SADC FISHERIES and AQUACULTURE

SUCCESS STORIES

Botswana Malawi Namibia

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SOUTHERN AFRICAN DEVELOPMENT COMMUNITY
TOWARDS A COMMON FUTURE

Acknowledgements

Botswana

Mr Shaft Nengu, Director of Fisheries

This sector is currently facing various challenges that impede its development and growth. It is therefore highly imperative that the development of a strategy that guides the development of the aquaculture industry was long overdue. I am greatly indebted to the GIZ-SNRL project and the European Union for the generous assistance they rendered to the Ministry of Agricultural Development and Food Security in developing the National Aquaculture Strategy and aligning it to the regional one. This assistance will go a long way to improving the livelihoods of citizens especially the poorer segment of the society in terms of income generation, employment creation, economic diversification, and wealth creation. It will further ensure that the development of the aquaculture industry does not have adverse environmental, ecological, and bio-diversity effects on the environment.

Namibia

Mr Rudi Cloete, Inland Fisheries and Aquaculture Director

Through the SADC Secretariat, the Ministry of Fisheries and Marine Resources of Namibia was assisted to develop the National Aquaculture Strategy, along with other elements, including this Success Stories publication. Namibia thanks all partners and donors that have contributed to the successful completion of the project and would like to call for the same enthusiasm with the implementation of these strategies.

Malawi

Dr Friday Njaya, Director of Fisheries

The Department of Fisheries under the Ministry of Forestry and Natural Resources in Malawi wishes to sincerely thank all individuals and organisations that contributed to the preparation of the National Aquaculture Strategy, Policy Brief, Fact Sheets and Success Stories. The Strategy will contribute towards Malawi's Vision: "*Malawi 2063*", through the Vision's pillar on agricultural productivity and commercialisation, with linkages to industrialisation through value addition of farmed fish products. Therefore, implementation of the Strategy will need coordination among investors and other players within the aquaculture supply chain.

Introduction

This SADC Success Stories publication is aimed at raising awareness of the economic benefits of fisheries and aquaculture in Botswana, Namibia and Malawi. Aquaculture is one of the National Fisheries and Aquaculture Policy priority areas, and offers great potential to create wealth for fish farmers and the region.

The decision for developing and aligning National Aquaculture Strategies to the SADC Regional Aquaculture Strategy and Action Plan was made by Ministers responsible for Agriculture and Food Security, Fisheries and Aquaculture. This highlights the importance accorded by SADC Ministers to this sector, and the timing of these development strategies has come at an opportune time with the SADC region now searching for new economic activities to develop the region.

In this Issue

Aquaculture SUCCESS in Botswana

Chobe Bream Farm in Kasane - leading the way

IDEAL SETTING

Clicking onto their social media platforms – The Chobe Bream Farm is introduced as the first and only aquaculture fish farm in Botswana and specifically in the Chobe Region.

In fact, this farm is the biggest aquaculture project in Botswana and is based in Kasane in the Chobe region, at a place where the four countries of Botswana, Namibia, Zambia and Zimbabwe intersect. This location is not only physically convenient; it is also economically astute. Its proximity to perennial water sources from the Chobe River makes Kasane the best location for this aquaculture project. It is also well-placed, marking an 'X' at the crossroads of a big market in the SADC region, which is going to be facilitated by the opening of the Trans-Chobe bridge linking Botswana to the Central African hinterland.

Currently, the farm exports approximately

10-15 TONS

of fish to Namibia.

The farm is also exploring another viable market between the *Democratic Republic of Congo* and *Zambia.*

BREAMING - WITH POTENTIAL

While fish farming in Botswana has, up till now, existed in the form of small-scale operations based on trial and error, the development of Chobe Bream farm has radically transformed Botswana's aquaculture landscape.

Chobe Bream Farm is a model to potential financiers.

As a successful aquaculture operation...

...it has essentially breathed life into many aquaculture projects that have been struggling for financial support.

THE FARM

Founded in 2014 as a privately funded commercial aquaculture farm, it started production in 2016 as the first major aquaculture project in northern Botswana. Currently the farm has approximately 45 full-time employees, however this number increases to 70 during the harvesting period when more people are needed for processing fish. At its inception, the key fish species produced on the farm was Three-Spot Tilapia (*Oreochromis andersonii*), but over time other species were added in the production cycle which now include Nile Tilapia (*O. niloticus*) and the Sharp-tooth Catfish (*Clarias gariepinus*). Currently the farm buys its Nile Tilapia broodstock and catfish fingerlings from Zambia.

Currently the fishponds have now been increased to 20, though production has not increased significantly.

Fish are bred in the Reticulating Aquaculture System (RAS).

Then fingerlings are transported to earthen ponds for outgrowth until they reach market size.

At inception, monthly production was approximately 20,000 fish.

By 2019, production ranged between 10 and 25 tons per month, from 15 fishponds each measuring 0.5 HA.

THE MARKET

The key local market for the farm's fish is the tourism industry, particularly to local hotels, because Kasane is in a prime tourism area. Direct sales of the farm's fish nationally is not a key strategy of Chobe Bream, but has rather been left to local entrepreneurs. Chobe Bream's philosophy is that local entrepreneurs should market the fish nationally. In a recent interview, one of the farm managers remarked that:

> "All that I want is for people to also develop their own marketing strategies and buy fish from us to sell elsewhere."

This suggests that one of the farm's strategies is to develop the value chain of the aquaculture sector in Botswana through local empowerment. Reportedly, the farm indicated that there are some small-scale entrepreneurs who buy fish from Chobe Bream to sell elsewhere in Botswana. It is also reported that there is at least one well-resourced entrepreneur funded through the Citizen Entrepreneurship Development Agency (CEDA), who buys fish from the farm and sells it as far as the town of Selebi Phikwe in Eastern Botswana. It is envisaged that this will facilitate the development of a strong and vibrant fish value chain in Botswana.

