

THE ECONOMICS OF SEAL HUNTING AND SEAL WATCHING IN NAMIBIA

Final report

2011 - Commissioned by:

Humane Society International
World Society for the Protection of Animals
Bont voor Dieren (NL)
Respect for Animals (UK)

Report prepared by:

Economists at Large Pty Ltd
Melbourne, Australia
www.ecolarge.com
research@ecolarge.com
Phone: +61 3 9005 0154 | Fax: +61 3 8080 1604
PO Box 256, Noble Park, Melbourne, Australia, 3174

Citation:

Economists at Large, 2011. *The economics of seal hunting and seal watching in Namibia*, a report for Humane Society International, World Society for the Protection of Animals, Bont Voor Dieren (NL) and Respect for Animals (UK), prepared by Economists at Large, Melbourne, Australia.

Authors:

Roderick Campbell
Tristan Knowles
Simon O'Connor

Disclaimer:

The views expressed in this report are those of the authors and may not in any circumstances be regarded as stating an official position of the organisations involved.

This report is distributed with the understanding that the authors are not responsible for the results of any actions undertaken on the basis of the information that is contained within, nor for any omission from, or error in, this publication.

Acknowledgements:

We would like to thank all the operators, tourism bureaus, government departments, non-government organisations, researchers and individuals who assisted us with this research. Without the generous contributions and cooperation of the many stakeholders involved, this report would not have been possible.

Contents

1	Executive Summary	8
2	Introduction.....	16
3	Namibia	21
4	Cape fur seals in Southern Africa	21
5	The economics of seals.....	23
5.1	Economic value of natural resources	23
5.2	Total economic value.....	23
5.3	Calculating economic value	25
5.4	The total economic value of seals	27
6	Seal Hunting in Namibia	29
6.1	Seal hunting globally.....	30
6.2	Why does seal hunting occur?.....	31
6.3	Fisheries in Namibia	31
6.4	Management of seal hunting	33
6.5	Methods and Regulations for the seal hunt	34
6.6	Effectiveness, humaneness and implications of sealing methods.....	35
6.7	Locations where sealing occurs	38
6.8	Products derived from seals	42
6.9	Economic Impact of Seal Hunting in Namibia.....	54
6.10	Tax revenue from seal hunting.....	66
6.11	Employment supported by seal hunting	67
6.12	Growth trends for seal hunting	68
6.13	Impact of proposed EU ban on seal products	69
6.14	Conclusions.....	70
7	Tourism and Nature tourism in Namibia	71
7.1	Size of Namibia’s tourism industry	71
7.2	Number of visitors	72
7.3	Motivation for travel to Namibia.....	74
7.4	Tourism growth trends.....	76
7.5	Nature-based tourism attractions.....	77

7.6	Seasonality in Namibian Tourism	78
8	Seal watching tourism in Namibia	81
8.1	Seal watching at Cape Cross	83
8.2	Seal watching at Pelican Point.....	87
8.3	Seal watching at Cape Frio	89
8.4	Seal watching at Dias Point and Atlas Bay area.....	91
8.5	Summary of seal watching tourism in Namibia.....	93
8.6	Conclusions.....	99
9	References.....	100
10	Appendices	107
10.1	2005, 2007 and 2008 prices for seal products.....	107
10.2	Estimated value of seal hunting (2005, 2007 and 2008)	109
10.3	Actual figures from Warren and Ladle (2006)	110
10.4	TAC and actual slaughter levels (1990-2008)	111
10.5	Application process for sealing concessions.....	112
10.6	Estimated wages.....	112
10.7	Socio-economic profile.....	114

Figures, charts and tables

Figure 1: Map showing locations for seal watching tourism	11
Figure 2: Framework for valuing seal watching	19
Figure 3: Chain of custody for seal products in Namibia	43
Figure 4: Map showing locations for seal watching tourism	82
Chart 1: Total allowable catch (TAC) (1990 - 2007)	12
Chart 2: Estimate of seal watching tourists in Namibia in 2008	14
Chart 3: Total Economic Value (TEV) of seals in Namibia	27
Chart 4: Seals slaughtered globally (2005).....	30
Chart 5: Total allowable catch (TAC) in Namibia (1990 - 2007)	37
Chart 6: TAC and seals slaughtered (1990 - 2007)	39
Chart 7: TAC and adult seals slaughtered (1990 - 2007).....	41
Chart 8: Producer prices for maize and millet in Namibia (1991 - 2007).....	51
Chart 9: Summary of values (2005, 2007 and 2008).....	61
Chart 10: Potential and verifiable export values (2005, 2006 and 2008)	63
Chart 11: International visitor arrivals to Namibia (2005 - 2007)	72
Chart 12: International arrives to Namibia by Country of Origin - African	73
Chart 13: International arrives to Namibia by Country of Origin - Non-African	74
Chart 14: Purpose of visit for top two African and non-African arrivals.....	74
Chart 15: Purpose of visit for African and non-African arrivals (average)	75
Chart 16: International Tourist Arrivals to Namibia.....	77
Chart 17: Seasonality in Namibian Tourism - occupancy rates (2008)	79
Chart 18: Seasons for European and Domestic/South African tourism	80
Chart 19: Estimate of seal watching tourists in Namibia in 2008	93
Table 1: Estimated landed value of seal hunt excluding seal-leather shoe value (2008)	13
Table 2: Estimated gross export value of seal hunt (2008).....	13
Table 3: Estimated tax revenue (2008)	13
Table 4: Estimated employment from seal hunting in Namibia	14

FINAL

Table 5: Estimate of tourism expenditure on seal watching in Namibia 2008	15
Table 6: Gross export value of seal watching tourism in Namibia 2008	15
Table 7: Valuation methods in economics	26
Table 8: Total fisheries catch and total catch value: 2003 - 2007	32
Table 9: Operational and ecological conflicts in fisheries	33
Table 10: Sealing concessionaires in Namibia.....	37
Table 11: Major importers of Namibian seal skins (pelts) (2004 - 2008)	46
Table 12: Exports of seal genitalia from Namibia (2004 to 2008).....	49
Table 13: Exports of seal oil from Namibia (2004 to 2008).....	50
Table 14: Seal Trophy hunting in Namibia	53
Table 15: Estimated landed value of seal hunt (2005).....	55
Table 16: Estimated final value of seal hunt including seal shoe value (2005).....	56
Table 17: Estimated gross export value of seal hunt (2005).....	57
Table 18: Estimated landed value of seal hunt (2007).....	59
Table 19: Estimated final value of seal hunt excluding seal shoe value (2007)	60
Table 20: Estimated gross export value of seal hunt (2007).....	61
Table 21: Landed (catch) value of seal hunting in Canada (2007)	65
Table 22: Comparison of landed (catch) values in Namibia and Canada (USD).....	65
Table 23: Estimated tax revenue (2005, 2007 and 2008)	66
Table 24: Estimated employment from seal hunting in Namibia	67
Table 25: Estimated annual wages in seal hunting industry	68
Table 26: Direct impacts and size of tourism in Namibia (2005 - 2008)	71
Table 27: Summary of seal watching locations and trips in Namibia.....	83
Table 28: Cape Cross entrance fees	85
Table 29: Cape Cross entrance fees (2007).....	85
Table 30: Estimate of ticket revenue from entry fees at Cape Cross reserve.....	86
Table 31: Estimated tourism revenue at Cape Cross reserve	87
Table 32: Estimated tourism revenue from Pelican Point (2007 and 2008)	89
Table 33: Estimated tourism revenue at Cape Frio.....	90
Table 34: Estimate of tourism revenues at the Atlas Bay area and Cape Dias	92
Table 35: Estimate of tourism expenditure on seal watching in Namibia	93

FINAL

Table 36: Gross export value of seal watching tourism in Namibia 2008	96
Table 37: Estimated average wages for seal watching jobs	99
Table 38: Prices for seal products in 2005	107
Table 39: Estimated prices for seal products in 2007	107
Table 40: Estimated prices for seal products in 2008	108
Table 41: Estimated value of seal hunting (2005, 2007 and 2008)	109
Table 42: Gross revenues from Warren and Ladle (2006)	110
Table 43: TAC and actual slaughter levels (1990 - 2008)	111
Table 44: Regions of analysis	114
Table 45: Population in Namibia and key regions (2001 and 2010)	114
Table 46: Employment by industry in Namibia	117

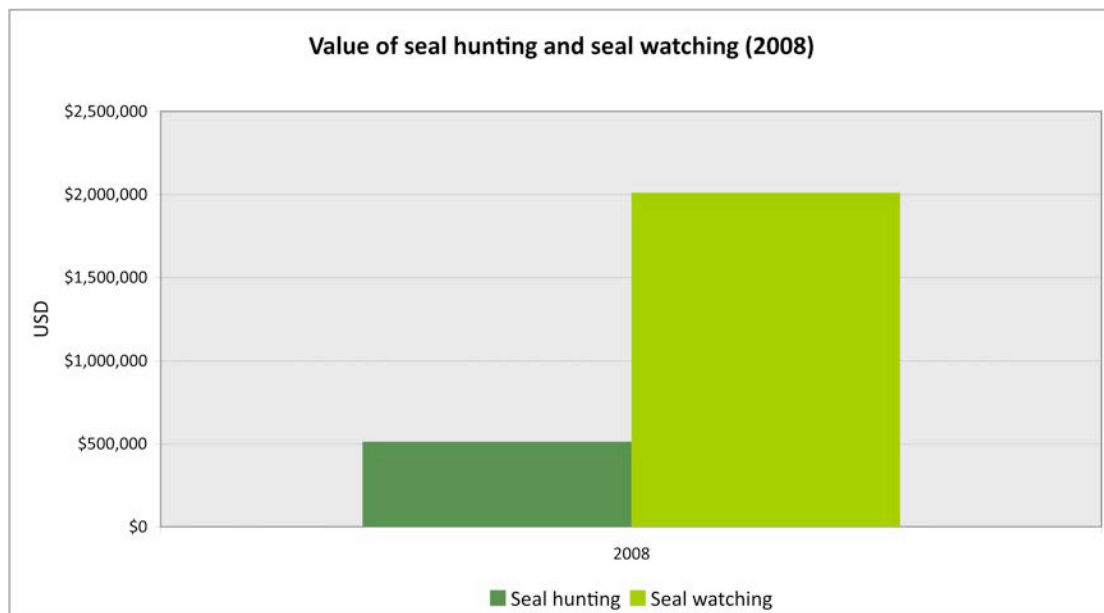
1 Executive Summary

This report examines the economics of the two seal based industries in Namibia: seal hunting and seal watching.

The report aims to compare and contrast the economics of the two industries that both rely on populations of Cape fur seals along Namibia's extensive coastline.

Seal hunting is undertaken annually in three locations; Cape Cross, Wolf Bay and Atlas Bay. The industry had an estimated landed catch value in 2008 of USD\$513,000 from 58,000 pups and 5,500 adult seals slaughtered.

Seal watching is a popular tourism activity undertaken by around 10% of total tourist arrivals to Namibia - just over 100,000 people in 2008. Of the tourists undertaking seal watching, approximately 70% are international arrivals. Based on 2008 figures, the industry generated just over USD\$2 million in direct tourism expenditure.



Importantly, this report finds that the seal hunting industry appears to be at or near capacity in terms of catch limits, due to the large number of pups taken annually (as a proportion of total population) and the high current catch numbers compared to historical catch rates.

The Namibian Ministry of Fisheries and Marine Resources encourages the high catch rates due to concerns surrounding the impacts of seals on fisheries. As well as the potential over exploitation of seals (supply side), the industry also faces significant challenges on the demand side: Europe has recently implemented a ban on seal product trade and there are active campaigns to ban seal products in a number of other potential markets for the Namibian sealing industry, including Turkey, Russia, Hong Kong, Taiwan and mainland China. The demand for seal products, and consequently the price of seal products, are both likely to be negatively impacted by existing and future trade bans.

The report also finds that the value derived from the vertically integrated seal hunting industry is quite low compared to seal watching and accrues to a narrow group of Namibians, being those who hold access rights to concessions.

In contrast to seal hunting, the seal watching appears to have much greater prospects for growth in Namibia. As the industry is non-extractive, seal populations are less likely to be impacted by increasing tourist numbers as long as tourist operators are responsible in their interactions with seals. As Namibia is projecting a strong growth in international visitor arrivals, and a majority of seal watchers are international arrivals, it is highly likely that this becomes the main determinant of growth of the seal watching industry. Based on estimates of aggregate growth in tourism in Namibia, we estimate that 175,000 tourists will take part in seal watching in Namibia by 2016 (up from current levels of 100,000), resulting in an industry with an estimated direct value of USD\$3.4 million (up from current value of USD\$ 2 million).

