



## POLICY BRIEF

# Fisheries in Omo-Turkana Basin: Sustainable Management and Resilience for Arid and Semi-Arid Lands (ASALs) communities

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# **Fisheries in Omo-Turkana Basin: Sustainable Management and Resilience for Arid and Semi-Arid Lands (ASALs) communities**

June 2021

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A young girl in a red and white striped shirt and a blue and orange patterned skirt stands in a muddy area near a body of water. She is holding a large, light-colored fish. In the background, there is a boat with a blue tarp, a corrugated metal structure, and a fence. The scene is outdoors with some trees and a clear sky.

“ Create awareness for ASAL Communities... to the unsustainable harvesting of the fisheries resources ...

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## PURPOSE

The aim of this policy brief is to:

- Highlight the importance of fisheries in providing sources of food and employment for Arid and Semi-Arid Land (ASAL) communities of Omo-Turkana Basin;
- Identify alternative livelihood opportunities to earn income from fisheries resources relieve pressure on crop farming and livestock in the ASAL Communities;
- Identify the adaptations and policies needed to reduce the threats and capitalize on the opportunities;
- Generate information for decision makers to effectively implement science-based fisheries the management;
- Emphasize the importance of establishing fisheries management system to avoid the existing open access fishing;
- Urgently required to support management of this important but neglected biodiversity.
- Create awareness for ASAL Communities, Governments and Development Partners to the unsustainable harvesting of the fisheries resources and the need for improved management.



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“ The small-scale fisheries in Lake Turkana and Omo River (Omo-Turkana Basin) currently supports livelihoods of more than **7,000 families**

“ The fisheries production potential in Lake Turkana alone is estimated to be more than **30,000 tons annually**