CHALLENGE VS. ENTREPRENEURSHIP

In the beginning, the farm used the Reticulating Aquaculture System (RAS) for the entire production cycle. But this, according to the farm, has proven to be expensive to maintain over time. Part of the operational challenges with this system became apparent due to COVID-19 when the main local market in the tourism establishments collapsed. Due to restricted movement and general lockdowns, even the small-scale local market was severely affected. This disruption in the fish market resulted in decreased sales which reduced revenue to the farm.

Another major challenge the farm faces, is cheaper fish imports from neighbouring counties. The farm acknowledges that it needs to meet these challenges to survive, therefore they have now changed their production models. Their strategy is to reduce operating costs to increase their profit margin.

1. They did this by using the RAS for breeding only, whereby the earthen ponds are used as outgrow areas.
2. The farm has also implemented an integrated aquaculture system where water from the fishponds is now used in crop production.
3. Currently maize is their major crop and is sold nationally.

This is a progressive production strategy which will help the farm to meet operational costs and stay afloat.

LOCAL, NATIONAL AND REGIONAL IMPACT

- *On a local scale*, Chobe Breams is a source of employment for the local community. This makes the farm a key source of local socio-economic development.
- *On a regional scale*, the farm is a perfect manifestation of the implementation of Sub Article 4 of the SADC Protocol on Fisheries, which advises Member States to create a conducive environment for a thriving private sector involvement in aquaculture development. Chobe Farms also fulfils the "industrial development and market integration" of SADC's "Regional Indicative Strategic Development Plan (RISDP)". The one area of action that this farm addresses towards this regional policy is the development of micro small and medium size enterprises.
- *On a continental scale*, this farm is an affirmation of the "sustainable aquaculture development" principle of the AU's "Policy Framework and Reform Strategy (PFRS) for Fisheries and Aquaculture in Africa". This is also a realisation of the AU's "Africa Blue Economy Strategy", aimed at leveraging the value of water resources in the socio-economic development of Member States.

CURRENT CHALLENGES AND FUTURE OUTLOOK

The COVID-19 pandemic has disrupted the value chain of this enterprise, and has had a negative impact on farm revenue. Due to decreased sales, the farm resorted to selling their fish product at wholesale prices. One of their adverts on the farm's Facebook account dated February 8, 2020 reads:

> "We're running a special on bigger fish 400g to 650g. We have 20 tons ready. Minimum 200kg. Until stocks last."

The farm aspires to expand its current operations to cater for increasing demand both locally and regionally. Chobe Bream has acquired more land from its initial project in 2016 and is constructing more earth ponds over several stages. After the third stage of development, the farm plans to have constructed an additional 36 earth fishponds. These notwithstanding, issues of biosecurity are some of the most emergent challenges facing this fish farm. The periodic occurrence of the Epizootic Ulcerative Syndrome (EUS) disease can have big economic losses on the farm. It is therefore vital that proactive strategies are implemented at not only the national level, but also regionally to mitigate against this.

Through challenge and adversity, this case study reflects aquaculture farming – the peaks and troughs, the reward and opportunity.

Ultimately, the potential to grow aquaculture in this region is extremely promising.

The SAMOCHIMA FISHERMEN

– a syndicate of plenty

IN THE BEGINNING

It all started with a vision of a small-scale, but vibrant commercial capture fishery to be developed on the banks of the Okavango Delta's upper panhandle. Using a combination of various funding facilities by both government and non-governmental organisations – this became a tangible reality.

And so, the Samochima Fishermen Syndicate - a cooperative made up of fishermen was created in 1994, with 15 members.

SOCIO-ECONOMIC IMPACT

Today, the syndicate has transformed the sleepy settlement of Samochima into a vibrant fish marketing site on the Okavango Delta's panhandle. In fact, from the 1990s until the early- 2000s, this facility was the largest source of fish in Botswana.

> During the late 1990s and early 2000s, the Samochima fishermen were the most active in the entire Okavango Delta

It is possible that their fishing effort was driven primarily by the development of a cold storage facility.

In 2000, the FOUR MOST ACTIVE FISHERMEN IN THIS FACILITY earned an average BWP 5400/ month at current exchange rates.

During the same period, the MOST ACTIVE FISHERMAN earned just over BWP 8000/ month at current exchange rates.

TOTAL REVENUES at the facility in 2000 were estimated at BWP 600,000 using current exchange rates.

Undoubtedly, this economic activity contributed to a radical transformation of the fishermen's lives – with a positive knock-on for their families and their community. Fisher's were also able to construct modern concrete houses, from their then ubiquitous traditional mud and grass thatched huts.

Part of this money was invested into LIVESTOCK

While some fishers invested in KIOSK'S

And, most put their money back into their FISHING OPERATIONS

This expenditure pattern continues to this day. A recent interview with the founding chairperson of the syndicate reveals the extent of economic empowerment this facility gave the members. According to him, because of the facility:

> Members are able to send their children to school.

This encapsulates the breadth and extent of economic empowerment that fishers gained from this facility. In essence, it suggests that fishermen are now able to buy school uniforms for their children and pay all the associated development fees at school. This agrees with a study which indicated that fishing income is not only used to purchase food, but is also spent on clothing/ footwear and education.

THE REASON

Creation of this syndicate was facilitated by government to deal with two emergent issues in the Okavango Delta capture fishery:

i. production capacity by fishers, and
ii. a centralised market/ landing place for fishermen.

