



REPUBLIC OF
NAMIBIA

MINISTRY OF
FISHERIES AND
MARINE
RESOURCES

ANNUAL REPORT 2020/2021

MINISTRY OF FISHERIES AND MARINE RESOURCES

Our mandate

To sustainably managed the living aquatic resources and promote the aquaculture sector

Our vision

Namibia to be a leading fishing nation with a well-developed aquaculture

Our mission

To responsibly manage living aquatic resources to continuously ensure a conducive environment for the fishing and Aquaculture sector to prosper

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LIST OF ABBREVIATIONS USED IN THE DOCUMENT

ADG-	Average Daily Gain
ALC-	Automatic Location Communication
AMP-	Annual Management Plan
ASP-	Amnesic Shellfish poisoning
ASPM-	Age Structured Production Model
BCC_	Benguela Current Commission
BENEFIT-	Benguela Environment Fisheries Interaction and Training Programme
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CPUE-	Catch per Unit Effort
DMA-	Directorate of
DoAIF-	Directorate of Aquaculture and Inland Fisheries
DSP-	Diarheltic Shellfish Poisoning
EDRMS-	Electronic Document and Report Monitoring System
EEZ-	Exclusive Economic Zone
FAO -	Food and Agricultural Organization
FCR-	Feed Conversion Ratio
FMC-	Fisheries Monitoring Center
FOA-	Fisheries Observer Agency
FPV-	Fisheries Patrol Vessel
FRV-	Fisheries Research Vessels
HAB	Harmful Algal Bloom
HIAC-	Hardap Inland Aquaculture Center
HLP-	High Level Panel
IAC-	Inland Aquaculture Centre
ICCAT-	International Commission for the Conservation of Atlantic Tunas
ICT-	Information and Communication Technology
IUU-	Illegal unreported, unregulated
KIFI-	Kamutjonga Inland Fisheries Institution



KG-	Kilogram
LFF-	Leonardville Fish Farm
MCS-	Monitoring, Control and Surveillance
MSC	Marine Stewardship Council
MEFT-	Ministry of Environment and Tourism
MFMR-	Ministry of Fisheries and Marine Resources
MoF -	Ministry of Finance
MWT-	Ministry of Works and Transport
MSC-	Marine Stewardship Council
MSY-	Maximum Sustainable Yield
MTEF-	Medium Term Expenditure Framework
NAMPOL-	Namibian Police
NCRST-	National Commission on Research Science and Technology
NDP5-	National Development Plan
NIWA-	Norwegian Institute of Nature Research Awaiting
NNF-	Namibia Nature Foundation
NORAD-	Norwegian Agency for Development Cooperation
NPC-	National Planning Commission
NPOA-	National Plan of Action for Small Scale Fisheries
NSI-	Namibia Standard Institute
NTF-	National Tasks Force
NUST-	Namibia University of Science and Technology
O/M/A-	Organizations Ministries Agency
OAC-	Ongwediva Aquaculture Center
OPM-	Office of the Prime Minister
PV-	Patrol Vessel
RV-	Research Vessel
SAIAB-	South African Institute for Aquatic Biodiversity
SEAFO-	South East Atlantic Fisheries Organization



SME-	Small Medium Enterprise
SSF-	Small Fish Farmers
SSFF-	Small Scale Fish farmers
SST-	Sea Surface Temperature
STCW-	Standard of Training and Certification of Watch keeping
TAC-	Total Allowable Catch
UKZN-	University of Kwazulu Natal
UNAM-	University of Namibia
VMS-	Vessel Monitoring System
ZIAC-	Zambezi Inland Aquaculture Center



Forward

The Ministry is pleased to present the public the 2020/2021 Annual Report. This report provides a summary of activities carried out during the reporting period from 01 April 2020 to 31 March 2021. Despite the numerous ongoing challenges such as budget cut and COVID -19 pandemic, the fishing industry reported a positive performance in 2020. Hence I am happy and proud to present to the public the results of our effort as a ministry. During the period under review, the sector achieved the 40% value addition target on horse mackerel, and sustained the 70% value addition in the hake fishery. Furthermore, the total TAC for various fisheries was 501 318 metric tons. This fish and fishery products contributed N\$ 10 billion from exports, making fisheries the second largest forex earner for Namibia, after Mining.

During 2020/21 financial year about 92% of our annual fisheries landings, constituted of the main fish stocks, which are healthy and harvested sustainably. Stocks which were in decline are showing signs of recovery, although there is still a need to rebuild them to Maximum Sustainable Yield (MSY) levels, in order to ensure their optimal contribution to our economy. During 2020, the Namibian hake fishery was certified by Marine Stewardship Council (MSC) which signifies that Namibia hake fishery met the globally recognized standard for sustainable fishing as set by MSC.

I have taken a commitment to ensure that per capita fish consumption in Namibia increases from 9.5 kg per person per year (in 2019), to the world average of 20.4 kg per person per year (FAO). A survey conducted by the Ministry of Fishery and Marine Resources suggests that currently the country's consumption stands at 18.86 kg per person per year, which is 92% of the target.

The role of aquaculture is of the utmost importance in order to reduce reliance and impact on wild stock and sustainable feed the world with healthy, lean protein. Therefore, I would like to report that, a total of 36.32 tons of fish was produced from freshwater aquaculture with a value of N\$ 1.8 million. Despite the difficult financial circumstances the Mariculture industry produced 149.5 tons of oysters with a total value of N\$ 11.36 million. Wild capture inland fisheries landings from our rivers in the north were around 2000 tons with a value of N\$120 million.

I hope that Namibia will continue promoting fisheries initiatives and strengthen the relationship of Regional Cooperation in Fisheries and Marine Resources.

I trust you find this 2020/2021 Annual Report interesting and informative.

Hon. Derek Clazen

MINISTER



1. THE MINISTRY OF FISHERIES AND MARINE RESOURCES

The Ministry is mandated to sustainably manage the living aquatic resources and to promote the aquaculture sector. The vision of the Ministry is for Namibia to be a leading Fishing Nation with a well-developed aquaculture industry.

1.1 Objectives

The overall objectives of the Ministry are derived from the Mission Statement; and are to:

- Encourage the scientific utilization of the living marine resources and health of the marine ecosystem.
- Ensure compliance with fisheries legislation
- Strengthen the development of aquaculture
- Improve contribution of value added exports and thereby the national economy
- Increase employment creation
- Enhance organizational performance

1.2 Organizational Structure

The Office of the Executive Director provides executive management to four Directorates within the Ministry namely:

1.2.1 Directorate: Operation

The Directorate is mandated to protect the living aquatic resource and regulating fishing activities within the Exclusive Economic Zone (EEZ) and public inland water bodies.

1.2.2 Directorate: Resource Management

The Directorate is mandated to conduct research to determine the status of the stocks and providing specific advice on the sustainable management of Namibia's living marine resources and ecosystem and promoting public awareness.



1.2.3 Directorate Policy Planning and Economics

The Directorate is mandated to co-ordinates the formulation, implementation as well as monitoring and evaluation of fisheries policies and legal framework, carry out continuous socio-economic research and evaluation, collect, capture, analyze and disseminate data to end users and stakeholders. It is also responsible to manage fishing rights and allocation of fishing quotas, issue licensing of vessels and co-ordinates overall planning of the Ministry.

1.2.4 Directorate Aquaculture

The Directorate is mandated to regulate and control aquaculture and inland fisheries activities and provide sustainable development of aquaculture, the conservation and protection of inland aquatic ecosystem and their sustainable management.

1.3 Policy and Legislative Framework

1.3.1 Marine Capture Fisheries

A policy document titled Marine Resources Policy: Towards responsible development and management of the Marine Resources Sector is available on the Ministry's web-site .The Legislation governing the marine capture sector includes: Territorial Sea and Exclusive Economic Zone of Namibia Act (1990); and Marine Resources Act (Act No 27 of 2000) and its regulations. International legal instruments to which Namibia is a Party also form a basis for the sustainable management of our living Marine resources.

1.3.2 Inland Capture Fisheries

Inland Fisheries Policy is outlined in the White Paper on the Responsible Management of the Inland Fisheries of Namibia (1995), which allows the exploitation of inland fish resources on a sustainable basis. The Inland Fisheries Resources Act (No.1 of 2003) governs inland fisheries.

1.3.3 Aquaculture

The documents below are in place, ensuring the development of Aquaculture in Namibia.

- ❑ Aquaculture Policy of 2001
- ❑ Aquaculture Act (No.18 of 2002)
- ❑ Aquaculture Licensing Regulations



1.4 Budget

The Ministry's total budget allocation for 2020/21 financial year was N\$ 208,383,000.00, broken down into N\$ 199,383,000 and N\$ 9 000,000 for operational and capital expenditures, respectively. The budget execution of the Ministry as at 31 March 2021 stood at N\$ 192,661,563 representing an execution rate of 92.5 %, mostly due to low performance of capital projects (Table 1). Six capital Projects shown in Table 2 were funded to a tune of N% 9 000 000.

Table 1: MFMR budget allocation 2020/21 financial year.

Budget	Allocation N\$	Expenditure N\$	% execution rate
Operational	199,383,000	191,643,098.48	91%
Development	9,000,000	1, 018,464.58	11,31%
Total		192,661,563	92.5%

Table 2. Development Budget for 2020/21

Ongoing projects	Estimate (N\$ 000)
Construction of Leonard Ville Fish Farming Project	4500
Renovation and Upgrading of Aquaculture Development Project in Kavango East and West	1000
Renovation and Upgrading of Keetmanshoop Fonteintjie fish Farm Community Project	1900
Construction of MFMR Regional Office in Kavango East	6850
Extension and Renovation of MFMR Head Office in Windhoek	4750
Total	19000

Source: MFMR 2020/21



1.5 Performance Management System

The Office of the Prime Minister (OPM) introduced the Performance Management System (PMS) aimed as a tool to guide the implementation of Ministry's interventions throughout the given financial year. For effective implementation of Ministerial policies and strategic plans, the MFMR organized the Annual Planning meeting to develop the Ministerial Annual Management Plan (AMP) for the 2021/2022 financial year and review the AMP of the 2020/2021 financial year. This is one of the key activities of the Ministry in its efforts to implement the Performance Management System with the rationale of setting the overall strategic direction in line with the Ministry's 2017 – 2021 Strategic Plan. Hence, the AMP 2020/2021 was reviewed, and AMP 2021/2022 was formulated on 19/04/2021-23/04/2021.

2. BLUE ECONOMY

Namibia's Fifth National Development Plan (NDP5) provides for the Blue Economy with a desired outcome that by 2022, Namibia will have implemented a Blue Economy governance and management system that sustainably maximizes economic benefits from aquatic resources and ensure equitable marine wealth distribution to all Namibians". Blue economy activities include fisheries, marine mining, marine energy, marine and coastal tourism, maritime transport, and emerging aspects such as pharmaceuticals, biotechnology and novel foods from marine resources.

An Inter-Ministerial Blue Economy Committee is in the process of finalizing Namibia's Sustainable Blue Economy Policy. The inter-ministerial committee comprises of Ministries of Fisheries and Marine Resources; Mines and Energy; Works and Transport; Environment, Forestry and Tourism; Agriculture, Water and Land Reform; International Relations and Cooperation; Industrialization and Trade; Labour, Industrial Relations and Employment Creation; Office of the Attorney General and the National Planning Commission. It is expected that the draft Policy will be finalized within the current financial year.

Within the blue economy space, Namibia is one of the members of the High Level Panel (HLP) for a Sustainable Ocean Economy. Membership of the HLP is made up of 14 Heads of States and Governments, each with a personal representative ("Sherpa"). The Minister of Fisheries and Marine Resources has been representing the Namibian Head of State on the HLP, as his Sherpa. The HLP Focal Ministers (Sherpas) have developed the Transformations Document/Text to signify their countries commitment to achieving certain targets relating to sustainable ocean



management in the areas of ocean food production, marine energy, ocean-based tourism, maritime transport, new ocean industries, sea-bed mining etc. The Transformations Document is a commitment to bold transformations towards a sustainable ocean economy, where environmental protection and conservation, and economic production and prosperity go hand in hand, guided by principles.

The document calls for a commitment to sustainably manage 100% of the ocean areas under national jurisdictions, guided by Sustainable Ocean Plans, by 2025, through five critical areas and corresponding themes along with their 2030 outcomes and priority actions: It was expected from each country to identify and priorities critical areas and themes they will implement. Namibia has identified and prioritized critical areas on Ocean Wealth, Ocean Health and Ocean Equity and their corresponding themes. The Transformations Document was launched by H.E. Dr. Hage. G Geingob, President of the Republic of Namibia, on 3rd December 2020. Once the Blue Economy Policy has been approved by Cabinet, Implementation Action Plans for both the Policy and the Transformation documents will be finalized, culminating into Sustainable Ocean Plans, which will enable Namibia to move to the 100% headline commitment.

3. CAPITAL PROJECTS

The Ministry funded various projects which includes structures such as Fish farms and MFMR office buildings.

These projects are implemented with the aim to accelerate growth within the Ministry and improve the livelihood of Namibians. During the year under review, the MFMR funded the following capital projects:

1. MFMR Head Office Building,
2. Mpungu Aquaculture project Kavango West,
3. Leornardville Fish Farm,
4. Foentintjie Fish Farm
5. MFMR Regional Office Kavango East
6. Arandis Airwing and Mowe Bay Hanger

3.1 MFMR Head Office Building,

The project is aimed to provide office accommodation to staff at the MFMR head office, the project started in 2014 and 92% of the activities, including the administration blocks, parking basements, security room were completed. Activities planned for 2021/2022 financial year are:



partitioning work on the 4th floor of the building, opening up the walls between the new and old building, associated works such as re-routing of services, water proofing work on the parking deck and boundary wall at the back of the building.

3.2 Mpungu Aquaculture Project, Kavango West,

Mpungu Aquaculture project is located in Kavango West, Mpungu Constituency and is aimed to improve the livelihood of the community by promoting food security, employment creation and poverty reduction. Construction of a three bedroom accommodation unit at Mpungu Fish Farm was completed to satisfactory standard and officially handed over to the MFMR on 19 March 2021 by the Ministry of Works and Transport (MWT). Activities planned for 2021/2022 Financial Year are: Rehabilitation of production facilities ponds, garden, installation of new pump at the river and renovation of the house.

3.3 Leonardville Fish Farm,

The construction of Fish Farm at Leonardville in Omaheke Region is aimed at fish production, extension services, training and capacity building, data management as well as research. The project will promote development of aquaculture in the Omaheke Region. It will contribute to employment creation, food security, poverty reduction and maximize the increase of fish production, which will supply the local market as well as regional. The on-farm site facilities include: administration block, two bedroom house, processing room, dry shed, Biological filter, ponds filter, 2 boreholes, 6 fish ponds with plastics linings and roof to control /regulate the temperature and embankment of the ponds. The construction of staff accommodation activity is planned for 2021/2022 financial year.

3.4 Foentintjie Fish Farm

The Project is aimed at contributing to aquaculture development and improve livelihood of the communities by promoting employment creation, food security and poverty reduction. The project is 80% completed, with a hatchery, processing room, sixteen (16) fishponds, staff accommodation (two flats and one house) fish feed store, a generator room and a security room. The activities planned for 2021/2022 financial year are installation of standby generator, aquaculture equipment, hot and cold water system and electrical outstanding works.



3.5 MFMR Regional Office, Kavango East

The project was initiated to provide office accommodations of the MFMR staff in Rundu, Kavango East. The project started in 2013 and is 50% complete. Since the building is close to the river a storm water system will be constructed in 2021/2022 to prevent it from flooding and erosion.