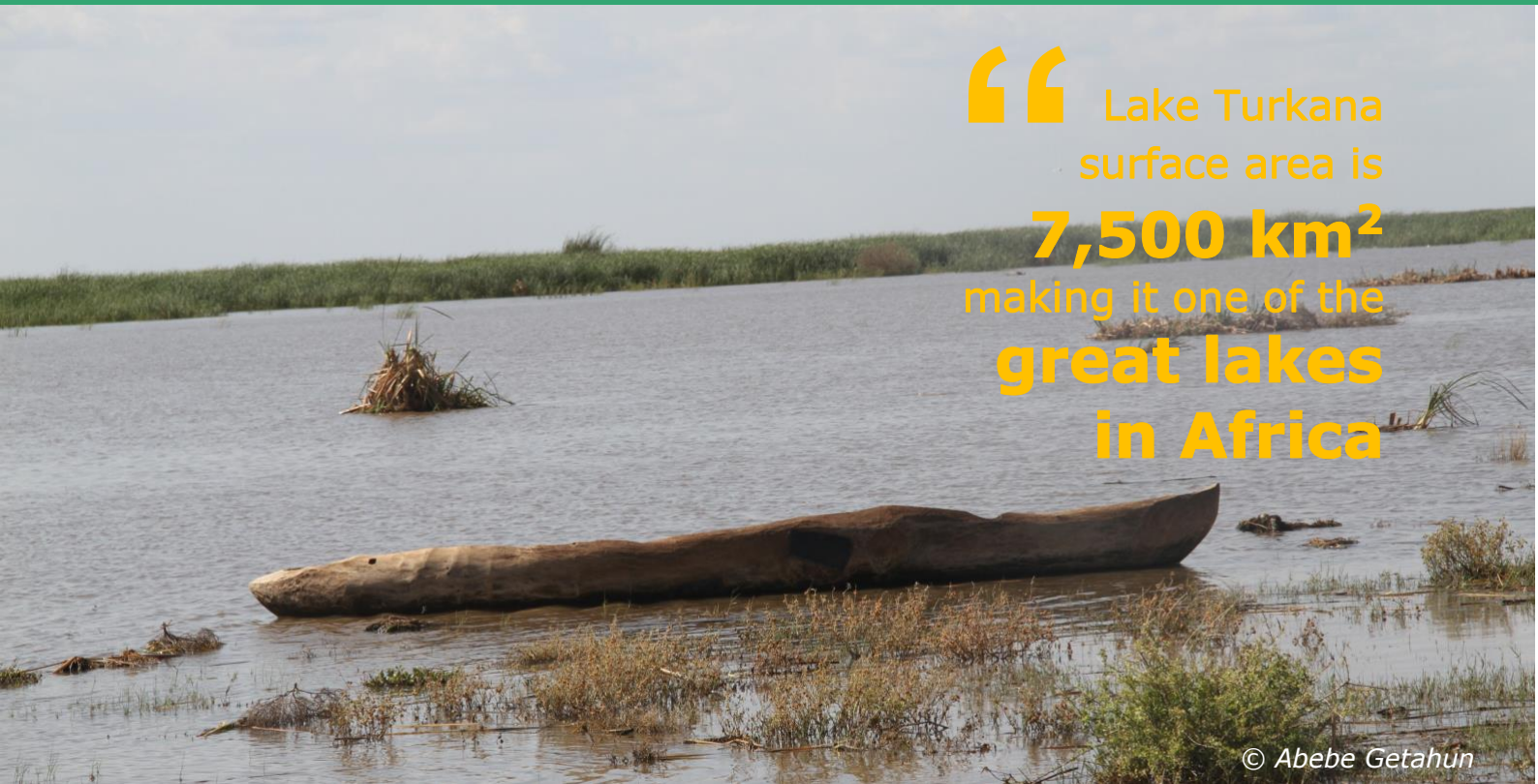
## KEY MESSAGES

The small-scale fisheries in Lake Turkana and Omo River (Omo-Turkana Basin) currently supports livelihoods of more than 7,000 families. The fisheries production potential in Lake Turkana alone is estimated to be more than 30,000 tons annually but the average actual current production is estimated to be 5,000 tons annually (<20% utilization). No fisheries management implemented in the basin and fishing is open access. The basin is characterized as Arid and Semi-Arid Land (ASAL) and most attendant communities are pastoralists. However, as a result of growing scarcity of grazing land and increased climate variability and human population in the area, many pastoralist

communities in the basin have currently shifted to fishing along the Omo Delta and Lake Turkana.

Sustainable harvests from well-managed fisheries of the basin need to be promoted to build climate resilient communities in Omo-Turkana Basin ASALs. The area has also huge aquaculture potential and development of locally appropriate, economically viable aquaculture (fish farms) is also another alternative.

“ the average actual current production is estimated to be **5,000 tons annually** ”



“ Lake Turkana surface area is **7,500 km<sup>2</sup>** making it one of the **great lakes in Africa**”

# OMO-TURKANA ECOSYSTEM

The River Omo-Lake Turkana (ROLT) is part of the large Turkana system with a catchment area of 131,000 to 145,500 km<sup>2</sup> covering South Western Ethiopia and Northern Kenya. The Turkana system essentially consists of River Omo-Gibe (or simply Omo) which is wholly in Ethiopia and Lake Turkana that is shared between Ethiopia and Kenya. The Ethiopian part of Lake Turkana is estimated at 1.3% (98 Km<sup>2</sup>) of the entire lake area<sup>1</sup>. The Lake Turkana surface area is 7,500 Km<sup>2</sup> making it one of the great lakes in Africa. It is 265 km long, 30 km wide (average) and 30 m deep (average). Lake Turkana is shallow, but it is the world's largest permanent desert and alkaline lake in the world.