FUNDING

Government funding vehicles included Agricultural Extension (AE 10), Local Government (LG 17), Financial assistance Policy (FAP), Global Environmental Facility (GEF), United National Development Program (UNDP), and government's Poverty Eradication funds respectively.

AE 10 were the first funds used to facilitate the development of a fishermen group in Samochima village: used to procure basic fishing equipment (fishing nets and boats).

LG 17 were then used to construct a storeroom for the fishermen to procure cold freezers and a generator. This development essentially allowed fishermen to sell fresh/ frozen fish, where they could only sell dried salted fish or smoked products before.

Fishers then used FAP funds at an individual level to purchase fishing equipment (which included boats outfitted with outboard engines and fishing nets).

Through facilitation and advice from government, the fishermen group managed to connect electricity to the Samochima Cold Storage Facility through funds that were generated from levies they paid to the syndicate.

GEF funds were then used to increase storage for the facility.

Another UNDP funded project installed a cold room at the facility and bought a generator as a back-up power supply.

- Recently, the government, through its Poverty Eradiation strategy, contributed to infrastructural refurbishment of the facility.
- The Poverty Eradication project also procured some fish processing equipment and funded the drilling of a borehole at the facility.

Currently, the syndicate has 30 members, even though only 10 have fishing licenses, while the rest are employed as workers in the facility.

COMMUNITY, NATIONAL AND REGIONAL IMPACT

At the community level, the Samochima Syndicate has given the local fishermen a sense of economic empowerment which dovetails into government's rural development strategy. It must be noted that these small-scale commercial fishermen are also a source of employment in the community. Therefore, there is a trickle-down economic benefit of these fishing enterprises into the community. Fishing is now seen as a viable economic enterprise which offers alternative livelihood activities. The Botswana government's investment in developing this small-scale commercial fishery at Samochima is a perfect domestication on Articles 12, 15 and 16 of the SADC Protocol on fisheries. Development of the Samochima facility by government is also a direct response to the AU's "Policy framework and reform strategy (PFRS) for fisheries and aquaculture in Africa". The second principle of this policy advocates for improving and strengthening the contribution of small-scale fisheries to poverty alleviation, food and nutrition security and socio-economic benefits of fishing communities through development of small-scale fisheries.

CURRENT CHALLENGES AND FUTURE OUTLOOK

Government's investment into the Okavango Delta fishery and development of the Samochima Syndicate has made fishing a viable alternative livelihood strategy in the region.

Therefore, more people, including women, have expressed interest in joining this sector. One of the key challenges of entry into the sector is the imposition of fishing licenses which regulates the total fishing effort into the fishery. There are also governance challenges at the local level where women feel they are left out of the fisheries governance equation. It is incumbent upon management authorities to ensure that gender is mainstreamed into fisheries management. Regular outbreaks of the Epizootic Ulcerative Syndrome (EUS) disease in the region can also disturb fishing operations.

Despite these challenges, the development to the Samochima facility has been a beacon of light to the rural communities around the Delta. Strengthening fisheries governance structures at the local level, training fishers in basic financial management skills and making them part of the management paradigm will go a long way to uplifting their lives and those of the communities they live in.

Aquaculture
SUCCESS
in Namibia
Small-scale fish farmers – tales of inspiration

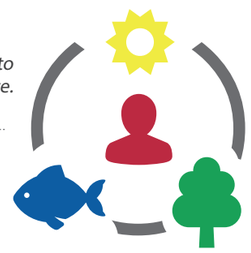
CASE STUDY 1

Otjiponic Tilapia Farm	
Enterprise	Otjiponic Tilapia Farm
Date established	2014
Location	Otjiwarongo, Otjozondjupa Region, Namibia
Water source	Borehole
Species under cultivation	• Mozambican Tilapia (*Orechromis mossambicus*) • Three-spotted Tilapia (*Oreochromis andersonii*)

HISTORY

Situated in the central Otjozondjupa Region of Namibia with vegetation ranging from open savanna around Otjiwarongwe, to lush vegetation and the massive bright red sandstone cliffs, Otjiponic Tilapia Farm (OTF) was conceptualised in 2013 with the purpose of:

Experimenting with hydroponics as a way to growing food fish as a protein source.



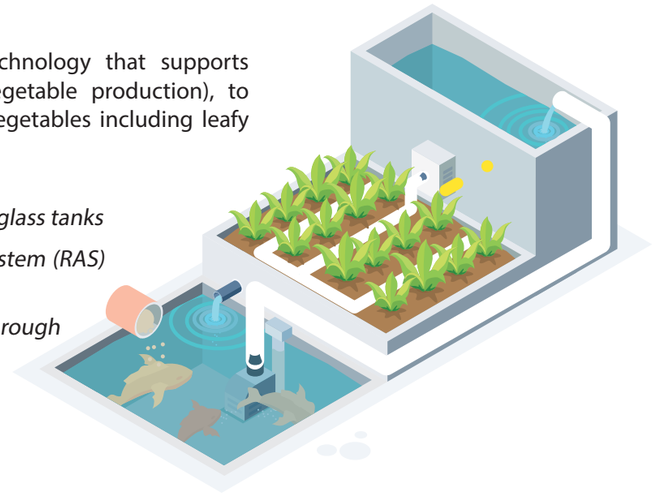
Producing nutritious food fish and vegetables to supplement food for poor and vulnerable persons in the Otjiwarongo area.

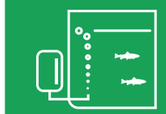
The farm is constructed on approximately 1 hectare of municipal land, which the owner purchased from the Otjiwarongo Municipality using own capital made up of Pension Funds as well as funds received from the Government's Veteran's Fund.