3.6 Arandis Airwing and Mowe Bay Hangers

The Ministry aims to renovate the two premises is to provide a conducive working environment through developed and reliable office infrastructure. Activities carried out are guard house, repair of the septic tank that discharge sewer in the desert/field. Activities planned for 2021/2022 are to repair sewerage disposal system that was damaged is discharging raw sewer into the desert/field as well as renovation of the hangars and refurbishment to the lodging facilities building for the guards and to repair the tank and new paving on the forefront of the lodging facility.

4. FISHERIES

4.1 Number and Duration of Fishing Rights

The Ministry has granted 163 fishing rights in 2012 for a period of ten (10) years, which are due to expire by the end of December 2021. The Ministry is now in the process of evaluating these right for possible extension. In 2020, the Ministry further granted 298 new fishing rights for a period of seven (7) years, thus expiring in 2027.

4.2 Vessel Licences

During 2020/2021 financial year a total number of 207 vessels were licensed to operate in the Namibian Exclusive Economic Zone (EEZ). It is observed that the total number of vessels licensed slightly increase in comparison to the total vessels licensed for financial year of 2019/2020 financial year. This increase is mostly in the larger pelagic and line-fish fleet. No licenses were



issued to the deep-sea (Orange Roughy) and Small Pelagic (Pilchards) fleet as fishing on these stocks have been put on a moratorium.

Table 3. Number of licensed vessels by fishery for 2019/2020 and 2020/2021

Fishery	2019/2020	2020/2021
Small pelagic	0	0
Demersal: Trawlers & Long liners	69	66
Midwater	18	18
Deepwater	0	0
Large pelagic	40	43
Line fish	28	40
Crab	5	5
Rock lobster	14	16
Monk	18	19
Total	192	207

Source: MFMR, 2020

4.3 Total Allowable Catches

The Total Allowable Catch (TAC) is one of Namibia's fishery management strategies, to avoid overexploitation of the resources. The Ministry sets TACs which means a limitation of the quantity in respect of any marine resources which may be harvested in a given period in terms of section 38 of Marine Resources Act of 2015 as Amended, for a particular fishing season. Scientific recommendations on the state of the stocks and marine environment as well as the economic performance of the sub-sectors are considered by the Marine Resources Advisory Council (the body that advises the Minister in relation to any matter on which the Minister is required to consult the advisory council under the Marine Resource Act, No.27 of 2000, section 38 (1) & (2) in setting the TACs.

The fisheries sub-sectors have different fishing seasons depending on their operations and the biological features of the resources and interactions in the ecosystem. The fishing season for horse mackerel, sardine and crab commence on the 1st of January to 31st December, whilst that of hake start from the 1st of November to the 30th of September. The month of October is closed for the hake fishery in order to allow fish to spawn undisturbed. The fishing season for rock lobsters start on the 1st of November to the 30th of April , while monk start from the 1st of May



to the 30th of April and larger pelagics from the 1st of September to the 31st of August. Seals are not harvested in metric tons but in number of permissible pups and nulls. The season for seal harvesting is the shortest, starting from the 1st of July to the 15th of November.

The large pelagic fishery TAC is set by the International Commission for the Conservation of Atlantic Tuna (ICCAT), which is an intergovernmental organization responsible for the management and conversation of tuna and tuna-like species in the Atlantic Ocean and adjacent seas. The line fish fisheries consist of snoek, kob, west coast Steenbras and galjoen and is effort controlled with a limited number of vessels targeting these species, net restrictions and no mechanical hand lining or any other method of fishing allowed.

Guano is natural manure composed mainly of the excrement of sea birds, found especially on islands, however, seabird guano harvested in Namibia are on artificial platform. The harvesting is done in three to five years interval.

Table 4. Total Allowable Catches, 2015/16-20/2020

Fishery		2016/17	2017/18	2018/19	2019/20	2020/21
Hake		154,000	154,000	154,000	154,000	160,000
Horse Mackerel		340,000	340,000	340,000	349,000	330,000
Pilchard		10,000	-	-	-	-
Monk		10,000	9,600	8,000	7,200	7,300
Deep Sea Red Crab		3,446	3,446	3,446	3,900	3,900
Rock Lobster		268	230	200	180	180
Large Pelagic	Albacore	3,600	3,600	3,600	3,600	3,600
	Swordfish	1,168	1,168	1,168	1,168	1,168
	Big eyes Tuna	2,100	2,100	2,100	2,100	2,100
Seals (in Numbers)	Pups	60,000	60,000	60,000	60,000	60,000
	Bulls	8,000	8,000	8,000	8,000	8,000

Source: MFMR, 2020 N/A =Not Applicable

The TAC for hake has remained constant over this period with a slight increase made for the 2020/2021 fishing season, whereas that for monk has been declining since 2015/2016 except for the 2020/2021 fishing season when an increase of 100 tons were made. The rock lobster TAC has declined from 268 tons in 2016/2017 to 180 tons in 2019/2020, after which it remained the same. On the other hand, the red crab TAC has increased from the 3,446 tons allocated for the 2016/2017 and 2017/2018 fishing seasons to 3,900 tons allocated thereafter. Horse mackerel TAC varied



between 330,000 and 349,000 tons during the past five fishing seasons. No TACs were set for sardine and orange roughy fisheries as fishing on these stocks is still on moratorium.

4.4 Landings

The industry managed to land 315,491 metric tons in 2020 which reflects a decrease of 43 % when compared landings of 452,461 metric tons in 2019. The decrease is evident in most fisheries such as Hake, Horse Mackerel, Monk and Crab.

Table 5. Landings of quota species in metric tons: 2016-2020

Species	2016	2017	2018	2019	2020
Pilchard	3,427.0	3,974.0	0.0	0.0	0.0
Anchovy	0.0	0.0	0.0	0.0	0.0
Hake	150,219.0	159,600.0	152,038.0	143,574.1	122,429.0
Horse Mackerel	318,200.0	304,533.0	311,892.0	295,976.0	182,186.4
Monk	8,412.0	8,001.0	7,702.0	8,054.1	6,767.7
Crab	3,078.0	2,964.0	3,136.0	4,099.7	2,772.5
Rock Robster	126.0	164.0	134.0	282.0	80.1
Orange roughy	0.0	0.0	0.0	0.0	0.0
Tuna	1,098.0	463.0	1,016.0	474.6	1, 255.0
Total	484,560.0	479,699.0	479,699.00	452,460.5	315,491.2
Seal (Number)	20,539.0	10,565.0	20, 419.0	13,527.0	3,238.0

The harvesting of seals declined by 76 % in 2020 when compared to 2019, which was attributed to various reasons, such as new right holders who came onboard and could not harvest their quota due to a lack of infrastructure development at some colonies.



Table 6. State Revenue from the marine fishing industry, 2016 to 2020 (N\$ million, current value)

Species	2016	2017	2018	2019	2020
Kingklip	3,731.0	2,655.0	3,084.0	2,504.9	2,103.9
Others	31,793.0	27,768.0	37,184.0	31,783.6	22,754.8
Total	35,524.0	30,423.0	40,268.0	34,288.5	24,858.7

Source: MFMR 2019/2020

Kingklip by-catch landings have decreased by 19 % in 2020 as compared to 2019, whilst other by- catches increased by 40 %.

4.5. Revenue Generated

The tables below reflect the revenue collected from the fishing industry for the 2016/17 to 2020/21 financial years. During the 2020/2021 financial year, a reduction in the collection of revenue was observed in both quota, by-catch and marine resources levies as well as license fees compared to the previous financial year. The decrease in fees and levies collected is due to uncaught quotas, mainly in the horse mackerel and hake subsectors (table 7).

Table 7. State Revenue from the marine fishing industry, 2016 to 2020 (N\$ million, current value)

Fees	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021
Quota fees	91,191	124 569	212 853	157,557	134,897
Marine Resources Fund levy	12,185	72 402	93 028	78,406	29,872



By-catch fees	6,017	26 120	32 174	34,604	9, 656
License fees	169	96	191	166	94
Total Revenue	109,562	223 187	338 246	270 733	174,519

Source: MFMR, 2020

During the reporting period, the Ministry collected N\$634,021 in revenue for recreational permits issued from 22,948 Namibians and 2,236 Non-Namibians (Table 8).

Table 8. Revenue generated from recreational fishing permit during the reporting period

Office	# of Month Permit		#of 3-Month Permit		# of Annual Permit		Amount N\$	
	Namibian	Foreign	Namibian	Foreign	Namibian	Foreign		
Walvis Bay	7, 194	0	624	0	803	0	8,621	261,828
Lüderitz	2,125	155	152	14	73	14	2,533	44,173
Henties Bay	10,886	1,999	325	30	766	24	14,030	328,020
Total	20,205	2,154	1,101	44	1,642	38	25,184	634,021

5. THE ECONOMIC PERFORMANCE OF THE FISHING SECTOR

This sector is important for employment creation, value addition to fish and fishery products, investment opportunities, export earnings opportunities, and food security. The fishing sector sustains or support other sectors of the economy such as repair and maintenance, stevedoring services, and fishing input suppliers. The fishing industry also plays an important role in the Namibian economy in terms of providing socio economic benefits.

In 2020, the fishing industry contribution to the Gross Domestic Products decreased from N\$7,339 billion in 2019 to N\$6,858 billion (- 6.55%). This is attributed to factors such as decrease in landings, reduction in total allowable catches (TAC) for Horse Mackerel and the general market



performance influenced by emergence of COVID-19 which caused a decrease in market process of fish products such as Rock Lobster.

5.1 Fisheries Values

The Ministry of Fisheries and Marine Resources assigns monetary values to fish caught in the Namibian waters at different levels of the value chain, termed as landed, final and export values. The values are determined by an 'economic model', which is an internal database fed with data on fish landings and prices to compute the fishing sector contribution to GDP.

5.2 Landed value

Landed value is the value of fish in the form which is landed. In other terms, landed value is the value of fish that is harvested in the Namibian water before any transformation takes place onshore. The landed value is set as a guiding tool in the determination of payable quota fees, by catch fees, and fund levies by right holders, which contribute to government revenue collection. The landed values greatly influenced by the quality of the marine resources catches, sizes and is determined by comparing values from the fish industry against those of Customs and Excise. The following table indicates landed value and the forms for different marine resources that must apply as per Government Notice, No.158, Imposition of levies on marine resources, 2017.

Table 9. Landed values per fish specie

Species	Scientific Name	Form landed	Landed value (N\$/kg)
Hake	<i>Merluccius capensis and Merluccius paradoxus</i>	Headed & Guttled	25.00
Horse Mackerel	<i>Trachurus capensis</i>	Whole	9.50
Crab	<i>Chaceon maritae</i>	Whole	52.40
Rock Lobster	<i>Jasus Lalandii</i>	Whole	193.60
Pilchard	<i>Sardinops sagax</i>	Whole	4.40
Monk	<i>Lophius vomerinus</i>	Headed & Guttled	51.20



Albacore	<i>Thunnus alalunga</i>	Whole	22.00
Sword fish	<i>Xiphias gladius</i>	Whole	49.00
Snoek Frozen	<i>Thyrstites atun</i>	Whole	21.80
Orange Roughy	<i>Hoplostethus atlanticus</i>	Whole	70.00
Big eye Tuna	<i>Thunnus obesus</i>	Whole	22.00
All Sharks	<i>Genus Hechanchiformes</i>	Whole	22.00
Yellowfin Tuna	<i>Thunnus albacares</i>	Whole	22.00
Oil Fish	<i>Ruvettus pretiosus</i>	Whole	24.00
Sole	<i>Genus Soleilidae</i>	Gutted	23.00
Kingklip	<i>Genyterus capensis</i>	Headed & Gutted	42.38
Angela Fish	<i>Brama brama</i>	Whole	6.00
Panga Reds	<i>Genus Sparidae</i>	Whole	5.00
Dentex	<i>Dentex macrophthalmus</i>	Whole	5.00
Alfonsino	<i>Beryx splendens</i>	Whole	7.00
Gurnard	<i>Chelidonichthys capensis</i>	Whole	3.00
John Dory	<i>Zeus faber and Zeus capensis</i>	Whole	3.00
Ribbon Fish	<i>Genus Trachipteride</i>	Whole	7.00
Squid	<i>Genus Cephalopods</i>	Whole	10.00
Jacopever	<i>Helicolenus dactylopterus</i>	Whole	7.00
Steenbras	<i>Lithognathus (aureti, lithognathus and mormyrus)</i>	Whole	30.00
Kob	<i>Argyrosomus hololepidotus</i>	Whole	30.00
Blacktail	<i>Diplodus sargus capensis</i>	Whole	30.00
Galjoen	<i>Caracinus capensis</i>	Whole	45.00
Barber	<i>Galeichthys feliceps</i>	Whole	3.00
Anchovy	<i>Engraulis capensis</i>	Whole	1.50
Sardine	<i>Sardinops sagax</i>	Whole	1.50
Red eye	<i>Etrumeus whiteheadii</i>	Whole	1.50
Lantern	<i>Genus Mychtophidae</i>	Whole	1.50
Gobies	<i>Sufflogobius bibarbatus</i>	Whole	1.50
Mullets	<i>Genus Mugilidae</i>	Whole	2.00
Spring Harders	<i>Liza richardsonii</i>	Whole	2.00
Moon Fish	<i>Selene dorsalis</i>	Whole	5.00
Blue Marlin	<i>Makaria nigricans</i>	Whole	24.00
Sail Fish	<i>Istiophorus platypterus</i>	Whole	24.00
Dorado Fish	<i>Coryphaena equiselis and Coryphaena hippurus</i>	Whole	24.00



Mackerel	<i>Scomber japonicus</i>	Whole	1.50
Cape Fur Seals	<i>Arctocephalus pusillus</i>	Whole	4.00
Shark Fins		Whole	73.17
Guano		Whole	5.00

Source: MFMR, 2021

In 2020 the fishing industry landed 340,350 MT, made up of 76,718 MT of unprocessed fish and 263,632 MT of fish processed on board, while during 2019 it landed 486,750 MT made up of 84,459 MT of unprocessed fish and 402,291 MT fish processed on board. Taking the prices into account, the landed value in 2019 was N\$11,226.18 billion while it was N\$9,624.4 billion in 2020, which is a 14.24% decline. The decrease in landed value was attributed to the volume of landings that decreased by 30.1%.

5.3 Final Value

The Final value is the value of processed fish and fishery products that are sold to consumers. This value is made up of fish processed on board vessels and onshore processing plants. The final value in 2019 was N\$ 12,263 billion, while in 2020 it was N\$10,454.7 billion, representing a 14.7% decline. The decrease resulted from low volume of landings by 30.1%.

5.4 Export Value

The Export value is defined as the value of fish and fishery products that are sold to foreign countries. As per Namibia Statistics Agencies, Annual Trade Statistics Bulletin of 2020, fish export fall in the fourth place of the top export commodities taking up 14.3% of the country total export. A 3.8% decline in export value was recorded in 2020 from N\$ 10, 516 billion in 2019, as a result of a 30% decrease in landings.



Table 10. Landis, final and export value from 2016 to 2020

VALUE TYPE N\$ MIL	2016	2017	2018	2019	2020
Landed	16,449	22,120	12,628	11,226	9,624.40
Final	17,574	24,516	13,020	12,262	10,454.70
Export	8,838	8,960	9,745	10,516	10,118
% of total export of goods	13.90%	14.10%	10.40%	10.90%	11.4%

Source: MFMR and NSA, 2021

5.5 Value Addition

Value addition is one of the most important aspect identified to promote employment creation and create wealth from Namibia's natural resources. In the fishing sector, value addition is encouraged by means of creating new value-added products or increased proportions/extent of value-added products.

