

REPORT



UNDERSTANDING THE ECONOMIC VALUE OF NAMIBIA'S MARINE RECREATIONAL FISHERY

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ABOUT THE SOUTH ATLANTIC ENVIRONMENTAL RESEARCH INSTITUTE

SAERI undertakes research in the UK Overseas Territories (UKOTs) and other Atlantic and Caribbean coastal communities, from the tropics down to the ice in Antarctica. The South Atlantic Environmental Research Institute (SAERI) conducts research in the South Atlantic from the tropics down to the ice in Antarctica, with a remit which includes the natural and physical sciences. It aims to deliver value to its stakeholders, its staff and the broader scientific community within the United Kingdom's South Atlantic Overseas Territories and beyond. Its mission is to grow a sustainable environmental research institute in the Falkland Islands through partnership working, to build capacity and inform the delivery of global environmental stewardship. SAERI was a Falkland Islands Government (FIG) initiative and operated as an arm's length government department from 2012 in July 2017.

Our vision is to deliver world-class environmental research from the Falkland Islands that informs the effective stewardship of our planet.

Strategically, SAERI aims to be a world-class research institute that, amongst other things, delivers science excellence to inform policy for the enhancement of environmental stewardship in the territories it operates, creating models which are replicable and scalable within and between the South Atlantic Overseas Territories and the countries within which it operates. In order to achieve that it must be:

1. Project optimised – by operating as a streamlined and efficient organisation through the Focal Areas;
2. Fully funded – Falklands registered limited company is able to contribute to SAERI core costs, ensuring SAERI ultimately becomes fully financially independent from FIG and by ensuring that all grant applications (where possible) contain cost of seat coverage; and
3. The holder of proprietary environmental knowledge of the South Atlantic – by continuing to provide the research expertise offered to date.

ABOUT THE NAMIBIA NATURE FOUNDATION

The Namibia Nature Foundation (NNF) was founded in 1987. It was initially established to help the (then) Department of Nature Conservation to raise and administer funds for the conservation of wildlife and protected area management. Since then, the work of the NNF has expanded, in both scope and volume, to encompass the whole field of environment. While considerable emphasis is still placed on the protection of parks and endangered species, the current focus of work is on broad sustainable development: environment and people, environment and development. This is seen in our work in community-based natural resource management, pollution and waste management, emphasis on policy, training and education.

The NNF works with a wide range of government organisations including the Ministry of Environment, Forest and Tourism, the Ministry of Fisheries and Marine Resources (MFMR), and the Ministry of Works and Transport, and non-government organisations (e.g., International Union for Conservation of Nature (IUCN), World Wide Fund for Nature (WWF), Integrated Rural Development and Nature Conservation (IRDNC), United States Agency for International Development (USAID), Royal Society for the Protection of Birds (RSPB), South Atlantic Environmental Research Institute (SAERI), etc.). The NNF has evolved into a national institution that provides support to all relevant aspects of the environment in Namibia, to sustainable development and to wise and ethical natural resource management.

The NNF is perhaps the main NGO that has a working relationship with MFMR through projects on MPA management, inland fisheries and the Blue Economy. Along the coast, NNF and MFMR collaborate on reducing the by-catch of seabirds in the long-line fisheries and on the sustainable development of a Blue Economy. Together, the MFMR and NNF have considerable experience in the sustainable management of aquatic resources and have collaborated -thereby creating strong ties- in various projects, including currently on the development of an updated management plan for the NIMPA, which is led by NNF with the support of the Blue Marine Foundation.

Throughout past projects, NNF was engaged in several complex stakeholder engagement processes. Within the Fishery sector, it was involved in setting up the KAZA Fisheries Working Group and developing the Okavango Transboundary Management Plan. The NNF also has good connections with stakeholders involved in the development of the Sustainable Blue Economy Policy process in Namibia, not only on marine conservation but also stakeholders in maritime transport, fisheries management and coastal city municipalities.

This considerable experience coupled with a good connection with stakeholders in the marine sector, places NNF in a strong position to provide support, stakeholder engagement and facilitation for this bid.

ACRONYMS

BCC	Benguela Current Convention
CE	Choice Experiment
CVM	Contingent Valuation Method
EIA	Environmental Impact Assessment
GNI	Gross National Income
IO	Input-Output
MEFT	Ministry of Environment, Forestry and Tourism
MFMR	Ministry of Fisheries and Marine Resources
MRF	Marine Recreational Fishing
NNF	Namibia Nature Foundation
SAERI	South Atlantic Environmental Research Institute
SAM	Social Accounting Matrix
TCM	Travel Cost Method
TEV	Total Economic Values
TSA	Tourism Satellite Account
UNAM	University of Namibia
VFR	Visiting friends and relatives
WCRA	West Coast Recreation Area

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EXECUTIVE SUMMARY

Marine recreational fishing has been recognised for its importance in Namibia, with thousands of anglers flocking to the coast annually to pursue either rock-and-surf or ski-boat angling. With efforts underway to formulate and implement Namibia's Blue Economy Policy, evidence on marine tourism is required which will guide the sustainable use and management of resources within Namibia's exclusive economic zone. From the government side, this is also an opportunity to address rising administrative costs which are becoming increasingly difficult to cover.

It is estimated that there are between 12,000 and 20,000 foreign anglers visiting Namibia annually. Combined with local anglers who comprise a similar figure, total direct expenditures associated with the sector are in the region of N\$1 billion. This is equivalent to 3 percent of the commercial fishery sector, which is a non-trivial amount.

Anglers were asked their maximum willingness to pay for recreational permits; the average values were N\$37 and N\$109 for Namibians and foreigners, indicating an acceptance towards modest increases in fees. However, any changes at this stage may have adverse impacts. Namibia's Marine Resources Act, in its current form, does not distinguish between subsistence and recreational anglers. The lack of any provision that would formally allow subsistence fishers access to resources means they operate under the guise of recreational anglers. A National Plan of Action for Small-Scale Fisheries (NPOA-SSF) process is underway to address policy and legislative gaps.

Recognising the ongoing NPOA-SSF and Blue Economy Policy processes, the following steps are recommended:

- Acknowledge the complexities of the marine recreational fishery within the NPOA-SSF process which is underway;
- Consider revising fees, which have remained unchanged since their introduction in 2001, in line with inflation;
- Align pricing with terrestrial counterparts. A tiered approach is well-recognised within the hospitality industry and would not deter visitors from participating in angling;
- Continue to collect and make available socioeconomic data on the sector to ensure evidence-based decision-making. Formulation of questionnaires should be done in consultation with academia, NGOs and the recreational angling sector to ensure data are fit-for-purpose; and
- Recreational angling permit data must be made publicly available at a sufficiently disaggregated level to enable detailed analysis as it relates to potential fee regime change.

1. INTRODUCTION

Marine and coastal tourism is already a well-established form of nature-based tourism, representing an ever-growing segment of the global tourism industry. This is no different in Namibia, with pre-COVID-19 tourist arrivals reaching a high of close to 1.60 million per annum (Directorate of Tourism and Gaming, 2021). While these data are not disaggregated to the level of participation in marine and coastal tourism, it is likely that a large proportion do take part in such leisure activities.

Under this marine and coastal tourism umbrella, Namibia has been recognised for its excellent marine recreational fishing opportunities, with thousands of recreational anglers flocking to the coast annually to pursue either rock-and-surf or ski-boat angling. Popular target species include kob (silver kob, *Argyrosomus inodorus* and dusky kob, *A. coronus*), West coast steenbras (*Lithognathus aureti*), galjoen (*Dichistius capensis*) and blacktail (*Diplodus sargus*). An abundance of in-shore shark species also provides angling opportunities to target, for example, the copper shark (*Carcharhinus brachyurus*), the spotted gully shark (*Triakis megalopterus*) and the smooth-hound shark (*Mustelus mustelus*).

Recreational angling provides a myriad of economic, social and ecological benefits to society (EIFAC, 2010). These benefits were extensively studied in Namibia during the late 1990s and early 2000s, with studies and descriptions of the recreational line fishery including Kirchner and Beyer (1999), Kircher et al. (2000), Holtzhausen et al. (2001) and Steenkamp and Nashandi (2004).

Two decades on, efforts are underway to formulate and implement Namibia's Blue Economy Policy which will guide the sustainable use and management of resources within Namibia's EEZ. Recognising that the "Blue Economy" concept encompasses activities including fisheries, this report looks to review and provide an update on the recreational fishery sector, contextualising its economic importance within coastal tourism and the industrial fishing sector more generally.

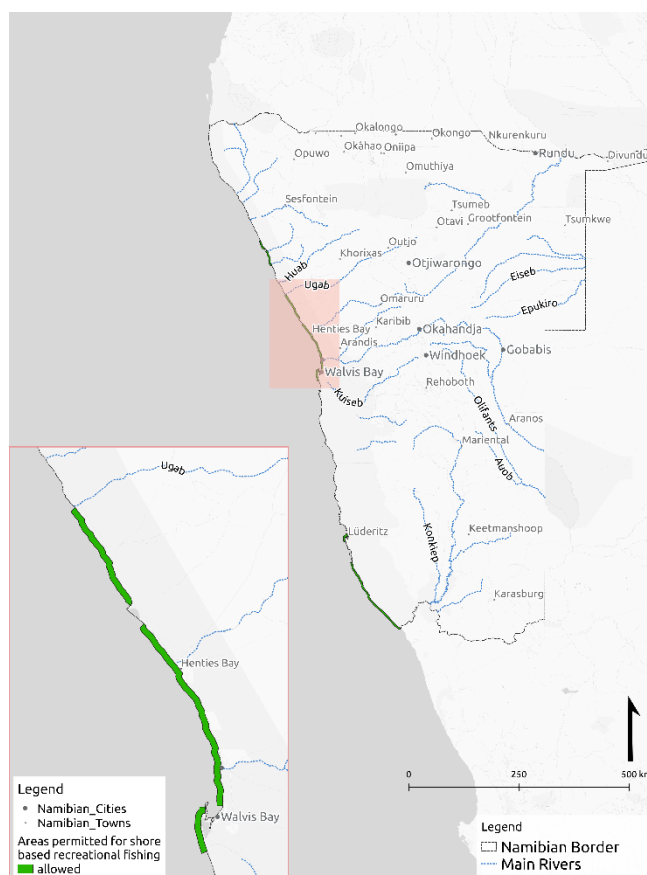


Figure 1 Areas where recreational angling is permissible in Namibia

2. MATERIALS AND METHODS

Most of Namibia's approximately 1,500-kilometre-long coastline is closed to shore-angling. There are exceptions (Figure 1), including from near the mouth of the Orange River and Lüderitz in the south; across 235 kilometres of coastline between Sandwich Harbour and the Ugab River in central Namibia; and a 50-kilometre stretch around Torra Bay and Terrace Bay in the north. The recreational fishery takes place wherever recreational angling is permissible, with most of the activity taking place within the central stretch of coast, between Sandwich Bay and Terrace Bay.