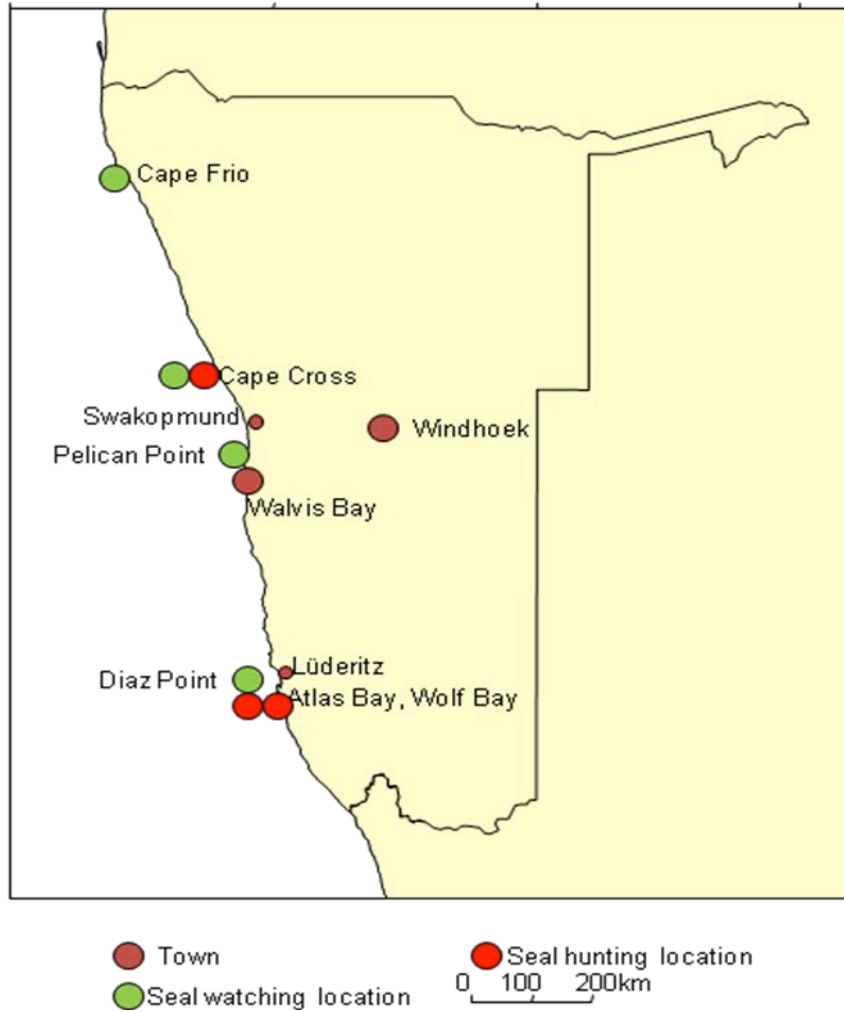
Unlike seal hunting, the benefits of seal watching tourism also accrue to a wider group of economic participants in Namibia, including those running tours as well as tourism support

services such as transport, restaurants and accommodation. These indirect spending impacts derived from tourism are significant and haven't been calculated in this report, although doing so would increase the potential value of seal watching to the Namibian economy.

Beyond the issues of future growth prospects of the Namibian seal industries, there are concerns surrounding the long-term viability of a growing seal watching industry alongside a seal hunting industry. This is a particular risk where the two activities take place side-by-side, such as at Cape Cross. A major risk for a growing nature-based tourism industry is that it receives major reputational damage from the unsustainable management of the main resource tourists are wanting to see – that is the seals themselves. It appears to be highly incompatible to have seal hunting being undertaken on the same beaches that tourists come to see those animals only hours later. We see this as a major risk to the future growth of a strong, nature-based tourism industry based around seal watching.

The Namibian government has identified the strong economic opportunity in promoting growth in its tourism industry, predicting growth to a point where tourism is the highest contributing industry to the national GDP. Namibia is attractive to high-end European nature tourists. A major attraction to such tourists is the high quality nature and wildlife experiences available with seal watching being one part of that offering. It is important therefore that nature and wildlife experiences in Namibia remain authentic and not threatened by the relatively unstable and low value industry that is seal hunting.

Figure 1: Map showing locations for seal watching tourism



Source: EcoLarge Analysis, based on maps and data provided by Seal Alert, WSPA and Google maps.

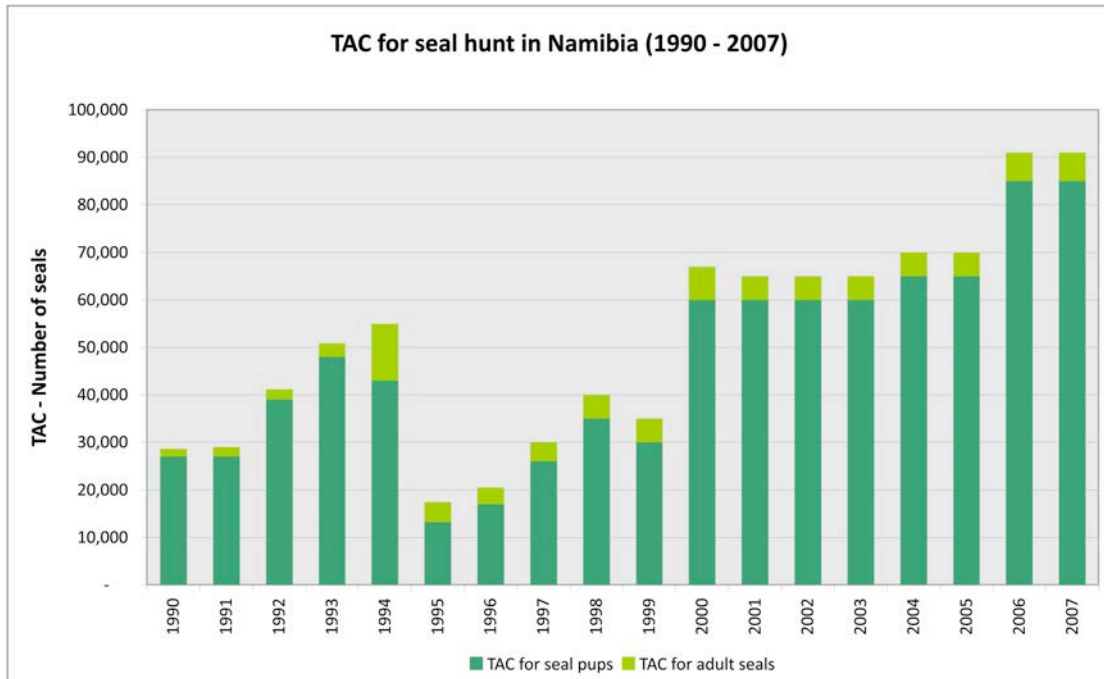
Key results:

Seal Hunting:

The seal hunting industry in Namibia occurs across three sealing concessions at Cape Cross (North of Swakopmund), as well as Atlas Bay and Wolf Bay (near Lüderitz). Seal watching occurs at Cape Cross as well as at Atlas and Wolf Bay.

The total allowable catch in 2007 was 85,000 pups and 6,000 bulls per year (from an estimated pup production of 135,000).

Chart 1: Total allowable catch (TAC) (1990 - 2007)



Source: Kirchner (2007), Ministry of Fisheries and Marine Resources (2008) and (www.usnews.com/science/articles/2009/07/06/namibian-seal-hunt-to-go-on-90000-to-be-clubbed.htm).

Based on analysis for this report, the following tables represent the estimated landed value, tax revenues and employment numbers for seal hunting industry in 2008.

Landed value of seal products (2008)**Table 1: Estimated landed value of seal hunt excluding seal-leather shoe value (2008)**

Product	Units	Quantity	Unit value (USD)	Total value (USD)	Percentage of total value
Pup pelts	pelts	58,129	\$5.82	\$338,095	66%
Adult skins	skins	5,493	\$4.69	\$25,782	5%
Genitalia (adult)	kg	291	\$139	\$40,513	8%
Genitalia (pup)	kg	73	\$110	\$8,060	2%
Oil (medicinal)	ltrs	36,081	\$0.10	\$3,638	1%
Oil (fodder)	ltrs	144,325	\$0.01	\$1,386	0%
MBM (fodder)	tonnes	198	\$480	\$95,199	19%
TOTAL				\$512,674	100%

Source: Warren and Ladle (2006) and EcoLarge analysis.

Export value of seal products (2008)**Table 2: Estimated gross export value of seal hunt (2008)**

Product	Units	Total value (USD)	Percentage exported	Export value (USD)	Percentage of total value
Pup pelts	pelts	\$338,095	100%	\$338,095	77%
Adult skins	skins	\$25,782	0%	\$0	0%
Genitalia (adult)	kg	\$40,513	100%	\$40,513	18%
Genitalia (pup)	kg	\$8,060	100%	\$8,060	4%
Oil (medicinal)	ltrs	\$3,638	76%	\$2,765	1%
Oil (fodder)	ltrs	\$1,386	0%	\$0	NA
MBM (fodder)	tonnes	\$95,199	0%	\$0	0%
TOTAL		\$512,674	100%	\$389,433	100%

Source: CITES (2009), Warren and Ladle (2006) and EcoLarge analysis

Table 3: Estimated tax revenue (2008)

2008	
Estimated tax revenue (15% of landed value)	\$76,901

Table 4: Estimated employment from seal hunting in Namibia

Location	Role	Number of jobs supported	Duration of job
Cape Cross	Slaughtering	10 - 15	1 st Jul to 15 th Nov (4.5 months)
Wolf Bay and Atlas Bay	Slaughtering	10 - 15	
Henties Bay	Processing	65	
Lüderitz	Processing	22	
Windhoek	Shoe making	15 - 20	All year round
TOTAL		122 (low) 137 (high)	

Source: Warren and Ladle (2006)

Seal watching industry:

Namibia's seal watching industry operates across four main locations: Cape Frio, Cape Cross, Pelican Point and Diaz Point. As a much younger industry to Namibia than seal hunting, it has quickly grown and now attracts an estimated 102,000 tourists each year, comprising predominantly international tourists.

The major locations for seal watching and number of tourists in each location are given in the table below.

Chart 2: Estimate of seal watching tourists in Namibia in 2008

Site	Boat-based	Land-based	Air-based	Total tourists	International tourists (%)	Domestic tourists (%)
Cape Cross	-	✓	✓	56,000	64%	36%
Pelican Point	✓	-	-	45,000	80%	20%
Cape Frio	-	✓	✓	420	100%	0%
Wolf and Atlas Bay (near Lüderitz)	✓	✓	-	1,250	80%	20%
TOTAL				102,670	71%	29%

Source: EcoLarge analysis

The value of seal watching at each location is given in the tables below:

Table 5: Estimate of tourism expenditure on seal watching in Namibia 2008

Site	Total tourists	Revenue estimate (NAD)	Revenue estimate (USD)	Revenue estimate per tourists (USD)
Cape Cross	56,000	\$2,422,560	\$327,046	\$6
Pelican Point	45,000	\$8,573,792	\$1,215,824	\$35
Cape Frio	420	\$686,091	\$93,219	\$222
Lüderitz	1,250	\$68,125	\$8,386	\$9
TOTAL	102,670	\$16,034,376	\$2,011,370	\$20 (average)

Source: Ecolarge analysis

Gross revenue figures above include a value added tax (VAT) of 15% and so direct taxation revenue from seal watching tourism is estimated at USD\$302,000 for 2008. These values represent an estimate of the direct tax revenue accruing to the Namibian government from seal watching tourism.

Table 6: Gross export value of seal watching tourism in Namibia 2008

Site	Percentage attributable to international tourists	Total revenue (NAD)	Estimated export revenue (NAD)	Estimated export revenue (USD)
Cape Cross	64%	\$2,422,560	\$1,550,438	\$209,309
Pelican Point	80%	\$12,857,600	\$1,582,719	\$1,266,175
Cape Frio	100%	\$686,091	\$686,091	\$93,219
Lüderitz	80%	\$68,125	\$54,500	\$6,709
TOTAL		\$16,034,376	\$12,577,109	\$1,575,412

Source: EcoLarge analysis. NOTE. Conservative estimates of international visitors have been used, resulting in a conservative estimate of export value.

As shown in the table above, seal watching tourism generates an estimated USD\$1.6 million in export income for Namibia.

Seal watching tourism in Namibia is estimated to support 69 full time jobs directly and an additional 194 jobs indirectly.

2 Introduction

Seals have traditionally been used by humans in the provision of a number of resources such as oil, fur, leather and meat. Since the 16th century, commercial sealing has existed as sealers realised that a profit could be made from the oil and pelts of seals and other pinnipeds. Before the 20th century, commercial sealing was primarily carried out to supply oil that was used as lamp fuel, lubricant, cooking oil, soap and for processing materials such as leather. With the discovery of petroleum in the 20th century as well as the widespread use of electricity, demand for seal oil dropped significantly and was overtaken by a demand for seal pelts.

Today, commercial sealing still takes place in Namibia, Canada, Greenland and Norway. Until recently, Russia also had a commercial sealing industry but the slaughtering of baby harp seals has now been banned¹. Commercial sealing now only accounts for a small percentage of the fur trade globally, with factory fur farming increasingly replacing wild caught animals.

In recent times, the expansion of tourism as an economic activity has resulted in seals being used for another commercial purpose, seal watching. This non-extractive use of seals can provide a significant attraction to tourists and is offered as part of dedicated and opportunistic land, boat and air-based tours, some of which also offer swim-with the seals and seal feeding experiences.

This report looks at the economic impact of seals to the Namibian economy, aimed primarily at direct use values derived from both sealing (seal hunting) and seal watching.

Methodology

This report relies on both secondary and primary sources of data. Secondary research consisted of a comprehensive literature review of both formal published and unpublished research, as well as less formal sources such as websites and other media sources. Where

¹ <http://www.guardian.co.uk/environment/2009/mar/19/seals-hunting-russia-ban>

possible, data was obtained from authoritative peer reviewed studies. A structured interview approach with key stakeholders was also used for any data gaps or verification of secondary data.

Primary research was conducted between September 2009 and July 2010, with secondary sources providing data across a range of years. The most recent data was used at all times, although, due to the lag times in the publication of some data, this could be as far back as 2006. No site visit was conducted as part of the research.

Where figures are provided in United States dollars (USD), the exchange rate was used as an average of the Namibian dollars (NAD) to USD exchange rate for the year in which the original data was presented. For data converted from earlier years, no adjustment was made for inflation.

Terminology

For the sake of clarity, we refer to 'sealing' as 'seal hunting' throughout the report and use the term slaughter to refer to the killing, or culling of seals as part of the seal hunt.