The Ministry of Fisheries and Marine Resources together with the fishing industry have implemented proactive measures to ensure value addition to the fishery resources. These efforts are seen through the biggest fisheries sub-sector in terms of fish landings, namely: Hake and Horse Mackerel. The implementation of a 70: 30 policy in the hake fishery has increased land-based processing to 70%. This policy remain beneficial as it discourages export of raw materials and simultaneously, creates employment in the sector. Moreover, the NDP5 target of 70% value addition in the horse mackerel fishery by 2021/22 has stimulated value initiatives in a fishery that is traditionally known for trading frozen whole round fish. Nevertheless, value addition is also observed in other commercial fisheries as depicted in the figure below.



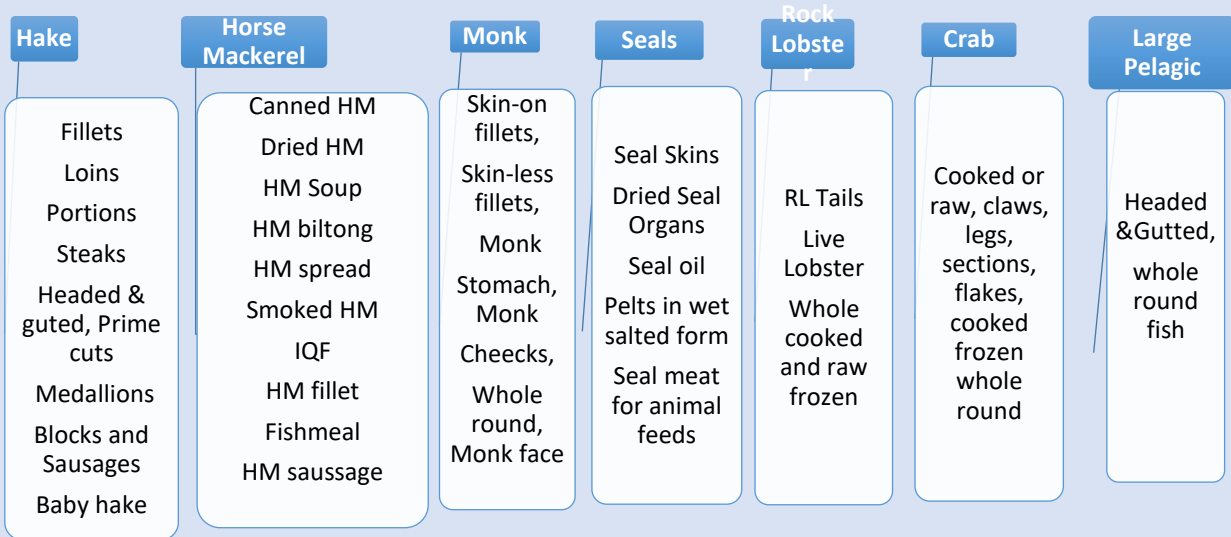


Figure 1. Value added products per fishery

Source: MFMR, 2019

5.6 Markets for the Namibian fish products

The Namibian fishing sector continues to enjoy the benefits of a sustainably managed, good quality fish resources. The productive Benguela Current Large Marine Ecosystem and an effective fisheries management system has given Namibian a competitive advantage in the international market and potential to penetrate lucrative markets such as the USA and UK through recognised certifications. Thus far, the hake fishery has been conditionally certified with MSCs.

Europe remains the main market for Namibian fish and fish products, mainly hake, monk and deep sea red crab. South Africa and Japan are also amongst the traditional markets for Namibian fish and fish products. South Africa is known for its high demand of hake, horse mackerel & deep sea red crab products whilst Japan demands crustaceans.

Namibia is observed to have increased its fish market share of all fishery products during 2018/19 and 2019/20 (table 11). However, it is important to highlight that 100% of seal products sold in the local market is due to lack of international markets. Nevertheless, it is noted that such



products are mainly bought by foreign nationals living in Namibia, who then, export to their respective countries (China, Japan and Hong Kong) for own consumption. The table below shows Namibia's market share per sub-sector in different markets during the period 2018/19 and 2019/20.

Table 11. Market shares 2018/19 and 2019/20

Sub-sector	Markets	Volumes sold (%)	
		2018/19	2019/20
Hake	Spain	44%	49%
	Namibia	28%	18%
	South Africa	17%	23%
	France	3%	2%
	Italy	3%	3%
	Germany	2%	2%
	Netherlands	1%	1%
	Australia	1%	1%
	Others	1%	1%
Monk	Spain	43%	74%
	Portugal	18%	9%
	Italy	38%	10%
	Holland	1%	1%
	France	0%	5%
	Namibia	0%	1%
Horse Mackerel	DRC	45%	51%
	South Africa	17%	13%
	Zambia	16%	14%
	Mozambique	7%	20%
	Cameroon	8%	-
	Others	7%	2%
Crab	Spain	52%	55%
	South Africa	14%	16%
	China	26%	20%
	Japan	7%	7%
	Namibia	1%	2%
Rock Lobster	Japan	69%	96%
	Namibia	4%	1%
	Hong Kong	4%	3%
	China	22%	0%
	US	1%	0%



Seals	Namibia	100%	100%

Source: MFMR, 2021

5.7 International fish prices

The international prices for Namibian fish and fishery products are influenced by market forces of demand and supply. In addition, the demand of Namibian fish products is positively enhanced by its rich nutrition and taste. The Namibian waters and deposits are considered clean and rich due to the Benguella current. Consequently, the size and quantity of the product plays an important role in the price determination.

Table 12 below provide a summary of Namibia fish and fish products and average prices as exported in Namibian dollars. As depicted, rock lobster has the highest price followed by monk then crab. Those products in the world market are perceived as some of the global luxury seafood. On the other hand, horse mackerel is the cheapest fish product that Namibia export.

Table 12. Products and prices per sub-sector for the years 2020/2021

Sub-sector	Products	Prices (N\$)
Seals	Seal Oil	18.40/liter
	Seal Skin	42/skin
Crab	Frozen whole round	56.77/kg
	Crab meat	86.25/kg
	Crab flakes	120.00/kg
	Crab sections	89.15/kg
Pilchard	Canned Pilchard	41.67/kg
Monk	Monk cheeks	18.95/kg
	Skin-on monk tails	138.63/kg
	Skin less monk tails	145.02/kg
	Skin-less monk fillets	166.87/kg
	Skin on monk fillets	126.45/kg
	Monk Whole Round	41.72/kg
	Monk face	85.35/kg
Rock Lobster	Whole cooked	281.00/kg
	Whole raw lobster	300.00/kg
	Raw Tails	362.00/kg
	Live Lobster	281.00/kg



Hake	Headed & Guttled	29.14/kg
	Frozen Hake fillets skinless	62.79/kg
	Frozen Hake fillets Skin on	59.18 /kg
	Portions	74.30/kg
	Loins	73.02/kg
Horse Mackerel	Overland Frozen whole 25+	20.56/kg
	Overland Frozen whole 20+	17.69/kg
	Overland Frozen whole 18+	15.37/kg
	Overland Frozen whole 16+	13.69/kg
	Overland Frozen whole 16-	11.69/kg
	Transshipment Frozen whole	13.64/kg
Tuna	Polling whole round Tuna	21.50/kg
	Longline whole round (For Sashimi)	31.60/kg
Swordfish	Whole round (WR)	52.10/kg

Source: MFMR, 2021

5.8 Contribution to gross domestic product

Fishing sector is important sector to the Namibian economy in terms of its contribution to Gross Domestic Products (GDP), through the total value of fish and fishery products produced in a specific year. In 2020 the fishing industry contributed 3.89% to the GDP, while in 2019, it contributed 4.05%. In terms of monetary value, the fishing industry contributed N\$6,858 billion, while in 2019, it contributed N\$7,339 billion, a decrease with 6.55% in 2020. The decrease in GDP is attributed to the decrease in landings particularly the onboard processed landings.

The breakdown of the contribution of the fishing sector to GDP in million dollars at current prices for the past five years (2016-2020) is indicated in Table 13.

Table 13. Fisheries contribution to GDP, 2016-2020

	2016	2017	2018	2019	2020
Total national GDP (N\$)	157,708	171,570	181,009	181,324	176,327
Fishing and fish processing on board (%)	2.87	2.62	2.50	2.58	2.55
Processing onshore (%)	1.05	1.07	1.83	1.47	1.33
Total fish contribution to GDP (%)	3.91	3.69	4.33	4.05	3.89

Source: NSA, 2021



The fishing and fish processing on board indicated in table 12 refers to fish processed on fishing vessels, also referred as factory vessels. These vessels have processing factories on board where fish is processed while at sea. On other hand, the fishing industry have land-based operations (processing onshore) that are supplied with fish by wet trawler or wet long liner vessels.

5.9 Economic indicators

5.9.1 Fuel Prices

The price of fuel is one of the highest costs incurred by the fishing industry and has a direct impact on the sector's profit. This is because most of the fishing activities requires fuels, specifically diesel used by the vessel when fishing, in generators, cars when transporting goods, etc. A rise in fuel prices will have a negative impact on the fishing industry, particularly in terms of their operating margin and ultimately their economic viability. Trawler vessels operate on diesel and fishing companies use trawler vessels to land their quota. In general, the cost of fuel is said to be directly proportional to the utility costs and indirectly proportional to profit.

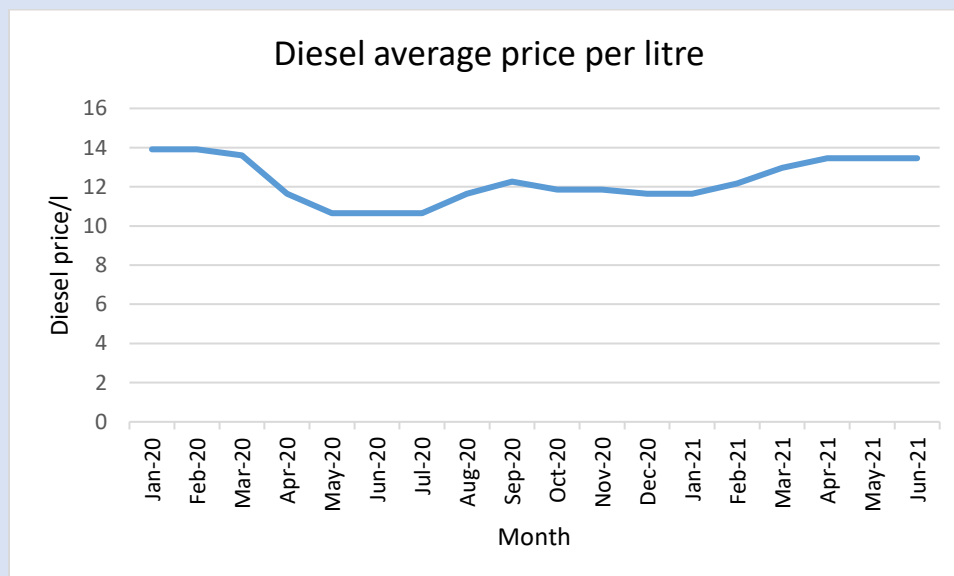


Figure 2. Average diesel process (Ministry of Mines and Energy, 2021)



Average diesel prices declined during March 2020 and remained fairly stable until March 2021, mainly due to the introduction of Covid-19 health protocols especially on travel restrictions put in place to curb the pandemic worldwide and locally. Also, most of the activities have shut down during this period as more infections were recorded and as a result, the demand for fuel decline around the globe which resulted in the price fall.

5.9.2 Exchange Rate Volatility

Fish products are exported to other countries around the globe, mainly to the EU where customers pay in their local currencies when they purchase these products. Due to the daily fluctuation of currency, the exchange rate plays a crucial role in terms of export earnings.

The chart below provides the exchange rate of the Namibian dollar against foreign currencies where a bulk of Namibian fish products are exported to such as Euro and US dollar and British Pound.

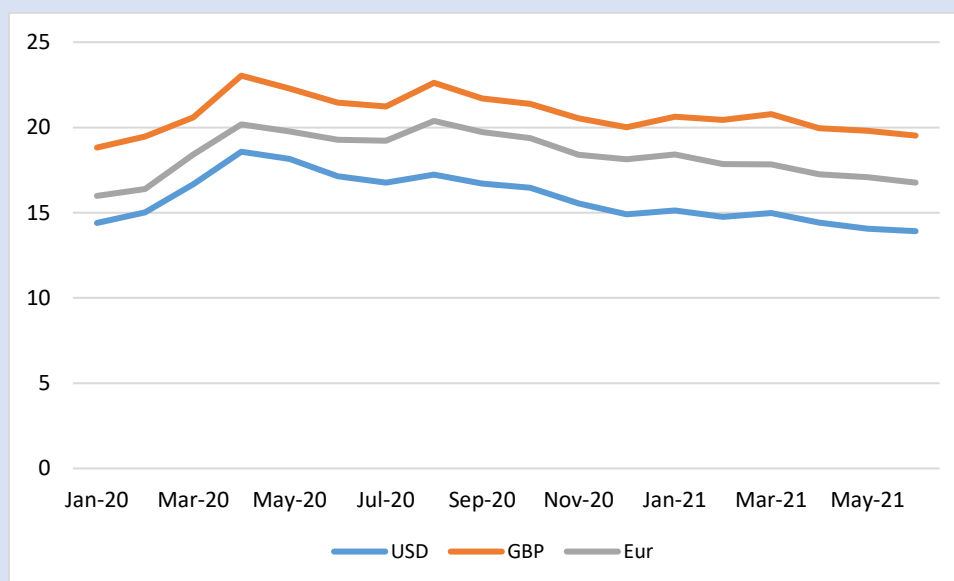


Figure 3. EURO, USD and British pound exchange rate

During 2020 the Namibian Dollar depreciated against foreign currencies, particularly from January 2020 to August 2020. Thus, the Namibian fishing industry sold fish at higher prices and earned more foreign exchange earnings as compared to competitors with strong currencies from



other countries in the international markets. From September 2020, the local currency appreciated against USD, British Pound and Euro, resulting in export becoming more expensive and the importation of goods and services cheaper and thus less export earnings. It is important to highlight that the overall appreciation was mainly due to Covid-19 pandemic which forced the whole world into lock downs.

The price and domestic sales of fish products remained fairly stable. The local wholesalers of fish and fish products such as Namibia Fish Consumption Trust (NFCPT) and other local distributors made a significant effort in local fish sales to the majority of the Namibian regions, thereby ensuring that Namibia continues to cultivate a culture of consuming more fish.

6. RESOURCES MANAGEMENT

Marine resources commercially harvested and regulated under Namibian laws include, hake, (*Merluccius capensis* and *Merluccius Paradoxus*), horse mackerel, sardine, monk, orange roughy, rock lobsters, crab, snoek and seals. In addition, highly migratory species under the purview of ICCAT management occur in the Namibian waters and are therefore exploited for commercial purposes. The Namibian marine ecosystem an assemblage of line fish species that support a highly esteemed recreational by both local and international anglers. Annual total allowable catches (TACs) are allocated for eight of the resources based on the best scientific available data. The horse mackerel, monk, crab and seal stocks are estimated to be at sustainable levels, whereas the hake and rock lobster resources require rebuilding to sustainable levels. The sardine and orange roughy stocks had decline to critically low levels and are currently under moratorium, to allow the stocks to recover.