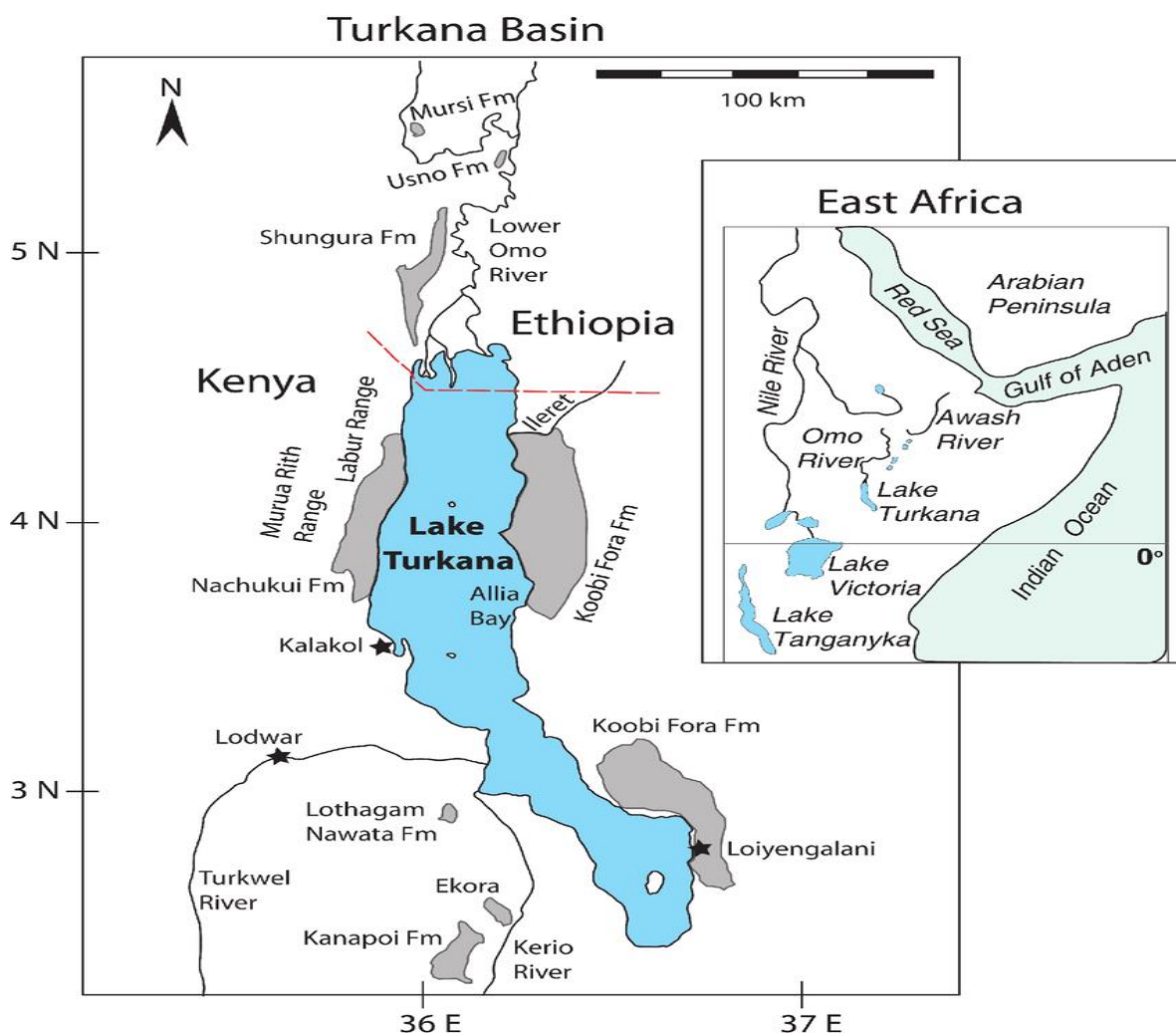
Lake Turkana's catchment areas form a unique environment containing a mosaic of habitats including wetlands, rivers and river mouths, sandy bottoms, rocky shores and stony pebbles that provide intrinsic services such as biodiversity reservoirs, fish breeding and nursery areas and water quality regulation. Aquatic