A survey instrument was designed (see appendix), informed by the literature review conducted in the initial stages of the project. The survey sought to collect information on:

- Trip-based expenditure by anglers
- Annual durable expenditures by anglers
- Participation in recreational angling in the last 12 months
- Socio-demographic characteristics
- Measure of self-reported skill and lifestyle importance

The in-person intercept survey was administered during the period of April to June 2023 (inclusive) between Walvis Bay and Mile 108. Both resident and non-resident marine recreational anglers were interviewed, with the objective to identify expenditures on recreational fishing within Namibia. All expenditures were estimated in Namibian Dollars. Respondents also reported the number of days spent fishing within the last 12 months, which is used to generate estimates for annual expenditures associated with recreational angling.

During the data cleaning process, entries were removed if there was evidence that a person had not been paying attention to questions, they were not part of the audience being targeted or only a small portion of the survey had been completed.

Recognising the time-bound nature of data collection, sampling was non-probabilistic. Enumerators attempted to improve quality of sampling by being spread as broadly as possible within the survey area. Nonetheless, the study method relied on work previously conducted in Namibia to reflect representative angler populations.

ESTIMATING ANGLER EXPENDITURE

Revenue generated by the recreational angling sector is assumed to be the sum of all recreational anglers' expenditure, thus it is a principal metric to quantify economic contribution (Scheufele & Pascoe, 2022).

The survey administered during this study captured the two components that need to be measured as they relate to expenditure: trip-specific expenses (e.g., accommodation, fuel, bait, tackle, fuel) and non-travel related expenditures (e.g., clothing, fishing equipment). For the former, respondents are asked to provide expenditures for the entire trip and state amounts that were spent within the borders of Namibia and specifically the proportion spent within the coastal economy. For the latter, respondents were asked to provide figures for direct expenditure on fishing-related expenses within the last 12 months. When asking this question, it was made clear that these expenses must only relate to items used while angling in Namibia.

When reviewing the dataset, care was taken to adjust expenditure amounts to expenditure per angler for entries where respondents were paying for multiple people. Expenditure figures per angler were then converted into a per day figure, dividing by the total number of angling trip days. Finally, to get annual travel expenditures, this average spend per angler per day figure was multiplied by the average number of days spent fishing in the last year:

Travel expenditure = Number of anglers x Average days fishing per angler x Average amount spent per day per angler

Estimating non-travel expenses is more straightforward, given that the time was specified (last 12 months) and the survey was only concerned with expenditures that related to trips within the study area. This can be expressed as:

Non-travel expenditure = Number of anglers x Average annual non-travel expenditure per angler

Results for both travel and non-travel expenditure were presented per angler group (coastal, inland and foreign), as their respective per-day trip and non-travel expenditures are expected to vary significantly.

ESTIMATING THE NUMBER OF MARINE RECREATIONAL ANGLERS IN NAMIBIA

Generating estimates for the economic contribution of the recreational fishery sector relies on having a good sense of what the coastal angler population is. This has always been a challenging task. Not all anglers are alike – they will seek different sorts of experiences and as such it is likely there will be spatial and temporal variations in their distribution (Pope, et al., 2017). Sampling methods may be unable to capture these variations and so there is clearly susceptibility to certain anglers not being counted.

The starting point in the case of Namibia is recognising the types of anglers that are participating in this activity. Kirchner et al. (2000) defined four distinct categories of anglers operating along the coastline: resident subsistence anglers, resident coastal anglers, resident inland anglers, and anglers visiting Namibia from other countries (i.e., foreign anglers). The latter three angler groups from this study are of interest and

were targeted during the data collection period. This is not to downplay the socio-economic importance of angling to subsistence anglers, rather their profile does not fit within the scope of the work as per the FAO definition of recreational fishing: fishing that does not constitute the individual's primary resource to meet basic nutritional needs and are not generally sold or otherwise traded. Despite this, the discussion section will touch on the governance issues relating to subsistence, recreational and commercial fisheries.

In the absence of real-time information on angler numbers, the study took three approaches to estimate the total number of anglers in Namibia which are described below:

Approach 1: Roving creel survey data from the Ministry of Fisheries and Marine Resources

Kirchner and Beyer (1999) laid the foundation for data that have been collected since the 1996/97 angling season and give insight into angler days and relative proportions of the different type of anglers. Administering the roving creel survey involves technicians asking anglers about their fishing trip, which includes information on catch by species and associated time spent. Their sampling approach consisted firstly with stratifying the year into two periods, one "in-season" (212 days, October to April) and another "off-season" (153 days, May to September). The area of interest, referred to as the West Coast Recreation Area (now the Dorob National Park), was further stratified into different areas ("beaches"), with each beach sampled multiple times during both seasons, but more frequently during the in-season. On any sampling day, the whole beach was covered, and each angler (rod in the water) was counted. The mean number of anglers per sampling day were estimated for each beach and season. These figures were then summed for all beaches by season and multiplied by the number of days in each season to obtain the total number of angler days per year (the year being defined as the season from e.g., October 1996 to September 1997). This was done for each year from the 1996/97 season to the 2016/17 season, with data from roving creel surveys obtained from the Ministry of Fisheries and Marine Resources (MFMR). To convert this to total number of anglers, each category's (i.e., foreign angler, coastal angler, inland angler or subsistence angler) estimated respective proportions were applied to obtain mean number of angler days per angler type. Then each respective category's mean number of angler days was divided by the mean number of days fished per angler type per year to calculate total angler participation (Kirchner, et al., 2000). It was estimated that total angler participation was at 8,798, equivalent to 173,111 angler days fished for the 1996/97 year. For the present study the 2016/17 season data (the most recent pre-COVID data) were used.

Approach 2: Recreational permit license data from the Ministry of Fisheries and Marine Resources

The introduction of the Marine Resources Act 27 of 2000 brought in a recreational angling license system, whereby anglers were now required to purchase a permit for the right to fish. This was a means of capturing

rents from anglers and doubled up as a useful resource to record number of recreational anglers, as previously it was only estimated from the roving creel data. A monthly permit is priced at N\$14, while an annual permit is N\$168. Permits are processed at MFMR offices in Lüderitz, Walvis Bay, Swakopmund, Henties Bay and Windhoek and capture information such as the angler's nationality, place of residence and duration of the permit. In theory, these data should be compiled such that numbers and composition of permit holders can be determined.

Most of these data were taken from reports that formed part of the literature review and covers the years 2002, 2003 and 2011. In addition, the total permit sales for 2021 were provided by MFMR. Figures for 2002 and 2003 only describe the total number of permits issued in those years, while 2011 and 2021 disaggregates by place of issuance (i.e., by each respective MFMR office). It is assumed that once permit issues from Lüderitz are removed, the remainder of the issuances will be utilised within the area of interest. This is a reasonable given anglers in Lüderitz are localised, owing to the distance from the central and northern regions of Namibia.

Approach 3: Tourist Exit Survey and Tourist Statistical Reports from the Ministry of Environment, Forestry and Tourism

A Tourist Exit Survey was commissioned in 2012 by the Ministry of Environment, Forestry and Tourism (MEFT), with the intention of recording visitor characteristics and expenditure data. The published report provides useful information detailed to the level of country of residence, so one can get a sense of the proportion of tourists in any given country that are visiting for specific activities, including for recreational angling purposes (Ministry of Environment and Tourism, 2013). Statistics were also provided on whether recreational angling was the main activity during their visit, or whether it is one of many they will participate in.

Separate to the Tourist Exit Survey, MEFT also publishes their annual Tourist Statistical Report. These reports contain figures for number of visitors, disaggregated by country of origin and purpose of visit (i.e., visiting friends and relatives, tourism, and business).

In view of the above, one can apply the figures on proportion of tourists indicating angling as an activity from the Tourist Exit Survey to the number of tourists visiting Namibia annually as outlined in the Tourist Statistical Report.

The literature on recreational angling in Namibia, which has been referenced thus far, suggests that foreign anglers are overwhelmingly South Africans; the figures taken from these reports relate to residents arriving

from South Africa. This is assumed to be a suitable proxy. One must also reconcile for the fact that these data sources are from different years. It is assumed that tourist preferences have remained steady for at least the past decade, i.e., proportion of tourists who participate in angling has not changed. For figures on tourists arriving from South Africa, 2018, which is the most recent pre-COVID report, is used to generate estimates. Approach 3 will only report figures for foreign anglers.

Angler number estimates from all three approaches will be reported and are to be compared in this study.

3. RESULTS

ECONOMIC SURVEY SAMPLE CHARACTERISTICS

A total of 272 valid responses were received from the survey. 63% were local coastal anglers, 23% were from inland Namibia, with the remaining 14% foreigners. Within this foreign subset, an overwhelming majority were from South Africa (36%), with a couple from Germany (1) and the USA (1). On average, inland Namibians spent 3.5 days out of an average of 8.3 trip length fishing, whereas those figures were 12.8 and 19.3 respectively for foreigners. Coastal Namibians typically go for day outings. The average number of days fished in the last year by marine recreational anglers are 47.6 for coastal Namibians, 19.5 for inland Namibians, and 20.2 for foreign anglers. These figures for annual angler days by each group does not seem to have deviated much from figures that featured in Kirchner, et al. (2000), which were 41.4, 18.9 and 18.5 respectively.