The long-term annual upwelling trend indicates a gradual return to stronger phase around Lüderitz, whilst the sea surface temperature off Namibia was average to slightly cooler than average in 2020. During the first half of 2020 moderate phytoplankton blooms we observed off central and northern Namibia and stronger blooms off southern Angola. East wind conditions prevailed leading to high air temperature and low relative humidity values temporarily reducing the biomass of sea lettuce (*Ulva* spp) on the rocky shores of Long beach during July 2020. The number of active nests of the Cape cormorants at Ichaboe Island has been increasing since 2016, whereas the population of Cape gannets at Possession Island has been decreasing exponentially.



Furthermore, two extreme events (outbreak of bird flu and heavy rains) have reduced the population of African penguins on Halifax Island.

6.1 State of the Stocks

6.1.1 Pelagic Species

6.1.1.1 Horse Mackerel (*trachurus capensis*)



The horse mackerel stock was estimated at approximately 1 705 000 tons in 2020, which is above the maximum sustainable yield (MSY) level.

A total allowable catch (TAC) of 330 000 tons was allocated for the 2020 fishing season, of which about 126 080 tons were landed by both the midwater and wet-landed fleets. Fishing activities were concentrated from around Walvis Bay Northwards, 24°S to 17°15`S, (Fig. 1). The annual average midwater catch-per-unit effort (CPUE) was approximately 15.5 tons/hour (Fig. 2). The fish landed ranged in length from 10 to 34 cm with a modal length of 21cm (Fig. 4).

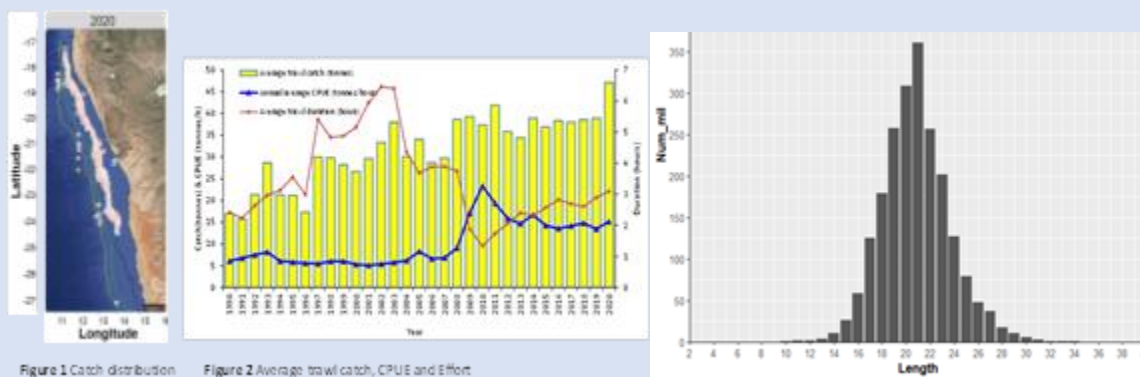


Figure 4. Catch distribution left, average annual CPUE (Middle) and commercial length frequency distribution 2020.



6.1.1.2 Sardine (*sardinops sagax*)

The Northern Benguela sardine stock has been under a moratorium since January 2018 because the population has by then declined to critically low levels. No surveys have since been conducted, however, a survey to assess the state of the stock and determine it has recovered to sustainable levels is scheduled for October 2021.



Although there was no sardine directed fishing since 2018, sardine bycatches were made by the midwater fishery (Fig. 4), from which samples were collected to determine some crucial biological parameters. The fish caught ranged from 18 to 25 cm total length and were in maturing stages of their sexual development.

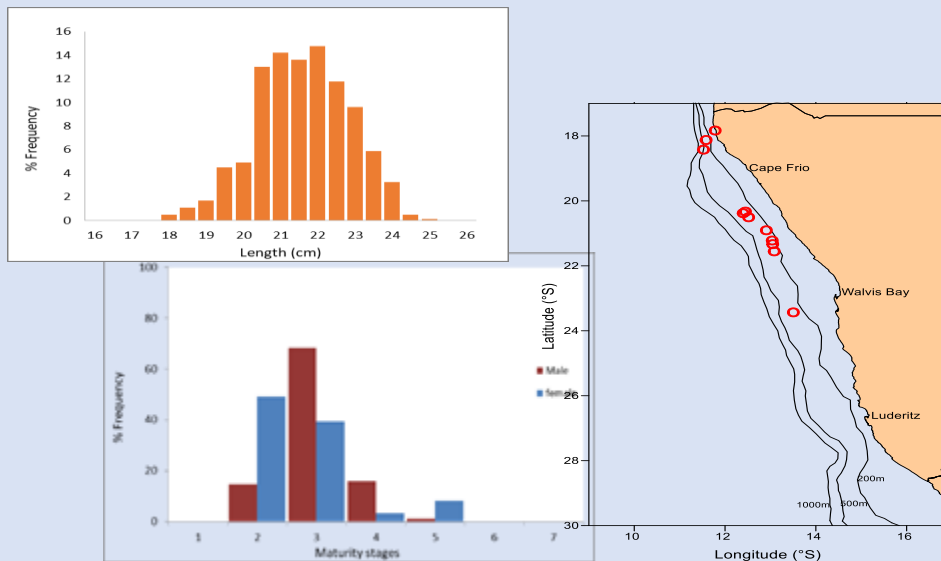


Figure 5. Distribution (left), Size (top right) and maturity stages (bottom right) of sardine bycatches and catch positions by Midwater fleet during the 2020

6.1.1.3 Tuna, Swordfish & Large Pelagic Sharks

Large pelagic species are highly migratory within the Atlantic Ocean and are managed by the International Convention on the Conservation of Atlantic Tunas (ICCAT), which determines the status of the stocks and TACs and allocates quotas to Parties. All catch statistics in the large pelagic fishery are recorded and reported to ICCAT.



In Namibia the large pelagic fishery consists of a bait boat fleet targeting tuna and a large pelagic longline fleet targeting swordfish and large pelagic sharks.



In 2020, bait boat landings reported consisted of 327.2 tons of albacore, 41.2 tons of bigeye tuna and 0.5 tons of yellowfin tuna (Fig. 6). The longline boats landings reported 215.5 tons of swordfish, 2017.8 tons blue shark, 718.7 tons of shortfin mako, 480.5 tons of albacore, 295.6 tons of bigeye tuna, 5.5 tons of blue marlin and 100.8 tons of yellowfin tuna.

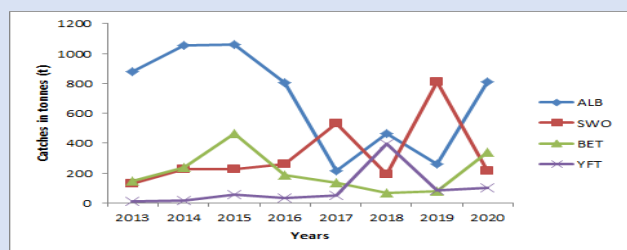


Figure 6. Catch trends of larger pelagic fisheries in recent years

6.1.2 Cape Fur Seal (*arctocephallus pusillus pusillus*)

The assessment made in 2020 estimated the seal population at around 1.365 million individuals. Seals are found on 26 colonies along the Namibian coastline, of which four are harvested. The distribution of the population is known to have been shifting northwards most likely because of the availability of prey. Stock indicators such as average birth weight was below the long-term levels, indicative of poor feeding condition of the cows during pregnancy, which leads to poor chances of early survival of pups. High premature births and deaths of pups, due to starvation of cows, were observed in 2020, but the phenomenon was localized and of a short duration. The proportion of non-commercial species in diet of seals (e.g. goby, *Sufflogobius bibarbatus*) has increased with the decline of the commercial pelagic stocks.



During the 2020 harvesting season at colonies in the north (Cape Cross and Torra Bay) and south (Atlas and Wolf Bay), the sealing industry harvested 8% and 43% of the allocated 60 000 pup and 8 000 bull TAC, respectively.



6.1.3 The Lineboat Sector

This sector targets Snoek (*Thyrsites atun*), a highly migratory and seasonal species, which is managed through a rights-based system.



The fishery is effort and not TAC controlled, with the vessels permitted to catch as much as possible during the harvesting season.

In 2020, 2,221.4 tons of snoek were caught with the highest catch (488.5) recorded in February and the lowest (0.6) in September (Fig. 7). Snoek is available between October-May so the low/lack of catches from June to September is not surprising.

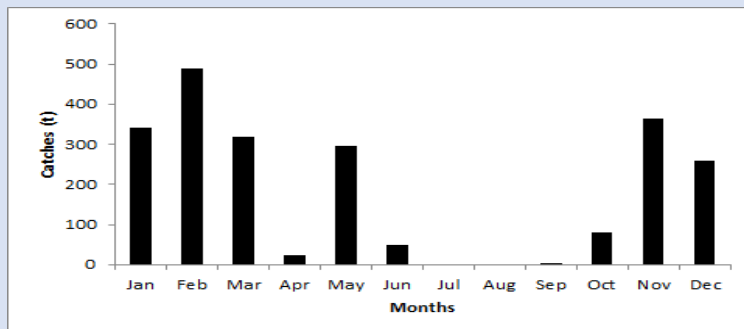


Figure 7. Monthly snoek catches

6.1.4 The Recreational Sector

The Namibian marine environment supports a highly esteemed recreational fishery which is exploited by both local and international anglers targeting a wide range of line fish species. The angling season runs from October to September each year and the last complete angling season corresponding with the reporting period ended in September 2020.

6.1.5 Demersal Species

6.1.5.1 Hake (*merluccius capensis* and *m. paradoxus*)



Data collected from the biomass survey in 2020 and the commercial fleet in 2019 indicated moderate declines in the relative biomass (879,000 tons) and catch per unit of effort (CPUE) indices, as well as in recruitment. Whilst the biomass has increased relative to the level of 1990 (when it was at 656,000 tons), the stock is still biologically unsustainable and thus needs to be rebuilt to a sustainable level (Bspmsy). However, the recent harvest levels



around 154,000 tons are below the replacement yield (RY) and should therefore allow the stock to rebuild to the desired level. The commercial catches during 2019 were made up of 23% *M. capensis* and 77% *M. paradoxus*, with mean length of 38 cm.

6.1.5.2 Monkfish (*lophius vomerinus*)



An Age-Structured Production Model (ASPM), with the commercial data only as input, shows that the monkfish stock is biologically sustainable. However, crucial biological parameters such as relative biomass, size, age, and maturity structure and recruitment could not be obtained to update the model as no surveys were carried out since 2019. Data collected from the commercial fishery, indicated an increase in the catch rates (CPUE) in 2020 while the commercial size structure showed an overall decrease in the length of fish landed, although the mean length remained the same.

6.1.5.3 Orange Roughy (*hoplostethus atlanticus*)

The Orange roughy annual biomass surveys resumed in 2016, after eight years of no research due to a moratorium put in place in 2009. The total estimated biomass of orange roughy in 2019 was 59 988 tons, representing a 123% increase from 2018, which is still below the levels of biomass recorded prior to the moratorium.



6.1.6 Crustacean

6.1.6.1 Rock Lobster (*jasus lalandii*)

An 18% increase in the fishable biomass of rock lobster was estimated for the 2019-20 fishing season. Biological data revealed stable states in both the population structure and average size of lobster at various fishing grounds samples. Fishing started off exceptionally well in November 2019 and the commercial fleet continued to make relatively good catch rates throughout the season, leading to a 77.6% increase in the seasonal (CPUE). By the end of the fishing season the fleet managed to land 102% of the 2019-20 TAC. Nonetheless, the resource



continues to be under severe pressure, and considering that about 75-80% of the lobsters caught are of sub-legal sizes that had to be returned to sea (where they may not survive due to exhaustion, damages and predation), stringent management measures are needed to allow the stock to rebuild to sustainable levels.

6.1.6.2 Deep-Sea Red Crab (*Chaceon maritae*)

A 42% increase in the biomass of fishable crabs and a 16% increase in that of recruits were estimated during the 2019 survey, as compared to 2017. During the 2018 fishing season, there was an overall decrease in the seasonal catch rate (CPUE, kg/trap).



Biological indicators remained fairly unchanged over the last two seasons (2018-2019), although there was an increase in the total number of male crabs caught during the 2018 season, which may have contributed to the increase in the overall biomass estimates. Overall, the deep-sea red crab appears to be biologically sustainable.

6.2 State of the Marine Ecosystem

6.2.1 Upwelling Indicators

Wind induced coastal upwelling is the most important oceanographic process along the Namibian coast. Through this process, nutrient-rich cool water moves vertically from depth to the surface sunlit zone, where it stimulates primary production (phytoplankton) forming the basis of the food chain and is thus very important for secondary production (e.g. zooplankton, fish eggs and larvae). Although increased upwelling increases the supply of nutrients to the surface and thereby primary production, prolonged events can lead to the loss of production through mixing and offshore advection of plankton. During periods of reduced upwelling (relaxed southerly winds), sea surface temperatures increase, leading to vertical density differences and increased thermal stratification. The surface stratified layer benefits both primary and secondary production through improved vertical retention. Resultant thermoclines and fronts further serve as food concentration areas. Wind and sea surface temperatures (SST) are presented below as indices for upwelling variability.



6.2.2 Wind

During the past few years wind speed standardized anomalies have been used as a proxy for an upwelling index for the Lüderitz area based on a 60-year time-series of wind speed data collected at Diaz Point. The dominant wind direction off Lüderitz is southerly, and is responsible for upwelling nutrients from the deeper ocean depths to the inshore surface waters and transporting it further north. These anomalies show two distinct periods of slackened upwelling at the start (1961-1974) and at the end (2005-2020) of the time series, with a more active phase in the middle (1977-1991) followed by a period of mixed anomalies (1992-2006) (Fig. 7). The present slackened phase reached a (negative) peak during the July 2010 to June 2011 period, and since then has started a gradual return towards the base-lin. Each of the four main upwelling phases lasted about 14-15 years.

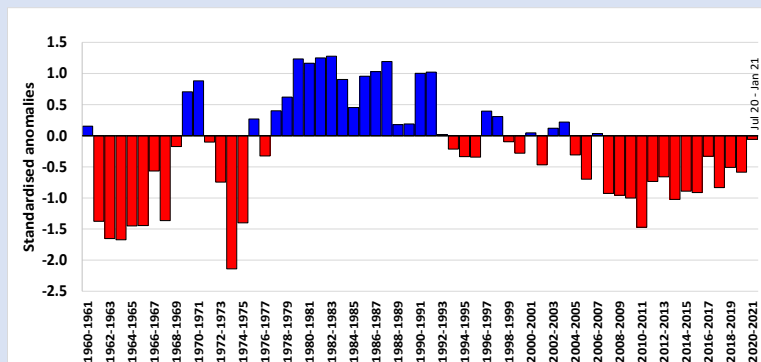


Figure 8. Annual (July to June) standardized wind speed anomalies at Diaz Point, Lüderitz (1960-2020). The July to June period was selected to avoid splitting the main upwelling season (November to February)

6.2.3 Sea Surface Temperature

During summer (February/March) the sea surface temperatures off central and northern Namibia usually increase due to a combination of solar radiation and a relaxation in the equatorward, upwelling favorable wind. The latter initiates a southward shift of warm subtropical water from Angola as well as the inshore advection of warmer oceanic waters from farther offshore (Figure 9 top).

Summer-autumn period is also the manifestation of the Benguela Niño phenomenon (e.g. 1995 and 2011), manifestation occur during the summer-autumn period usually between January/February to April/May, which typically lasts three to four months. The Benguela Niño is remotely forced and originates from sustained anomalous atmospheric conditions in the tropical Atlantic, further north. The time overlap of the Benguela Niño and the seasonal warming makes



it very difficult to immediately distinguish between the two, but the difference can be inferred from the intensity and duration of the surface warming as well as from in situ oceanographic data.