FARMING OPERATIONS

This farm uses aquaponics (an emerging technology that supports integrated aquaculture - "fish farming", and vegetable production), to produce tilapia fish as well as various types of vegetables including leafy greens, lettuce, tomatoes, cabbage and maize.

- *The fish farm component consists of 10 fibre-glass tanks*
- *The tanks use a re-circulating aquaculture system (RAS) to pump water from a borehole*
- *The water is then sent to reserve tanks and through gravity flow, water reaches the fish tanks.*





A simple recirculating system moves water from the outlet of the fish tanks to flow to a mechanical filter. From here, it moves further on to a biological filter before it is aerated and stripped of carbon dioxide, and returned to the fish tanks.

Ref: Food and Agriculture Organisation of the United Nations (FAO).

Fresh water is occasionally pumped into the system to make up for water lost due to evaporation.

PRODUCTION

The farm is seeded in early January / February with fingerlings transported from two government stations – the Hardap Inland Aquaculture Centre in the South (which provides the farm with Mozambican tilapia fingerlings), and the Ongwediva Inland Aquaculture Centre in the Oshana Region (which provides the farm with three spotted tilapia fingerlings).

These fingerlings are stocked at approximately 1000 fish per tank – with the potential to yield approximately 10,000 fish - or 3,500 kg - per annum. Harvesting normally takes place between August to November at intervals.

WATER AND ELECTRICITY SOURCES

Otjiwarongo area does not have any major rivers or dams – this meant that Otjiponic Tilapia Farm had to rehabilitate an existing borehole which supplies the farm with the required water. Electricity is installed and supplied by CENORED (the Central Electricity Distributor).

PRODUCTS, BRAND AND MARKETING

The farm currently supplies the domestic market and sells frozen fish to communities and clients under the "Otjiponic Tilapia Farm" brand the whole year round.

EMPLOYMENT

Due to the seasonal nature of the operations, the farm employs both full-time and part-time staff. Eight full-time employees are currently working on the farm. During harvesting periods, when more labour is required, the fish farm employs an additional five part-time employees to assist during the peak period.

MAJOR CHALLENGES

Over the years, the farm has experienced various challenges, with planned mitigation as follows:

Challenge	Details	Mitigating measures
Slow growing fish	The fish are slow growing, taking between 8-12 months to reach 350g.	To liaise with the Government to provide a faster growing species for cultivation.
Source of fingerlings	Hardap Inland Aquaculture Centre (Mozambicus fingerlings) and Ongwediva Inland Aquaculture Centre (Three Spotted Tilapia fingerlings).	To establish their own hatchery in future for own fingerlings supply, and to sell fingerlings to other aspiring fish farmers.
Electrical costs	Pumping costs are becoming more and more costly each year and will soon become unaffordable.	To install a solar powered water pump.
Sustainability	To be sustainable, the fish farm needs to diversify its service offering and sources of income.	The farm has plans to diversify to include other income generating services (e.g. training). The sale of cash crops (e.g. tomatoes, green peppers, lettuce etc) has been one of the mitigating factors that has maintained the farming operations.

SUSTAINABILITY PLANS

To be sustainable, the farm is planning on diversifying its service offering to include various income generating services such as:

- establishing a training facility;
- social responsibility training for vulnerable persons and community members;
- liaising with universities for students to undertake their practical lessons on the farm as free labour while they impart knowledge and skills to workers and community members.

CASE STUDY 2

Hippo Lodge and Aquaculture Farm	
Enterprise	Hippo Lodge and Aquaculture Farm
Date established	2019
Location	Katima Mulilo, Zambezi Region, Namibia
Water source	Zambezi River
Species under cultivation	• Red Breasted Tilapia (*Tilapia rendalii*) • Three-spotted Tilapia (*Oreochromis andersonii*)
Other products	Vegetables, fruit, fruit trees

HISTORY

Situated along the banks of the Zambezi River, close to Katima Mulilo in the Zambezi Region in Northern Namibia, Hippo Lodge and Aquaculture Farm (HLAF) identifies with aquaculture as one of the fastest growing forms of food production in the world, and recognises the sector as a way to meet the seafood demands of a growing population.

FARMING OPERATIONS

Vital to the success of this operation is the close proximity of the Zambezi River, which secures water availability for 12 months of every year. The farm also has a hatchery where it produces its own fry (baby fish), which grow into fingerlings that are used to stock the aquaculture farm. Conveniently, the broodstock was secured from the Zambezi River. Another point of interest is that the fish farm makes use of gravity to enable water to flow to the fish tanks.

AQUAPONICS

Hippo Lodge practices integrated aquaculture and fruit tree production (aquaponics) by planting and growing mango fruit trees as well as indigenous trees to offset their carbon footprint. Once again, the trees are irrigated through gravity flow, a smart way of using the nutrient rich water from the fish tanks.

AQUAPONICS

Is an emerging technology that supports integrated aquaculture (fish farming) and vegetable production. It combines the two most efficient methods in their respective fields:

- recirculating aquaculture systems (RAS);
- and hydroponics.

Hydroponics is the cultivation of plants in water without soil, while aquaponics combines it with fish production in the same water for the plants.