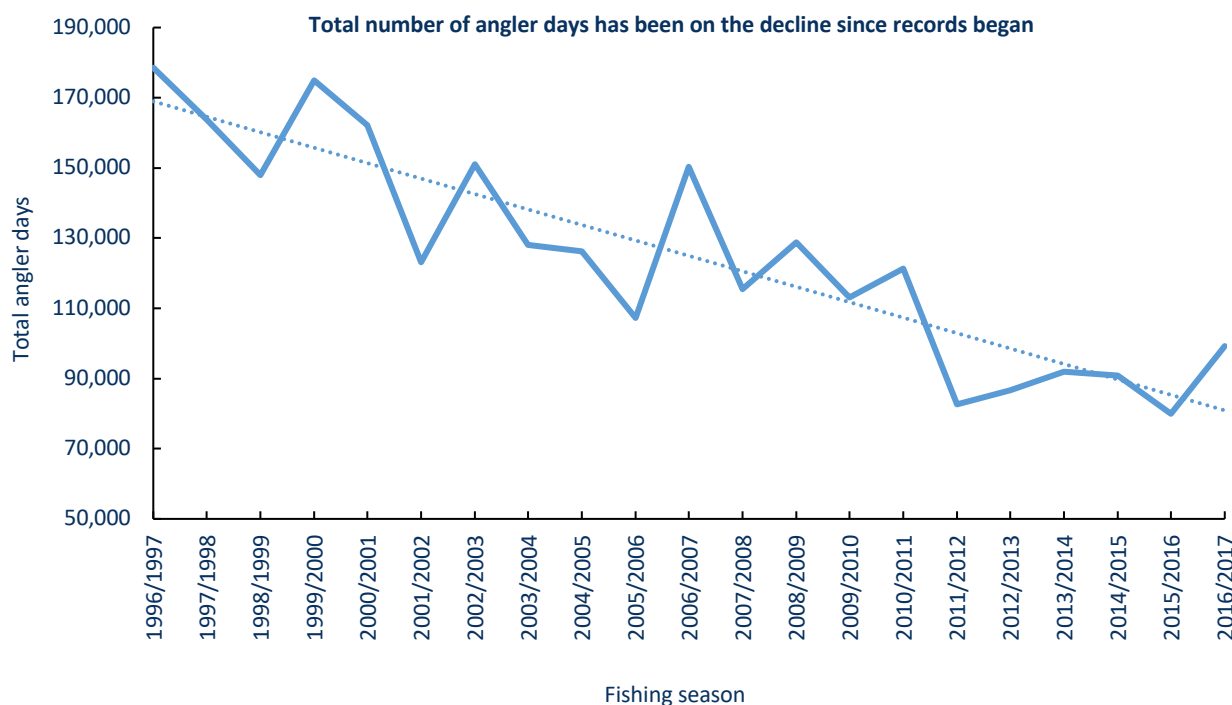


Figure 2 Angler days by fishing season (data constructed by Dr. Margit Wilhelm using MFMR data)

Table 1 Estimated number of anglers based on roving creel methodology

Angling season	Coastal	Inland	Foreign	Total anglers in the season
1996/97	1,556	1,717	3,325	6,598
1997/98	933	2,136	3,542	6,611
1998/99	895	2,158	3,137	6,190
1999/00	954	2,135	4,289	7,378
2000/01	1,133	1,859	3,558	6,550
2001/02	658	1,928	2,535	5,121
2002/03	814	2,097	3,408	6,319
20/0304	869	1,558	2,807	5,234
2004/05	762	1,707	2,825	5,294
2005/06	571	1,631	2,263	4,465
2006/07	957	2,195	2,820	5,972
2007/08	718	2,301	1,736	4,755
2008/09	673	2,621	2,212	5,506
2009/10	638	1,931	2,187	4,756
2010/11	785	1,971	2,253	5,009
2011/12	758	1,140	1,205	3,103
2012/13	713	1,255	1,405	3,373
2013/14	832	1,196	1,447	3,475
2014/15	825	1,249	1,355	3,429
2015/16	723	1,081	1,215	3,019
2016/17	1,069	975	1,470	3,514

TOTAL ANGLER EFFORT IN NAMIBIA

Total angler days for the 2016/17 season for the entire central Namibian coast were estimated to be 99,297. This represents a significant decline (approximately 44%) from the angler days that were calculated for the 1996/97 season. As indicated by Figure 2, this is part of a longer-term decline in angler numbers. Associated angler numbers for each category of angler (coastal, inland and foreigner) were calculated by applying the respective proportions of angler days from each angling season. The results are outlined in Table 1. What is most intriguing from the data is that there appears to be a substantial change in the composition of type of angler over time. Coastal Namibians are now reflecting the majority angler population among Namibians.

Estimates based on MFMR recreational angling permits are 58,270 and 29,321 for 2011 and 2021 respectively. Despite COVID hampering the tourism sector, the 2021 figure is used as it is likely a better reflection of circumstances today. Using the roving-creel angler type proportions from 2016/17 (the latest available), estimates generate 8,920 coastal anglers, 8,135 inland anglers and 12,226 foreign anglers.

The third approach, outlined in the methodology, uses the Tourism Exit Survey and Tourist Statistical Reports. As it relates to the Tourist Exit Survey of 2012/13, 13.2% of South African tourists identified angling as an activity undertaken, while 3.8% state that it is the main activity.

Next, one needs to consider the number of tourist arrivals from South Africa. Using the 2018 Tourist Statistical Report, 107,019 South African visitors self-identify as tourists. Applying the participation rate in angling translates into 20,239 foreign anglers.

Table 2 Estimates of angler numbers using various approaches

Approach used	Estimated number of anglers in Namibia			
	Coastal	Inland	Foreign	Total
Approach 1: Roving-creel method	1,069	975	1,470	3,514
Approach 2: Permit issuances	8,920	8,135	12,226	29,321
Approach 3: Tourist Exit Survey and Tourist Statistical Report	N/A	N/A	20,239	N/A

Table 2 summarises these estimates, disaggregated by angler type. Only approaches 1 and 2 can estimate angler numbers across all categories. The difficulty here is that the total number diverge by a factor of 10, which is not ideal for reporting. Approach 3 looks to understand foreign participation in recreational angling.

Table 3 Mean trip expenditure per angler per day, separated by three angler type (NAD)

Category	Coastal anglers	Inland anglers	Foreign anglers
Permit fee	83.05	46.28	34.24
Groceries	210.16	967.08	3,559.21
Restaurants	65.11	400.49	1,564.87
Accommodation	166.91	641.48	4,726.97
Vehicle rental	1.18	4.44	434.21
Vehicle fuel	366.82	2,138.42	4,925.66
Airfare	0.00	31.75	442.98
Tackle	276.11	364.36	1,604.56
Bait	103.56	231.37	689.43
Boat rental	0.00	26.98	0.00
Boat fuel	34.12	43.17	0.00
Tournament fee	29.36	92.70	78.95
Guide fee	0.00	35.32	511.84
Fish fillet	4.35	8.75	157.89
Gift	6.65	83.20	625.22
Other expenses	51.49	52.14	257.46
Total	1,398.86	5,167.94	19,613.50

Table 4 Non-trip expenses separated by angler type (NAD)

Durable item	Coastal angler	Inland angler	Foreign angler
Fishing equipment	8,348.88	10,880.95	5,592.11
Boat maintenance	326.47	1,825.40	0.00
Boat seaworthy	72.94	342.86	0.00
Mooring fee	7.06	247.62	0.00
Storage fee	45.29	1,357.14	378.95
Fishing clothes	791.82	1,418.25	355.26
Insurance	1,230.77	3,765.08	1,947.37
Other durables	152.35	15.87	0.00
Total	10,975.59	19,853.17	8,273.68

ECONOMIC EXPENDITURES

Table 3 presents expenditures for anglers, both for trip and non-trip related expenses by each angler group. Expenditure within Namibia by foreign anglers was dominated by accommodation (24.1%), groceries (18.1%), tackle (8.2%) and restaurants (8.0%). Non-resident respondents reported spending an average of 20.3 days within Namibia, and so average daily spending per foreign angler amounts to roughly N\$1,016.95.

Non-trip expenditures are provided in Table 4, showing that the bulk of expenditure for all angler types is fishing equipment and insurance. On average, a non-resident spends N\$8,273.68 on recreational angling related durable expenses for use in Namibia. Both coastal and inland anglers spend more, N\$10,892.70 and N\$19,853.17 respectively.

Aggregate direct expenditures are illustrated in Table 5. The lower bound estimate, which relies on the roving creel data, puts total direct expenditures at N\$137 million annually. Approach 2, which uses recreational angling permit data, puts total direct expenditure at N\$1.03 billion. Approach 3 only considers the foreign component of anglers, putting their total direct expenditure at N\$563 million. This is higher than the equivalent figure under approach 2, which is in the region of N\$341 million. It is likely that the sector's total direct expenditure is in the region of N\$1 billion.

WILLINGNESS TO PAY FOR A RECREATIONAL ANGLING PERMIT

All recreational anglers were asked about their willingness to pay for a recreational angling permit. This was framed as a non-hypothetical question, explicitly asking them to state their maximum willingness to pay for a monthly permit in the fisheries' current state. An overwhelming majority (94 percent) indicated a willingness to pay for a permit. The mean maximum willingness to pay among Namibians was N\$37 (N\$31 coastal Namibian, N\$51 inland Namibian) and N\$109 among foreigners (N\$81 for South Africa, N\$400 Germany and N\$800 USA). There were a few responses indicating they would not be willing to pay anything at all (1 foreigner, 4 inland Namibians, 12 coastal Namibians).

Table 5 Summary table of angler direct expenditures based on each approach of calculating total number of angler days per year

Approach	Angler type	# of anglers	# of angler days p.a.	Expenditure per day (N\$)	Trip expenditure p.a. (N\$)	Non-trip expenditure p.a. (N\$)	Total direct expenditure (N\$)
Approach 1	Foreign	1,470	20.2	966	31,826,064	13,477,832	136,955,739
	Inland	975	19.5	556	16,494,998	30,236,385	
	Coastal	1,096	47.6	798	34,844,866	10,075,595	
Approach 2	Foreign	12,226	20.2	966	239,643,032	101,485,011	1,027,222,551
	Inland	8,135	19.5	556	88,106,899	161,505,575	
	Coastal	8,920	47.6	798	338,579,746	97,902,287	
Approach 3	Foreign	20,239	20.2	966	395,412,956	167,451,095	562,864,051

4. DISCUSSION

CONTEXTUALISING WITHIN THE FISHERIES AND COASTAL TOURISM SECTORS

Using data from the National Statistics Agency, one can calculate the contribution of the commercial fishery to Namibia's GDP. This can then give a sense of the relative importance of the recreational sector. This is in line with an assessment of the fishery sector by Chiripanhura and Teweldemedhin (2016), who estimated the sector contributes an average of 3.5 percent to Namibia's real GDP. As a proportion of this, the figures that this study has arrived at suggest that recreational angling is valued at approximately 3% of the fisheries sector, a non-trivial amount.