During the Benguela Niño of 2011 the SST was up to 3°C warmer than average over the Namibian shelf for more than 3 months (Fig. 9 bottom). There have since then been some warm events over the Namibian shelf (notably during summer 2016) but these have been only a few weeks in duration. During the first quarter of 2020 the SST was average and slightly below average along most of the Namibian coast during the remainder of 2020, except for the far north where it was above average. There was a warming anomaly off northern Namibia in February 2021, whereas the central to southern coast had average to slightly cooler than average SST during the first quarter of 2021.

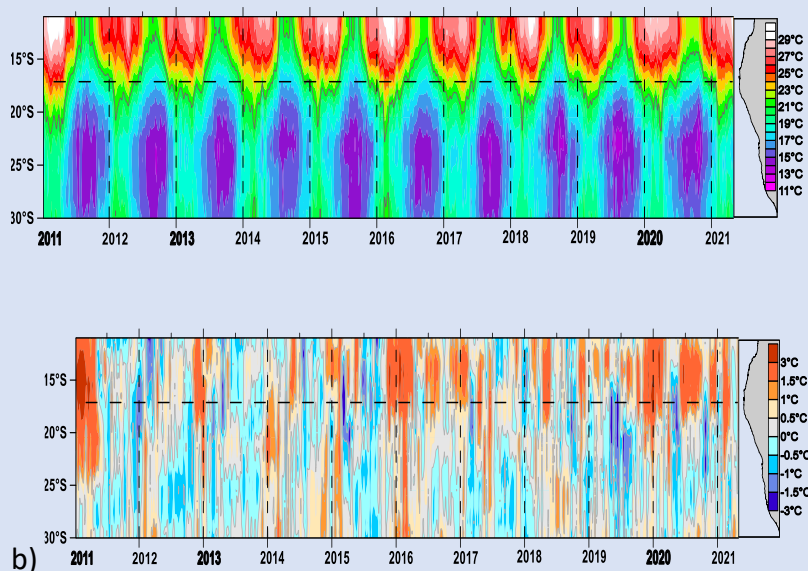


Figure 9. Weekly (top) SST and (bottom) SST anomalies along the southern Angolan and Namibian coastlines (2011-March 2021)

6.2.4 Plankton

Plankton productivity forms the basis for the marine food web and determines the energy flow to higher trophic levels such as fish. The enrichment of the surface water through upwelling of nutrients stimulates phytoplankton growth (primary production), followed by secondary production, consisting of zoo- and ichthyoplankton (fish eggs and larvae). Both phyto- and zooplankton are important food sources for many fish species during different stages of their life cycle.



6.2.5 Phytoplankton

Highest chlorophyll-a, indicative of the primary productivity along the Namibian coast, concentrations usually occur off central Namibia, downstream of the Lüderitz upwelling area. The upwelling centers at Lüderitz (26° to 28°S) and Cape Fria (18°S) usually have low chlorophyll-a concentrations due to the intense turbulence in the water column during active upwelling (Fig. 10). The concentration of chlorophyll-a, was relatively low in 2005, 2006 and 2011, whereas 2004, 2008, 2010, 2015, 2016, end of 2017 and beginning of 2018 showed more intense blooms off the northern part of the Namibian coast. During 2019 strong blooms off central Namibia were observed, while during 2020 moderate blooms were observed off central and northern Namibia and stronger blooms off southern Angola.

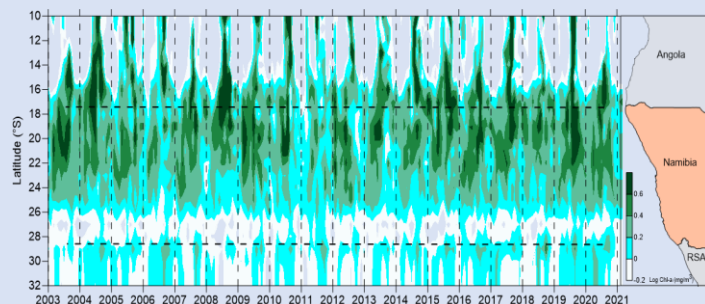


Figure 10. Monthly average chlorophyll-a concentration (mg/m³) (Jan.2003 – Feb. 2021, (log transformed)).

6.2.6 Zooplankton

Copepods are the most important component of the zooplankton community and are good indicators of food web and ecosystem changes. Copepod abundance, calculated from the monitoring line off Walvis Bay 23°S transect (10nm to 70 nm from the shore), provides an indication of secondary production and general feeding conditions off central Namibia. Peak abundances occur during spring and summer months approximately eight weeks after the onset of upwelling.

Overall, copepod abundance shows a high monthly, seasonal and inter-annual variability over the time series, reflecting the highly dynamic nature of the Benguela Current. However, two distinct periods with abundances below the long-term average 2000-2001 and 2005-2011 (Fig. 11). Persistence low abundances were, particularly observed between 2008 and 2011. The period 2002-2004 was characterized by above average abundances, but since 2012 abundances fluctuated around the long term average.



In some years, particularly during the 2016 and 2020 summer period, neritic copepods (e.g. *Temora* sp.) of tropical origin were observed over the Namibian shelf with the southward intrusion of the warm and saline Angola Current. These copepods could thus be regarded as indicators of warm water intrusions into the Namibian shelf. With climate change, copepods are expected to shift their distributional ranges.

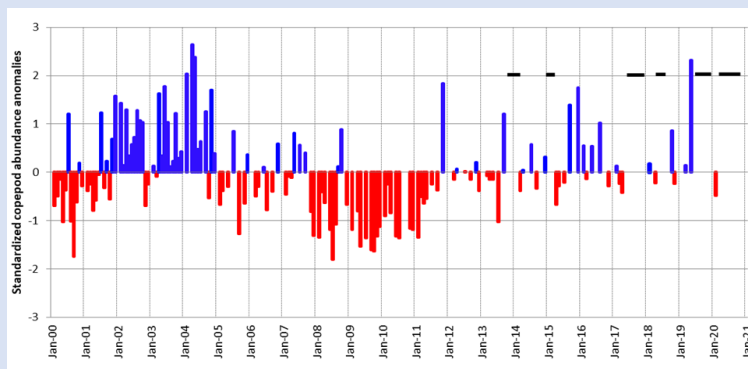


Figure 11. Monthly standardized copepod abundance anomalies on the 23°S transect

*Blue bars indicate above the average and red bars below the average abundance. (-) indicates 'no data'.

6.2.7 Coastal Zone

A temperature sensor at the Swakopmund Jetty mounted and retrieved by scuba divers at 7m depth measures daily water temperatures. The daily coastal water temperature can vary considerably due to the influence of the local winds, the heating by the sun and the diurnal tides, particularly during summer months. During 2020/21 the daily coastal water temperatures off central Namibia were mostly near the long-term average (calculated for the years 2004 to 2020) from April to September 2020 but with warming events during June and mid-July to mid-August, a time period which was also characterized by low relative humidity and high air temperatures (Figure 12) due to east wind conditions, as well as cooling events during September to early October. From October onwards the daily water temperature became more variable with a strong warming event mid-October followed by cooler than average temperatures in November. December 2020 to February 2021 saw predominantly warmer than average seawater temperatures, during some periods by up to 4°C. From mid-February to April 2021 the water temperature was average to slightly cooler than average.



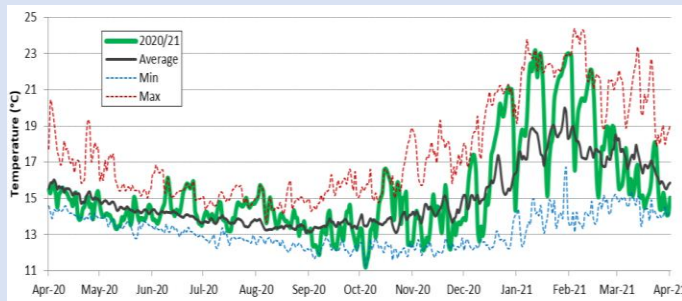


Figure 12. Daily water temperature ($^{\circ}\text{C}$) and long-term average minimum and maximum temperature at Swakopmund at 7m depth

The intertidal zone is an important area to study, especially on wave-swept rocky shores as these are usually home to a high diversity of species. Thermal stress is an important driver of species' distribution and abundance in the intertidal zone. With the predicted increasing frequency of extreme high temperatures associated with climate change, it is likely that species' distribution and abundance will be affected.

The sea lettuce (*Ulva* spp) is one of the most abundant green algae found in the intertidal zone. High temperatures and low humidity during east wind conditions between June and August 2020 led to a temporary decline of *Ulva* spp at Long Beach as observed during September 2020 (Figures 13). By March 2021, % coverage of *Ulva* spp had increased again.

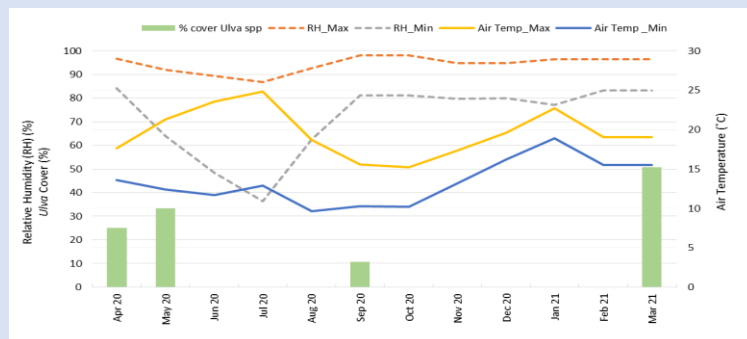


Figure 13. Monthly minimum and maximum air temperature ($^{\circ}\text{C}$) and relative humidity (RH) (%) at Swakopmund





Figure 14. Photos of the same area on the rock shore at Long Beach taken in July 2019 (left) and September 2020 (right).

The green on the left photo is Ulva spp, which disappeared after the east wind conditions.

6.2.8 Top Predators

The Cape cormorants, Bank cormorants and Cape gannets had a good breeding season, especially on Ichaboe and Mercury Islands. The breeding season started around early November 2020 and around 13 November 2020 and the first chicks to hatch were observed on Ichaboe Island. Cape Cormorant colonies were estimated to have been 100% occupied with more than the estimated 35000 active nests with the last census done 30-31 December 2019. Presently there are possibly 100,000 chicks on Ichaboe and the 2020/21 breeding season could have been at ± 50000 active nests. The number of active nests of the Cape cormorants at Ichaboe Island has been increasing since 2016 (Figure 14 left), whilst the population of Cape gannets at Possession Island has been decreasing exponentially since 2008 (Figure 14 right), possibly due to a lack of food. This Cape gannet population is the smallest in Namibia.

On 24 January 2020 an extreme heat wave, leading to the destruction of 579 penguin active nests amounting to a loss of 29.05% of the entire penguin active nests on Mercury Island was experienced. The avian flu outbreak on Halifax Island in 2019 was well contained and handled and there was no second wave of the virus in 2020. However, the heavy rain experienced in 2020 had a devastating effect, and more than 300 active nests on Halifax Island were destroyed. These two events reduced the population of African penguins on Halifax Island.

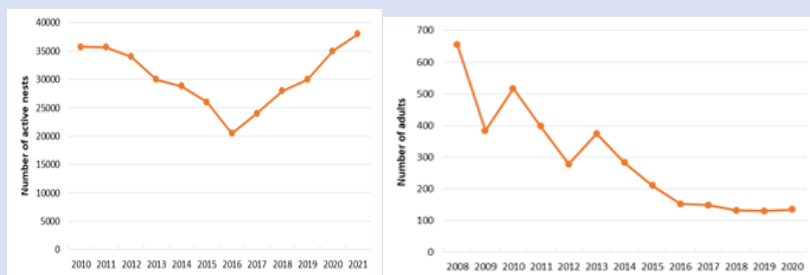


Figure 15. *Active nests of Cape Cormorants over the years at Ichaboe Island (left) and a number of Cape gannets at Possession island (right)*

7. AQUACULTURE AND INLAND FISHERIES

The Ministry of Fisheries and Marine Resources continues to promote protection of bio-diversity of inland water systems and sustainable inland freshwater capture fisheries and aquaculture to enhance food and nutritional security, reduce poverty, generate employment, improve rural livelihoods and increase investment. Fish, fishing and fisheries are an integral part of the culture and economy of many people in Namibia. The inland fisheries resource are under severe pressure from individuals who exploit them for financial benefit at the detriment of local communities that depend on fish for their survival.

7.1 North Division

7.1.1 Inland Fisheries



The subsistence fishery from rivers, lakes and Oshanas in the Zambezi, Kavango (East and West), Oshana, Ohangwena, Oshikoto, Omusati, Otjozondjupa and Kunene regions play an important role in the daily lives of the rural communities along these systems.

The fishing season in the Omusati, Ohangwena, Oshikoto and Oshana regions is seasonal when the Oshanas in the Kunene/Cuvelai system are flooded during the rainy season, whilst those in the Zambezi and Kavango regions occur throughout the year with about 33% of the communities along the Zambezi and Chobe completely dependent on it for their livelihood. The fishing in the Kavango and Zambezi River systems intensify during the low water periods when fish are concentrated in these regions. Illegal drag netting with banned monofilament nets (Fig. 16) in these systems continued in 2020/2021, with increased frequency in the protected Kwando River system and the Mahangu Park on the Kavango River.





Figure 16. Illegal drag netting and use of monofilament nets in Zambezi, Kavango and Cuvelai/Kunene systems during 2020/21.

Lake Liambezi received no water and is practically dried up. Overfishing in the Zambezi-Chobe system resulted in the reduction in catch per unit effort from 9.1 kg per net set during 2010 to 3.8 kg per net set at the end of 2017, with respective declines in total estimated fish landings from 6,100 tons to 2,534 tons, representing a 58% loss of fish stocks over the period (Table 14). Two Kavango River Biological Surveys conducted (low water during August 2020 and the high water during March 2021), as well as the Zambezi Biological survey conducted during May/June 2020, confirmed the declining trend in the stocks. The declining fish population is a result of over fishing and use of illegal fishing gears (monofilament nets) and illegal fishing methods like drag netting.

An estimated total landing of 2,100 tons with associated estimated value of N\$ 126.56 million (average fish market price of N\$ 60/kg fish at Katima Mulilo fish market) were made from the inland fisheries systems (rivers, lakes, dams) in the Northern Regions of Namibia in 2020/21. Of these 1,500 tons were landed in the Zambezi-Chobe system and 600 tons in the Kavango and Kunene systems.

Table 14. Annual total catches from Zambezi-Chobe system sampled August 20210 to December 2018 and with estimated projection up 2020/21

Measure	2010	2011	2012	2013	2015	2016	2017	2018	2019	2020
Annual CPUE (kg/set)	9.1	8.4	4.5	4.9	5.4	5.5	3.8			
Total catch (ton)	6100	5600	3000	3267	3600	3670	2534	2000	1500	1500



Total Income (N\$/kg fish ave market price)	122 mil (N\$20/kg)	112 mil (N\$20/kg)	60 mil (N\$20/kg)	65.340 mil (N\$20/kg)	72 mil (N\$20/kg)	146.8 mil (N\$40/kg)	126.7 mil (N\$50/kg)	120 mil (N\$60/kg)	126.56 mil (N\$60/kg)	126.56 mil (N\$60/kg)
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Table 15. Catch and income from Inland fisheries systems in Northern Namibia 2020/21

Measure	Zambezi-Chobe system 2020/21	Kavango Kunene/Cuvelai 2020/21	+ system	Total Northern Regions 2020/21
Catch/system (ton)	1500	600		2100
Income (N\$/kg fish ave. market price)		N\$90 mil	N\$36 mil	N\$126.56 million

7.1.2 Aquaculture



Aquaculture in the north of Namibia consists of freshwater fish farming and fish ranching.