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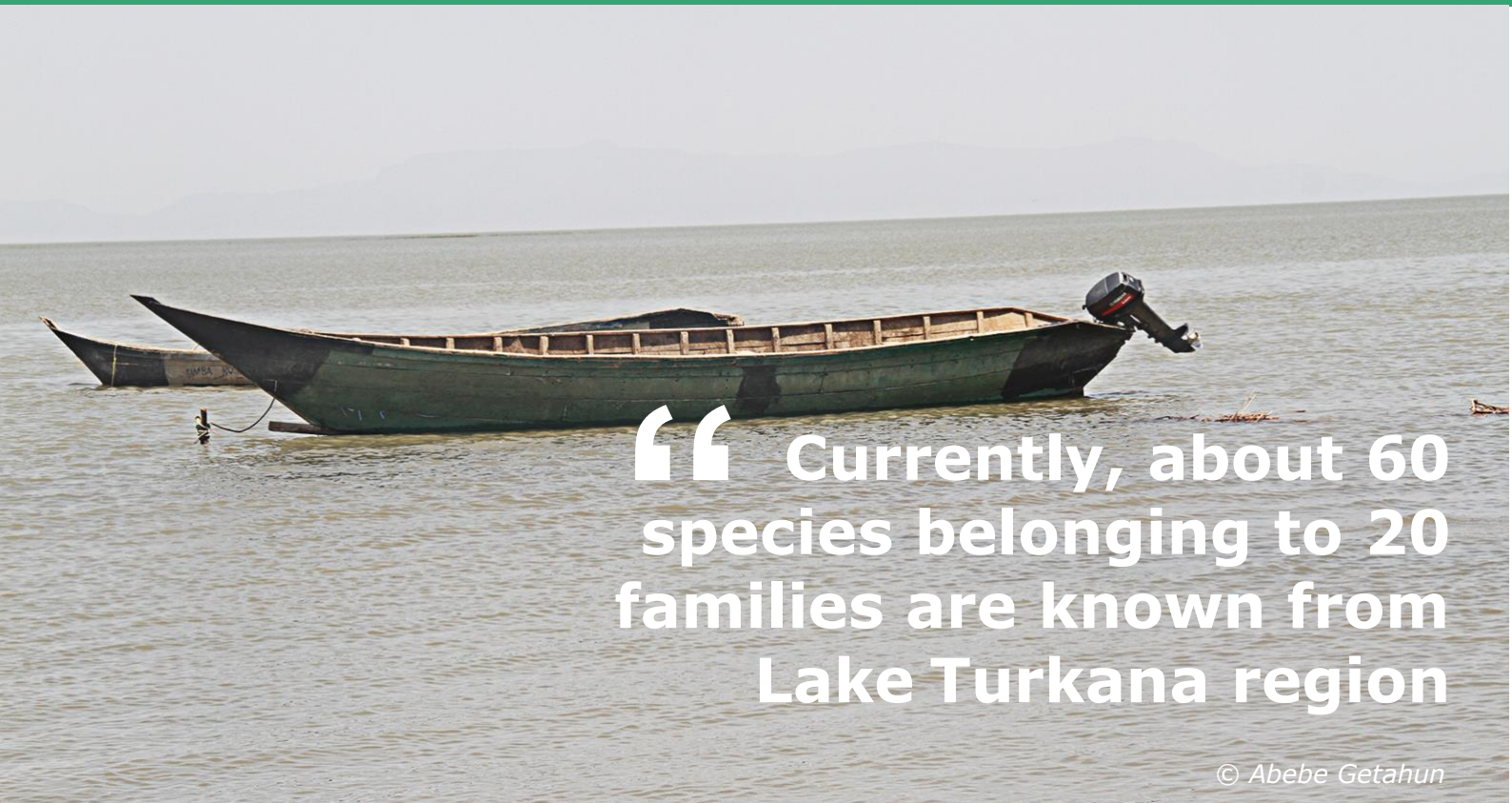
<sup>1</sup> FAO, 2003



productivity of Lake Turkana is controlled by inflow of water from River Omo. River Omo brings fresh water rich in nutrients from the Ethiopian highlands. The water passes through the Omo River wetlands which is also rich in organic matter. At the lake and river interface, the stimulating effect of flowing fresh water mixing with the salty lake water creates a gradient in production where the northern sector near the Omo River has the highest production while the southern basin with its deep clear waters the lowest. The gradient in primary production is also reflected in the secondary and fish production where fish is more abundant in the north compared to the south.