As for tourism, the 2015 TSA (Namibia Tourism Board, 2015) notes that the industry's direct impact is equivalent to 3.5% of GDP, similar to the commercial fishery. The tourism sector also generates more than 44,700 jobs. Unfortunately, it is not possible to compare with what the recreational fishery sector generates due to an absence of data.

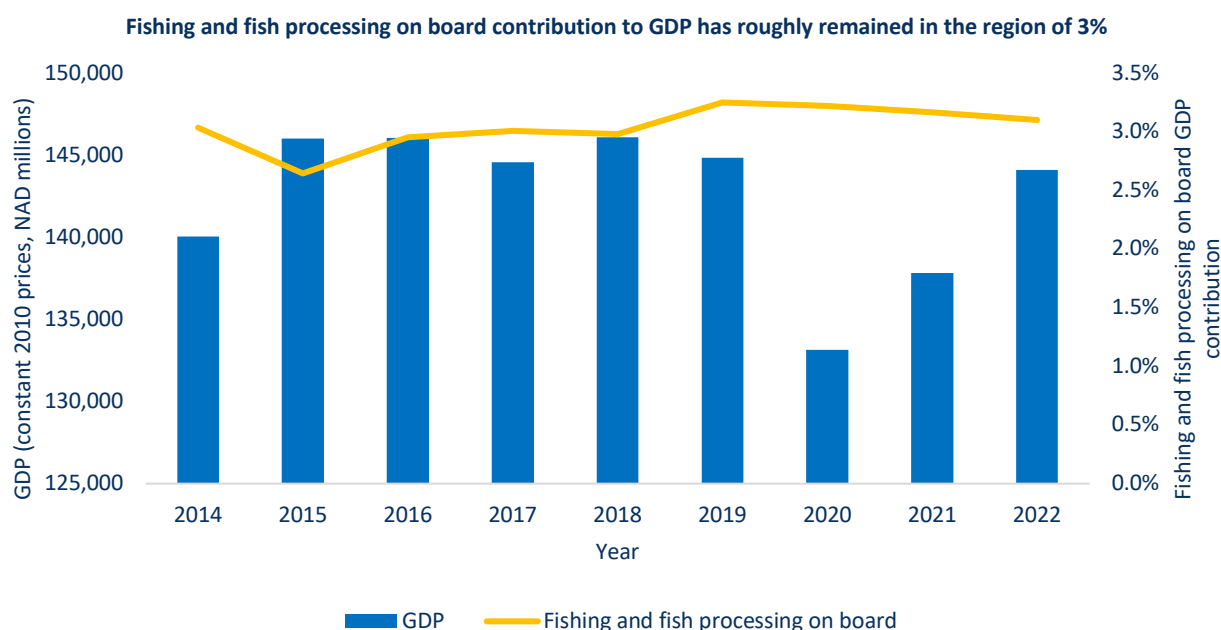


Figure 3 Commercial fishing contribution to Namibia's GDP

RECREATIONAL ANGLING PERMIT FEE

The introduction of the Marine Resources Act 27 of 2000 provided legislation to “... provide for the conservation of the marine ecosystem and the responsible utilization, conservation, protection and promotion of marine resources on a sustainable basis; for that purpose to provide for the exercise of control over marine resources; and to provide for matters connected therewith”. This legislation brought new regulations relating

to recreational angling, which included bag limits and a recreational angling permit fee (either a monthly fee of N\$14 or annually at N\$168). This was the implementation of policy recommendations from research at the time.

Recreational angling permits were introduced towards the end of 2001. Prices have remained unchanged since their introduction, despite the need to increase revenue to cover administrative costs. The only exception came in 2017, where recreational angling permit prices saw a dramatic increase to N\$1,500 per month. This was subsequently withdrawn following backlash from anglers, both recreational and artisanal, because of a process that did not consult relevant stakeholders.

The results from the previous section indicate acceptance towards modest fee increases with the fishery in its current state. Not only this, but there seems to be a clear distinction between residents and foreigners, with the latter willing to pay on average three times the amount reported by Namibians. In addition, while research was ongoing, preliminary results were workshopped with stakeholders who provided useful input. With both these in mind, there is scope for possible revisions to the current system, such as:

- A tiered permit based on residency. This would be straightforward to operationalise as information on residence is already required when purchasing a permit. Revised fees could broadly follow the average values from the survey. A determination would also need to be made as to whether coastal anglers and inland anglers are subject to different fees; the survey data suggests they could be treated separately. Park fees, which are administered by MEFT, also provide precedent for a tiered system. Individuals are categorised as Namibian, Southern African Development Community (SADC) nationals or other foreigners. Taking such an approach could harmonise fees across the terrestrial and marine landscapes.
- Within the current areas where recreational angling takes place, implement zone-based pricing. As an example, coastline within municipal boundaries is subject to a lower permit rate than areas more remote. This would align well with areas different angler groups visit. However, costs with operationalising this may be more burdensome than the tiered system.
- In addition to the angling permit increase, a vehicle levy can also be administered as is done for the terrestrial national parks.

One suggestion that emerged from the stakeholder consultations was that fees, at a minimum, could be inflation adjusted if it is simply a case of trying to cover administrative costs associated with permit issuance. One can use Namibian CPI data which is available from 2002 and apply annual inflation rate changes to the original permit price of N\$14 monthly. On average, inflation has been approximately 5.4% over the past two

decades. When applied, this gives an inflation adjusted figure of approximately N\$40. This is in line with maximum willingness to pay for permits.

Results from Barnes, et al. (2002) suggest that demand for shore angling on the Namibian coast is price inelastic, so modest increases in the permit fee should be palatable among recreational anglers.

To understand the extent to which a change in the fee regime will affect revenue, one must understand the breakdown of anglers based on permit issuance data. The data collected should allow for this, as it captures residence and whether the permit issuance is monthly or annually. It would then be a straightforward calculation to understand revenue increases. While statistics do exist on the number of recreational anglers (through the angling permit system), the data need to be fully interrogated. This is particularly important because if the roving-creel survey is data to go by, Namibia has possibly been experiencing a decline in marine recreational angling tourists over the course of two decades. This observation also seems to be supported when comparing Tourist Exit Surveys for 2002 and 2012: while the number of tourists from South Africa has remained steady over time, recreational angling both as a main activity, and as an activity undertaken has declined substantially. If this is the case, the sector's relative importance and overall economic impact may be overstated. 2002 numbers do not exist in the report

ESTIMATING ECONOMIC CONTRIBUTION AND IMPACT

Economic impact, which has been the focus of this study, concerns measuring economic activity. This is examined through the expenditures associated with an industry or activity and how they subsequently flow through the economy. The objective of this approach is to assess the extent to which the industry or activity in question contributes to the region's overall economy.

There are three levels of expenditure associated with recreational angling tourism (or any industry or activity for that matter):

- Direct effects, which represents the expenditure that anglers make;
 - Indirect effects, which measure the value of additional economic demands that the recreational angling sector places on supplying industries within the region; and
 - Induced effects, which is the consumption and local level of economic activity driven by this income.
- This is also referred to as household effects.

The total economic impact of the recreational angling industry is then the sum of the direct, indirect and induced effects generated in the economy. These impacts can be expressed in terms of number of jobs supported, value added, or contribution to GDP or income.

These different levels of expenditure show that direct expenditures by anglers have the potential to “multiply”. Using economic models, the indirect and induced effects can be estimated. This can then inform the total economic impact, which is expressed as:

$$\text{Total impact} = \text{Total annual expenditures} \times \text{Multiplier}$$

Tourism multiplier analysis determines the impact generated by every Namibian dollar spent in the country. Input-output models, which record economy-wide transactions of productive sectors, are the foundation for analysis. I-O tables describe production and consumption interdependencies at regional and national level. They can be used to calculate output, employment, and income multipliers. An extension of this is the social accounting matrix, which not only traces the income and expenditure flows of activities and commodities, but also contains complete information on different institutional accounts, such as households and the government.

The latest and most reliable Namibian social accounting matrix is the one for 2013 and comprises 37 industries and 37 products. The SAM includes the 'hotel and restaurant' sector that is often taken as a proxy for tourism.

The magnitude of the multiplier effect is influenced by the structural characteristics of an economy and introduces the concept of leakage. If consumption in an economy consists of predominately imported goods and services, it is foreign producers who benefit. This represents a “leakage” from the circular flow of income, which will lead to smaller indirect linkage effects and subsequently a lower multiplier effect. The converse would hold true if households are demanding domestic goods and services. It is also important to recognise that multiplier effects do not have an explicit time dimension; evidence suggests that it may take a couple of years to move through the economy.

A final, and important, distinction must be made between the concepts of economic contribution and economic impact.

Economic contribution refers to recreational angling’s economic significance, i.e., the contribution that these expenditures make to, e.g., GDP, household income, value added, foreign exchange earnings, employment. It is a broader concept than economic impact and counts all spending related to an activity such as recreational fishing, both by non-residents and residents.

Economic impact, on the other hand, refers to “changes in the economic contribution resulting from specific events or activities that comprise ‘shocks’ to the tourism system” (Dwyer, et al., 2010). These are changes that are brought about when non-resident tourists inject money into a region (Mayer & Vogt, 2016). To meet

this requirement, any analysis must be restricted to cases that constitute “new money” in the region (Watson, et al., 2007). Another way of interpreting economic impact, and specifically in the context of this study, is what would be lost if recreational angling did not exist in Namibia.