Seal hunting methodology

Analysis of the value of the seal hunting industry was based primarily on Warren and Ladle (2006) along with analysis of data available from the United Nations Environment Programme World Conservation Monitoring Centre, Convention on International Trade in Endangered Species of Wild Flora and Fauna (UNEP-WCMC CITES) Trade Database (2009)². Because of the largely informal nature of the industry in Namibia, it was difficult to obtain time series data for certain important prices such as pelts or fodder. We have therefore combined data from Warren and Ladle (2006) with our own analysis, to present figures of the value of the industry in 2007, the most recent year possible to obtain figures on the number of seals slaughtered. In putting values on the seal hunting industry, we have attempted to use the approach of the Namibian Ministry of Fisheries and Marine Resources (MFMR) that distinguishes between landed value, finished value and export value.

² <http://www.cites.org/eng/resources/trade.shtml>

- Landed value is the value of the catch if it were sold unprocessed;
- Finished value is the value of the catch post processing; and
- Export value is the value of the catch in terms of generating export revenue. See MFMR (2008) for more information.

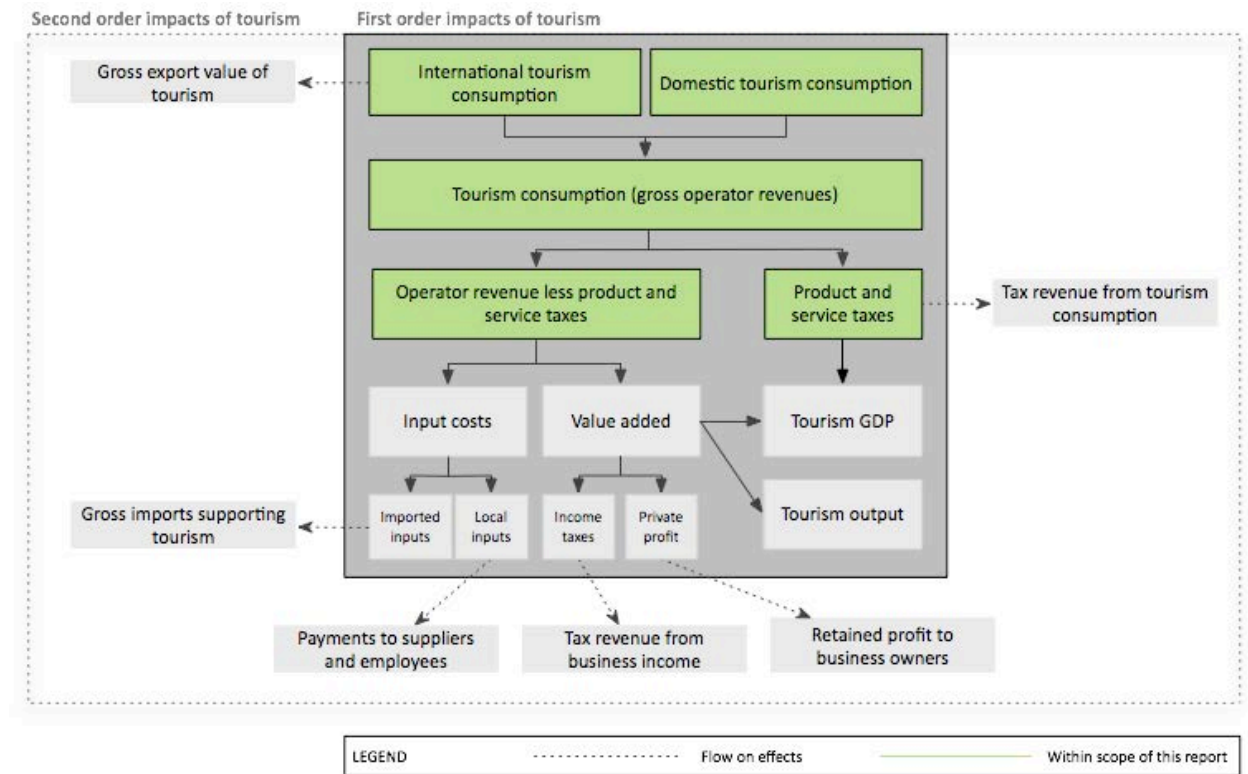
Where CITES data was used, we focused on trade for all purposes, not just “Commercial Purposes (“t”) in the CITES database. Where data was missing for the type of product imported (“Imp Term”), we referred to the type of product listed as the re-exported product “(Re-) Exp Source”. (Our tables of CITES data and analysis can be made available upon request.)

Seal watching methodology

Seal watching is a form of nature-based tourism that occurs at several locations across Namibia. Tours are offered as part of boat-based, land-based and even air-based trips and often include other activities and sightings of animals or natural and historical scenery. All seal watching in Namibia is focused on wild seal watching, as opposed to seals in captivity. This report also only focuses on formal seal watching tourism that involves some form of payment. The report does not look at recreational seal watching by locals, which would be informal and harder to estimate values for.

Because seal watching is a form of nature-based tourism, a tourism economics framework is used to assess the contribution of seal watching tourism to the Namibian economy. This approach is derived from the recommended methodological framework for tourism satellite accounts (Commission of European Communities, 2008). The chart below highlights the areas within a tourism valuation framework that are within the scope of this report.

Figure 2: Framework for valuing seal watching



The framework above distinguishes between first order (or direct) impacts of tourism and second order (or indirect) impacts. Tourism economics literature usually defines a third category known as induced, or flow on impacts. These are the impacts that tourism consumption has beyond the industries where the tourism consumption occurs (i.e.. Impacts that flow to others).

International tourism consumption is spending by international visitors on tourism goods and services.

Domestic tourism consumption is spending by domestic visitors on tourism goods and services.

Operator revenue less product and service taxes is the gross revenue to business from tourism consumption.

Product and service taxes are the taxes applied to goods and services by government, usually in the form of a value added tax (VAT) or goods and services tax (GST).

Seal watching can be a major contributor of direct income to local tourism industries where tourists visit local regions to view seal populations in their natural habitats or in sanctuaries. This form of tourism usually involves a ticket price for travel to seal colonies and sometimes entry fees to view the seals.

In addition to spending on seal watching activities by tourists, other local businesses may also derive benefits from tourists spending money on other goods and services such as hotels, restaurants and souvenirs. The extent to which this spending can be attributed to seal watching depends on the extent to which the tourists were drawn to the region by the seals. To ascertain this, detailed surveying of tourists needs to be undertaken, and is beyond the scope of this report. For this reason, this report only looks at the direct spending on seal watching activities.

3 Namibia

Namibia is located in southern Africa and borders Angola and Zambia to the north, Botswana and Zimbabwe to the east and South Africa to the south and east. In terms of population, it is a relatively small country by African standards, with a population of approximately 2.1 million people in 2008³. In 2008, Namibia's gross domestic product was USD\$8.56 billion⁴. Major industries in Namibia are mining, manufacturing and tourism, accounting for approximately 16%⁴, 13%⁵ and 16%⁶ of gross domestic product (GDP) respectively.

4 Cape fur seals in Southern Africa

There are 33 living species of pinnipeds worldwide. Distributed mainly in polar, sub-polar and temperate waters, they are divided into three distinct families: the Phocidae ('true seals'), the Otariidae ('eared seals'), which include the fur seals and sea lions, and the Odobenidae (the walrus). The Cape fur seal (*Arctocephalus pusillus pusillus*) is a species of pinniped in the Otariidae family. Cape fur seals, also known as brown fur seals, are related to other fur seals found in Australia and South America (King, 1983).

Before the arrival of Europeans, large populations of Cape fur seals lived mainly on islands off the Southern African coast. It is thought colonies were on islands due to mainland predators such as lions, hyenas and humans (Kirkman et al., 2007).

Since the 17th century, Cape fur seals have been hunted extensively off the southern African coast (Shaughnessy, 1982). Centuries of commercial sealing reduced the overall population to around 100,000 individuals before regulation of the industry in the twentieth century helped the population to recover to its present level of an estimated two million.

³ <https://www.cia.gov/library/publications/the-world-factbook/geos/wa.html> and http://ddp-ext.worldbank.org/ext/ddpreports/ViewSharedReport?&CF=&REPORT_ID=9147&REQUEST_TYPE=VIEWADVANCED

⁴ US Department of state. <http://www.state.gov/r/pa/ei/bgn/5472.htm>

⁵ Ministry of Trade and Investment: Republic of Namibia. <http://www.mti.gov.na/subpage.php?linkNo=69>

⁶ World Travel and Tourism Council (2006)

Of the estimated two million Cape fur seals that live in southern African, Namibia is home to approximately 35% of the population (Kirkman et al., 2007). Other large colonies are in neighbouring South Africa and Angola.

The Cape fur seal is listed under Appendix II of the Convention on International Trade in Endangered Species (CITES II), as a species which is “not necessarily now threatened with extinction but that may become so unless trade is closely controlled” (CITES, n.d.).

5 The economics of seals

In economics, seals are considered a natural resource available to be utilised by humans to fulfill needs and wants. Where fulfilling these needs and wants results in the exchange of a currency for goods and services, we can calculate a monetary value of the seals to an economy. Increasingly however, the value that natural resources provide to economy is being seen with more complexity than these purely anthropocentric market values.

5.1 Economic value of natural resources

Resource economics tends to look at the demand, supply and allocation of provisioning services provided by natural resources. More recently, however, environmental economics has attempted to put values on regulating, cultural & amenity and supporting services provided by natural resources or entire ecosystems.

In the case of seals, their economic value is typically considered through provisioning of goods and services as well as through cultural and amenity values.

Because a resource such as seals can have multiple and sometimes conflicting uses, it is important to understand the concept of total economic value.

5.2 Total economic value

The concept of total economic value (TEV) provides a framework for assessing the utilitarian and non-utilitarian value of ecosystems. The framework can also be used to assess the anthropogenic values associated with an individual species such as the Cape fur seal. TEV does not consider non-anthropogenic values.

The TEV framework is typically divided into use values and non-use values.

Use values are composed of: direct use, indirect use, and option values.

People are most familiar with direct use values, as they are easily expressed as a dollar value and are often traded. Direct use value is also known as extractive or consumptive use values as they are mainly from goods that can be extracted, consumed or enjoyed directly such as fish from the oceans, timber from forests, and tourism in a national park (Dixon & Pagiola, 1998).

Indirect use value is also known as non-extractive use value, or functional value, and includes most environmental service values. They are indirect, as often people are unaware they are benefiting from the environmental service – water quality due to forested watersheds and storm protection from coastal mangroves. Often these values only become apparent when they are removed.

Option value is the value attached to maintaining the option to take advantage of something's use value at a later date. Some authors also distinguish 'quasi-option value', which derives from the possibility that even though something appears unimportant now, information received later might lead us to re-evaluate it.

Non-use values are composed of existence values and bequest values. Both existence and bequest values are derived from the benefits the environment may provide which do not involve using it in any way, whether directly or indirectly.

Existence value is the value that people derive from the knowledge that something exists, even if they never plan to use it. For example, people like to know that wild tiger populations exist, even if they hope never to come face to face with a wild tiger.

Bequest value is the value derived from the desire to pass something on to future generations.

Non-use values are often used as proxies for cultural values or non-anthropogenic ecological values that have no direct market values.

Total economic value (TEV) should consider both total economic benefits (TEB) and total economic costs (TEC). This can be represented by the following equation:

$$TEV = TEB - TEC$$

After the TEB of a natural resource is obtained, these benefits can be compared and traded off with the TEC of the resource using benefit-cost analysis (BCA) in order to make decisions regarding use and allocation.

5.3 Calculating economic value

The economic value of a resource is one way to represent the degree to which the resource satisfies an individual's needs and wants. Although economic value is generally represented as a dollar value, it does not imply a physical realisation of that value (i.e. tradable for cash), nor does it imply that an actual market place for that resource exists. Rather, it is a means for comparing the value of different resources for different - and sometimes competing - uses.

In economics, there are typically three types of monetary or financial valuation; direct market valuation, indirect market valuation and expressed willingness-to-pay valuation. Within each there are number of techniques that can be used to arrive at a monetary valuation of a resource, as shown in the table below.

Table 7: Valuation methods in economics

VALUATION TYPE	Direct market valuation	Indirect market valuation	Expressed willingness-to-pay valuation
TECHNIQUE	<ul style="list-style-type: none"> • Market price • Factor income 	<ul style="list-style-type: none"> • Avoided cost • Replacement cost • Mitigation or restoration cost • Travel cost • Hedonic pricing • Revealed preference 	<ul style="list-style-type: none"> • Contingent valuation • Contingent choice
COMPONENT OF TEV	Use values	Use values	Non-use values
TYPE OF ECOSYSTEM SERVICE	Provisioning, Cultural & Amenity	Regulating, Supporting	All services

Source: EcoLarge analysis adapted from De Groot et al (2006).

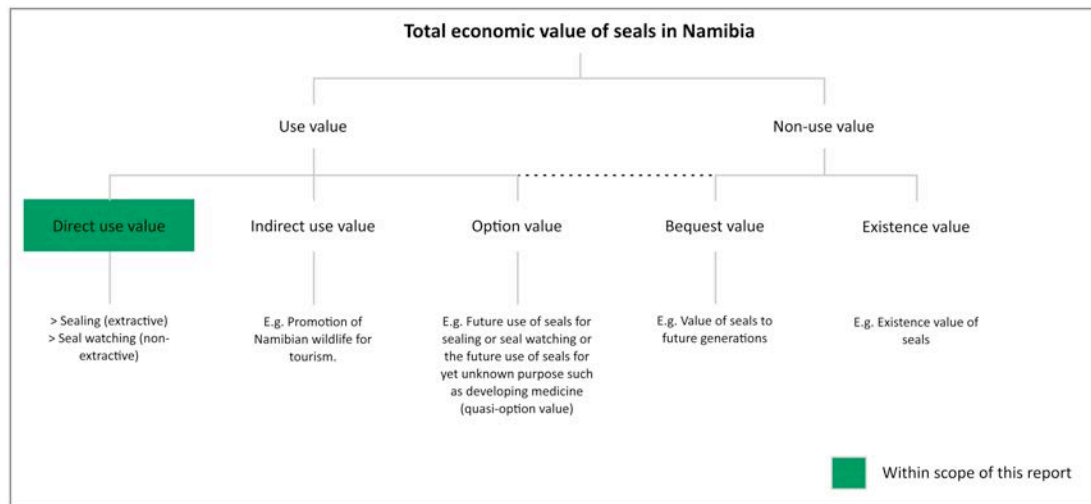
For each technique identified in the table above, there are a number of evaluation methods that can be employed. Common evaluation methods include impact analysis and benefit-cost analysis. To estimate flow-on economic impacts, simple multipliers, input-output tables or general equilibrium models are often used. When non-market social and ecological values are also included, the process is known as multi-criteria analysis.