With aquaponics, small-scale farmers and communities are able to improve their diets through the addition of nutritious fruit and vegetables - rich in micronutrients and essential minerals, including fish, which is an important source of protein. Beyond improving diets, aquaponics offers an opportunity for income generating activities at the local level. *(Ref: FAO)*

FISH PRODUCTION

The farm has a capacity of

1000 l^3 of water

It stocks approximately

90,000 fish consisting of

Red Breasted Tilapia (*Tilapia rendalii*) and
Three Spotted Tilapia (*Oreochromis andersonii*)

FRUIT TREE PRODUCTION

In 2019

Hippo Lodge and Aquaculture Farm produced over

500kg of mangos

PRODUCTS, BRANDS AND MARKETING

From Katima Mulilo to Windhoek, HLAF ships its products; selling its tilapia fish under the brand "*Zambezi Bream Fillets*". Fish is also marketed to surrounding villages, shops, schools and hospitals. The farm has now diversified their tilapia products and sells fresh tilapia fillets, tilapia whole fish (gutted and scaled) as well as frozen tilapia fillets.

FRESH FROM THE FARM SHOP

On 18 December 2020, Hippo Lodge opened a farm shop, which makes it easier for clients to access fresh produce on a daily basis, 6 days a week (Mondays to Saturdays).

EMPLOYMENT CREATION

The farm provides permanent employment for 15 staff - this includes four women, and a further 15 women as non-permanent staff during harvesting time.

TRAINING FOR THE FUTURE

Hippo Lodge's "Flat Bed Aquaculture Training Centre" is located in the Zambezi region and invites aspiring aquaculturists to be trained in low-cost methods for fish production; hatchery management; fish production management; aquaponics as well as tilapia cage culture.

COMMUNITY ENGAGEMENT

The farm encourages communities, villages and surrounding schools to plant

MANGO TREES

in order to achieve scalability, which will lead to

improved marketing as well as helping to increase marketing avenues

Images courtesy of Hippo Lodge and Aquaculture Farm.

CASE STUDY: NAMIBIA'S HAKE DEEP SEA TRAWL FISHERY – PUTTING POLICY INTO ACTION

INTRODUCTION

Following 31 years since the country's Independence in 1990, Namibia has demonstrated the social and economic benefits that can be derived by reforming and putting policy into action through the development of a fishing sector that has continued to create income, generate and maintain jobs and provide socio-economic benefits to Namibians.

Fisheries Policy reform coupled with an implementation framework that is driven by strong public sector action (through the competent authority, the Ministry of Fisheries and Marine Resources (MFMR) of Namibia) and sound private sector engagement strategies has resulted in the ability for Namibia's Fishing Sector to continue providing sound employment even in the advent of the COVID-19 pandemic which continues to devastate nations globally.

Today, Namibia's fishing industry is the third largest national economic sector, providing an estimated U$ 700 million (N$ 10 Billion) to the country's GDP; maintaining and sustaining approximately 16,800 direct jobs and sustaining multiple livelihoods across nine (9) key fisheries including the Hake deep sea trawl fishery (Merluccius capensis and M. paradoxus), Cape horse mackerel (Trachurus capensis), Monk (Lophius vomerinus and L. vaillanti) Rock Lobster (Jasus lalandii), Deep-Sea Red Crab (Chaceon maritae), Snoek (Thyrsites atun), Kob (Argyrosomus inodorus and A. coronus), West Coast Steenbras (Lithognathus aureti) and Cape fur seals (Arctocephalus pusillus pusillus).

THE HAKE FISHERY

The hake fishery is the most valuable fishery in Namibia supporting two species of hake namely – shallow-water hake (M. capensis) and deepwater hake (M.paradoxus) which are caught by demersal trawl. The hake fishery provides over 70% of total direct jobs in Namibia's fishing sector; it supports livelihoods through local value addition; supplying fish to local and international markets, while ensuring food stability and generating foreign currency for Namibia.

At Independence in 1990, there were no hake factories in Namibia - today there are a total of thirteen (13) land-based factories operating in the two harbour towns of Walvis Bay and Lüderitz. The factories sustain livelihoods and employment through land-based, value addition operations. The hake value chain process includes cleaning, filleting and packaging the products for domestic consumption and for export – with a majority of these value chain linked jobs being dedicated primarily to women.

MANAGEMENT PLAN FOR THE NAMIBIAN HAKE FISHERY

Sustainable management of the hake fishery has been achieved through policy and regulatory framework development and implementation coupled with sound management processes and practices that commenced shortly at Independence. The MFMR makes use of various management strategies aimed at protecting the resource and the environment – including the Total Allowable Catch (TAC), Individual Quotas, Quota Fees, By Catch fees, a number of technical measures and a Fisheries Observer system

As part of the management measures, the MFMR has planned to develop management plans for the various commercial species. The Hake Management Plan (HMP) is the first to be launched in 2014 and provides a long-term assessment framework for the hake fisheries policy - it consolidates the current policy framework and provides a holistic view of the hake industry, allowing for the identification of policy gaps and areas that require adjustment and improvement. The HMP prioritizes the recovery and long-term sustainability of the hake resource among other social and economic benefits and points the management process towards an Ecosystem based Approach to Fisheries Management (EAF) thus considering the ecosystem impacts of fisheries including target, non-target and general ecosystem impacts. To fully implement the EAF, the MFMR will need to consider a review of legal, policy and strategic changes to the management of the hake stocks.

Hake jobs, orkers in a Namibian Hake Fish Processwing Factory processing and filleting hake (New Era Newspaper, 2019)

Fisheries observers on board a vessel, receive training on capturing landing data (Source: Fisheries Observer Agency)

Hake being a transboundary fish stock benefits from Regional Collaboration and management initiatives and activities including through the Benguela Current Commission (BCC) and makes use of the best available scientific evidence to drive strategy.

One such initiative is the 2017 Ecological Risk Assessment (ERA) Review Workshop for the Namibian Hake fishery which was undertaken through a collaboration between the BCC, the University of Namibia and Rhodes University. The ERA Review assessed (among others) whether good data procedures exist to support EAF implementation and whether sufficient capacity, skills equipment and funding exist to support implementation of an EAF in the hake fishery. The review recommended various ecological, socio-economic and governance priority actions to enable further monitoring and stimulation of EAF implementation.