There are currently four inland aquaculture centers (IAC, producing 3-Spot tilapia (*Oreochromis andersonii*), Redbreast tilapia (*Coptodon rendalii*), and African catfish

(*Clarias gariepinus*) fingerlings in the north of Namibia for the production of fish by Small Scale Fish Farmers (SSFF), farmers, cooperatives and MFMR fish farms (Epalela). These centers include Onavivi (Onavivi IAC), Ongwediva (OIAC), Kamutjonga Inland Fisheries Institute (KIFI), Zambezi (ZIAC), and Rundu which is still under construction. A total of 728,963 fingerlings (tilapia 698,137 and catfish 30,826) were stocked at fish farms and distributed to SSFFs in the north (North West 626,932 tilapia and 7,706 catfish, Rundu/Mpungu fish farm 27,706 tilapia, ZIAC/Katima 20,185 tilapia and 23,120 catfish, KIFI 23,314 tilapia).



The Mpungu “Cooperative” fish farm in Kavango West Region was handed over to the MFMR on the 2nd of August 2018 by the Ministry of Industrialization, Trade and SME Development and is used as demonstration research fish farm in the Kavango West Region. Mpungu and Epalela fish farms are the only Government fish farms in the north of the country responsible for growing fish to market size and sale to the community at a low price of N\$15-20/kg. Aquaculture Centers in the North of the country registered 63 new small scale fish farmers (SSFF) and provided technical advice to 74 registered and active fish farmers with a total of 162 extension and advisory services. Sixty-nine Farmers (North West, 39 and KIFI, 30) and 22 students (NW, 13, KIFI, 9) were trained on aquaculture during 2020/21.

Small Scale Fish Farmers (SSFF) produced 3,696 tons of fish due to limited rain in 2020 and lack of fish feed compared to 6,752 tons in 2019/20. Production efficiency of SSFF’s with a Feed Conversion Ratio (FCR) of 2.5:1 relate to a production cost of N\$17.85/kg fish (subsidized feed at N\$5/kg) and profit of N\$32.14/kg fish at selling price of N\$50/kg resulting in a total value of N\$184,800 and a profit of N\$118,784 for SSFF’s. Therefore, if farmers had to buy the fish feed at a market price of N\$11/kg (average price 2020/21) it would have related to a production cost of N\$39,29/kg and a profit of N\$10,71/kg fish (selling price N\$50/kg).

Table 16. Extension services to SSFF in the north 2020/21

	Site assessments	Technical advice	Trained	Tilapia fingerling	Catfish fingerling	Fish feed (t)	Fish produced (t)	FCR	Prod. Cost (N\$/kg)
SSFF	63	162	69	698137	30826	9,24	3,696	2.5:1	17,85
Students			22						

A total of 26,193 ton of freshwater fish was produced on GRN fish farms (Epalela 26,015t, KIFI 0,078t, ZIAC 0,1t) during 2020/21.



Table 17. Performance of GRN fish farms in the north of Namibia 2019/20

	Tilapia fingerling distributed	Catfish fingerling distributed	Feed procured (t)	Fish production (t)	FCR (kg feed:kg fish) (Estimated)	Ave Feed Cost (N\$/kg)	Estimated Prod. Cost (N\$/kg)
GRN Fish Farms	698137	30826		26,193	2:1	11	31,43



Fresh water aquaculture viability in Namibia is very limited due to the sub-tropical cold climate with only 7-8 months of warm water conditions for effective fish breeding and growth.

Research on a climate adaptive stocking density growth was conducted at KIFI in small open pond conditions with air breathing catfish (*Clarias gariepinus*) in order to improve freshwater fish production efficiency. Stocking of tilapia in open ponds are limited to around 5fish/m² due to the limitation of dissolved oxygen. The higher density catfish stocking research had very positive results with a 653% improvement in production per square m² of pond compared to tilapia. Results showed a production of 7.8kg/m² (10m² pond) with a stocking of 25.5 fish/m² compared to around 1.25kg/m² for tilapia stocked at 5 fish/m². The catfish achieved an average daily gain (ADG) of 0.78g/fish/day with an average weight of 307g per catfish after 353 days (150 winter or cold water days) with around 200 days of warm water (23-28 OC) for optimum growth. A feed conversion ratio of 1.81:1 was achieved with a potential profit of N\$ 219.38/m² of pond.



7.2 South Division

7.2.1 Aquaculture

There has been an increasing number of freshwater fish farmers seeking for training as well as site assessment. The number of farmers experimenting aquaponics, especially in the Khomas Region continues to grow.

The HIAC hatchery produced 203,373 all male fingerlings of Mozambique tilapia (*Oreochromis mossambicus*) and distributed 72,685 fingerlings to 62 small scale fish farmers and aquaponics farmers in Omaheke, Hardap, //Karas, Erongo, Khomas and part of the Otjozondjupa Region. Furthermore, a total of 64,834 fingerlings were stocked at Leonard Ville Fish Farm (LFF) and HIAC. No fingerlings were stocked at Fonteintjie Fish Farm (FFF) during this reporting period.

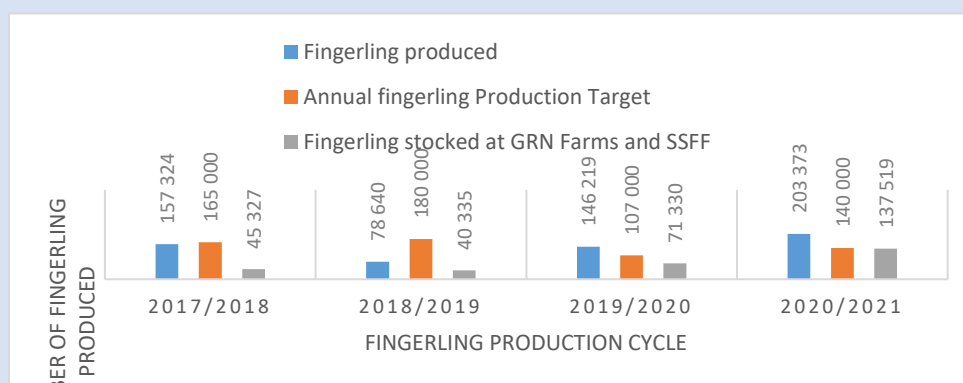


Figure 17. Fingerling production and distribution of Southern Division

A total of 6.43 tons harvest of tilapia *Oreochromis mossambicus* was recorded from small scale fish farms (SSFF) and government (GRN) fish farms, a drop from 11.44 tons recorded in the previous financial year. The fish production is far below the desired production level that can be regarded as “well developed aquaculture sector”.

The division provided extension and advice services SSFF to 102 registered small-scale fish farmers (SSFF), potential fish farmers and public. This include site assessments, provision of fish feed; registration of SSFF, hands-on training, restocking, regular biological fish sampling and fish harvests in the Omaheke, Khomas, Erongo, Oshana, Otjozondjupa, Hardap and //Karas Regions.



7.2.2 Marine Aquaculture



The marine environment along the Namibian coast presents an opportunity for the development of a sustainable marine aquaculture sector that can make a meaningful contribution to economic growth and socio-economic development, as acknowledged in the National Development Plan (NDP5) and in Namibia's Vision 2030.

The Mariculture sector in Namibia is mainly dominated by molluscan shellfish (oysters and abalone), which are best suited to the Benguela upwelling system. Water Quality Monitoring and Aquatic Animal Health and Biosecurity Monitoring were carried out to provide timely information of the occurrence or imminent occurrence of any pollution or natural phenomenon which may have a harmful or detrimental effect on the aquatic environment or any aquaculture product to the Mariculture industry and the public.



A total of 21 sampling points in Walvis Bay, Swakopmund, Henties Bay and Lüderitz were monitored during the time under review. Six oyster farms, one oyster hatchery and one abalone farm are operational at the coastal towns. A total of 214 phytoplankton samples (126 from the central coast and 88 from Lüderitz area) were taken from sampling points along the Namibian coast.

A total of 78 DSP, 79 PSP and 6 ASP toxin tests were analyzed during the reporting period. Results for PSP toxins showed that 37% of the tested samples were over the Codex limit for abalone while DSP and ASP toxins did not exceed the Codex safety limit. The production of marine bio



toxins is associated with the formation of Harmful Algal Blooms (HABs), which are caused by certain specific phytoplankton species in marine environments. These HABs can accumulate in the tissues of filter-feeding molluscan shellfish (and some non-filter feeding organisms) that cause toxin related illness in humans, when contaminated shellfish are consumed. Paralytic Shellfish Poisoning (PSP), Diarrhetic Shellfish Poisoning (DSP) and Amnesic shellfish poisoning (ASP) are the human illnesses commonly associated with the consumption of contaminated seafood.

A total of 102 E. coli tests from production areas were analyzed during the reporting period and did not exceed the safety limits. Heavy metals were also monitored in molluscan shellfish and sediments and the levels were below the Codex limits. A total of 530 pacific oysters (*Crassostrea gigas*), representing 170 animals, were tested for aquatic animal diseases: *Perkinsus* sp. and ostreid herpesvirus 1 microvariants and confirmed the absence of above diseases.

A total of 161.13 metric tons were produced by the sector and were exported to China, Hong Kong, Russia and South Africa for a value of about N\$12.6 million.

7.2.3 NPOA-SSA Programme

The MFMR commenced the process of developing the National Plan of Action for Small-Scale Fisheries (NPOA-SSF) through implementation of the Voluntary Guidelines on Securing Sustainable Small-Scale Fisheries (SSF Guidelines) in the context of Food Security and Poverty Eradication. The SSF Guidelines are international instruments and a critical tool to assist Namibia to narrow down what best fits Small Scale Fisheries within the country context. The key role of the NPOA-SSF for Namibia is to ultimately advance policy dialogue on small scale fisheries; to enrich policy direction, engagement and implementation processes for small scale fisheries.

A series of consultations were held with the stakeholders and primary beneficiary groups including fisherwomen and men; fish traders, and communities whose livelihoods depend on small-scale fisheries for food security and nutrition in all fourteen regions.

Technical support is provided through the Food and Agriculture Organization (FAO) and programme development is being led, guided and facilitated by a National Small-Scale Fisheries National Task Force (SSF-NTF) representing Ministry of Fisheries and Marine Resources (MFMR); Ministry of Environment, Forestry and Tourism (MEFT), Namibia Nature Foundation (NNF),



Benguela Current Convention (BCC) and the University of Namibia (UNAM) which are relevant to the SSF sector.

7.2.4 Management Measures Developed and Implemented

Government Gazette notices 7138 no.64, 65,66 and 67 were published during the period under review legalizing 8 fisheries reserves/protected areas on the Cuando/Chobe rivers to allow community management of the resource. These reserves are the Lwezuba and Kabweza Fisheries Reserve in Lusesse Conservancy, Munga, Nsala and Makumbi Fisheries Reserves in Nakabolelwa Conservancy, Luhingi Fisheries Reserve in Mayuni Conservancy and Qhuqhumupa and Kalume Fisheries Reserves in Balyerwa Conservancy.

A submission for a gazette notice towards declaring the first fisheries reserve on the Kavango River in the Joseph Wa-Mbambangandu Conservancy in the very near future was made. The effectiveness these reserves, both biologically as well as socially with positive signs already being observed is in the process of being evaluated.

8. OPERATION

Monitoring control and surveillance operations are critical to the management and conservation of fisheries and their sustainable utilization. MCS operations in Namibia comprise of the air and sea components for marine operations, which use radar, vessel and aircraft platforms and the land component, or land-based operations, for inland, freshwater, and coastal aspects of fisheries monitoring, control and surveillance. The land component is usually the coordinating sector of all MCS activities and regulates the deployment of available resources to best address the changing situations in the fisheries. The coastal/land component is the sector responsible for port inspections and the monitoring of transshipments and trade in fish products to ensure compliance with fisheries legislation.

8.1 Management and Manning of Research and Patrol Crafts

In carrying out its mandate the Ministry of Fisheries and Marine Resources has the following major assets that it manages,

Vessels:

Two (2) Fisheries Patrol Vessels (FPV's):- FPV Nathaniel Maxuilili and the



FPV Anna Kakurukaze Mungunda, and

One (1) Fisheries Research Vessel (FRV):- FRV Mirabilis

Fixed wing aircrafts:

Two (2) fixed wing patrol aircraft namely: - Sea Eagle I and Sea Eagle II

8.1.1 Vessel Report

During the reporting period, both patrol vessels were active and were deployed for ten missions of a duration of one hundred and fifty six days at sea. The patrol vessels were scheduled to sail for twelve (12) voyages, however, COVID-19 restrictions made it difficult to obtain goods and services on time. Nonetheless, this was a drastic improvement on the 4 patrol missions or 63 days spent at sea the preceding year.

The Research Vessel, Mirabilis did not sail during the period under review, except for four days for sea trials, due to major technical problems compared to 2019/2020 when she undertook three (3) missions spending forty-seven (47) days at sea.

The main technical problems were malfunctioning of the shaft generators, main port engine vibration and Bow-thruster. At the end of the reporting period, the problem were still being addressed, due to COVID -19 restrictions, which made it difficult to obtain parts on time, the vessel is only expected to resume her duties during the first quarter of the 2021/2022 financial year.

Table 18. Statistics per Vessel

Activity/Item	FPV N Maxuilili	FPV A K Mungunda	RV Mirabilis	Total
# of Voyages/ Mission per annum	4	6	1	11
Days at Sea per annum	69	87	4	160
Distance Covered (nautical miles) per annum	7,832	10,310	367	18,509
Diesel Consumed (litres)	145,850	225,300	21,600	392,750



8.1.2 Aircraft Report

During the period under review only Sea Eagle I, was able to undertake one flight mission, after which both planes were grounded as the life-saving equipment of both had to be sent for servicing abroad, just before the first COVID-19 lock down and border closure. By the time the lifesaving equipment returned, the pilots' licenses had expired and the institution where they could be renewed were closed due to the COVID-19 restrictions, and as such the aircrafts remained grounded for the rest of the reporting period.

Table 19. Activities of the Aircrafts for the period under review

Activity/Item	Sea Eagle I	Sea Eagle II
Number of Voyages/Missions per annum	1	0
Hours flown per annum	2.30	0
Distance Covered (km) per annum	431	0
Jet A1 Fuel Consumed (litres) per annum	790	0
Jet A1 Fuel remain on board (litres)	2,880	0

With lessor COVID-19 restriction, it is anticipated that the pilots' licenses will be renewed during the first quarter of the ensuing financial year.

8.2 Marine Monitoring, Control and Surveillance (MARINE MCS)

8.2.1 Sea Patrol Activities

The good co-operation established between the MFMR and other Law Enforcement Agencies of Government, the Navy and the Police Water Wing, continued to be strengthened during the reporting period, on most, if not all patrol missions undertaken our Fisheries Inspectors were accompanied by either Naval Officials or Police Officers (or both).

During the period under review ten 10 sea patrol mission, covering the length and breadth of the Namibian EEZ were carried out. However, the majority were focused along the northern maritime boarder where IUU activities were reported. Although various foreign vessels were observed fishing just outside the Namibian EEZ, along the northern maritime boarder, no illegal fishing was detected during the period under review. However, four (4) violations by Namibian fishing vessels were detected during routine at sea inspections and four (4) fines amounting to N\$1,200.00 were issued (table 20).