This report takes an impact analysis approach, focusing on first order economic impacts and so does not estimate flow-on impacts. Flow-on impacts have not been assessed due to a lack of available data and also because of theoretical problems that can often arise for such estimates.

5.4 The total economic value of seals

The TEV framework for seals in Namibia is represented in the chart below, with the shaded area highlighting the scope of research for this report.

Chart 3: Total Economic Value (TEV) of seals in Namibia



Source: EcoLarge Analysis

This report focuses on the direct use values of seals to the Namibian economy. Indirect use value and option values have not been assessed for this report, but could include values such as the value of seals in promoting the wildlife of Namibia for broader tourism purposes. Option value represents the value of preserving seals as a resource for future generations.

5.4.1 Direct use value of seals (seal hunting)

Seal hunting will be discussed in more detail below, but typically generates economic activity via:

- the provision of goods and services required for slaughtering seals;
- the provision of goods and services required for processing of seals into final or intermediate products;
- through the sale of intermediate products as inputs into further production (value adding); AND

- through the sale of the final products for consumption.

5.4.2 Direct use value of seals (seal watching)

Seal watching will be discussed in more detail below, but typically generates economic activity via:

- the provision of seal watching tours or gate fees (ticket fees);
- the provision of goods and services that support seal watching tours such as souvenir shops, museums, fuel, vehicle servicing etc.;
- the provision of goods and services that support the tourism experience directly, such as hotels, restaurants etc.;
- the provision of goods and services that support the tourism experience indirectly, such as suppliers to tour companies, hotels etc.

5.4.3 Non-use values of seals

A small number of studies have used contingent valuation (CV) to place a value on seal conservation in particular areas. Bosetti and Pearce (2003) used CV to examine the use and non-use value of seals by measuring the Willingness-To-Pay (WTP) in southwest England, finding that the annual non-use value (predominantly existence value) of seals was between £526,000 and £900,000 annually. No similar studies have been carried out in the Namibian context but the study demonstrates that non-use values can be calculated for seals and can equate to a significant annual value.

Studies by Bosetti and Pearce (2003) and Langford et al (1997) have also found that the conservation of seal populations can generate benefits for the local community indirectly through non-use existence value generated by factors such as moral satisfaction. Conversely, it can be assumed that seal hunting can create negative externalities through moral dissatisfaction and can potential impact on the tourism image of a country that promotes wildlife tourism.

6 Seal Hunting in Namibia

Seals have been hunted commercially in what is now Namibia for over 300 years. (Shaughnessy, 1982). By the 20th century, the population of seals in southern Africa had declined to under 100,000 individuals (Kirkman et al. (2007) quoting Shaughnessy and Butterworth (1981)). Since then the hunting of seals has been regulated and the population has recovered, though with a different geographical distribution and occasionally erratic population dynamics such as mass die-offs of pups (Kirkman et al., 2007).

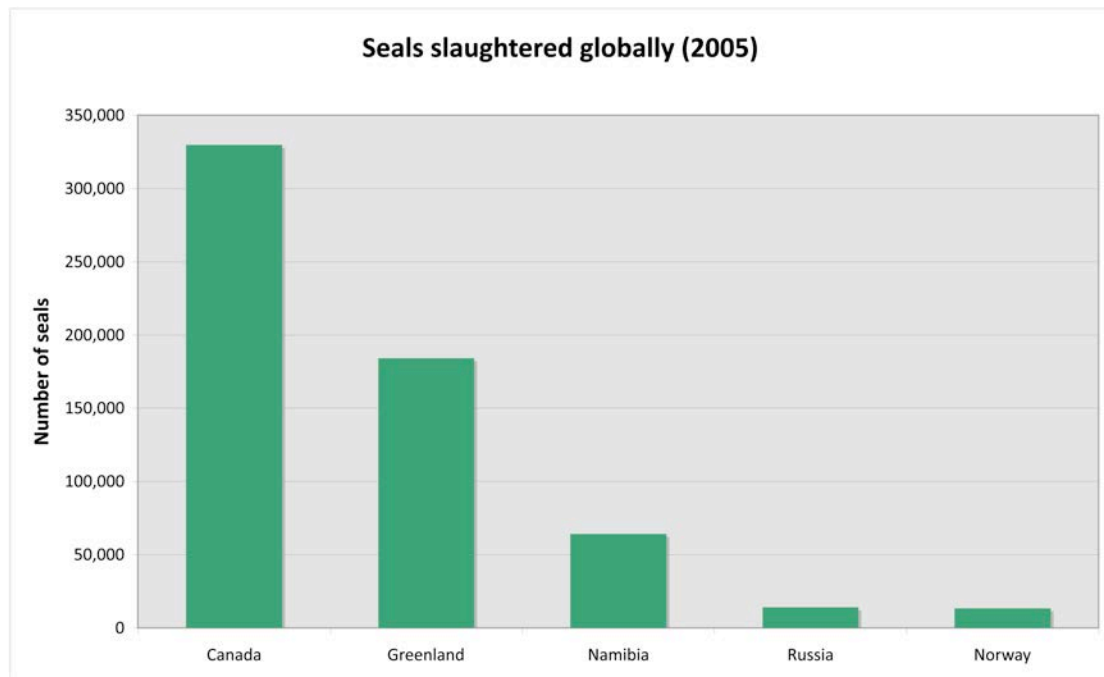
As a result of sealing among other factors, the distribution of seal colonies has changed over time, with many islands not being recolonised and mainland colonies having been established. Reduction of mainland predators and ongoing guano extraction from outer islands are thought to be some of the major factors behind this change (Kirkman et al., 2007).

As at January 2008, there were an estimated 620,000 seals living in 25 breeding colonies along the Namibian coast (Ministry of Fisheries and Marine Resources, 2008) and (Kirchner, 2007). Eleven of these colonies are on offshore islands. Most sources suggest that the largest colony is at Cape Cross, to the North of Swakopmund and Walvis Bay. Up to 210,000 seals can be in residence at Cape Cross during the breeding season in November and December (Ministry of Environment and Tourism, n.d.).

6.1 Seal hunting globally

Sealing was abolished in South Africa in 1990, but continued and increased in Namibia – the country had the third largest commercial seal hunt globally in 2005, accounting for an estimated 11% of all seals killed for commercial purposes. Canada, Greenland and Namibia combined accounted for approximately 95% of all seals slaughtered in 2005.

Chart 4: Seals slaughtered globally (2005)⁷



Source: Fink (2007), Fisheries and Oceans Canada (2010a) and Fisheries and Oceans Canada (2010b)

As shown in Chart 4 above, a total of 606,000 seals are estimated to have been hunted globally for human purposes in 2005, a figure lower than that reported in 2006, when around 750,000 seals were estimated to have been slaughtered for commercial purposes, (European Food and Safety Authority, 2007).

⁷ 2005 was the most recent year for which comparative data was available.

6.2 Why does seal hunting occur?

Commercially, sealing occurs in Namibia to supply pelts into the international fur market as well as meat and bone meal (MBM) and leather products to domestic and South African markets. There are also domestic and international markets for seal genitalia and seal oil from blubber. Products derived from seals are discussed in more detail in section 6.8 below.

Seal culling in Namibia appears to be considered by government as part of fisheries management, a reason often given for other seal hunts such as those in Greenland and Canada. In Namibia, the annual report published by the (Ministry of Fisheries and Marine Resources (MFMR), 2008) states that consumption of fisheries stocks by seals was estimated at 860,000 tonnes. Incentives to fill total allowable catch (TAC) quotas for seal hunters are also an indication that the MFMR is keen to see the seals slaughtered to reduce their perceived impact on fish stocks.

Citing Kirkman (2006), the European Food and Safety Authority states that some seals are also killed in Namibia to “reduce perceived impacts of seals (predation or displacement) on threatened seabird populations” (European Food and Safety Authority, 2007, p.30).

6.3 Fisheries in Namibia

In 2007, there were a total of 155 “harvesting rights” issued for commercial fishing in Namibia, of these, 3 were rights (or concessions) for “seal harvesting” (MFMR, 2008). Nine species of fish are commercially fished (not including seals) with hake being the most valuable of these. Horse mackerel is the most heavily fished by total catch weight. Other unspecified fish species are also caught and accounted for 8% of the total catch in 2007. There are 277 licensed fishing vessels (MFMR, 2008).

Table 8: Total fisheries catch and total catch value: 2003 - 2007

	2003	2004	2005	2006	2007	AAGR ⁸
Total catch (tonnes)	631,121	567,133	552,164	504,382	412,671	-10.1%
Landed value (NAD millions)	2,862	2,531	3,130	3,146	3,593	5.9%
Landed value per tonne (NAD)	4,535	4,463	5,669	6,237	8,707	17.7%
Final value (NAD millions)	3,867	3,427	3,789	3,985	4,843	5.8%
Final value per tonne (NAD)	6,127	6,043	6,862	7,901	11,736	17.6%
Amount of value adding per tonne (NAD)	1,592	1,580	1,193	1,663	3,029	17.4%
Value added per tonne (%)	26.0%	26.1%	17.4%	21.1%	25.8%	-0.2%
Export value (NAD millions)	3,781	3,350	3,697	3,882	4,711	5.7%
Export value per tonne (NAD)	5,991	5,907	6,695	7,697	11,416	17.5%

Source: MFMR (2008) and EcoLarge analysis.

The table above shows the total fisheries catch and catch values between 2003 and 2007. Since 2003, the total catch in tonnes has decreased at an average annual rate of 10%, while the landed, final and export value have all increased by approximately 6% per annum. At the same time, the landed, final and export value per tonne have all increased at a rate of 18%. This implies that either prices are increasing for fish caught, or fisheries are increasingly targeting higher value species. Over this time, value added per tonne has stayed flat, implying that there has been no increase in productivity in fisheries processing between 2003 and 2007.

In the Namibian context, the MFMR does not make it clear how seals are deemed to impact upon the fisheries industry described above.

⁸ Average annual growth rate (AAGR)

The culling of marine mammals or other predator species for fisheries management is generally seen as having little scientific justification and extensive discussion of this topic can be found in Lavigne (2003). Lavigne (2003) distinguishes between “operational” and “ecological” conflicts between marine mammals and fisheries.

Table 9: Operational and ecological conflicts in fisheries

Operational conflict	Ecological conflict
<ul style="list-style-type: none"> • Damage to fishing gear or aquaculture facilities. • Damage to (or loss of) catches or aquaculture stocks. 	<ul style="list-style-type: none"> • Transmission of parasites. • Predation and competition <ul style="list-style-type: none"> ○ Effects on fisheries (direct effects and indirect effects)

Source: Adapted from Lavigne (2003), using conflicts that Lavigne states result in calls for culling.

Since no figures are provided in MFMR (2008) for any costs to the commercial fishing industry from operational conflicts, we assume that it is perceived ecological conflicts (predation and competition) between seal populations and commercial fishing that are driving the desire to cull seals. The emphasis placed by MFMR (2008) on consumption of fish by seal colonies in Namibia supports this. MFMR (2008) states that seals consumed approximately 860,000 tonnes in 2007, of which, approximately 282,900 tonnes was considered to be consumption of commercial species.

6.4 Management of seal hunting

The Namibian government, through its Ministry of Fisheries and Marine Resources (MFMR), issues sealing concessions to private operators to slaughter a “total allowable catch” (TAC) of seals per year.

There are three sealing concessions in Namibia with seal hunting occurring at Cape Cross Atlas Bay and Wolf Bay (European Food and Safety Authority, 2007). The current TAC across all three concessions is 85,000 pups and 6,000 bulls per year (Kirchner, 2007) and (Ministry

of Fisheries and Marine Resources, 2008)⁹. The hunting season currently runs from the 1st July to the 15th November (European Food and Safety Authority, 2007).

The MFMR also supervises the hunt, to ensure the hunt is humane and that the TAC is adhered to (Ministry of Fisheries and Marine Resources, 2001) (Ministry of Fisheries and Marine Resources, 2008). Doubt has been cast on the impartiality and capacity of these inspectors by animal welfare groups (European Food and Safety Authority, 2007) and (COWI, 2008) and research undertaken for this report suggests that ‘adhering’ to the TAC often means encouragement to meet the full TAC, as distinct from supervision to ensure that the quota is not exceeded. Warren and Ladle (2006) citing the Ministry of Fisheries and Marine Resources (2005) also reported that “The government strongly encourages the right holders to fulfill their quotas”. Concession holders are further incentivised to fill the TAC due to the fact that they are charged royalties on the TAC, not on the actual number of seals slaughtered¹⁰. The reason concession holders are so strongly encouraged to fill the TAC is unclear but may be linked to the belief within government that seal populations are impacting on fisheries.