Private Sector participation has been a key driver in domesticating the HMP. The Namibian Hake Association (NHA) has embraced the HMP as a sustainable development framework for the hake industry and has committed to its implementation.

PUTTING THE ECOSYSTEM APPROACH TO FISHERIES INTO PRACTICE FOR THE HAKE FISHERY

Early emerging wins signifying implementation of the EAF include the adopted National Plan of Action for Seabirds (NPOS-S) developed through a collaboration with a global Albatross Task Force (ATF) and implemented through the Namibia Nature Foundation (NNF) a local NGO. The NPOA-S provides a set of mitigating measures and actions to reduce the number of albatross and petrel bird deaths caused by vessels during fishing activities. The NPOA-S is important for improving the conservation status of threatened seabirds such as the albatross. Private sector adopted proposed measures under the NPOA-S which have resulted in a significant reduction of albatross and petrel mortalities. Long term monitoring of compliance of the NPOA-S is expected through the Fisheries Observers who are already active within the fishing industry, and plans are currently underway to achieve this strategy.

Another notable win is the draft National Plan of Action (NPOA) for sharks, which, although yet to be adopted and implemented signifies successful early strides towards putting the EAF into practice across various non-target species.

Notably, continued assessment of the fisheries management processes and instruments is required to ascertain their degree of conformity of the EAF principles. Of particular relevance withing the SADC context are the EAF strategies for managing transboundary fish species which are yet to be formulated, and which will require multi-country collaboration for successful implementation.

MARINE STEWARDSHIP CERTIFICATION (MSC)

In 2020, the Namibia hake trawl and longline fishery become the first fishery in Namibia, and the second in Africa, to attain Marine Stewardship Certification (MSC) – thereby meeting globally recognised standards for sustainable fishing. MSC occurs if a fishery meets three criteria, namely (i) the fishery must show that the fish stock is healthy (ii) the fishery must minimise its impact on the environment and (iii) it must have effective management in place.

The Namibian Hake fishery operates on a much larger scale than many fisheries in the Global South, and will add up to 160,000 tonnes of sustainable hake into the local, regional and global sustainable seafood supply chain.

MSC recognises progress made by the Namibian government and fishing industry in rebuilding hake stocks, which in the past were decimated by overfishing by foreign fleets prior to independence – and certification is expected to aid sectoral growth, to benefit the economy, communities and to stimulate additional job creation in the hake sector.

PRIVATE SECTOR ENGAGEMENT

COVID-19 has devastated various industrial sectors in Namibia and globally, however, strong Government engagement strategies with the private sector, through the Namibian Hake Association, and the Namibian Fishing Confederation (among others) have ensured that the Hake industry continued operating during the pandemic, thereby safeguarding jobs and maintaining foreign export earnings. Government support to private sector across three key services enabled the industry to remain active during the pandemic - namely (i) Recognition of fishing operations as an essential service (thus not temporarily closing-down operations but rather enforcing strict COVID-19 measures to protect employees) (ii) Continued provision of vessel licensing and other operational services and (iii) Issuing the fishing quota on time – thereby ensuring that the industry remained competitive.

CONCLUSION

Namibia continue working steadily towards achieving a near optimum political, economic, social and environmental management framework for Namibian fisheries that not only supports governance reform in the hake sector and broader fishing industry, but presents a degree of certainty regarding the gains and distribution of benefits (and in some instances the losses) to Government (through taxation, levies & fees), to fish workers (through sustained employment), to the Fishing Industry (through profitable fishing and fishing enterprise business development) to Namibian fishing right holders (through economic participation opportunities), as well as community beneficiaries (through mandatory socio-economic development programmes). The current gains being experienced in the hake sector and other fishing sectors are a direct result of the Namibianisation policy, coupled with the Rights and Quota based Fisheries and sustainable Natural Resources Management approaches which are applicable across all major fisheries to this day.

Community Fisheries
SUCCESS
in Malawi

The fisheries of Lake Chiuta - community focussed sharing

This success story presents best practice on the development of a transboundary fisheries co-management (TFC) that has developed over time in Lake Chiuta. Before it was introduced, there were conflicts between fishing communities from both Malawi and Mozambique, who share the lake. The conflicts mainly centred on the management system and fishing rules. The solution by co-management led to the formation of Beach Village Committees (BVCs) and Community Fishing Councils (Conselho Comunidade das Pescas) to represent the best interests of the fishing community in both Malawi and Mozambique, respectively.

THE SETTING

Almost 20% of the total surface area of Malawi is covered in lakes, rivers and floodplains; the main ones being Lakes Malawi, Chilwa, Malombe, Chiuta, Shire River and floodplains.

These water bodies are the major source of fish for Malawians, and in 2017, fish production was estimated at 199,454 MT. According to the Fisheries Conservation and Management Act of 1997, fisheries in Malawi can be categorised into three areas.

1. **Subsistance fishing**

Fishing for the primary purpose of providing food for household consumption.

2. **Small-scale fishing**

An individual engages or intends to engage in fishing for sale throughout the year / a specified season / or part of a season each year.

Relies on fishing activities for partial income.

3. **Commercial fishing**

A corporate body or association that has an appreciable investment in the fishing industry or intends to make one.

The predominant fishing practices in Lake Chiuta are subsistence and small-scale, using traditional craft (dug-out canoes) and gears like fish traps and gillnets.