Table 20. Summary of Sea Patrol Results.

<i>Vessel name</i>	<i>Offences Detected</i>	<i>FPV “Nathaniel Maxuilili”</i>	<i>FPV “Anna Kakurukaze Mungunda”</i>	<i>Amount (N\$)</i>
Ernir	Failed to maintain up to date drawings of fish holds	0	1	300.00
	Failed to display vessel L-Number on structure of vessel	0	1	300.00
Puente Sabaris	Failed to display proper markings namely vessel L-Number less than 1 meter	0	1	300.00
Playa Pesmar Uno	Not carrying Marine Resources Act on board the vessel	0	1	300.00
Total Fines issued:		0	4	1,200.00

8.2.2 Air Surveillance

During the reporting period two aerial surveillance flights were undertaken, one by the Sea Eagle I and the other by the NAMPOL helicopter, as part of the joint operation “30 days at Sea” with the NAMPOL, Navy, Custom and DMA. The sea Eagle 1 did not report anything out of order, however, for operation “30 days at sea”, due to unfavorable foggy weather conditions the team could not patrol the intended targeted areas.

8.2.3 Coastal MCS Activities

One thousand two hundred and fifty six (1,256) daily coastal MCS patrols were undertaken along the entire Namibian coastline covering a total distance of 186,233 km. In addition, one hundred and twenty three (123) roadblocks were carried out, jointly, with the Namibian Police, Immigration, and Traffic officers during Easter and festive season.



Table 21. Coastal MCS Fleet Running Costs

Distance (km)	Travelled	Service/Repairs Cost(N\$)	Fuel Consumed (litres)	Fuel Cost (N\$)	Total Cost (N\$)
	186,233	355,271.26	41,183.55	431,671.68	786,942.94

During these operation a total of one thousand five hundred and sixty five (1,565) fines were issued for violating the fisheries legislation, amounting to N\$744,200.00. This includes all violations detected through own means as well as those reported to the Ministry by the Fisheries Observer Agency (FOA) as depicted in the table below.

Table 22. Total number of fines issues for violations reported

Violation Type	Number of Fines Issued			Total Fine (N\$)
	Walvis Bay	Lüderitz	Total	
In possession of prohibited annelid worms	313	0	313	313,000
Fishing without recreational fishing permit	336	27	363	108,900
Harvest undersize fish	154	5	159	50,200
Harvest undersize white mussels	159	0	159	105,600
Harvest white mussels in excess	1	0	1	1,000
Harvest limpets more than daily bag limit	0	7	7	1,100
Harvest undersize rock lobster	5	32	37	16,200
Harvest rock lobster in berry	2	1	3	1,500
Harvest rock lobster in excess	0	2	2	1,000
Harvest fish in excess	6	0	6	4,100
Exceed the 7 daily bag limit for rock lobster	0	139	139	26,500
Selling fish caught for recreational purposes	0	11	11	3,300
Fish not in whole state	1	0	1	300
Transport without RFP	2	2	4	2,200
Enter reserve area illegally	4	0	4	4,000
70cm Kob in excess	9	0	9	1,400
Harvest and retain Kob during Paaltjies closure	1	0	1	300
Violating seal quota condition by disposing of seal parts in unstipulated manner	0	2	2	600
Violating seal conditions by killing 2 cows	0	8	8	2,400



Failure to report to fisheries a problem that occurred at the factory	0	2	2	600
Discarding big eye tuna by-catch into the sea (Observers)	0	165	165	49,500
Discarding big eye tuna by-catch into the sea (Observers)	0	2	2	400
Removing shark fins and discarding shark carcasses into the sea (Observers)	0	167	167	50,100
Total	993	572	1565	744,200

During the reporting period, a total of N\$44,330.00 was paid in admission of guilt fines at the Magistrate office.

Table 23. Admission of Guilt (AoG) fines payment received for period under review

Offence	# of fines paid	Amount (N\$)
1. Annelid worms	19	16,200
2. No Permit	26	7,800
3. Undersize fish	13	3,200
4. Undersize White Mussels	26	13,980
5. Kob more than 70cm in excess	2	800
6. Fish in excess	1	50
7. Failure to carry licence on board the vessel	1	1,000
8. Fish not in whole state	1	1,000
12. Enter marine reserve	1	300
Total	90	44,330

During the reporting period eight (8) warrants of arrest from the magistrate courts for execution, stemming from the fines issued for which acceptance of guilt was not paid.

Table 24. Warrants of arrest executed

Offence	Violation	Nationality Gender	/	Result
Arrested on 20th September 2020 CR – 59/09/2020 Reg. 19(2) (a)	Harvesting rock lobster during closing season Harvesting undersize lobster Harvest rock lobster in berry	Three Namibian males were arrested on		Case finalized The accused were given suspended sentences, and not commit offence with the next three years.



Reg. 19(2) (b) Reg. 19(3) (c)			
Arrested on 06th August 2020 CR – Reg 8(6)	Harvesting 500 black mussels in excess	One Male Namibian	Case finalized got bail on 07th August 2020 of N\$4,000.00, case postponed and finalised on 13/08/2020. Fined N\$ 5,000.00
Arrested 17th July 2020 CR-	1.Dumping of Marine resources 2. Assault and intimidating of Observer	Captain Chief Mate Trawl Master	Appeared in court on 17th July 2020, got bail of 50,000.00 each and case postponed to 31 August 2020, and due to absence of prosecutor no further date of appearance could be set on 07th September 2020. Case pending
Arrested. Case registered on file	obstructs, resists, hinders, threatens or intimidates a fisheries inspector	One Male Namibian	Appeared in court on, got bail of N\$ 5,000.00 and case postponed to due to absence of prosecutor no further date of appearance could be set on 23/02/21. case pending

Fish found during MCS operation to have been caught in contravention of the legislations was confiscated and kept in storage until the matter was finalised. Once the matter is finalised, those that were found to be fit for human consumption were donated to needy and vulnerable groups, whilst those that are unfit are destroyed as per local authority regulations.

Table 25. Venerable Groups that benefited from confiscated fish

Name of Institution:	Quantity donated:	Region / Place:
Swakopmund Municipality	Barbers (26 individual)	Arandis Roadblock
	Tilapia - 132	
	Fish Biltong - 200	
	Galjoen – 36 kg	
	Steenbras – 8 kg	
Believe Succeed Transform	Galjoen (23.8kg), Crayfish (21.0kg)	Coastal Patrol
	Kob – 10 kg	
	Snoek - 20	
NAMPOL – Karibib	Kob - 16	Karibib & Vergenoeg Roadblock
	Kob Fillet – 26 kg	
	Galjoen - 3	
Erongo Regional Council	Kob – 120 kg	Coastal Patrol
	Kob – 11 (70cm)	



	Galjoen – 17 kg	
	Rock Lobster – 8 kg	
	Snoek – 20 fish	

8.2.4 MCS Activities during Seal Harvesting

Seal harvesting operations took place at Cape Cross Reserve and Torra Bay in the Skeleton Coast during the seal harvesting season and no infringement were reported.

8.2.5 Marine Fisheries Monitoring

8.2.5.1 Vessel Monitoring

In line with the Vessel Monitoring Regulations, all licensed fishing vessels above 24 metres must be equipped with functional VMS. During the period under review, a total of one hundred and sixty nine (169) fishing vessels, that were licensed, were captured on the system and were monitored and tracked by the VMS Operators in the FMC.

During the reporting period, all licensed fishing vessels had a functional VMS on board and all had Automatic Location Communicator (ALC) devices on board which enabled a 100% coverage and or tracking of the fleet.

Table 26. List of Vessels per fishery captured on VMS

VESSELS TYPE	NUMBER OF VESSELS CAPTURED	ALC'S	ACTIVE	INACTIVE
Hake Wet Trawlers	46	46	46	0
Hake Freezers Trawler	15	15	15	0
Hake Long Liners	15	15	15	0
Midwater Trawlers	19	19	19	0
Monk & Sole	13	13	13	0
Tuna Long Line	45	45	45	0
Tuna Pole & Line	07	07	07	0
Purse Seiner	03	03	03	0
Crab	05	05	05	0
Line Fish	01	01	01	0
TOTAL	169	169	169	0



8.2.5.2 Vessel Operating outside the EEZ

During the reporting period, forty eight (48) Namibian licensed vessels were operating outside the Economic Exclusive Zone (EEZ) as indicated in the table below.

Table 27. Namibian Vessel operational outside the Namibia EEZ

EEZ	Description	# of Vessels
Angola	2 Purse Seiners, 1 Tuna and 3 Hake Wet Trawlers – (in terms of an MoU – the VMS data are sent to Angolan Authority daily)	6
ICATT	Tuna Vessels	38
Kenya	Tuna Long line	1
Mozambique	Monk and Sole (Vessel sold and is still operating there)	1
Las Palmas	1 Midwater Trawler (Horse Mackerel)	1
Comoros Islands	1 Tuna vessel	1
Total		48

8.2.5.3 Fishing Conditions Violations

During the period under review eleven (11) fishing vessels triggered the VMS for crossing the 200m and 300m depth zones respectively, with speeds that could be categorised as trawling (fishing). All triggers evoke an investigation for non-compliance with the conditions. The investigation revealed that some triggers were indeed violations of the legislation, of which three (3) were so severe that they the involvement of the judiciary was warranted. All three (3) cases involved Captains of Midwater Trawlers that violated conditions pertaining to the 200m depth restrictions. At the end of the reporting period, two (2) cases were finalised and one (1) was postponed for plea and trial. The details of those cases are provided in the table below.

Table 28. Details of fishing vessels tracking related court cases

Vessel	Description	Results
FV Mediva Star	The Captain who absconded in October 2019 appeared and pleaded guilty on Wednesday, the 11th March 2020. The case was finalized on Friday, 07th August 2020.	Convicted of one (1) count of Section 52 (4) (a), was sentenced to pay N\$200 000.00 and another one (1) count of what he gained



		(value) in fish and was sentenced to pay N\$7 000.00. Total amount N\$207 000.00.
FV Krossfjord	The court case of Fishing Vessel Krossfjord detected in the restricted 200m depth zone on the 20th February 2020 and contravene Section 52 (4) (a) was held on the 01st December 2020 to the 03rd December 2020.	The captain was discharged on technical grounds that no evidence was provided that the vessel was licenced and no quota conditions documents was also attached, and that the natural contour line co-ordinates also not gazette.
FV Zephyr	The court case of Fishing Vessel Zephyr who was detected in the restricted 200m depth zone on the 06th November 2019.	The Captain was postponed to 23 August 2021.

8.2.5.4 Vessel Monitoring System (VMS) Support and Maintenance

During the period under review, the Fisheries Monitoring Center (FMC) support and maintenance continued to be rendered by CLS, a French based company, which has contract agreement with the Ministry. CLS render maintenance support to the FMC to facilitate the smooth functioning of the system and to render technical assistance to ensure that the VMS functionalities are in line with the Regulations. However, the FMC experienced continuous network problem that were being addressed (internally) by the end of the reporting period that hampered the effectiveness of the system.



8.2.5.5 Operation Centre

As part of Fisheries Monitoring, the Ministry has an Operations Centre, hosting communications facilities to enable daily communication and speedy action by patrol and research crafts as well as Fisheries Inspectors during their routine coastal patrols, and Fisheries Observers on board vessels and FMC.

During the reporting period the Operations Centre was manned on a normal working shift basis and on a 24 hours shift basis during the patrol missions. . No problems were experienced.

8.2.5.6 Onshore Monitoring and Control

The landings of fishery products from two thousand one hundred and ninety-four (2194) Namibian fishing vessels 'trip were monitored and inspected during the reporting period. In line with the FAO, Port State Requirement, the Ministry further monitored the landings and other activities of bunkers, repairs, crew changes and provisions of one hundred and twenty-six (1026) foreign fishing vessels.

During these activities violating were detected, for which sixty-five (65) fines, amounting to N\$27,600.00, were issued as indicted in the table below.

Table 29. *Violations detected during factories, port and off port inspections*

Violations Type	Fines issued	Amount N\$
Discharge in foreign port without permission	1	3,000
Violation of fisheries conditions	1	3,000
Discharge without the presence of inspector	1	3,000
Undersize rock lobster	42	12,600
Rock lobster in berry	19	5,700
Offload a fishing vessel without presence of fisheries inspector	1	300
Total	65	27,600



8.3 Inland Monitoring, Control and Surveillance (INLAND MCS)

8.3.1 MCS Patrol Missions

During the reporting period, the Ministry conducted one thousand one hundred forty four (1,144) inland water bodies MCS missions of which 1,077 were land based (along the water bodies) and 67 on the rivers, covering a distance of 234,891 kilometres.

Table 30. Number of inland MCS Patrol missions undertaken

Patrol Missing Type	Total Number of Patrol Missions					Total
	Lüderitz	Walvis Bay	Ongwediva	Rundu	Katima Mulilo	
Land patrol missions	17	3	402	348	307	1,077
River patrol missions	0	0	2	19	46	67
Total	17	3	404	367	353	1,144

Table 31. Total distance travelled during inland MCS patrol missions

Patrol Missing Type	Total Number of Patrol Missions					Total
	Lüderitz	Walvis Bay	Ongwediva	Rundu	Katima Mulilo	
Land patrol missions	26,614	820	57,839	61,896	83,550	230,719
River patrol missions	0	0	150	657	3,365	4,172
Total	26,614	820	57,989	62,553	86,915	234,891

During the period under review, the Inland MCS team observed a number of non-adherence to the Inland Fisheries legislation by the members of the communities, involving both Namibian and non-Namibian nationals. Illegal activities observed on the rivers are of particular concern, most observed were on the other side of the river (in Angola or Zambia depending on the river). Furthermore, culprits also tend to move to the other side when law enforcement approaches, and the officers can do nothing. The Ministry opened 24 criminal case dockets leading to the arrests of 75 foreign nationals and 44 Namibian citizens for contravening the Inland Fisheries Legislation. Of the cases finalised some foreigners were deported while others (along with Namibians) were ordered to pay a fine or serve varying prison terms depending on the merits of the case.

During the abovementioned Inland MCS mission, a total 287 fines were issued, amounting to N\$116,050.00.



Table 32. Number of fines issued

Violation Type	Number of Fines Issues						Amount (NS)
	Lüderitz	Walvis Bay	Ongwe diva	Rundu	Katima Mulilo	Total Fines	
Fishing with monofilament gill net	0	0	0	0	28	28	21,500
Fishing with mosquito net	0	0	0	0	50	50	16,000
Drag netting	8	0	2	3	9	22	6,000
Fishing without license/permit	72	21	0	0	17	110	33,700
Use net not in conformity with fishing requirements	0	1	0	0	15	166	4,950
Transfer certificate of registration	0	0	0	0	1	1	800.00
Fishing in reserve without permission	0	0	0	0	5	5	4,000
In possession of fresh fish during closed fishing season	0	0	0	0	10	100	4,800
Use net not authorized by a license (gauze wire)	0	0	0	0	4	4	3,200
Use net for fishing other than prescribed gill net	0	0	0	6	0	6	1,800
Failure to register net in all regions of intended usage	0	0	1	0	0	1	300.00
Selling of fish caught for recreational purposes	18	0	0	0	0	188	3,700
Fish in excess of daily bag limit	2	12	0	0	0	14	15,100
Harvest fish with more than two rods	2	0	0	0	0	2	200.00
Total	102	34	3	9	139	697	116,050

A number of items were also confiscated during the inland MCS missions as tabled below.