6.5 Methods and Regulations for the seal hunt

The MFMR specifies the methods by which seals are slaughtered and supervises the hunt, described below:

Seal pups aged less than one year are rounded up by groups of sealers and driven to areas away from the water. There they are to be released between two rows of sealers armed with clubs. In Namibia, sealing clubs are not spiked. As the pups pass between the sealers they are slaughtered by blows to the top of the head. To ensure the seals are dead, they are then “stuck”, by piercing the heart of the seal with a long knife and bled (Ministry of Fisheries and Marine Resources, 2001).

⁹ See www.usnews.com/science/articles/2009/07/06/namibian-seal-hunt-to-go-on-90000-to-be-clubbed.htm

¹⁰ Although this approach would also make collection of royalties much simpler, since there is no need to verify numbers of seals slaughtered.

Adult seals of at least 3 years are slaughtered with rifles, with a shot to the head, but are not bled. Government inspectors must be satisfied that each seal is dead (Ministry of Fisheries and Marine Resources, 2001). Bulls account for the vast majority of adult seal slaughtered although a small number of cows are taken.

The Government oversees the seal hunt, with at least one inspector from the MFMR required to supervise the hunt (Ministry of Fisheries and Marine Resources, 2001). Sealers are given training on how to conduct the hunt and tested at the beginning and during the July to November season (European Food and Safety Authority, 2007).

Seal carcasses are loaded onto trucks and taken to processing facilities where they are skinned and processed for pelts, meat and other products (Warren and Ladle, 2006). There are processing factories near Cape Cross and Lüderitz (Warren and Ladle, 2006) and (COWI, 2008).

6.6 Effectiveness, humaneness and implications of sealing methods

It is intended that the seals will be slaughtered painlessly and instantly by clubbing or shooting, however there is debate over the effectiveness and humaneness of the methods employed. While sealing industry supporters claim that seals are slaughtered quickly and humanely, the European Food and Safety Authority (EFSA) found that this was not always likely to occur (European Food and Safety Authority, 2007):

The accuracy of blows is compromised by the fact that the targets are nearly always in motion. The extra momentum required to inflict effective blows with the relatively light pick-handle may further compromise accuracy, but without the extra momentum, the forcefulness of the blows would be compromised. Clubs, particularly pick-handles, are likely to be less effective in the case of older animals which have thicker skulls, and which may be mistaken for pups. (Section 3.2.4.1)

Graphic pictures and footage of seal hunts have been published on the Internet¹¹ and accusations of a lack of openness and public access to the hunts add to concern about the humaneness of the industry. This has not been helped by recent arrests of journalists commissioned by welfare groups trying to film the hunt - see for example Hartman & Weidlich (2009) and Annon (2009).

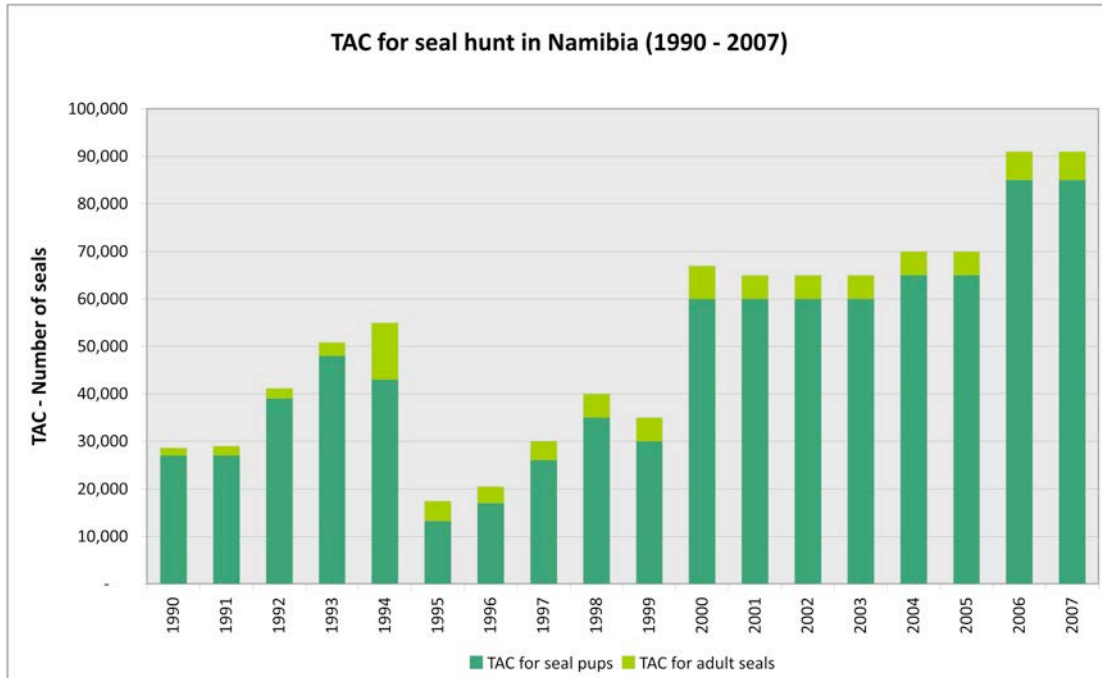
6.6.1 Total Allowable Catch (TAC)

As mentioned above, the sealing quota in 2007 (as well as 2008 and 2009) was set at 85,000 pups (93% of quota) and 6,000 adults (7% of quota) between the three concessions. This has been the quota level since 2006, when the quotas were increased from 65,000 pups and 5,000 bulls.

The TAC is calculated from aerial population surveys conducted every three years and population modeling, including assessment of pup production, survival rates and pup sex ratios to arrive at a maximum sustainable yield (Kirchner, 2007). Based on population estimates of around 620,000 (MFMR, 2008), this annual TAC equates to 15% of the total population. However, when we only consider the TAC for pups against pup breeding numbers – discussed in more detail below - we can see that the TAC could be between 48% and 63% of the total pup production annually. This rate would appear to be a significant proportion of pup population, particularly given that pup populations have historically fluctuated (Kirchner, 2007), (European Food and Safety Authority, 2007) and (Kirkman et al., 2007).

¹¹ See <http://www.youtube.com/watch?v=uzPcAvEARwI&NR=1>

Chart 5: Total allowable catch (TAC) in Namibia (1990 - 2007)



Source: Kirchner (2007), Ministry of Fisheries and Marine Resources (2008) AND (www.usnews.com/science/articles/2009/07/06/namibian-seal-hunt-to-go-on-90000-to-be-clubbed.htm). See appendices for full data.

6.6.2 Concession holders

According to Warren and Ladle (2006) and MFMR (2007), there are three concession holders in Namibia. Two concession holders slaughter seals at the Cape Cross colony and operate a joint venture. Warren and Ladle (2006) state that Cape Cross Seals is not directly involved in the slaughter, and only claims its TAC if another company, Sea Lion Products, fills its own quota and has time to then fill the quota of Cape Cross Seals.

Table 10: Sealing concessionaires in Namibia

Company	Based in	Location for slaughtering	Location for processing
Sea Lion Products / Seal Products	NA	Cape Cross	Henties Bay
Cape Cross Seals	NA	Cape Cross	Henties Bay
Namibia Venison and Marine Exporters	Lüderitz	Wolf Bay and Atlas Bay	Lüderitz

Source: (Atlantic Canadian Anti-Sealing Coalition n.d.) , Warren and Ladle (2006)

Warren and Ladle (2006) also report that most of the concession holders tend to be sole proprietorship businesses. The industry appears to be heavily vertically integrated, with concession holders being involved in seal hunting through the entire value chain from slaughtering through to exporting intermediate products and retail sales of final products.

6.7 Locations where sealing occurs

6.7.1 Cape Cross

Cape Cross is the most well known and controversial of the seal hunting locations, as it is also the most popular location for land-based seal watching in Namibia. Between July and November each year, seals are culled in the morning before the area is cleaned and tourists are allowed in to view the seal colony. The colony at Cape Cross is probably the largest colony of seals in Namibia, with estimates of its population ranging from 210,000 to 270,000¹². Two the concessionaires are licensed to slaughter seals at Cape Cross.

6.7.2 Wolf and Atlas Bays

South of Lüderitz, Wolf and Atlas Bays are close together and often treated as one location. They have populations of around 170,000 and 110,000 seals respectively¹³. These sites are both located in the restricted mining concession Diamond Area Number One, managed by the De Beers Group in conjunction with the Namibian Government. Only one of the concessionaires is licensed to slaughter seals at Wolf and Atlas Bays.

¹² See <http://www.orusovo.com/guidebook/content11.htm>

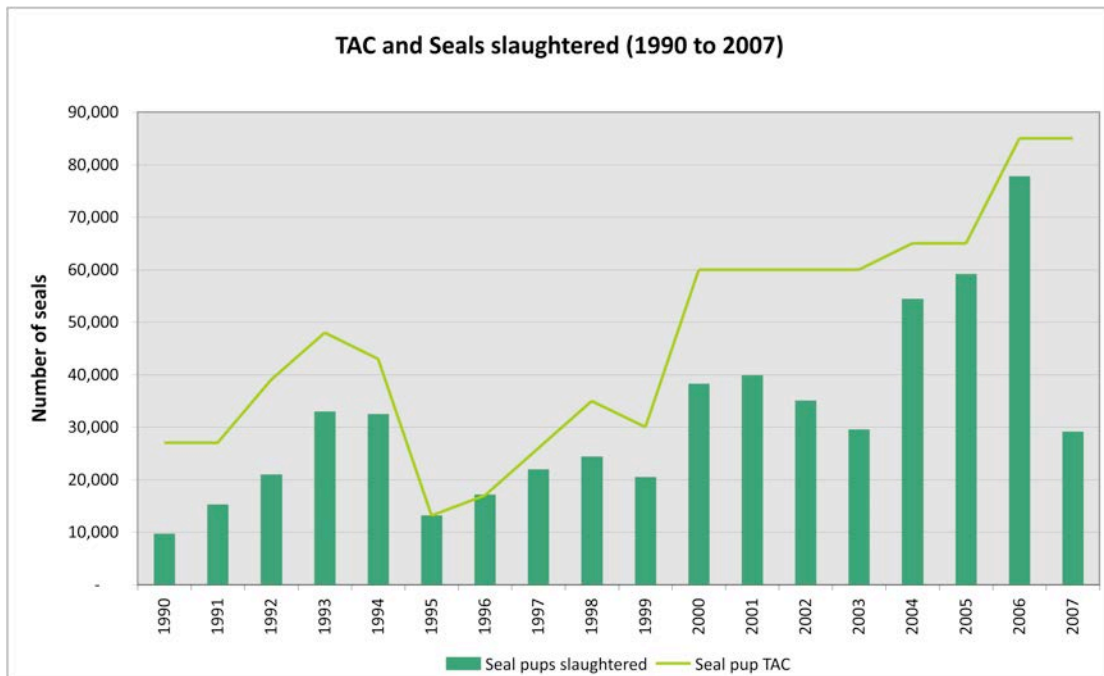
¹³ See <http://www.orusovo.com/guidebook/content11.htm>

6.7.3 Actual numbers of seal pups slaughtered

Seal pups are generally slaughtered in the first half of the season, between July and early September, since weaning is usually complete by August (European Food and Safety Authority, 2007) the pups leave the colony beginning in September (Warren and Ladle, 2006). Warren and Ladle (2006) report that around 15 people are involved in the seal pup slaughter and are divided between ‘herders’, ‘clubbers’ and ‘stickers’.

The following chart shows the historical trends for both TAC and actual catch.

Chart 6: TAC and seals slaughtered (1990 - 2007)



Source: (Kirchner 2007). For full data, see appendices.

From the year 2000 to 2003 the seal pup TAC was under-filled by at least 20,000 pups. In 2006, the slaughter peaked at nearly 80,000 pups, coinciding with a rise in the price of Canadian seal pelts. In 2007, although the TAC remained at 85,000, the number of pups slaughtered fell to just under 30,000 pups. Although this too coincides with a decrease in Canadian pelt prices, our research indicates that there is only one buyer in Namibia and

FINAL

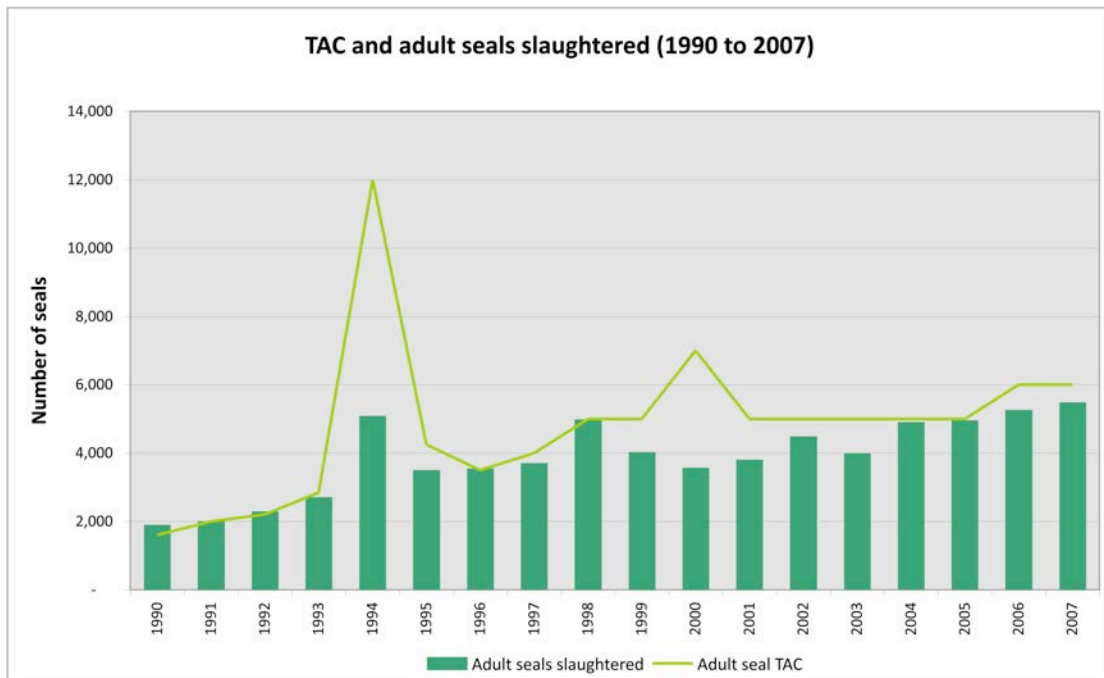
pelts are not auctioned so are not likely to be following the price of international markets directly. As such, it is difficult to draw any conclusions about the link between Canadian prices and demand for seal pelts in Namibia.