*Schematic map of the Omo-Turkana Basin. Source: reserarchgate.net*



“ Currently, about 60 species belonging to 20 families are known from Lake Turkana region

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## FISH DIVERSITY IN THE OMO-TURKANA ECOSYSTEM

Despite the high salinity, Lake Turkana still supports a rich diversity of Nilotic freshwater fishes. In general, the ichthyofauna of Omo - Lake Turkana basin is dominated by Nilotic riverine species. Currently, about 60 species belonging to 20 families are known from Lake Turkana region. Thirty of its species are spread over the Nilo-Sudan region, eight are found in the Nile only, and twelve species are endemics. The endemic species nearly all live in the offshore demersal or pelagic zone. The basin contains the highly-priced, Nile perch (*Lates niloticus*) and Nile

“ Average of fish density at 3,512 fish per hectare with a biomass estimate of 29.3 kg per hectare

tilapia (*Oreochromis niloticus*). The stock status is unclear but a hydro-acoustic survey in 2010 of the pelagic fish assemblage in the central part of the lake estimated the long-term average of fish density at 3,512 fish per hectare with a biomass estimate of 29.3 kg per hectare.

# SEASONALITY OF FISHING

The fishing activity is largely seasonal but for most part there is some fishing activity throughout the year in Omo-Turkana Basin. Various surveys show clearly that the most productive months of the fisheries in the basin for both Ethiopian and Kenyan sides, are January to June, dropping off precipitously from June to November when the catch begins to go up once again (Figure 1).

“ the most **productive months** of the fisheries in the basin for both Ethiopian and Kenyan sides, are **January to June**”

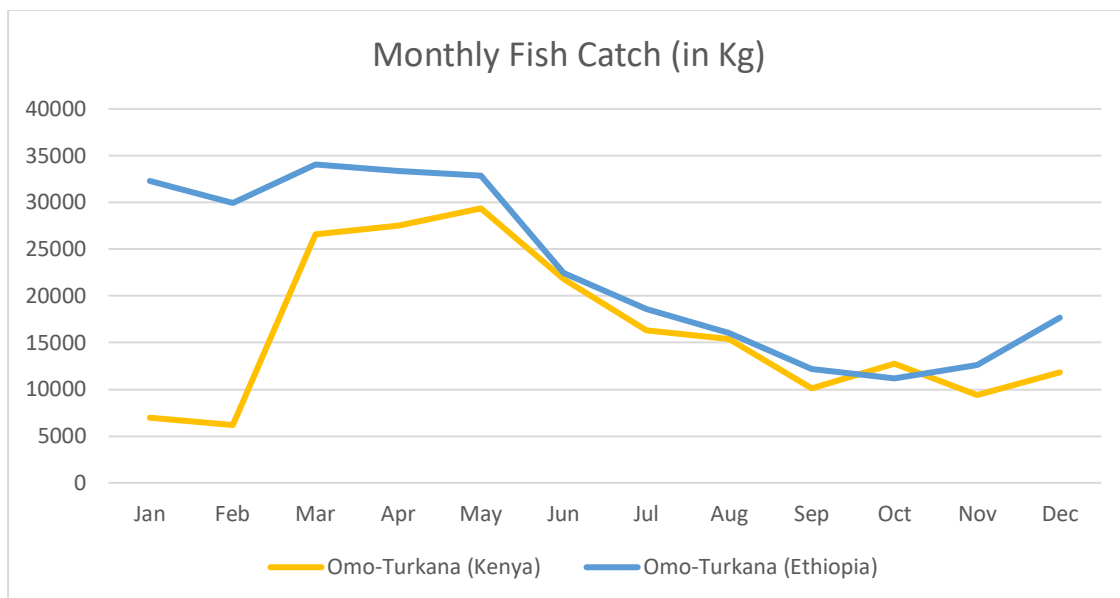


Figure 1: Mean monthly fish production in Omo-Turkana Basin.