It is sometimes contested whether residents should be included in the impact assessments. Ultimately, one needs to ask whether their spending would have still occurred, had recreational angling not been available. This could be possible in the situation that residents would have left the region for angling opportunities elsewhere. In Namibia’s case, it is highly unlikely that this would be the case; rather, resident expenditure will simply shift their monies to another coastal activity.

The same line of reasoning can be applied to inland Namibians. It is assumed that, in the absence of marine recreational angling, they would have taken planned another activity at the coast. That is, it represents a recirculation of preexisting monies in the region.

As for non-resident anglers, a determination must also be made as to whether a tourist would have visited if marine recreational angling did not exist. Respondents were asked to answer this and, given they would visit, a follow up was to determine what activity they would opt for instead. Complementary data is provided from the Tourist Exit Survey, which makes a distinction between recreational angling as a main activity (i.e., ‘new money’) and one of multiple activities (it is assumed they would be visiting despite no angling opportunities). From that, the assumption to be made is economic impact only relates to those who selected angling as their main activity.

The nuance between terminologies is simply the difference between overall significance to an economy versus the effect of shocks to economic contribution.

At a minimum, economic analysis of this type requires a minimum of four types of information (Loomis & Caughlan, 2006): number of anglers; their spending profiles and amounts per visitor; types of visitors and trip purposes; and an input-output model to calculate value-added and multiplier effects. It is recommended that future research embarks on utilising the SAM to understand value-added and multiplier effects, as this was not possible during this study period. At this point, we are only able to comment on the direct impacts.

SMALL SCALE FISHERIES IN THE NAMIBIAN MARINE ENVIRONMENT

It was not so long ago that it was assumed there were no subsistence fishers operating along Namibia’s coastline. This perception is changing in more recent times, with greater recognition of artisanal fishing, e.g., Sowman and Cardoso (2010). Broadly speaking, these anglers are characterized by harvesting the resource for income or to supply food security, harvest occurring locally, use of low-technology gear and having low

cash incomes (Branch, et al., 2002). However, formal recognition is absent with associated policy and regulatory frameworks.

There is currently no distinction between subsistence and recreational anglers. The FAO, in collaboration with MFMR, developed Namibia's National Plan of Action for Small-Scale Fisheries (Ministry of Fisheries and Marine Resources, 2022) to initiate the implementation of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication. A first attempt to define SSF in Namibia was made:

"Namibia's small-scale fisheries sector consists of small-scale fishers who are defined as women, men (and sometimes children) who make use of various fishing methods (e.g., canoes, small fishing vessels) on a daily or regular basis, catch fish as a source of income, for own consumption or livelihoods for most parts of the year and sale of surplus but within weight limits or number of fish. Fishing includes fishing activities that are undertaken along the entire value chain, including preharvest (gear mending, boat mending etc.), during harvest (the catch process of fish) and post-harvest (fish processing, marketing, and selling of fish etc.) in both marine and inland waters."

This, however, does not distinguish between subsistence and recreational anglers. The Marine Resources Act, in its current form, lacks any provisions that would formally allow this group access to resources.

In the implementation of the NPOA-SSF, it is expected there will be a legislative review to address these gaps. Of importance, one will need to consider those operating at the nexus of food and fun. This overlap adds a layer of complexity and applies very much in the Namibian landscape: over 25% of respondents in the survey administered reported their incomes fellow N\$50,000 annually.

Tourists comprise a large portion of anglers in Namibia. Recreational angling should continue to be promoted, provided that local and regional fishing communities' access to marine resources are not constrained. Fisheries managers should carefully value the basic interests of subsistence fisheries, with those of relatively more well-off resident and non-resident anglers. This could be, e.g., an alternative permit or exemption, with the verification determined by certain criteria. The NPOA-SFF process will need to capture this going forward.

5. RECOMMENDATIONS

In the context of inadequate fiscal space, capturing rents through increases in the price of permit fees for recreational fisheries sector would be considered a low-hanging fruit. Understanding the full implications of this relies on determining angler numbers and respective resident/non-resident proportions. The recreational angling permit system is indicative of actual numbers and as such a fisheries manager would

simply need to interrogate the data and understand the proportion split between Namibians and foreign anglers and ensure that individuals are not being captured multiple times. Unfortunately, this was not provided during the study period by MFMR.

Irrespective, a case can clearly be made in support of a change in the fee regime. Based on the work that has been undertaken, the following steps are recommended:

- Since the introduction of recreational angling permits in 2001, prices have remained unchanged. At a minimum, MFMR should consider revising fees in line with inflation. Based on calculations in this study, the price of a monthly permit should be raised to N\$40. Concern has been raised that administrative costs are not being covered by what is currently received and this serves as a first step to reducing the burden.
- MFMR should look to align its pricing with its terrestrial counterparts at MEFT. National parks currently operate on a tiered system, with pricing determined by whether one is a Namibian, SADC national or other foreign national. This is a well-recognised practice within the hospitality industry and would do little to deter anglers from participating in angling in Namibia.
- Acknowledge the complexities of the marine recreational fishery within the NPOA-SSF process which is underway. Any fee regime changes should be made through this process, recognising that any fee rises made prior to reform would have detrimental impacts on subsistence anglers who operate through the recreational angling permit. This also speaks to the “Blue Economy” concept, which can be broad and ambiguous. By going beyond economics and applying a transdisciplinary approach to this field, matters of social and justice dimensions can be more deliberately centred on with respect to sustainability.
- MFMR must continue to collect and make available socioeconomic data on the recreational angling sector to ensure evidence-based decision-making. The most recent socio-economic survey implemented was over seven years ago; if possible, this should revert to the annual exercise that used to take place. Questions should be refined in consultation with academia, NGOs and the recreational angling sector to ensure surveys are fit-for-purpose.
- As for recreational angling permits, these data are not publicly available at a sufficiently disaggregated level and do not appear to be utilised by fisheries managers to understand potential fee change implications. Given the nature of these data are not politically sensitive, it is advised that these data are consolidated so to prevent having to use guesswork to determine angler numbers. The figures from permit data are authoritative and a reliable reflection of angler numbers, given enforcement from the MFMR Inspectorate is good along Namibia’s coastline.

6. CONCLUSION

Tourism is expected to rebound post-COVID. To the extent that the desirability of tourism as a sustainable development mechanism will ultimately be judged on the extent to which it contributes to sustainable development by increasing incomes and reducing income disparities. Recreational angling can be considered an important component of coastal and marine tourism, with direct expenditures in the region of N\$1 billion. While this is a non-trivial, more needs to be done to ensure inclusion and sustainability. Ongoing work to formally recognise the small-scale fishery will advance the inclusion agenda, while consideration should be made in reviewing the recreational angling fee regime.

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ANNEX I: SURVEY

ID #:	Date and time of survey:	Location:
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Hello, my name is [] and I am working on behalf of the Namibia Nature Foundation, Namibia's leading sustainable development and conservation NGO. I am collecting data on the economic value of Namibia's recreational fishery under the One Ocean Hub programme, in collaboration with University of Namibia. Your response is very important to the validity of the overall research. Please be assured that your anonymity is valued. Answers are strictly voluntary and confidential.

The survey should take 15 minutes. On completion, you will have the option to enter a prize draw.

Ask: Do you consent to the conditions outlined above? ☐ No ☐ Yes

If unable to determine the respondent's age, ask: Are you at least 18 years of age? ☐ No ☐ Yes

If the respondent is under 18, terminate the interview.

Ask: Have you participated in this survey previously? ☐ No ☐ Yes

If yes, terminate the interview.

To begin with, I have a set of questions to understand the number of people who have travelled and your length of stay.

How many people have travelled on this trip?	
How many people in the group are fishing?	
Are you spending more than one night away from your permanent residence?	<input type="checkbox"/> No <input type="checkbox"/> Yes
How many nights are you spending away from home?	
How many days on this trip are you fishing?	
Days spent recreational fishing at the coast in Namibia during the last 12 months?	

I will now move onto questions relating to expenditures during your trip.

How many people did you pay for in the group?	
---	--

How much do you expect to spend on the following items?

Be clear to specify these expenses relate to the ENTIRE TRIP, not just what has been paid so far.

Expenditure category	Total personal expense	Spent within Namibia	Spent at Namibia's coast
Permit fee(s)		N\$____.00	(0 / 25 / 50 / 75 / 100)
Groceries	N\$____.00	N\$____.00	(0 / 25 / 50 / 75 / 100)
Restaurants	N\$____.00	N\$____.00	(0 / 25 / 50 / 75 / 100)
Accommodation	N\$____.00	N\$____.00	(0 / 25 / 50 / 75 / 100)
Vehicle rental	N\$____.00	N\$____.00	(0 / 25 / 50 / 75 / 100)
Vehicle fuel	N\$____.00	N\$____.00	(0 / 25 / 50 / 75 / 100)
Airfare (ask airline)	N\$____.00	N\$____.00	
Fishing tackle	N\$____.00	N\$____.00	(0 / 25 / 50 / 75 / 100)
Fishing bait	N\$____.00	N\$____.00	(0 / 25 / 50 / 75 / 100)
Boat rental	N\$____.00	N\$____.00	(0 / 25 / 50 / 75 / 100)
Boat fuel	N\$____.00	N\$____.00	(0 / 25 / 50 / 75 / 100)
Tournament fee(s)	N\$____.00	N\$____.00	(0 / 25 / 50 / 75 / 100)
Charter of guide fee(s)	N\$____.00	N\$____.00	(0 / 25 / 50 / 75 / 100)
Fish filleting fee(s)	N\$____.00	N\$____.00	(0 / 25 / 50 / 75 / 100)
Gifts or souvenirs	N\$____.00	N\$____.00	(0 / 25 / 50 / 75 / 100)
Other:	N\$____.00	N\$____.00	(0 / 25 / 50 / 75 / 100)

I will turn to annual expenditures on durable goods that have been used for recreational fishing at the coast in Namibia.