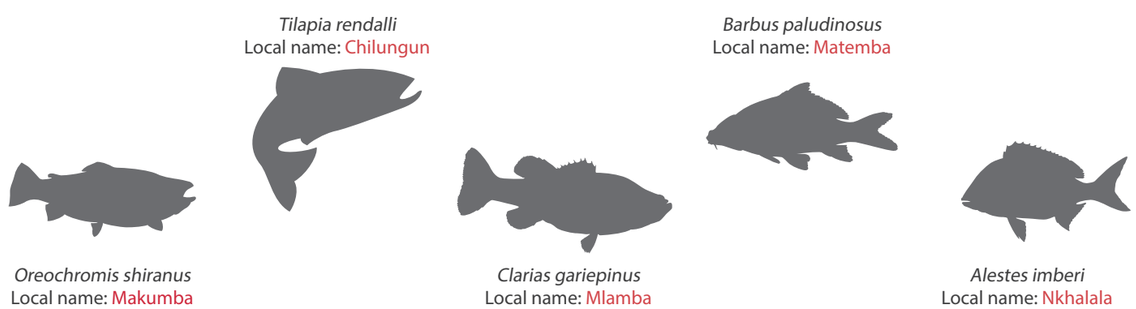
This success story is about a shared lake, and the development of Transboundary Fisheries Co-management to support fishing communities in Malawi and Mozambique - in line with SADC Protocol on Fisheries.

LAKE CHIUTA

This lake is shallow, with a mean depth of 5 m, located at an altitude of 620 m in the southern part of Malawi and has a total surface area of about 200 km2, of which 49 km2 lie in Mozambique (FAO, 1994). The southern part is more or less permanently covered with emergent vegetation - penetrable by canoes, but not larger craft.

In 2015, Lake Chiuta registered 822 fishers using 298 dug-out canoes, and 1,869 gillnet units were counted on the Malawian side of the lake (GoM 2015). Others use long lines and individually placed hooks locally termed as nchomanga. A few planked boats are also commonly used on the lake for fishing activities.

Lake Chiuta is a multi-species fishery; commonly exploited fish species include:



SHARED LAKE, SHARED CHALLENGE

Just like Lakes Malawi and Chilwa; Lake Chiuta is shared between Malawi and Mozambique, and this complicates the shared management of these lakes between the two countries.

Two types of fisheries management systems exist in many fishing communities:

1. an informal or traditional management system, which is developed and implemented by a community of resource users and often coexists with;
2. a centralised fisheries management system.

Outsiders to the community are often not aware of informal systems as these are not easily observed or understood. An informal management system refers to a "rights-and-rules" system collectively sanctioned by fishers.

Comparison of fishing regulations for Lake Chiuta, on Malawi and Mozambique sides of the lake

Rule/regulation	Malawi	Mozambique
1. Fishing gear types:		
Gill nets	Allowed	Allowed
Fish traps	Allowed	Allowed
Long lines	Allowed	Allowed
Beach seine	Prohibited	Allowed
Open water seine (nkacha)	Prohibited	Allowed
2. Minimum mesh size for gill nets	Set at 69mm	Not yet applied
3. Closed season for seines – 1 November to 30 April	Not applicable: seines prohibited	Not yet applied

Based on the regulations, it is evident that the main source of conflict is with regard to use of seine nets for fishing operations. These nets are allowed on the Mozambican side, but they are prohibited on the Malawian side. Therefore, there is a need for continued dialogue between the two fishing communities to address this problem.

Where natural resources transcend national boundaries, appropriate cooperation between or among the riparian countries is required in order to address the fishing-related conflicts among fishers. According to Dr Friday Njaya (Director of Fisheries in Malawi), "this is the case with Lake Chiuta, where such conflicts arose due to differences in national policies and legislation, resource management regimes and the heavy dependency of the communities on fishing as a source of livelihood". Dr Njaya, further noted that "the lake is located in the remote parts of both Malawi and Mozambique, and that communities have fewer opportunities for livelihood".

GENESIS OF THE LAKE CHIUTA TFC

The process of establishing the Lake Chiuta TFC initiative started in 2002, with support from the International Union for Conservation of Nature and Natural Resources (IUCN) that provided a negotiation platform for the Malawian and Mozambican fishing communities. It was also engaged in building capacity for both fishing communities in areas of conflict management, entrepreneurship, business management, fish resource management and environmental issues. Two major activities included (i) a study tour to Zambia/ Zimbabwe for government officials to learn about Lake Kariba transboundary initiative on fisheries management; and (ii) organising a training session for riparian representatives of the fishing communities (fisheries, traditional leaders, fisheries technical assistants) from both Malawi and Mozambique, which was conducted in Malawi in 2003.

WIN-WIN

The TFC has emerged and helped fishing communities in both SADC territories to collaborate in managing shared fisheries resources. In this case, TFC can be referred to as a joint fisheries co-management arrangement across boundaries that concerned parties in the respective countries pursue to achieve goals of equitable and sustainable fish resource utilisation.

The TFC has evolved through three phases including field-based coordination and collaboration:

Phase I: Institutionalisation of TFC through national legislations process in the two countries.

Phase II: The signing of a Memorandum of Understanding (MoU) on Fisheries Management and Aquaculture Development between Malawi and Mozambique.

Phase III: This evolution has helped reduce the fishing-related conflicts, and enhanced Malawi and Mozambique's delivery on their commitment to the provisions of the SADC Protocol on Fisheries. Currently, monthly joint meetings are being held by both communities in Malawi and the Mozambican side of Lake Chiuta; and their commitment to sustainable fisheries management has led the communities to respect the joint rules.

Key lessons can be drawn from the process of establishing the TFC, and these include:

- Use of traditional knowledge
- Sharing of common culture, values and traditions
- Institutionalisation of community participation, through national policy, underpinned by the regional SADC Protocol on Fisheries
- The willingness of countries to negotiate on behalf of the fishing communities.

