort & use of large HP vessels
  - encroachment of trawlers into artisanal fishing grounds and during closed seasons
  - undersized cod end mesh
  - increased number of unlicensed fishing gear operators
- Situation exacerbated by
  - high post-harvest losses due to poor handling and processing
  - environmental degradation & climate change impacts
  - transitioning of the fishery from multi-species to a fishery dominated by a single species- Usipa
  - 2 ornamental fishing operations (Mbuna, highly coloured cichlids).

Fisheries: Artisanal Fisheries of Lake Malombe

- Only artisanal fishing - no trawlers
- Current fish production from Lake Malombe estimated at around 4 500 metric tonnes/year .
- Fisheries of high local importance.
- Catches declining
- Multi-species and multi-gear fishery.
- Dominant species Haplochromines (Kambuzi and Mbaba)
- 90% of the total landings Chambo catches declined significantly during the period 1975-1998. Now <1% to the total catch..
- Other landed fish species include Mlamba, Usipa and Sanjika.



Livelihoods and socio-economics: Employment

Lake Malawi

- SE and SW arms provide full-time fisher livelihoods for around 16 000 people.
- 40 000 other people involved in support activities such as fish trading, boat building fish gear construction.

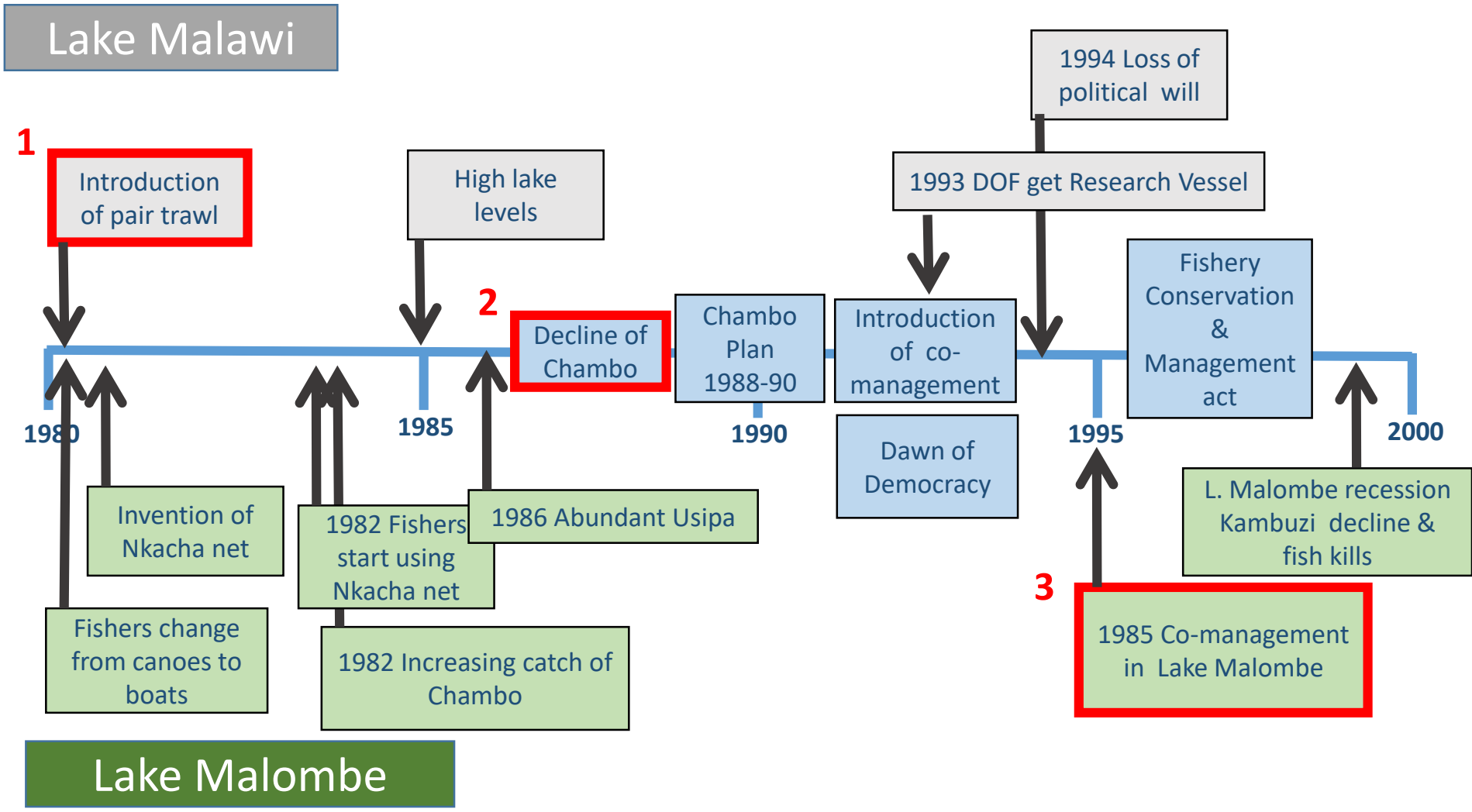
Lake Malombe/ Upper Shire

- Number of fishers 755 (2010) – 5 398 (2016)