It may be that the single buyer purchases Namibian pelts as substitute products when the price of Canadian pelts is especially high. Although the seals are of a different species and so it is not clear if Cape fur seal pelts are a perfect substitute for Canadian seal pelts.

6.7.4 Actual numbers of adult seals slaughtered

Shooting of of adult seals typically takes place in the latter half of the season, between September and November (Warren and Ladle, 2006). The number of people involved in the shooting is unknown.

Chart 7: TAC and adult seals slaughtered (1990 - 2007)



Source: Kirchner (2007)

As shown in the chart above, the number of adult seals slaughtered fluctuates less compared to seal pups¹⁴ and has steadily increased since 1990. This could be because the local demand for leather and international demand for seal genitalia are more reliable than the market for pelts. Products and markets will be discussed in more detail below.

¹⁴ The coefficient of variation for the number of adult seals slaughtered between 1990 and 2007 is 29%, compared to 55% for seal pups.

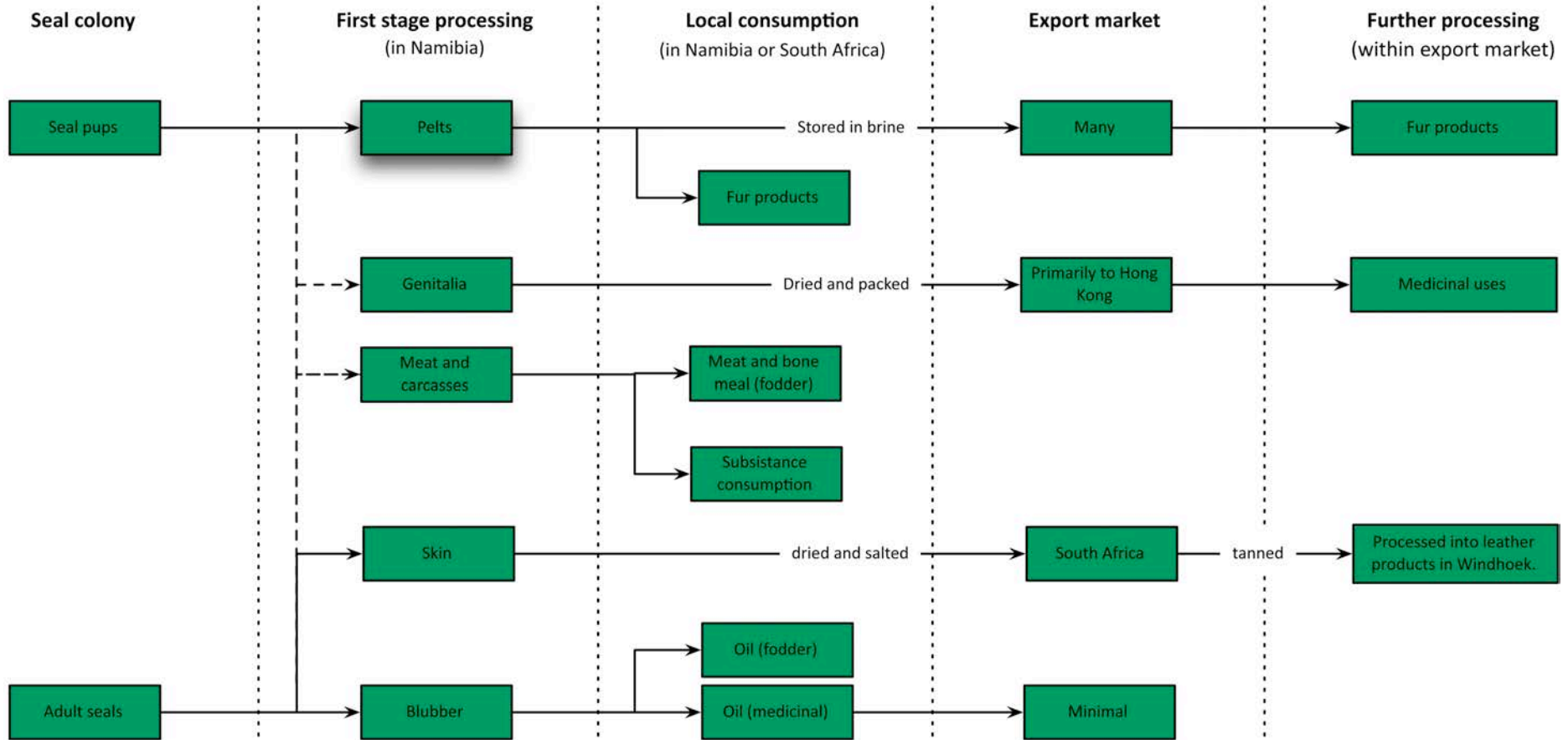
6.8 Products derived from seals

Seals are exploited commercially in Namibia for their pelts, genitalia, oil, meat and for trophy hunting. Figure 3 below outlines the chain of custody for seal derived products in Namibia. There is minimal value adding occurring in Namibia of seal pup products. Leather from adult skins is tanned in South Africa and then imported back into Namibia for manufacture into shoes and other leather products at a Windhoek factory.

The chain of custody for seal hunting in Namibia appears to be heavily vertically integrated, with three concession holders carrying out operations from slaughtering through to processing into intermediate products and even to selling finished leather products. Furthermore, one buyer, Mr. Hatem Yavuz, is reported to account for a significant amount of all Namibian seal pelts purchased. Mr. Yavuz runs a fur business registered in Australia with operations in Turkey, Russia and South Africa¹⁵.

¹⁵ <http://yavuzgrup.com/index.htm>

Figure 3: Chain of custody for seal products in Namibia



Source: EcoLarge Analysis

6.8.1 Pelts

One of the main products derived from sealing in Namibia are the pelts of seal pups. The pelts of the pups are softer and of higher quality than adult seal pelts and are used for making fur coats, hats and other fashion accessories. Fur derived from seal hunting is typically referred to as 'wild fur', as opposed to 'farm fur'. Wild fur is reported to account for 15-20% of total trade in furs globally¹⁶. Seals are not the only animals slaughtered as 'wild fur', however, unlike most other animals (such as mink or fox), there is no farming of seals for fur.

In Namibia, once the concessionaires have caught the seals they are skinned and pelts are stored in brine. They are predominantly exported from Namibia in this condition, though some small scale processing does occur locally to provide some garments and souvenirs that are sold to tourists.

6.8.1.1 Value of the pelts

The pelts are typically the most valuable component of the landed catch from seal hunting; in Canada the sale of pelts accounts for up to 99% of the value of the landed catch (Fink, 2007). Yavuz (2009) confirmed that this was the case in Namibia, however, figures highlighted in other sources indicate that in Namibia, pelts only account for around 65% of the catch value (Warren and Ladle, 2006).

The reasons for this could be due to the low value of pelts in Namibia, where they reportedly sold for only USD\$4.70 per pelt in 2005 (NAD\$36.66). This is 11% of the price of Canadian seal pelts, that sold for an average price of USD\$41 in 2005¹⁷. There are several reasons why prices are low in Namibia. Firstly, in Namibia, the industry is heavily vertically integrated and there appears to be only a few buyers of the pelts. In other countries, pelts are often auctioned and prices can vary from year to year. In Namibia, the price appears to be relatively stable. Furthermore, seal fur products appear to be less heavily in demand by

¹⁶ <http://www.iftf.com/#/wild-fur/>

¹⁷ Inferred from 2006 prices reported in:
<http://www.cbc.ca/canada/story/2006/04/19/seal-pelt-prices060419.html>

comparison to mink and fox fur (among others). Updated figures obtained for this report from the Ministry of Fisheries and Marine Resources indicates that pup pelts now sell for USD\$5.78 (NAD\$47.25) and adult skins for USD\$4.66 (NAD\$38.13).

Another reason why pelts may account for a smaller percentage of the total catch value in Namibia, compared to Canada, is due to the methodology used by Warren and Ladle (2006), who assumed that all seal products produced were sold. Because of this, the values for oil and meat in particular may be overstating the value of non-pelt products and so understating the value of pelts. CITES data confirm the volumes of pelts and genitalia sold closely matches volumes reported by Warren and Ladle (2006), so we can conclude that these estimates are reasonably accurate. However, for oil, meat and leather products, consumption is reported to be predominantly local so it is difficult to verify actual volumes sold.

6.8.1.2 International Markets

Data available from CITES (2009) suggests that there are several export markets for Namibian seal pelts. Table 11 below shows CITES recorded exports since 2004 and the major importers. Smaller importers are included within "Other".

Table 11: Major importers of Namibian seal skins (pelts) (2004 - 2008)

Year	Major importers	Number of skins imported	Percentage of total skins
2004	Turkey	20,000	30%
	Greece	15,900	24%
	Belarus	15,000	23%
	Norway	5,866	9%
	South Africa	5,020	8%
	Other	4,733	7%
	TOTAL	66,519	100%
2005	Turkey	18,603	42%
	Greece	11,836	27%
	South Africa	7,250	17%
	Canada	4,879	11%
	Norway	1,017	2%
	Other	321	1%
	TOTAL	43,906	100%
2006	Norway	27,874	31%
	Turkey	19,557	22%
	Greece	18,800	21%
	Canada	10,004	11%
	Hong Kong	5,400	6%
	South Africa	3,100	3%
	Croatia	4,273	5%
	Other	1,767	2%
TOTAL	90,775	100%	
2007	Turkey	15,028	58%
	Greece	10,056	39%
	Other	997	4%
	TOTAL	26,081	100%
2008	Turkey	37,555	65%
	Canada	17,415	30%
	Other	3,159	5%
	TOTAL	58,129	100%

Source: CITES (2009)

Between 2004 and 2008, Turkey and Greece combined accounted for approximately 60% of all Namibian seal pelt exports. The next most significant export destinations were Norway and Canada that accounted for 12% and 11% respectively over this period.

Interestingly, Greek exports disappear in 2008 but Turkey's exports increase by 105% on their yearly average between 2004 and 2007. This may be due to Greek exports being absorbed by Turkey as a result of the announced ban on the importation of seal products into the European Union – that came into effect in August 2010. In 2008, Canadian exports also re-appear after being absent from data in 2007 and this could indicate another buyer of pelts.

6.8.1.3 Global prices and substitute products

An expansion in the world supply of mink fur is cited as a key reason for the decline in seal skin prices that was experienced in 2007 (Carino Company Limited, 2007), combined with warmer winters in key markets Russia and China, and general economic downturn that followed (Galbraith, 2007). It is unclear how Namibian prices are linked to prices of seal pelts in Canada and substitute pelts. Prices in both Warren and Ladle (2006) and updated prices received from the Namibian Ministry of Fisheries and Marine Resources would indicate that prices for Namibian seal pelts are relatively low by comparison to global prices and reasonably steady.

6.8.2 Leather

Most leather is derived from adult seals. The seals are skinned in the processing factories before being cleaned of fat, then salted and stored. A wide variety of products are made from leather including belts, slippers, jackets and shoes. Most of these products are sold domestically, with some exported to South Africa (Warren and Ladle, 2006). Apart from shoes, quantities of leather products sold are relatively small.

To make shoes and other leather products, the skin of bull seals has to be tanned in South Africa, before being re-imported to Namibia for further processing. These exports do not appear to be reported in the UNEP-WCMC CITES Trade Database, indicating a relatively informal trade. A local company associated with one of the sealing concessionaires has established a shoe factory in the Namibian capital, Windhoek. Warren and Ladle (2006) reported that in 2005, the factory turned 5000 skins into 40,325 pairs of shoes. Because the shoes are made to order, the wholesale price of the shoes is estimated at between USD\$27.5 and USD\$62.5 per pair of shoes (Warren and Ladle, 2006).

6.8.3 Genitalia

The genitals of seals are used in Chinese medicine and cooking and are believed to work as an aphrodisiac and promote men's virility. The genitalia, including the testes and the baculum (penis bone) are usually dried and packed before being exported. Information is limited on the trade in seal penises and other animal parts, due to the often controversial and informal nature of the trade. Yavuz (2009) emphasized the informal nature of the seal genitalia trade, saying that Chinese traders would buy in various quantities and often transport genitalia in suitcases or with other goods.

W. Von Hippel et al. (2005) found that the demand for genitalia and other traditional Chinese medicines might decline following the release of erectile dysfunction drug Viagra. CITES and other local stakeholders suggest that there is still considerable demand for seal genitalia sourced from Namibia.

Prices vary and little data is available, but on wholesale markets, Canadian seal penises can fetch between USD\$15 and \$40, depending on size, with a reported average price of \$20 per penis (High North Alliance, 1997) and Fisheries and Oceans Canada figures quoted in Fink (2007). In Namibia, the price of seal penises is unknown, although Yavuz (2009) stated that sales of penises only contribute “petty cash”. The testes of both adults and pups are also sold for medicinal purposes in Asia. Warren and Ladle (2006) reported that in 2006 the testes could sell for between USD\$115 and USD\$145 per kilo.

According to the CITES trade database, from 2004 to 2006, Namibia exported between 400-500kg of seal genitals per year, with nearly all recorded exports going to Hong Kong (CITES). In 2008, this figure increased to 728 kg.