# LOCALLY PREFERRED/ CONSUMED AND COMMERCIAL FISH SPECIES

“ Nile tilapia species was found to be the **most consumed** locally, followed by a diverse group of others that is dominated by Nile perch mainly from Lake Turkana

**Table 1** shows the key fisheries species locally consumed in the basin. Nile tilapia species was found to be the most consumed locally, followed by a diverse group of others that is dominated by Nile perch mainly from Lake Turkana. Other commonly consumed species include *Bagrus* species, the African catfish (*Clarias gariepinus*) and the marbled lung fish (*Protopterus aethiopicus*). The key commercial species for Lake Turkana are

*Oreochromis niloticus* (Nile tilapia), *Lates niloticus* (Nile Perch), *Labeo horie* (Turkana carp), *Distichodus niloticus* (cowfish) and *Alestes baremose* (silverside)

Table 1: Commonly consumed and preferred fish species in Omo-Turkana Basin

Produced species	Most locally consumed species	Most locally preferred species	Cumulative Percent
Nile tilapia	49.5	31.0	49.5
Bagrus	17.8	24.0	67.3
African catfish	5.9	9.0	73.3
Marbled lung fish	2.0	5.0	75.2
Others*	24.8	31.0	100.0

N.B \* the "Others" group is dominated by Nile perch

According to statistics from the State Department of Fisheries of Kenya, in 2014, Lake Turkana produced a total of 4,338 t of fish with an ex-vessel value of KES 438,646,000.00 from both sides (Turkana and Marsabit counties) of the lake (Figure 2). This constituted 3% of all the fish landed from inland waters of Kenya. Provisional data from the County Government of Turkana also showed a positive trend in catches compared to recent years with the amount landed in 2015 estimated at 10,000 MT valued at KES 735.7 million (Figure 2).

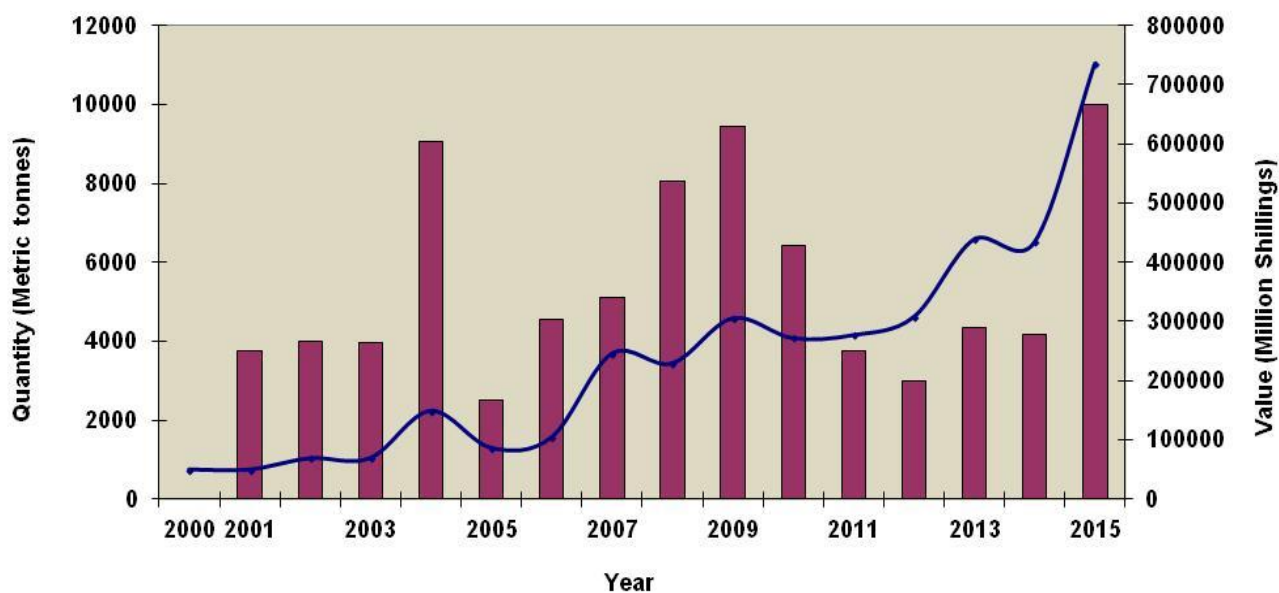


Figure 2: Trend in total annual fish landings and value in Lake Turkana from 2000 to 2015