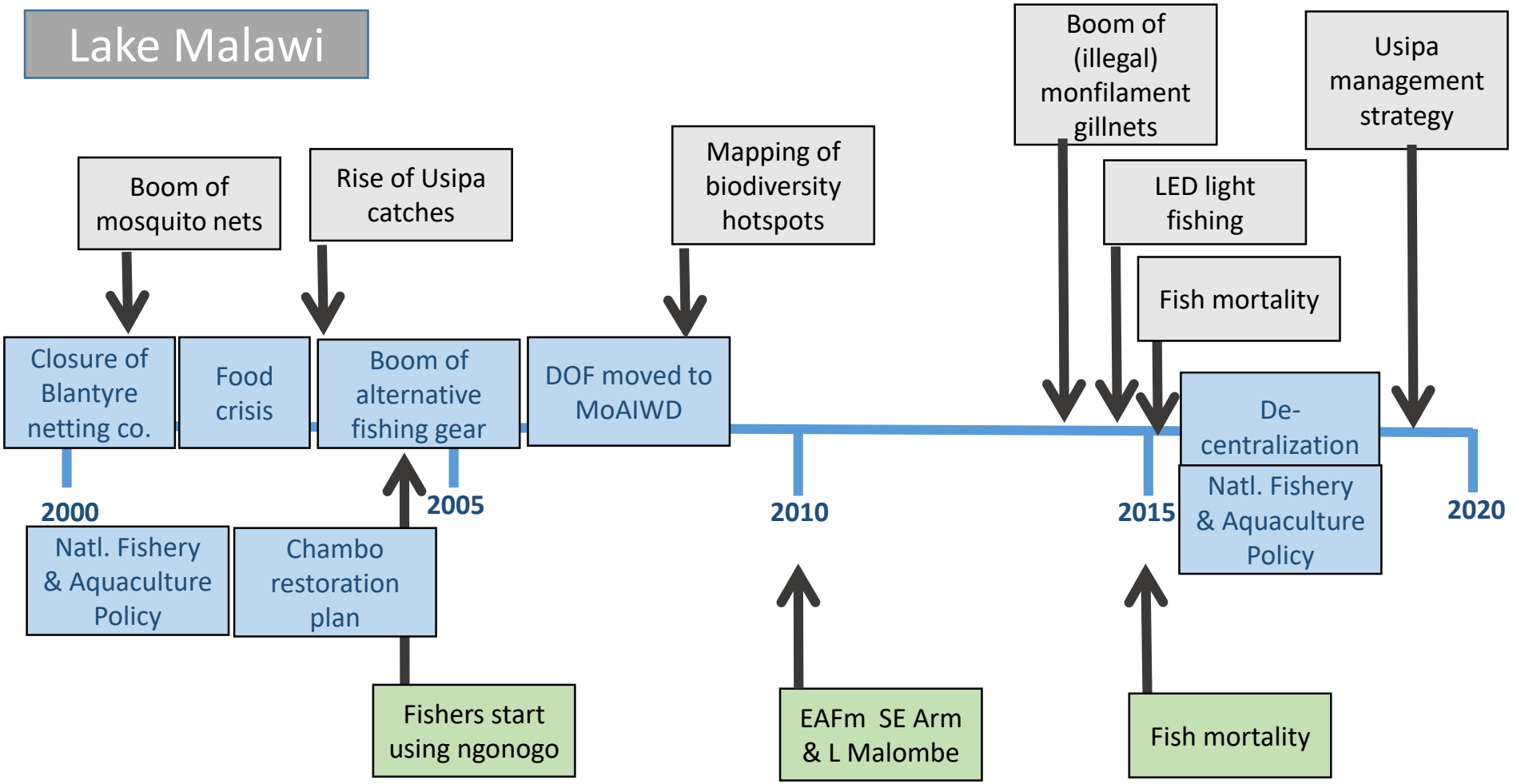
Livelihoods and socio-economics: Issues

- Conflicts
  - Lake Malawi: Conflict between trawler operators and artisanal fishers
  - Lake Malombe/ Upper Shire: Nkacha fishers active throughout the year;
  - Closed season violations common, fuelling conflict
  - Theft of fishing gears; destruction of fishing gears by nkacha (seines)
- Health: HIV/AIDS Infection rates in fishing communities are higher than national average
- Gender: Fishing on Lake Malawi is dominated by males, but women engaged through ownership of fishing gears as well as engagement in fish trading and processing
- Child Labour: school age children frequently engaged in fishing, fish processing and marketing
- Livelihood viability now threatened by climate change

Timeline: 1980 - 2000



Timeline: 2000 - 2018



Governance: promoting fishery co-management

- Malawi Government objectives
  - Allow fish stocks to recover to mid-1980 levels, when production was highest
  - Recovery of fishery, to base mainly on sustainable harvest of high value Chambo
- Fisheries co-management introduced
  - Pre-1993, fisheries management approach influenced by principles of conservation
  - Still applied to commercial fisheries; fixed no. of fishing units allocated to fishing zones
- Post-1993, increased community participation in fisheries co-management
  - Fisheries extension service strengthened through Participatory Fisheries Management approach
  - Recognition of Local Fisheries Management Authorities
  - e.g. Beach Village Committees (BVCs), River Village Committees (RVCs) & Fisheries Associations (FA)
  - BVCs act as intermediaries between fishing communities and DoF for co-management
- Introduction of sanctuary areas with the aim of improving breeding and nursery conditions for the commercially important fish species.

Moving towards EAFm – 7 principles

EAFm principle	Malawi/ Malombe - How it is being implemented
Good Governance:	Devolution of some fisheries management functions to local government Usipa management strategies in place in Lake Malawi
Appropriate Scale	SE and SW arms of Lake Malawi suitable scale for for EAFm Lake Malombe considered very suitable for EAFm
Increased participation	Relatively long history of local fisheries co-management institutions such as the BVCs and Fisheries Associations established and functioning.