Table 12: Exports of seal genitalia from Namibia (2004 to 2008)

Year	Genitalia exports (Kg)
2004	422
2005	468
2006	488
2007	250
2008	728

Source: CITES (2009)

6.8.4 Seal Oil

While some seal oil is used medicinally and is high in Omega 3 acids, most is sold to farmers as cattle feed. Warren and Ladle (2006) report that 163,000 litres were extracted from seals in 2005, with 20% being sold for medicinal purposes and 80% for cattle feed. Oil sold for medicinal purposes is reported to sell for between USD\$0.07 and USD\$0.14 per litre while oil sold to farms sells for USD\$0.014 per litre (Warren and Ladle, 2006). It is unclear how much of this oil is sold in Namibia. In Canada, it has been reported that over 80% of blubber to produce seal oil is discarded, despite considerable investment in product development (Fink, 2007).

Table 13: Exports of seal oil from Namibia (2004 to 2008)

Country	Seal oil (ltrs)	Export Markets
2004	4,000	South Africa
2005	24,701	Norway, South Africa, Taiwan, China (PRC)
2006	6,500	South Africa, Tokelau, Taiwan
2007	NA	NA
2008	9,390	South Africa, China

Source: CITES (2009), export markets are listed in order of size of export quantity from biggest to smallest.

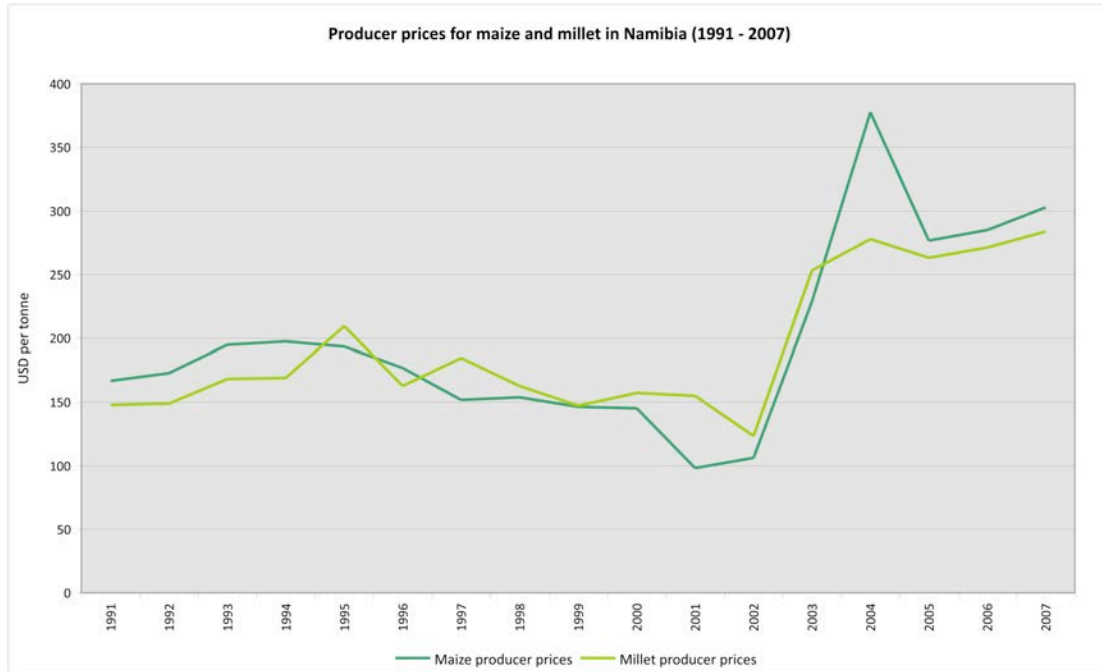
Table 13 above shows that exports of oil from seals can vary greatly from year to year. It is assumed that the oil exported would be medicinal quality although it's possible that exports to South Africa may be used for low value fodder due to the closer proximity and hence low cost of transport.

6.8.5 Fodder and seal meat

The seal meat and carcasses are reported to be “shredded, boiled and dried to produce cattle fodder” (Warren and Ladle, 2006). Other sources claim that the meat is used as pig fodder and even as subsistence food for workers employed by the concession holders (Hartman, 2009).

Warren and Ladle (2006) report that 200 tonnes of fodder - likely to be meat and bone meal (MBM) – were produced and sold in 2005 at a price of USD\$500 per tonne. Yellow maize, which accounts for 50% of the ingredients of cattle fodder in Namibia was priced at between \$100 and \$200 per tonne between 1991 and 2002, before going up very steeply to reach a peak of approximately USD\$375 per tonne in 2004 and then dropping back down to USD\$275 per tonne in 2005 (Chiriboga et. al., 2008). Updated data from the Food and Agricultural Organisation (FAO) of the United States obtained for this report shows that the price of maize in Namibia in 2006 was USD\$285 and that it increased to USD\$300 in 2007¹⁸. This would indicate that the potential price of MBM in 2007 remained at around USD\$500 and may have even slightly increased in-line with price increases for maize.

¹⁸ <http://faostat.fao.org/site/570/default.aspx>

Chart 8: Producer prices for maize and millet in Namibia (1991 - 2007)

Source: FAO statistics. Available online at <http://faostat.fao.org/site/570/default.aspx>.

By comparison to the historical prices of maize and millet in Namibia, USD\$500 per tonne for fodder produced from seals appears to be expensive when considered a direct substitute for maize. However, the higher prices may be due to a potentially higher protein content of seal compared with maize. With fodder prices increasing drastically after 2002, markets for MBM fodder may be a recent opportunity for the sealing industry in Namibia, a country reported by Chiriboga et. al. (2008) to have high and variable fodder prices.

Despite reports that claim the fodder is sold to cattle farms, Warren and Ladle (2006), our analysis indicates that the situation is less clear. Our analysis shows that fodder is also reportedly sold to pig farms (Hartman, 2009). Chiriboga et. al. (2008) looked at the potential competitive advantage the Namibian cattle industry might have and noted that many cattle raised in Namibia are sold young to feedlots in South Africa. Furthermore, they noted that Namibia has stricter regulations on what can be fed to cattle, by comparison to South Africa, due to a desire to export cattle from Namibia to the European Union. Because of this, it would seem more likely that the majority of the MBM fodder produced from seals is either

FINAL

sold locally to pig farms, or potentially to South African feedlots, some of which may be cattle feedlots.

Hartman (2009) reports that some restaurants in Canada sell seal meat as a gourmet item and one Namibian seal concessionaire suggests Namibian hotels could also sell the meat; however, a restaurant owner in Swakopmund noted that they would not be willing to sell seal meat to tourists who have often participated in seal watching 'eco tours'.

6.8.6 Seal trophy hunting

Trophy hunting is a considerable and lucrative part of tourism in Namibia, although seals would only account for a small minority of this. Asheeke & Katjuongua (2007) report that 446 trophy hunting businesses were registered with the Namibian Tourism Board. Namibia Tourism Board (2009b) lists statistics on animals hunted and fees associated with them, however does not mention seals.

Table 14: Seal Trophy hunting in Namibia

Country	Trophies (bull seals)	Export Markets
2004	4	Germany, Slovenia
2005	NA	NA
2006	2	Germany and Unknown
2007	3	Latvia, Germany
2008	2	France

Source: CITES (2009)

Because of the relatively small number of seals taken for trophy hunting, our analysis will ignore these values to focus primarily on the industry for processing seals into products.

6.9 Economic Impact of Seal Hunting in Namibia

The following section provides a quantification of the economic impact of seal hunting in Namibia, for 2005 and 2007. The economic impact of seal hunting in Namibia can broadly be considered to include:

- Royalties to Government (the Namibian public) from seal hunting.
- Revenues derived from sales of intermediate products derived from seals.
- Revenues derived from sales of final products derived from seals.

6.9.1 Royalties from seal hunting

Concessionaires are required to pay a royalty of NAD\$2 per pup and NAD\$6 per bull (Ministry of Fisheries and Marine Resources, 2007b). Once concessionaires have accepted their quota they are liable to pay for the full quota, regardless of whether the full quota of seals is slaughtered (Ministry of Fisheries and Marine Resources, 2007a).

6.9.1.1 Royalties in 2005

Based on the TAC for 2005, this amounts to a total of NAD\$160,000 (USD\$25,183); comprised of NAD\$130,000 for the pup quota and NAD\$30,000 for the adult quota.

Royalties received for the seal TAC accounted for only 0.2% of all fisheries quota revenues received in 2005 (MFMR, 2008).

6.9.1.2 Royalties in 2007

Based on the TAC for 2007, this amounts to a total of NAD\$206,000 (USD\$29,212); comprised of NAD\$170,000 for the pup quota and NAD\$36,000 for the adult quota.

Royalties received for the seal TAC accounted for only 0.2% of all fisheries quota revenues received in 2007 (MFMR, 2008).

6.9.2 Value of products derived from seal hunting

In this section, we quantify the value of products derived from seal hunting in Namibia in 2005 and 2007, where possible following the MFMR convention of grouping values into ‘landed value’, ‘final value’ and ‘export value’.

6.9.2.1 Value in 2005: Warren and Ladle (2006)

Warren and Ladle (2006) attempted to quantify the potential revenue that sealing concession holders may generate from sealing derived products. Warren and Ladle (2006) reported that seal hunting was a “small but lucrative industry” which generated an estimated profit of between USD\$900,000 and USD\$2,300,000 in 2005. In Table 15, Table 16 and Table 17 below, we have re-created the data from Warren and Ladle (2006). Where a range of prices was stated by Warren and Ladle (2006), we have used an average of the two prices, whereas Warren and Ladle (2006) had used a low and high estimate.

Value at factory gate or landed value (2005)

The table below shows the landed value at the ‘factory gate’ for products derived from seals in Namibia. These products are either exported or consumed locally, with no further value adding occurring in Namibia.

Table 15: Estimated landed value of seal hunt (2005)

Product	Units	Quantity	Unit value (USD)	Total value (USD)	Percentage of total value
Pup pelts	pelts	59,204	\$4.70	\$278,259	65%
Adult skins	skins	4,963	NA	NA	0%
Genitalia (adult)	kg	250	\$145	\$36,250	8%
Genitalia (pup)	kg	74	\$115	\$8,510	2%
Oil (medicinal)	ltrs	32,600	\$0.07 - \$ 0.14	\$3,423	1%
Oil (fodder)	ltrs	130,400	\$0.014	\$1,826	0%
MBM (fodder)	tonnes	200	\$500	\$100,000	18%
TOTAL				\$428,267	100%

Source: Warren and Ladle (2006) and EcoLarge analysis.

In the table above, we see that the estimated value of seal derived products at the “factory gate” was around USD\$430,000 in 2005. With pelts accounting for nearly 65% of all revenues, being followed by meat that accounts for 18% and genitalia for 10%. For most seal

derived products, this is where the value adding ends in Namibia. However, for adult skins, Warren and Ladle (2006) report that concession holders are now tanning the skins and then making leather products that are sold in Namibia and South Africa.

Final value of seal products (2005)

The table below shows the final value of products derived from seals in Namibia. This includes any additional value adding that occurs after the first stage of processing of products. In this case, the significant difference in value is due to the potential value of leather shoes made from the skins of adult seals, adding an additional \$1.8 million to total industry value.

Table 16: Estimated final value of seal hunt including seal shoe value (2005)

Product	Units	Quantity	Unit value (USD)	Total value (USD)	Percentage of total value
Pup pelts	pelts	59,204	\$4.70	\$278,259	12%
Adult skins	skins	4,963	NA	NA	NA
Leather shoes	pairs of shoes	40,325	\$27.5-\$62.5	\$1,814,625	81%
Genitalia (adult)	kg	250	\$145	\$36,250	2%
Genitalia (pup)	kg	74	\$115	\$8,510	0%
Oil (medicinal)	ltrs	32,600	\$0.07 - \$ 0.14	\$3,423	0%
Oil (fodder)	ltrs	130,400	\$0.014	\$1,826	0%
MBM (fodder)	tonnes	200	\$500	\$100,000	4%
TOTAL				\$2,242,892¹⁹	100%

Source: Warren and Ladle (2006) and EcoLarge analysis.

Both Warren and Ladle (2006) and Yavuz (2009) emphasised that there is considerable potential to increase the value of seal products through further processing. Further processing of skins into leather products could hold more potential than further processing of pelts into fur products because the fur industry is well established and has a long history (and so an associated skills base and knowledge base) in countries such as Turkey. The Namibian government highlights tanning of hides into leather and leather products as an

¹⁹ Figures for this table were based on reported volumes and prices provided by Warren and Ladle (2006). These figures differ slightly from the final values calculated by Warren and Ladle (2006). Warren and Ladle (2006) reported a profit to the industry at between USD\$0.9 million and USD\$2.3 million, see appendices for actual figures from Warren and Ladle (2006).

opportunity for Namibia²⁰. Some stakeholders maintain that despite the potential, little additional value adding is likely to occur in Namibia - although they did not cite reasons why. Further processing would require significant capital investment in plant and equipment for quite specialist processes and labour that may not be readily available in Namibia.

Export value of seal products (2005)

Based on CITES data available for 2005, as well as the stated markets for products from Warren and Ladle (2006), we have estimated below the export value of seal derived products from Namibia in 2005.