“ Postharvest loss is estimated at **30% but may rise to 100%** over a short duration if not appropriately addressed region

*Figure 3: Mixed catch of no-salted sundried fish being packed at a trader's shop in Loarengak centre Turkana County before being transported to markets*


## FISH POST-HARVEST LOSSES IN THE BASIN

In the Omo-Turkana Basin fish are either processed or sold fresh. The processing typically involves gutting and salting, and sun drying. The current production of the whole basin is low compared to assessed potential (ECRAM, 2019). The low exploitation level has been caused by several environmental, socioeconomic and resource management challenges. Among those known to regulate fish production are the extreme water level fluctuations dictated by floods from River Omo in Ethiopia. The generally harsh weather and remoteness of Lake Turkana from market centres means that landed fish spoils very quickly. This has led to an adaptation where most of the fish is processed in the sundried form. Postharvest loss is estimated at 30% but may rise to 100% over a short duration if not appropriately addressed due to the high temperatures and generally poor hygiene conditions (Figure 3). A new emerging fishing trend is the processing of under-sized Nile tilapia for Democratic Republic of Congo market. The under-sized fish is split, salted and sun-dried, ready for marketing.

# CURRENT FISHERIES MANAGEMENT INTERVENTIONS

The Government of Kenya has emphasised on fisheries co-management and strengthened the previously inefficient Beach Committees into BMUs through the Gazette Notice on Beach Management Unit Regulations in 2000. The BMUs are responsible for vetting fishermen, monitoring, security, marketing and development of the landing sites in partnership with the government and other development partners in the sector. Although initially developed for Lake Victoria as means of involving fishing community in the management of fisheries resources, the BMU approach and statute now applies to all lakes including Turkana. Currently, Lake Turkana has BMUs both in Kenyan and Ethiopian parts.

The initial step to management of fisheries resources is establishing status and/or improving the assessment of biological production to enable science-based management. This intervention is aimed at getting accurate and complete information about fishery production, which is currently sub-optimal for Omo-Turkana Basin fisheries. There is little or no attention paid to Omo-Turkana fisheries by both Government of Ethiopia and Government of Kenya due to several reasons and lack of resources, civil strife and lack of appreciation of role of fisheries being the most evident. Through fisheries co-management, mainly the fishers (resource users) and Government develop fisheries co-management plans and upgrade BMUs as co-management units with clearly defined responsibilities of both the fishing communities and the Government. Careful management is needed to maximise the sustainable yields of fish from basins to narrow the gap between the production required for food security and the harvests available from coastal fisheries (Figure 4).

 **Careful management** is needed to maximise the sustainable yields of fish from basins to narrow the gap between the production required for food security and the harvests available from coastal fisheries