Therefore, effective and sustainable TFC models for small-scale fisheries should always be community-driven.

SUCCESS FACTORS OF THE LAKE CHIUTA TFC

Expert advice recommends that in order for co-management to succeed, there is a need for policy-makers to be aware of the opportunities, enabling conditions and constraints in order to assess the likelihood of the success of achieving the objectives of transboundary natural resource management. In terms of Lake Chiuta, the TFC has succeeded due to a number of factors, including:

- socio-cultural
- policy and political context
- the level of dependence on the fisheries resource for economic gains
- willingness of the communities to engage in dialogue with government
- international obligations and commitments by both Malawi and Mozambique.

SOCIO-CULTURAL ISSUES

Ethnically, the majority of the people around Lake Chiuta, in both Malawi and Mozambique, are Yao and Lomwe. Since the fishing communities share a common history, language, socio-cultural values and traditions; as well as common land tenure systems, marriage traditions and initiation ceremonies, it is easy for them to agree on common community-based fisheries management measures. Consequently, the level of trust among key stakeholders for commitment to management process is high. Furthermore, the process of addressing potential conflicts among stakeholders, as well as empowerment of the actors for benefits is much easier.

Level of dependence on the fisheries resource for economic sustenance

Fish provides a livelihood to many people on both Malawi and Mozambique sides of Lake Chiuta. The growth of the urban centres near the lake in the Mozambican town of Mecanhelas and Liwonde town in Malawi, has created demand for fish from the lake. This means that fishing and fish trading are important sources of income for the majority of the population around the lake. This level of dependency on the fisheries provides an incentive for fishing communities to value the need for sustainable management of the resources.

INTERNATIONAL OBLIGATIONS

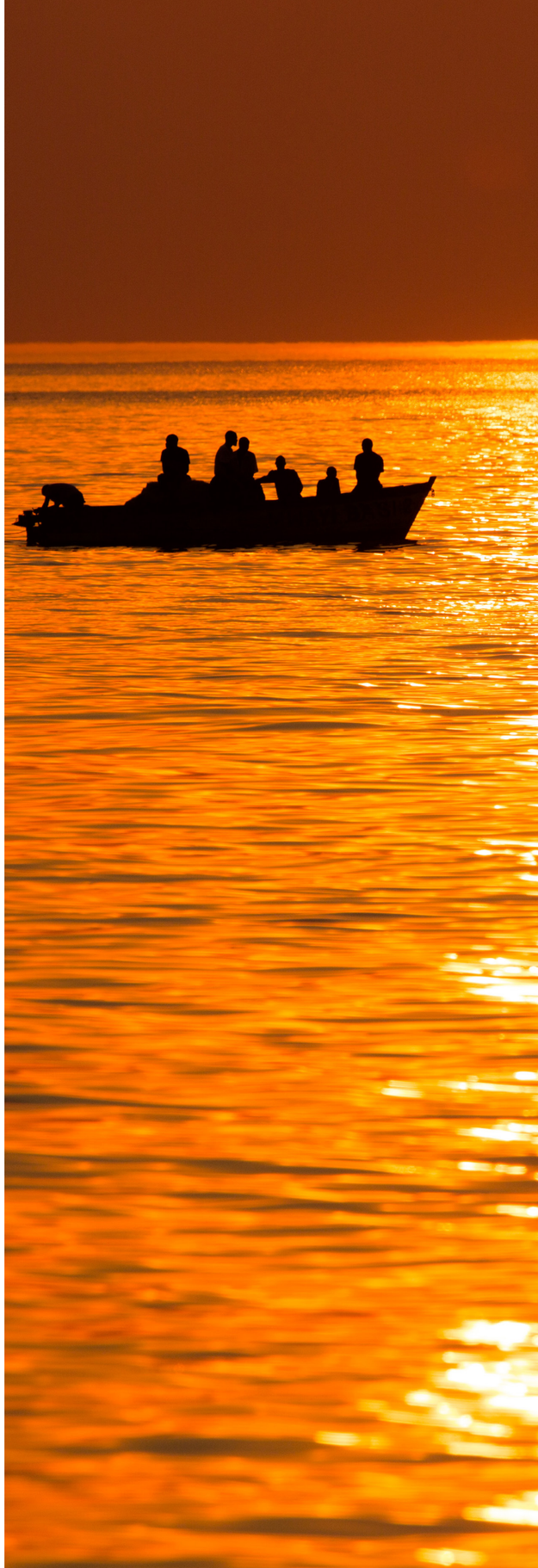
Both Malawi and Mozambique are committed to various international conventions, agreements, and protocols like the FAO Code of Conduct of 1995; SADC Protocol on Fisheries and the AU Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa. These conventions provide a framework of cooperation for shared ecosystems in pursuit of a common goal towards sustainable fish resource management.

FINAL WORD

Lessons from Lake Chiuta reinforce the importance of harmonising national fishing regulations and governance systems between Malawi and Mozambique into transboundary fisheries management arrangements. This can't be successfully achieved unless fishing communities are involved in the formulation and implementation of those rules.

Ultimately, transboundary fisheries co-management is not a quick fix. Since TFC involves communities and governments in multiple countries, there is a need to consider it as a long term initiative for the future.

Co-management is about the inclusive right to participate in making key decisions about how, when, where, how much, and by whom fishing will occur.



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Aligned with the SADC Protocol on Fisheries and SADC Regional Aquaculture Strategy and Action Plan (2016-2026), this Strategy serves as a guide to the implementation of the National Fisheries and Aquaculture Policy of 2016.

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