Moving towards EAFm – 7 principles (cont.)

EAFm principle	Malawi/ Malombe - How it is being implemented
Multiple objectives	Conservation and livelihood management objectives Malawi Government objectives to persuade the fishing community: • To allow fish stocks to recover to levels experienced in the mid-1980" and secondly • To restore the recovered fishery to one based mainly on the high value Chambo, which should be harvested sustainably thereafter • Recognition of importance of habitats
Cooperation and coordination	DoF has a number of partnerships with other institutions for natural resource co-management Potential for trans-national management of Lake Malawi
Adaptive Management	Management decisions supported by historical biological studies/data
Precautionary principle	Rules in place regarding introductions of exotic Nile Tilapia

Strengthening the capacity to deliver EAFm

- Main DoF focus remains biological.
- EAFm introductory course Mangochi April 2019 - well received.
- EAFm has potential as a mechanism for local DoF to work with BVCs and communities
- Important to win political support for EAFm
- Cadre of EAFm trainers required to build capacity nationally
- EAFm Training of Trainers Course.

Key messages of case study

- EAFM is a step by step process; apply lessons learned along the way
  - increasing stakeholder engagement
  - broadening scale and scope of management
  - built on existing fisheries management
  - strengthen governance
- Many fisheries in the world are doing EAFM in part;
- Each country is a different stage of the journey

Activity 1:

- Each group receives a card that displays one EAFM principle (some groups may have to consider two principles).
- In groups, discuss and score where you think your COUNTRY is along the continuum 0-5 for that principle.
- Using the lines set out on the floor, one representative for each principle paces out their score while holding the card.

Activity 2: In groups

1. Identify the **challenges** your country might face in moving towards EAFM

2. Write each challenge on a card. (**ONE** challenge per card)

3. Now identify **opportunities** your country may have in moving towards EAFM (and in meeting the above challenges).

4. Write each opportunity on a separate card