Table 33. Items confiscated during MCS missions

Item Type	Action Taken	Number of Items Confiscated					
		Lüderitz	Walvis Bay	Ongwediva	Rundu	Katima Mulilo	Total
Monofilament gill net	Burned in field/store at Ongwediva office	5	85	118	161	998	1,367
Dry fish bags	Stored at Office	0	0	0	0	29	29
Wet fish bags	Stored at Office	0	0	0	0	2 bags + 8.26 kg	2 bags + 8.26 kg
Canoes	Destroyed in field	0	0	0	8	7	15
Shed nets	Burned in field/ Stored at Ongwediva office	0	0	3	31	5	39
Drag Nets	Disposed by Fire	0	0	0	0	12	12
Wheel barrow	Stored at office	0	0	0	0	1	1
Mosquito Nets	Disposed by Fire	0	0	5	98	359	462
Round plastic dishes	Stored at office	0	0	0	0	11	11
Plastic buckets	Stored at Office	0	0	0	0	86	86kg
Fresh fish	Donated	84	0	0	0	1,657 kg	1,741 kg
Fresh catfish	Donated	0	0	0	0	50 kg	50kg
Dry fish mixed	Donated	0	0	0	0	25 kg	25kg
Dry minnows	Stored at office	0	0	0	0	2 bags	2bags
Gauze wire	Disposed by Fire	0	0	0	0	6	6
Dry fish	Stored at Office	0	0	0	0	14 bags	14 bags
Dry fish	Donated	0	0	0	0	180 kg	180kg
Dry fish	Destroyed	144	4,500	0	0	63 kg	4,707kg
Throwing nets	Disposed by Fire	0	0	0	7	0	7

8.3.2 Joint Operations

During the period under review twenty four (24) joint patrols were conducted with various law enforcement agencies within the country, comprising NDF, Nampol, MEFT and Customs officials, as well as Impalila Conservancy and Kasika Conservancy at the eastern floodplain and on the rivers.

In addition, the Fisheries Inspectors participated in various joint operations, aimed at combating fisheries and wild life crimes, conducted with other law enforcement agencies in the country as well along the Namibia Botswana border. Due COVID 19 restrictions the joint patrols along the Namibia Botswana border were conducted in parallel on both sides along the respective borders.



9. GENERAL SERVICE

9.1 Human Resource

The total workforce in the Ministry for the reporting period was 502, comprising of 229 females and 273 males.

Thirty-one posts, ranging from entry-level to middle management, were filled by means of new appointments, promotions and transfers from other O/M/A's, whilst two staff members resigned during the reporting period. All general administrative functions, including the processing of pensions, medical aid, leaves, housing, and social security, were carried out satisfactorily.

In addition, the Ministry submitted the Affirmative Action Report to the Office of the Prime Minister as well as the Employment Equity Commission in February 2021. The Employment Equity Commission approved the report and issued the Ministry with a Compliance Certificate.

Table 34. Human Resources

STAFF MOVEMENTS	MALE	FEMALE	TOTAL
Appointment /Promotions/Transfer	15	16	31
Resignation	1	1	2
Retirements (55& 60 yrs)	8	1	9
Death	4	0	4
Discharge on account of ill-health	0	1	1

9.1.1 Human Resource Development

The Ministry of Fisheries and Marine Resources aims at equipping staff members with different skills and abilities, through training and development programs in various fields at all levels in the Ministry mainly through bursaries, sponsored courses, mandatory courses and induction and orientation.



During the 2020/21 financial year, the Ministry administered bursaries and scholarships in fields such as Business administration, finance and accounting, aquaculture, fisheries and aquatic and environmental management. Table 35 below provides further details

Table 35. Staff development record during the period under review

LEVEL	TYPE	MALE	FEMALE	TOTAL
Staff below management	Skills Development (non-qualifying)	6	4	10
	Induction and orientation	90	35	125
	Sponsored Scholarships Courses (Qualifying)	6	5	11
	Bursaries	9	16	25
TOTAL		111	60	171

During the period under review, an amount of N\$87,275 was utilized for the purposes of improving skills for staff members under the short-term courses as well as to cater for induction programmes.

In terms of bursaries and scholarships, during the reporting period the Ministry facilitated eleven sponsored scholarships and self-funded courses as well as assisted twenty-five staff members with a once off –partial funding. An amount of N\$259,600 was utilized for the purpose. The courses are from both local and abroad institutions of high learning.

9.1.2 Student Internship

The Ministry also assisted sixteen (16) university students to gain job training attachments under the supervision of permanent staff members. Most of the internships undertaken varied from one (1) month to six (6) months and in areas of Administration, Human Resources Management, Economics, Information Technology, Fisheries and Aquaculture Management.



9.2 Electronic Document and Records Management System (EDRMS)

The EDRMS system intends to move away from paper based to electronic record management and will ensure that all documents created in the ministry comply with the filing and document disposal requirements.

The EDRMS implementation project reached a satisfactory stage of technical implementation in September 2020, which resulted in the EDRMS going live. The next phase of the project requires that the ministry procures additional scanners and equipment to ensure that more staff are able to utilize the system. The Office of the Prime Minister during the reporting period provided training to key focal persons to ensure that staff are trained and are able to utilize the system. The trained staff have also embarked on screening old documents for transfer to the electronic system based on the current file plan. This process is ongoing till all the documents have been referenced and scanned into the EDRMS.

10. REGIONAL FISHERIES ORGANISATIONS AND OBLIGATIONS

Namibia has acceded to Regional Fisheries Organizations (RFMOs) and is a signatory to several international instruments concerning the management of world fishery resources. Of particular interest Namibia is a Party to (BCC), CCMLAR, ICCAT, and SEAFO, as well as signatory to the UN Fish Stocks Agreement (UNFSA), the FAO Port State Agreement, the FAO Compliance Agreement, the FAO Code of Conduct for Responsible Fisheries (the Code) and a number of international action plans, such as the FAO International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU), the FAO International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (IPOA-Seabirds), the FAO International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks) and the FAO International Plan of Action for the Management of Capacity (IPOA-Capacity).

10.1 Benguela Current Commission (BCC)

A major goal of this cooperation is to improve the structures and capacities of the three countries to deal with problems and issues which occur across national boundaries and to establish an appropriate institutional framework to manage shared resources and to resolve conflicts. Namibian scientists and compliance officers have actively participated in the several BCC



scientific and compliance working groups through the year. The Regional Demersal Working Group (DMG) has been engaging to enable the available data to enable joint assessment of the *Merluccius paradoxus* stock, which is transboundary between Namibia and South Africa. With the certification of both of fisheries by the MSC, it is expected that the countries develop joint harvest rule by the end of the certify period of 5 years, to promote the sustainable utilization of this resource.

10.2 International Commission for the Conversation of Atlantic Tunas- (ICCAT)

Namibia represented by the Ministry of Fisheries and Marine Resource is a member of the International Commission for the Conversation of Atlantic Tunas (ICCAT), since 1999 Namibia has an elaborate fisheries management policy and legal framework that includes management of different fish species at national, regional and international levels including Tunas, Sharks and Swordfish etc. Namibia regular submitted its tunas and tuna like species landings statistics to ICCAT. In an effort to support sustainable harvesting to our national, regional and International marine resource the Ministry support NATA Fishing Enterprises CC to participate in the Tri Marine –Marine Stewardship Council (MSC) Certification Scheme for long line-caught North and South Atlantic Albacore. The quotas allocated for these species are indicated in table 4 underlined as pelagic fishery.

10.3 Commission for the Conversation of Atlantic Marine Living Resource (CCAMLR)

Namibia continues to be a member and participate in the activities of CCAMLR. The commission adopted the budget by SCAF for 2020 as well as the forecast budget for 2021. Namibia's annual membership contribution for 2020 is estimated to be about N\$ 125,000.00 and is forecasted to increase to about N\$ 131,000 during 2021. An increase in Namibia's annual membership contribution could be expected in future, considering the continuing depreciation of the Namibian dollar against major foreign currencies.

The Commission adopted extensive conservation measures for the next fishing season, after spending a considerable amount of time discussing such measures. These measures deal mostly with the limitation of fishing effort and setting of catch limits of species under CCAMLR's purview, the establishment of Marine Protected Areas (MPAs) and accompanying research monitoring plans, as well as requirements for vessels intending to conduct research or exploratory fishing in the CA. MCS measures, such as VMS requirements and specifications, the deployment of both



compliance and scientific observers onboard fishing vessels , as well as the combating of IUU fishing in the CA and globally were set.

10.4 South East Atlantic Fisheries Organization (SEAFO)

The organization is responsible for management and conservation of non-tuna species on the high seas in the Southeast Atlantic. SEAFO has adopted a series of measures to ensure the long-term conservation and sustainable use of the fisheries resources, applying the precautionary approach and ecosystem-based management of measures including measures in response to calls from the UN General Assembly to protect vulnerable marine ecosystems by closing several areas to bottom fishing, assessment requirements, operational procedures as well as explanatory and data collection protocols. SEAFO has also established an adequate system of observation, inspection, compliance and enforcement.

Since 2016, SEAFO has allocated TACs for 1) Orange roughy, 2) Patagonian toothfish, 3) Alfonsino, 4) Pelagic armourhead and 5) Deep-sea red crab in the order of 50, 270, 200, 150 and 180 tons respectively. The total landings made from the SEAFO CA during the indicated period were as indicated in table 36, but the participation of Namibian vessels was limited to 2017 and 2018, landing a total of 180 tons of deep-sea crab only.

Table 36. Total catches (in tons) made in the SEAFO CA since 2016.

Year	Total catch (all Species)
2016	139.56
2017	161.16
2018	231
2019	65
2020	96.56
2021	37.52



Annex 1: Useful contacts

Institution and contact details	
Ministry of Fisheries and Marine Resources (MFMR)	
<p>Head Office, Private Bag 13355, Brendan Simbwaye Square, Block C, Corner of Uhland & Goethe Streets, Windhoek, Namibia.</p> <p>Tel: +264 61 2053 911 Fax: +264 61 233 286 www.mfmr.gov.na</p>	<p>Office of the Minister, sectoral policy, planning and economics, fisheries administration, legislative controls, data collection and analysis.</p>
<p>National Marine Information and Research Centre, (NatMIRC), Strand Street, Box 912, Swakopmund.</p> <p>Tel: +264 64 410 1000 Fax: +264 64 404 385</p>	<p>Applied fisheries and environmental research, physical, biological and chemical oceanography, stock surveys and stock assessment, advice to MFMR on TACs for commercial stocks and other management measures, regional programmes and research collaboration, aquaculture and inland fisheries research and development.</p>
<p>NatMIRC Research Centre, Luderitz.</p> <p>Tel: +264 63 202 415 Fax: +264 63 202 495</p>	<p>Branch of the Swakopmund regional office. Main research activities include seals, seaweed, rock lobster as well as regular commercial fish stock surveys and assessment work.</p>
<p>Hardap Freshwater Research Institute, Private Bag 2116, Mariental.</p>	<p>Freshwater fish and invertebrate research, migrations of freshwater fishes using radio tagging, development of</p>



<p>Tel: +264 63 240 361 Fax: +264 63 242 643</p> <p>Inland Fisheries - Rundu Office Private Bag 2084, Rundu. Tel: +264 66 256 853. Fax: +264 256 867</p> <p>Inland Fisheries – Katima Mulilo Office Private Bag 1004, Ngweze. Tel: +264 66 253 224. Fax: +264 66 253 226</p>	<p>freshwater aquaculture techniques and assessment of candidate species.</p>
<p>Fisheries Inspectorate Office, Box 394, Luderitz.</p> <p>Tel: +264 63 202 905 Fax: +264 63 203 337</p>	<p>Monitoring, control and surveillance of marine commercial and recreational fisheries.</p>
<p>Fisheries Inspectorate Office, PO Box 1594, Walvis Bay.</p> <p>Tel: +264 64 201 6111 Fax: +264 64 205,008</p>	<p>Monitoring, control and surveillance of marine commercial and recreational fisheries.</p>
Regional programmes	
<p>SADC Regional Monitoring, Control and Surveillance of Fishing Activities Programme, Private Bag 13355, Windhoek Namibia.</p> <p>PO Box 9768, Windhoek, Namibia.</p>	<p>EU-funded regional programme to enhance capacity in regard to MCS matters.</p>



<p>Tel: +264 61 205 3016</p> <p>Fax: +264 61 242 502</p> <p>www.mcs-sadc.org</p>	
<p>Benguela Current Large Marine Ecosystem (BCLME) Programme,</p> <p>PO Box 40728 Aussenplatz Circle, Windhoek, Namibia.</p> <p>Tel: +264 61 246 948</p> <p>Fax: +264 61 246803</p> <p>E-mail: pcu@bclme.un.na</p> <p>www.bclme.org</p>	<p>Multinational cross-sectoral initiative by Angola, Namibia and South Africa to manage the living marine resources of the Benguela Current Large Marine Ecosystem in an integrated and sustainable manner and to protect the marine environment.</p>
<p>Benguela Environment Fisheries Interaction and Training (BENEFIT) Programme,</p> <p>PO Box 912, Swakopmund, Namibia.</p> <p>Tel: +264 64 410 1165</p> <p>Fax: +264 64 405 913</p> <p>www.benefit.org.na</p>	<p>To establish a research framework for biological and oceanographic investigation of the entire Benguela Current system. Principal focus is training in resource management research in support of the major fisheries of the three co-operating countries: Namibia, South Africa and Angola.</p>
<p>INFOPECHE Unit, Kenya House, 4th Floor, Robert Mugabe Avenue – Windhoek – Namibia.</p> <p>Tel: +264 61 205 3112/3</p> <p>Fax: +264 61 205 3041</p> <p>E-mail: infosadc@mweb.com.na</p> <p>Web page:</p>	<p>Provides timely information regarding prices and trends in the marketplace and stimulates greater intra-regional and international trade in fish products.</p>



www.globefish.org/entry_infopech.htm

Other institutions

Namibian Maritime and Fisheries Institute (NAMFI), PO Box 3228, Walvis Bay.

Tel: +264 64 203 114

Fax: +264 64 203 112

e-mail: chantel@namfi.net

Main institute providing education and training. Observers, patrol boat personnel and fisheries scientists.

Fisheries Observer Agency, PO Box 2903, Walvis Bay.

Tel +264 64 219 500

Fax: +264 64 219 547/8

e-mail: reception@foa.com.na

Website: www.foa.com.na

Management and administration of the MFMR Fisheries Observer Programme.

Fishing industry associations:

Pelagic Fishing Association

Hake Association

Midwater Trawling Association

Monk and Sole Association

Tuna and Hake Longlining Association

Deepwater Fishing Sector

PO Box 2513, Walvis Bay, Namibia.

Phone: +264 (0)64 20 9083.

Fax: +264 (0)64 20 6158.

E-mail: hardrud@iafrica.com.na



Annex 2: Ministry of Fisheries and Marine Resources Structural organogram.



Hon. Derek Klazen: Minister



Hon. Sylvia Makhone: Deputy Minister



Ms. Annely Haiphene: Executive Director



Mr. Ueritjiua Kauria: Deputy Executive Director



Vacant Director:
Policy, planning
and Economics



Ms. Graca D'Almeida:
Director: Resources
Management



Mr. Hafeni Mungungu:
Director: Operation



Mr. Rudi Cloete
Director:
Aquaculture and
Inland Fisheries



Ms. Elizabet Swartz
Deputy Director:
General Services



Ms. Veneranda Shoombe
Deputy Director:
Information Technology



REPUBLIC OF NAMIBIA

MINISTRY OF FISHERIES AND MARINE RESOURCES

Brendan Simbwaye Square, Block C

c/o Dr Kenneth David Kaunda and Goethe Streets

Private Bag 13355

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