Annual expenditure type for items used in Namibia	Your personal expense (R/N\$)	Spent within Namibia (R/N\$)	Spent at Namibia's coast (%)
Fishing equipment (rods, reels, GPS, etc.)	_____.00	_____.00	(0 / 25 / 50 / 75 / 100)
Boat maintenance (servicing, repair)	_____.00	_____.00	(0 / 25 / 50 / 75 / 100)
Boat seaworthy inspection and safety gear	_____.00	_____.00	(0 / 25 / 50 / 75 / 100)
Mooring fees	_____.00	_____.00	(0 / 25 / 50 / 75 / 100)
Storage fees	_____.00	_____.00	(0 / 25 / 50 / 75 / 100)
Fishing clothing	_____.00	_____.00	(0 / 25 / 50 / 75 / 100)
Insurance of all fishing-related equipment	_____.00	_____.00	(0 / 25 / 50 / 75 / 100)
Other:	_____.00	_____.00	(0 / 25 / 50 / 75 / 100)

Now, I would like to ask specifically about recreational angling permits. A monthly permit is currently priced at N\$14. The total revenue generated does not adequately cover research and development in connection with sea fisheries.

In the current state of Namibia's fisheries', what is the maximum price you would be willing to pay for a monthly recreational angling permit?	N\$_____.00
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Next, I have some questions as it relates to your personal characteristics.

Gender	<input type="checkbox"/> Male	<input type="checkbox"/> Female	<input type="checkbox"/> Prefer not to say
Age	<input type="checkbox"/> 18 – 24 <input type="checkbox"/> 55 – 64	<input type="checkbox"/> 25 – 34 <input type="checkbox"/> 65 +	<input type="checkbox"/> 35 – 44 <input type="checkbox"/> 45 – 54 <input type="checkbox"/> Prefer not to say
Highest obtained level of education	<input type="checkbox"/> No education <input type="checkbox"/> Primary education <input type="checkbox"/> Secondary education <input type="checkbox"/> Prefer not to say <input type="checkbox"/> Other: <input type="checkbox"/> Undergraduate education <input type="checkbox"/> Postgraduate education		
Occupation	<input type="checkbox"/> Corporate Manager <input type="checkbox"/> General Manager <input type="checkbox"/> Miner <input type="checkbox"/> Office Clerk <input type="checkbox"/> Trades Worker <input type="checkbox"/> Academic <input type="checkbox"/> Retired <input type="checkbox"/> Prefer not to say <input type="checkbox"/> Professional: <input type="checkbox"/> Other: <input type="checkbox"/> Legislator or Senior Official <input type="checkbox"/> Skilled Agricultural or Fishery Worker		
Region of residence	<input type="checkbox"/> Coastal Namibia: <input type="checkbox"/> Inland Namibia: <input type="checkbox"/> Outside Namibia: <input type="checkbox"/> Prefer not to say		
Total annual income before taxes (N\$)	<input type="checkbox"/> < 50,000 <input type="checkbox"/> 50,001 – 100,000 <input type="checkbox"/> 100,001 – N\$300,000 <input type="checkbox"/> 300,001 – 500,000 <input type="checkbox"/> 500,001 – 800,000 <input type="checkbox"/> 800,001 – 1.500,000 <input type="checkbox"/> 1,500,000 + <input type="checkbox"/> Prefer not to say		

And finally, some questions to help inform broader research on recreational fisheries.

How important is the influence of fishing on your lifestyle?	Not at all important	Slightly important	Moderately important	Very important	Extremely important	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
How would you compare your overall fishing skills to the average fisherman?	Novice	Advanced beginner	Competent	Proficient	Expert	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Importance of fishing discipline		Not at all important	Slightly important	Moderately important	Very important	Extremely important
	Shore angling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Ski-boat angling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Would you have visited Namibia if there was no marine recreational fishing available?	<input type="checkbox"/> No <input type="checkbox"/> Yes					
What would you have done otherwise?	<i>Only ask if respondent has said "Yes" to previous question</i> <input type="checkbox"/> Hunting <input type="checkbox"/> Coastal tourism <input type="checkbox"/> Other: <input type="checkbox"/> Prefer not to say					
Additional comments:						

ANNEX II: PHOTOS FROM DATA COLLECTION



ANNEX III: LITERATURE REVIEW

Report	Methodology	Key findings	Relevance to this study
STUDIES IN NAMIBIA			
Estimation of total catch of silver kob <i>Argyrosomus inodorus</i> by recreational shore-anglers in Namibia using a roving-roving creel survey (Kirchner & Beyer, 1999)	<ul style="list-style-type: none"> Roving creel survey to determine angler numbers and catches Sampling was conducted from 1 October 1996 to 30 September 1997 	<ul style="list-style-type: none"> Coastal Namibian residents (15), inland Namibian residents (38 percent) and South African visitors (46 percent) 	
An economic valuation of the Namibian recreational shore-angling	<ul style="list-style-type: none"> Stratified sample of 240 anglers surveyed to determine expenditures 	<ul style="list-style-type: none"> Roughly 8,800 anglers spent around 173,000 days angling, with direct expenditures of N\$29.7 million. 44 percent of anglers foreign, comprising 55 percent of expenditure. 	

fishery (Kirchner, et al., 2000)		<ul style="list-style-type: none"> Value added to GNI equivalent to 3.6 percent of whole fisheries sector Angler average expenditure around N\$ 3,400. At an aggregate level, this represents direct expenditures between N\$ 23 and N\$ 31 million. 	
Zeybrandt and Barnes (2001)	<ul style="list-style-type: none"> 626 people surveyed between Walvis Bay and Terrace Bay to determine trip expenditures and willingness to pay for angling and conservation (372 responses selected for use after cleaning) Survey took place between January and April 1998, no system nor random, rather non-selective at sites Applied both TCM and CVM (respondents asked what they would be willing to pay for a similar, return, angling trip) to enable comparison of results and possible convergent validation 	<ul style="list-style-type: none"> 52 percent of their sample consisted of foreigners, the remaining 48 percent comprising 64 percent from inland Namibia and 34 from coastal Namibia Considerable proportion of anglers were willing to contribute towards a coastal conservation trust fund, to the degree of N\$1 million per annum in aggregate. Willingness to pay for a recreational angling licence, which could generate revenue of roughly N\$340,000 annually. Value added by sub-sector estimated to amount to 3 to 4 percent of the fisheries sector be between the region of N\$11 to N\$15 million. 	

		<ul style="list-style-type: none"> Major policy recommendations were for the establishment of a marine conservation trust and fishing license system, which would enable the capture lost consumer surplus Given the very low price elasticity of demand in the marine recreational sector, imposition of additional costs are unlikely to deter anglers from this activity 	
The dynamics of recreational angling in Namibia (Steenkamp & Nashandi, 2004)	<ul style="list-style-type: none"> Annual recreational angling survey between Terrace Bay and Meob Bay, data collected using TCM 	<ul style="list-style-type: none"> 2003 direct angler expenditure estimated to be N\$380.8 million 	<ul style="list-style-type: none"> Angler numbers provided for 2002 (43,981) and 2003 (50,556)
(Holtzhausen & Camarada, 2007)	<ul style="list-style-type: none"> investigated the socio-economic importance of a specific fishery, i.e., the bronze whale survey was administered to determine economic and social benefits to the Namibian economy, that are derived specifically from 	<ul style="list-style-type: none"> Based on their interviews, it was determined that annually the bronze whaler angling fishery contributed N\$8 million. This was not inclusive of travel costs, which were significant (in the range of N\$28 million). In addition, “add-on” values were not captured – this refers to other 	

	guided angling tours. Respondents were interviewed across Walvis Bay, Swakopmund and Henties Bay and included angling guides, tackle shop owners, accommodation establishments that were catering for the angling market	activities that bronze whaler anglers could participate in.	
An economic comparison of the commercial and recreational line fisheries in Namibia (Kirchner & Stage, 2005)	<ul style="list-style-type: none"> Profitability of commercial line fishing survey in 2002 which covered the period 1995 through 2001 	<ul style="list-style-type: none"> Estimated overall impact of the recreational fishery is larger than that of commercial line fishing 	
The economics of recreational fishery in Namibia (Nghipunya, 2012)	<ul style="list-style-type: none"> Random sample of 219 anglers taking part in recreational angling activities between Swakopmund and Mowe Bay in December 2011 	<ul style="list-style-type: none"> 51 percent of respondents from Namibia, the remainder from SADC Total expenditures on angling in 2011 estimated at N\$428,330,812, with accommodation comprising the largest portion followed by fuel 	<ul style="list-style-type: none"> Most recent publicly available data on recreational angling permits

		<ul style="list-style-type: none"> Based on angling permits issued at the Ministry offices in Windhoek, Lüderitz, Swakopmund, Walvis Bay and Henties Bay, the total number of anglers registered was 60,498 and the permit fees paid amounted to N\$1,173,914 in 2011 	issued along the coast
Angling survey report (Directorate of Policy, Planning and Economics, 2017)	<ul style="list-style-type: none"> 300 anglers surveyed during the 2017/18 festive period between Walvis Bay and Skeleton Coast 	<ul style="list-style-type: none"> 74 percent of anglers from Namibia, with the remaining from bordering countries Survey participants spend on average N\$14,880 Significant number of anglers willing to pay the maximum of N\$50 for monthly permits 	<ul style="list-style-type: none"> Reference point for maximum willingness to pay for recreational angling permit, but doesn't distinguish between residents and foreign anglers
STUDIES IN THE REGION			
(Potts, et al., 2022)		Annual spending on angling excursions and major angling-related items was ZAR 18.9 billion. Estimates for participation in the sector total 1,327,633, contributing approximately ZAR 32.6 billion per year to the South African economy and sustaining 94,070	

		<p>full-time jobs. However, only 8.9 percent of economic benefit accrued to low-income households. Input-output analysis was applied to model economic impacts of recreational fisheries on the economy. Direct, indirect and induced activity on production of recreational fisher spending was ZAR 12.1, ZAR 8.1 and ZAR 16 billion respectively.</p>	
Butler, et al. (2020)	<p>In Angola, explored the concept of economic leakage. This is particularly important in understanding the extent to which the recreational fishery can contribute to poverty alleviation. By minimising leakage, local fishing communities can capture maximum possible benefit. Understanding value retention from recreational angling required calculating total revenue, local total revenue and leaked revenue generated from tourism.</p>	<p>Total revenue generated from fishing tourism was on average \$282,054 per fishing season; while 83.9 percent of this value was spent locally, only \$33,010 was retained reflecting 13.9 percent of total revenue. What was previously framed as a fishery that generates more than 100 times more activity than artisanal fishers is reduced substantially when leakage is considered. Linkages between local community and the recreational fishery could be one way to combat this leakage. This could involve local communities supplying fresh produce on a contractual basis or addressing barriers to local employment.</p>	

ANNEX IV: STAKEHOLDER MAPPING MATRIX

To ensure legitimacy and ownership of what is outlined under the scope of work, relevant stakeholders are involved throughout the process. This captures a range of actors including, among others, government, academia, private sector and civil society. The stakeholder engagement process included identification of relevant institutions and persons; analysis as it relates to the responsibilities, mandate(s), and interest(s) of those identified; mapping stakeholders to assess relative interest and influence; and planning of stakeholder engagement during the project period.