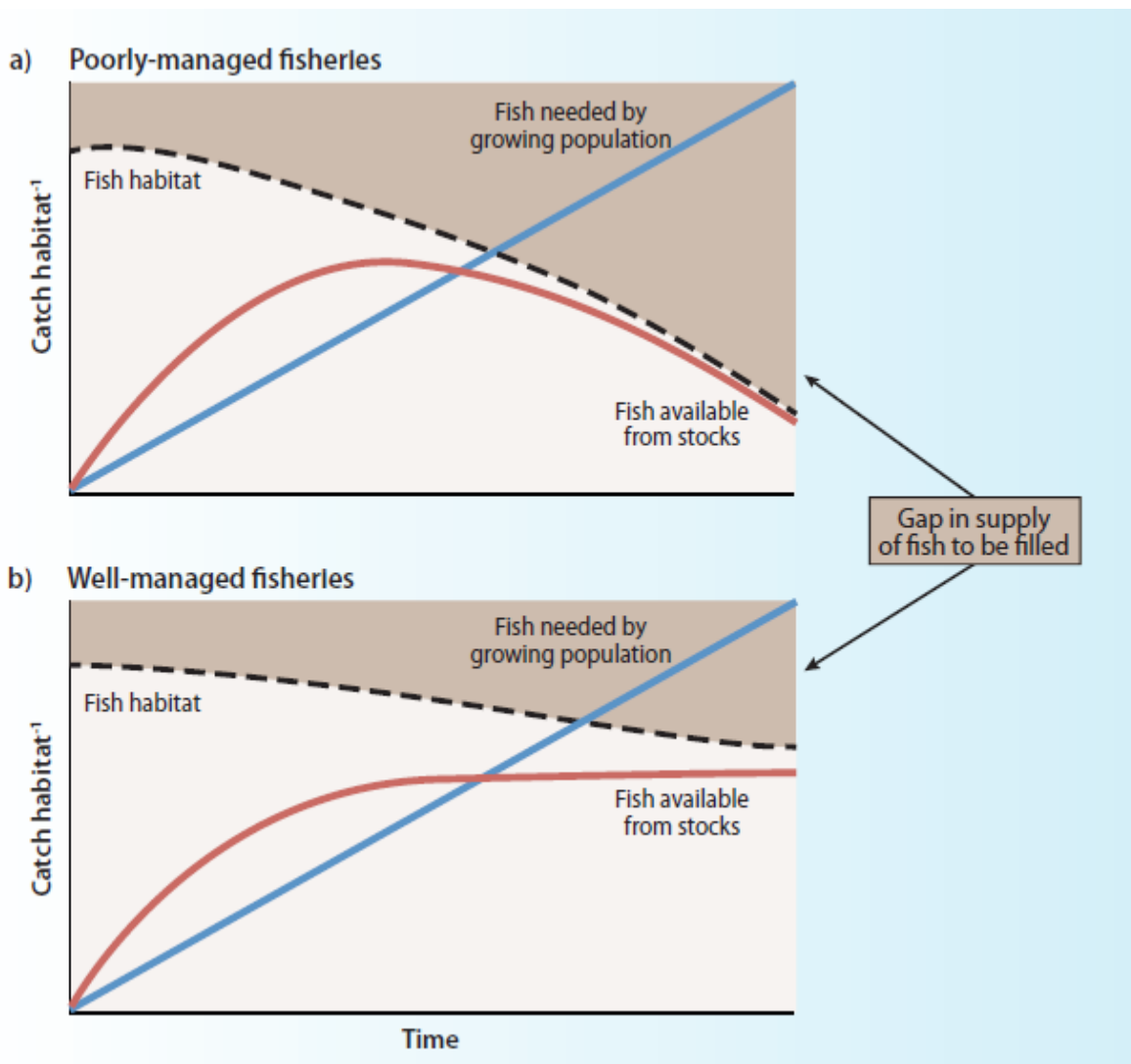


Figure 4. In a poorly managed fishery (graph a), fish stocks and catches (red line) decrease, and fish habitat (light blue area) deteriorate over time. In a well-managed fishery (graph b), fish stocks and catches remain at a sustainable level. Well-managed fisheries minimize the gap between the production required by rapidly growing human populations and sustainable harvests of fish (SPC 2008; Bell et al. 2011).



# SUGGESTED PRIORITY POLICY ACTIONS

- The fish production potential is high in the Omo-Turkana Basin, thus, promote more fish production (sustainably) for livelihood diversification, consequently resilience building in the ASALs pastoralist and fishing communities.
- Since the area is arid and semi-arid and infrastructure development is very poor, the fish post-harvest loss is very high, therefore, capacity building in fish post-harvest loss management (PHLM) and value addition should be priority actions.
- Fisheries in Omo-Turkana Basin is open access and although the fish production potential is still very high, there is some localized overfishing, especially in the very productive Omo-Delta part of the lake, thus, basin wide fisheries co-management is essential for its sustainable utilization.
- Lake Turkana is shared between Kenya and Ethiopia, there are conflicts between fishers of the two countries in lake, therefore establishment of bilateral platforms is needed for the harmonized fisheries development and management.

“ establishment of bilateral platforms is needed for the harmonized fisheries development and management

# FURTHER READING

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