The initial step, identification, was completed through a combination of desktop review and consultations with select stakeholder groups. Responsibilities, mandate(s) and interest(s) were determined in parallel with the identification process. In terms of stakeholder mapping technique, each stakeholders' level of interest in the project and potential ability to influence the project's success was determined. Based on these factors, each stakeholder was then assigned to one of four categories:

- Collaborate: these are stakeholders with who it is likely most beneficial to engage. They can supply relevant information, permissions, and resources, or may be markedly impacted by eventual outcomes.
- Involve: these are stakeholders who are highly influential but have either little interest in the research or relatively low capacity of resources to engage.
- Consult: these are stakeholders who have high interest but low influence and, although they are supportive of the project, they lack the capacity to significantly support this project and deliver impact.
- Inform: these are stakeholders who have little interest in or influence over research outcomes. They do not need to be considered in so much detail nor are they essential for engagement.

Figure 4 below illustrates the outcome of the mapping exercise, while additional detail, including contact points and methods to increase engage with identified institution, is provided in Table 6.

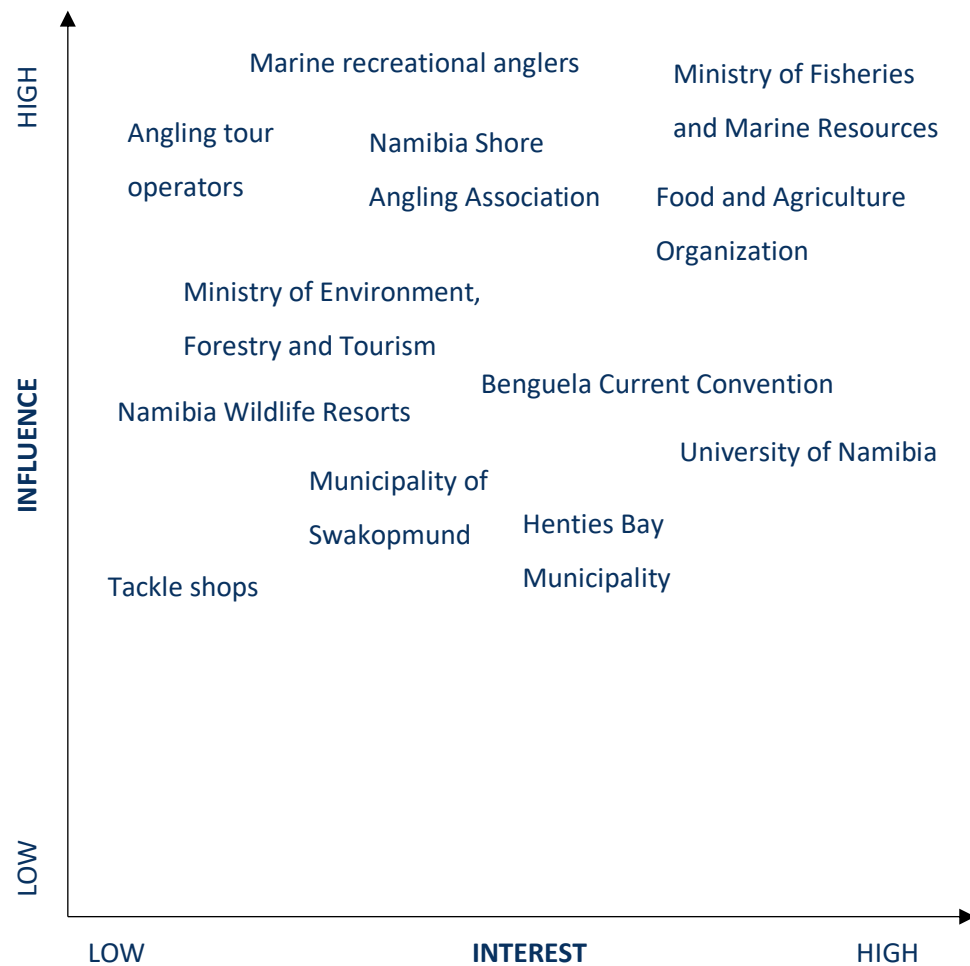


Figure 4 Influence-interest matrix for this study (Source: Durham, et al., 2014)

Table 6 Expanded interest-influence matrix

Name of stakeholder	Interest (H/M/L)	Aspects of research they are likely to be interested in?	If interest is L/M, how might we motivate engagement with the research?	Key messages from research for this group	Influence (H/M/L)	Comments on influence	Key contact(s)
Angling tour companies	M	Economic values associated with recreational anglers	Emphasise importance of angler buy-in to support development of Namibia's Blue Economy	Importance of recreational angling for Namibia's coastal economies	H	Can mobilise anglers in terms of engaging with survey	Henry Loubser (Henry's Fishing Safaris)
Benguela Current Convention	M	Economic values associated with recreational anglers	Contextualise work with respect to economic valuation study that was done for the BCLME region	Importance of recreational angling for Namibia's coastal economies	H	Useful resource to identify possible stakeholders for policy workshop	Ipeinge Mundjulu (National Coordinator)
Food and Agriculture Organization	H	Economic values associated with recreational anglers, SSF	N/A	Need to support legislative process to formally capture SSF	H	NPOA-SSF developed and progress on SSF	Alushe Hitula (National Consultant)

		concerns as it relates to recreational angling				will be achieved through this	
Henties Bay Municipality	M	Economic values associated with recreational anglers	Emphasise importance of municipality buy-in to support development of Namibia's Blue Economy	Importance of recreational angling for Namibia's coastal economies	M	Municipality will be able to speak to the dependency of recreational angling to the town	N/A
Ministry of Environment, Forestry and Tourism	M	Economic expenditures relating to anglers; breakdown of anglers by nationality	Link to existing work within MEFT, e.g., Tourism Satellite Account (TSA)	Economic values relating to foreign tourists	M	Can help convene stakeholders within the tourism sector for policy workshop	Sebulon Chicalu (Director, Tourism and Gaming)
Ministry of Fisheries and Marine Resources	H	Results from willingness to pay question on recreational	N/A	Values will help inform elements of the Sustainable Blue Economy	H	Can help convene stakeholders within the tourism	Anna Erastus (Director, Policy,

		angling permits; general economic impact		Policy implementation		sector for policy workshop	Planning and Economics)
Municipality of Swakopmund	L	Economic values associated with recreational anglers	Emphasise importance of municipality buy-in to support development of Namibia's Blue Economy	Importance of recreational angling for Namibia's coastal economies	M	Municipality will be able to speak to the importance of recreational angling to the town	Paulina Engelbrecht (Environmental Officer)
Namibia Shore Angling Association	H	Economic values associated with recreational anglers and possible policy implications	N/A	Importance of recreational angling for Namibia's coastal economies	H	Can mobilise anglers in terms of engaging with survey	Simen Andersen (Chairman)
Namibia Wildlife Resorts	M	Economic values associated with recreational anglers	Emphasise importance of institution's buy-in to support development	Importance of recreational angling for Namibia's coastal economies	M	NWR manages campsites at Mile 72, 108 and at Jakkalsputz; enumerators can	Fransiska Nghitila (Environmental and

			of Namibia's Blue Economy			liaise with employees to ensure time is w	Compliance Specialist)
Recreational anglers	M	Economic values associated with recreational anglers	Emphasise the importance of their participation to help inform management of recreational fisheries	Importance of recreational angling for Namibia's coastal economies	H	Study is not possible without their participation	N/A
Tackle shops	L	Economic values associated with recreational anglers	N/A	Importance of recreational angling for Namibia's coastal economies	M	N/A	N/A
University of Namibia	H	Stakeholder mapping process; economic values associated with recreational anglers	N/A	Economic values from the recreational angling sector may help inform SSF definition UNAM	M	N/A	Margit Wilhelm (Senior Lecturer)

				researchers are developing; work also complements research on compliance by the recreational angling sector			
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ANNEX V: WORKSHOP INFORMATION

Table 7 Consolidated participant list for Swakopmund and Windhoek workshops

Name	Institution
1. Alex Kanyimba	University of Namibia
2. Alushe Hitula	Food and Agriculture Organisation
3. Anja Kreiner	Ministry of Fisheries and Marine Resources
4. Beau Tjizoo	Ministry of Fisheries and Marine Resources
5. Charmaine Jagger	Ministry of Fisheries and Marine Resources
6. Gabriel Hainghumbi	Ministry of Environment, Forestry and Tourism
7. Herman /Honeb	Hanganeni Artisanal Fishing Association
8. Herman Kalipa	Hospitality Association of Namibia
9. Johannes Hamukwaya	Ministry of Fisheries and Marine Resources
10. Katrina Hilundwa	Independent Consultant
11.	Ministry of Environment, Forestry and Tourism
12.	Ministry of Environment, Forestry and Tourism
13.	Ministry of Environment, Forestry and Tourism
14.	Ministry of Environment, Forestry and Tourism
15.	Ministry of Environment, Forestry and Tourism
16.	Ministry of Environment, Forestry and Tourism
17. Nico Willemse	Independent Consultant
18. Protasius Mutjida	Kelp Blue
19. Rod Braby	Namibia Nature Foundation
20. Taimi Nambahu	Ministry of Fisheries and Marine Resources
21. Tapiwa Warikandwa	University of Namibia
22. Titus Shaanika	Namibia Nature Foundation

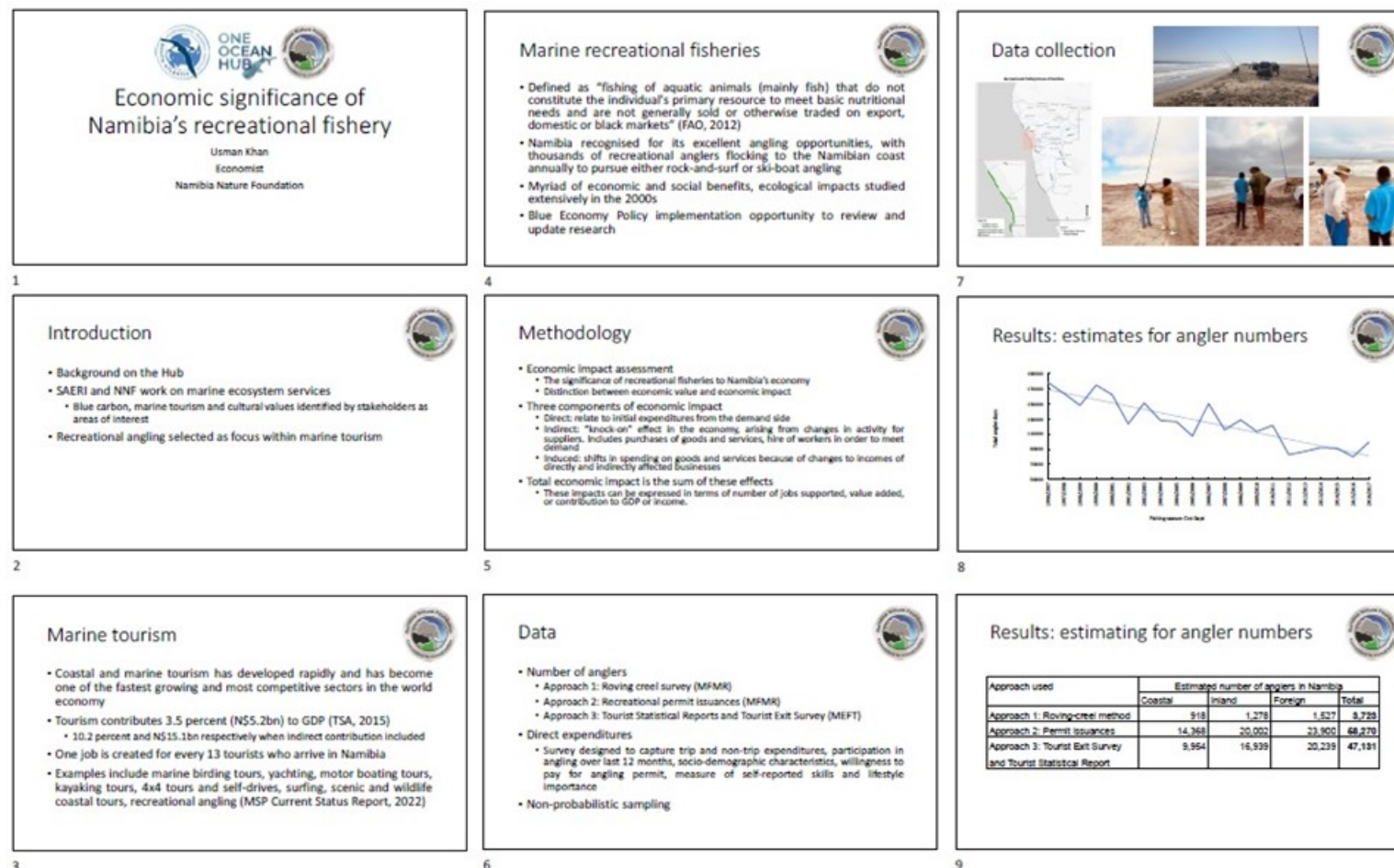


Figure 5 Presentation from workshops

Results: survey data

- 272 valid responses: 63 percent of respondents local coastal anglers, 23 percent inland Namibia, 14 percent foreign.
- On average, inland Namibians spent 3.5 days out of 8.3 trip length fishing, whereas those figures are 12.8 and 19.3 respectively for foreigners.
- Average number of days fished in the last year by marine recreational anglers are 47.6 for coastal Namibians, 19.5 for inland Namibians, and 20.2 for foreign anglers.

Total direct expenditures

Travel expenditures = Number of anglers x Average days fishing per angler x Average amount spent per day per angler

Non-travel expenditures = Number of anglers x Average annual per angler non-travel expenditure

	Namibia			Foreign		
	Coastal	Inland	Foreign	Coastal	Inland	Foreign
# of anglers	818	1,852	1,852	13,000	30,000	9,500
# of angler days p.a.	47.6	19.5	20.2	47.6	19.5	20.2
Expenditure per day (N\$)	785	585	965	785	585	965
Trip expenditure p.a. (N\$)	34,880	11,580	21,880	218,880	118,880	218,880
Non-travel expenditure p.a. (N\$)	15,180	30,280	19,580	187,780	187,780	187,780
Total direct expenditure (N\$)	NAD 135,016,880	NAD 1,887,488,216	NAD 1,887,488,216	NAD 1,887,488,216	NAD 1,887,488,216	NAD 1,887,488,216

Social accounting matrix

- Comprehensive and economy-wide database recording data about all transactions between economic agents
- Depicts the linkages in an economy between the various industries (activities), markets (commodities) as well as factors of production (labour, capital), savings/investment and Rest of the World (exports, imports)
- Impact on distribution of income through factors of production to different household categories and hence on income inequality
- Identify potential areas of policy interventions
 - Strengthen backward- and forward-linkages, increase value chains
 - Mitigate undesired impacts on household income distribution
- Namibia has a SAM from 2013

Results: trip expenditures

Items	Coastal	Inland	Foreign
Permit fee	NAD 60.00	NAD 60.00	NAD 160.00
Gasoline	NAD 235.18	NAD 107.08	NAD 6,000.21
Restaurants	NAD 60.11	NAD 60.09	NAD 1,500.87
Accommodation	NAD 138.91	NAD 841.58	NAD 6,738.97
Vehicle rental	NAD 1.24	NAD 6.44	NAD 434.21
Vehicle fuel	NAD 168.47	NAD 1,108.42	NAD 6,070.46
Airfare	NAD 0.00	NAD 51.76	NAD 142.98
Taxi fee	NAD 176.11	NAD 364.38	NAD 1,044.68
Rail	NAD 138.04	NAD 231.37	NAD 689.43
Rail rental	NAD 0.00	NAD 26.98	NAD 0.00
Rail fuel	NAD 16.11	NAD 63.17	NAD 1,000.00
Tourism fee	NAD 28.88	NAD 91.93	NAD 78.86
Guide fee	NAD 0.00	NAD 16.42	NAD 111.48
Food - fish	NAD 6.44	NAD 6.76	NAD 137.89
SDS	NAD 0.00	NAD 93.33	NAD 636.32
Cover map	NAD 10.48	NAD 52.14	NAD 297.48
TOTAL	NAD 1,088.88	NAD 1,507.96	NAD 14,614.60
Daily expenditure	NAD 798.04	NAD 104.56	NAD 798.04

Economic impact

- Previous slide illustrates the final demand of the sector
 - These expenditures have the potential to "multiply"
 - Calculate direct, indirect and induced effects using economic models
- The magnitude of the multiplier effect is influenced by the structural characteristics of an economy
- It is also important to recognise that multiplier effects do not have an explicit time dimension; evidence suggests that it may take a couple of years to move through the economy.

Motivation

South Africa

Potts et al. (2022): 1.3 million participating in angling. Economic contribution of the sector ZAR 36.2bn. 94,070 full-time jobs sustained. However, only 8.9 percent of economic benefit accrued to low-income households.

Angola

Butler et al. (2020): Total revenue generated from fishing tourism was on average USD 282,054 per fishing season; while 83.9 percent of this value was spent locally, only USD 33,010 was retained reflecting 13.9 percent of total revenue.

Results: non-trip expenditures

Items	Coastal	Inland	Foreign
Fishing equipment	NAD 6,348.88	NAD 10,880.95	NAD 5,592.11
Boat maintenance	NAD 126.47	NAD 1,825.40	NAD 0.00
Boat seaworthy inspection and safety gear	NAD 72.34	NAD 342.86	NAD 0.00
Moorings fee	NAD 7.06	NAD 247.62	NAD 0.00
Storage fee	NAD 45.29	NAD 1,357.14	NAD 378.95
Angling clothing	NAD 791.62	NAD 1,418.25	NAD 155.26
Insurance	NAD 1,230.77	NAD 1,705.08	NAD 1,547.37
Other expenses	NAD 153.35	NAD 15.87	NAD 0.00
TOTAL	NAD 10,975.59	NAD 15,853.17	NAD 9,273.68

Circular flow diagram of economy



Economic contribution and impact

- Economic contribution refers to recreational angling's economic significance
- Economic impact, on the other hand, refers to "changes in the economic contribution resulting from specific events or activities that comprise 'shocks' to the tourism system"
 - What would be lost if recreational angling did not exist in Namibia?
- Concept of "new money"

Willingness to pay



- Anglers asked about their willingness to pay for a monthly recreational angling permit in the fisheries' **current state**
- Overwhelming majority (94 percent) indicated a willingness to pay for a permit
- Mean maximum willingness to pay among Namibians was N\$37 (N\$31 coastal Namibian, N\$51 inland Namibian) and N\$109 among foreigners (N\$81 for South Africa, N\$400 Germany and N\$800 USA)
- Few responses indicate they would not be willing to pay anything at all (1 foreigner, 4 inland Namibians, 12 coastal Namibians)

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Discussion



- In your opinion:
- What is a more realistic range for angler numbers?
 - Should pricing of permits follow terrestrial example?
 - What is the appetite for policy change?
 - Steps required to take this forward
 - Additional research required within coastal and marine tourism sector?

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Recommendations



- Revision of recreational angling permit fee
 - Tiered system, e.g., Namibian, SADC, Other foreign nationals
 - Demand for shore angling is price inelastic (Barnes et al., 2002)
- Review of recreational fisheries governance
 - SSF definition exists, next step to recognize subsistence anglers
 - Angling for food and fun

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Thank you

Initial thoughts and reflections?



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