Table 17: Estimated gross export value of seal hunt (2005)

Product	Units	Total value (USD)	Percentage exported	Export value (USD)	Percentage of total value
Pup pelts	pelts	\$278,259	100%	\$278,259	32%
Adult skins	skins	NA	NA	NA	NA
Leather shoes	pairs of shoes	\$1,814,625	30%	\$544,388	63%
Genitalia (adult)	kg	\$36,250	100%	\$36,250	11%
Genitalia (pup)	kg	\$8,510	100%	\$8,510	1%
Oil (medical)	ltrs	\$3,423	76%	\$2,594	0%
Oil (fodder)	ltrs	\$1,826	0%	\$0	0%
MBM (fodder)	tonnes	\$100,000	0%	\$0	0%
TOTAL		\$2,242,892	100%	\$870,000	100%

Source: CITES (2009), Warren and Ladle (2006) and EcoLarge analysis

Although Warren and Ladle (2006) reports that 30% of shoes are exported from Namibia, no exports of leather products can be seen in CITES (2009) for 2005 or 2006. This indicates that the exports are informal – and therefore unreported. Arcto Pty Ltd – the company manufacturing the shoes in Namibia – only lists one agent in South Africa²¹. Although Warren and Ladle (2006) report that approximately 40,000 pairs of shoes were made in 2005 from nearly 5,000 skins, they also state that “the shoes are manufactured to order” and so 40,000 is really an estimated maximum number of pairs of shoes, the actual number produced could be much lower than this. Attempts to contact relevant stakeholders to gain

²⁰ <http://www.mti.gov.na/subpage.php?linkNo=69>

²¹ <http://www.arcto.iway.na/contacts.htm>

FINAL

clarity into this issue were unsuccessful. Although Warren and Ladle (2006) don't discuss exportation of oil from Namibia, CITES (2009) reports that 24,701 litres were exported in 2005, amounting to 76% of total medicinal oil produced in 2005. We assume it is medicinal oil exported due to its higher value. The reason for the difference of USD\$1.6 million between export and final value is largely due to the 70% of shoes assumed to be purchased domestically in Namibia.

6.9.2.2 Value in 2007: Economists at Large

The number of seal pups slaughtered in 2007 reduced dramatically to 27,171 pups, down from 59,204 pups in 2006. By contrast, the number of adult bull seals slaughtered increased from 4,963 seals in 2005 to 5,493 seals in 2007. Prices for pup pelts are estimated to have increased from USD\$4.70 to USD\$6.70, based on updated prices received from the Namibian Ministry of Fisheries and Marine Resources in April 2010. Prices were also obtained for adult skins, that weren't included in 2005 analysis by Warren and Ladle (2005).

Landed value or value at factory gate (2007)

Table 18: Estimated landed value of seal hunt (2007)

Product	Units	Quantity	Unit value (USD)	Total value (USD)	Percentage of total value
Pup pelts	pelts	29,171	\$6.70	\$195,457	57%
Adult skins	skins	5,493	\$5.41	\$29,701	9%
Genitalia (adult)	kg	291	\$160	\$46,672	17%
Genitalia (pup)	kg	36	\$127	\$4,579	2%
Oil (medicinal)	ltrs	36,081	\$0.07 - \$ 0.12	\$4,190	2%
Oil (fodder)	ltrs	144,325	\$0.01	\$1,596	1%
MBM (fodder)	tonnes	108	\$553	\$59,753	22%
TOTAL				\$341,949	100%

Source: Warren and Ladle (2006) and EcoLarge analysis.

The estimated value of seal derived products at the “factory gate” in 2007 was USD\$341,949. Pelts account for approximately 57% of the landed value, with MBM (fodder) accounting for 22% and genitalia accounting for 19%.

Final value of seal products (2007)**Table 19: Estimated final value of seal hunt excluding seal shoe value (2007)**

Product	Units	Quantity	Unit value (USD)	Total value (USD)	Percentage of total value
Pup pelts	pelts	29,171	\$6.70	\$195,457	57%
Adult skins	skins	5,493	\$5.41	\$29,701	9%
Genitalia (adult)	kg	291	\$160	\$46,672	14%
Genitalia (pup)	kg	36	\$127	\$4,579	1%
Oil (medicinal)	ltrs	36,081	\$0.07 - \$ 0.12	\$4,190	1%
Oil (fodder)	ltrs	144,325	\$0.01	\$1,596	0%
MBM (fodder)	tonnes	108	\$553	\$59,753	17%
TOTAL				\$341,949	100%

Source: Warren and Ladle (2006) and EcoLarge analysis.

The estimated final value of seal derived products in Namibia in 2007 was USD\$341,949. The figure is the same as that for landed value, indicating that no value adding occurs in Namibia - with the exclusion of seal leather shoes, discussed below.

Seal leather shoes

We have not included the value of leather shoes produced from seal leather due to a lack of data to clarify the number of shoes produced. Without this data, due to the high value of the shoes, the figures for final value can be inflated by USD\$2.2 million - assuming an average price per pair of shoes sold of USD\$49.75²². Due to this lack of data, as well as the high cost of these shoes in a lower income country and the lack of any CITES data to confirm exports, we assume the value of the shoes is low and exclude it from our figures for final values.

²² The average of the range of prices given by Warren and Ladle (2006): USD\$30.40 and USD\$69.10

Export value of seal products (2007)**Table 20: Estimated gross export value of seal hunt (2007)**

Product	Units	Total value (USD)	Percentage exported	Export value (USD)	Percentage of total value
Pup pelts	pelts	\$195,457	100%	\$195,457	78%
Adult skins	skins	\$29,701	0%	\$0	0%
Genitalia (adult)	kg	\$46,672	100%	\$46,672	19%
Genitalia (pup)	kg	\$4,579	100%	\$4,579	2%
Oil (medinical)	ltrs	\$4,190	76%	\$3,185	1%
Oil (fodder)	ltrs	\$1,596	0%	\$0	0%
MBM (fodder)	tonnes	\$59,753	0%	\$0	0%
TOTAL		\$341,949	100%	\$249,842	100%

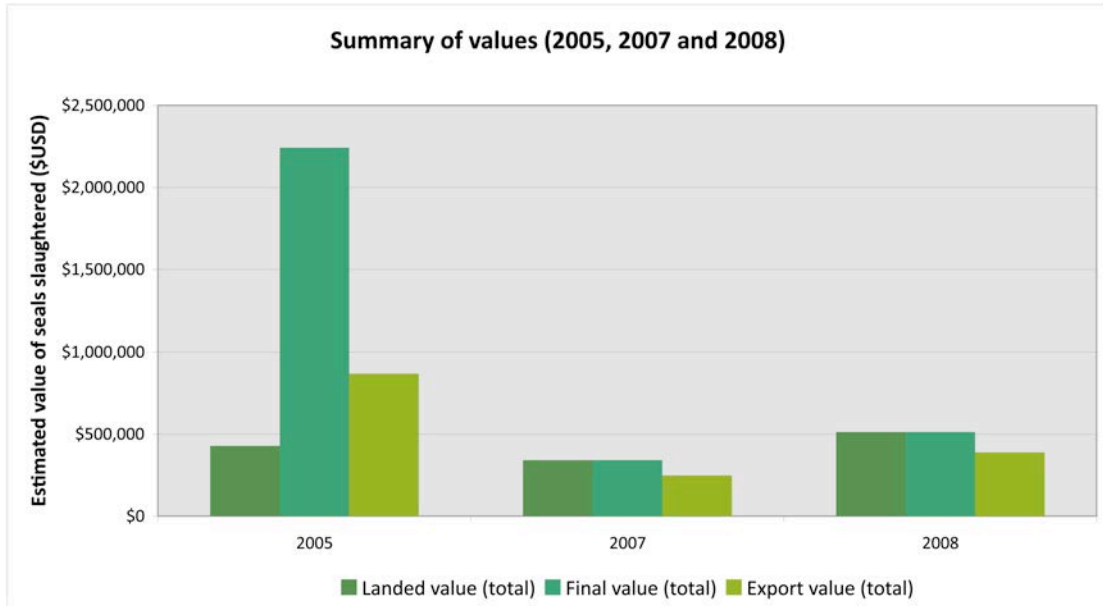
Source: CITES (2009), Warren & Ladle(2006) and EcoLarge analysis

The estimated export value of seal derived products in Namibia in 2007 was USD\$249,842. Seventy-eight percent of the estimated export value is attributable to the export value of seal pup pelts and nineteen percent to adult genitalia.

6.9.2.3 Summary of values (2005,2007 and 2008)

Chart 9 below displays the landed, final and export value of the seals slaughtered in Namibia in 2005, 2007 and 2008. The landed value is highest in 2005 because figures for that year are based on Warren and Ladle (2006) who included high values for seal leather shoes.

Chart 9: Summary of values (2005, 2007 and 2008)



Source: EcoLarge analysis

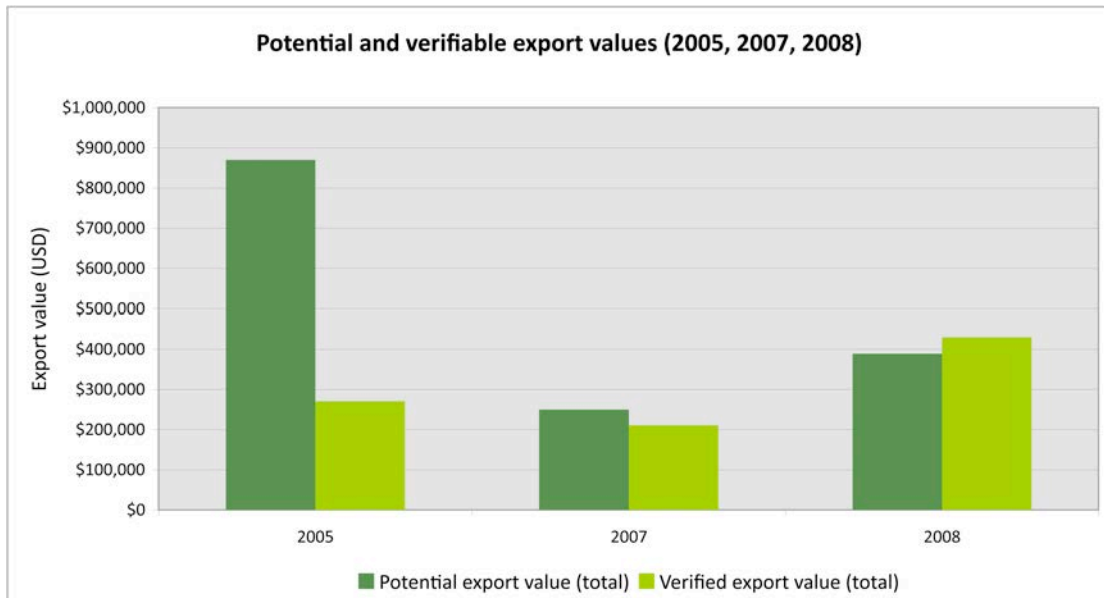
2008 VALUES:

Because the number of seals slaughtered in 2007 was so low by comparison to recent years and because of the availability of data from CITES (2009) indicating that 58,129 seal pelts were exported in 2008, we have estimated the value of seal hunting in 2008 as well using the same assumptions as 2005 and 2007. We can see in Chart 9 above that landed value increases to just over USD\$500,000, due to the higher number of skins. For price information used in these estimates, see section 10.1 in the appendices.

6.9.2.4 Values vs. revenues (2005, 2007 and 2008)

The only value from the figures above that can be tested using other sources are the figures for export values. In the chart below, we compare the potential export value from the number of seals slaughtered in 2005, 2007 and 2008 with estimates of potential export revenues received, based on quantities reported in CITES (2009).

Chart 10: Potential and verifiable export values (2005, 2006 and 2008)



Source: EcoLarge analysis

For 2005, the verifiable export value is only 31% of the potential export value. Furthermore, CITES (2009) indicates no exports of leather products (i.e. shoes) so it is likely that the potential value of the shoes is not being realised and the 30% reported as being exported by Warren and Ladle (2006) is more likely to be 30% of shoes made to order, as opposed to 30% of the total potential shoes produced. For 2007 the verifiable export value is 84% of the potential value. In 2008, the verifiable export value is actually 10% higher than the potential export value, this is due to the large volume of genitalia reportedly exported in 2008, 728 kg, whereas based on volumes estimated to be slaughtered in 2008, an estimated 364 kg of genitalia could be produced. This indicates that some inventories of genitalia were sold down in 2008.

6.9.2.5 Notes on 2007 and 2008 estimates

Notes on price per unit

Except for pup pelts and adult skins, prices per unit were held steady from Warren and Ladle (2006) in Namibian dollars, with the exchange rate to USD adjusted to update for 2007 and 2008 prices. See section 10.1 in the appendices for full data on these conversion.

Notes on adult skins and leather shoes

As reported in Warren and Ladle (2006), it is assumed that on average, 8 pairs of shoes can be made from each seal skin. Warren and Ladle (2006) do not state a price for the unprocessed skins of adult seals, however, a price of NAD\$38.13 (USD\$5.78 at 2009 exchange rates) for adult skins was obtained from the Ministry of Fisheries and Marine Resources for this research.

Notes on genitalia

Estimated quantities for genitals based on the weight of testes reported by Warren and Ladle (2006) of 53 grams for adults and 12 grams for pups. Like Warren and Ladle (2006) estimates for 2007 and 2008 assume that all the genitals are used and that 50% of pups are male.

Notes on oil

For 2007, we assume that approximately 33 litres is obtained from each adult seal, as per figures provided by Warren and Ladle (2006); and that 20% is of medicinal quality while 80% is sold as fodder.

Notes on values per seal

To calculate values per seal, we simply divided landed, final and export values by the total number of seals slaughtered in a particular year. To calculate values per pup and adult, we assumed that adults accounted for 100% of all oil produced and we split value for MBM (fodder) evenly between adults and pups. Although this is simplistic, it is unclear how much the meat and carcass of a seal weighs once blubber and skin have been removed.

6.9.2.6 Comparative value of Canadian hunt (2007)

For comparison to Namibian catch values estimated by Warren and Ladle (2006) and this analysis, the table below shows the landed value for seal hunting in Canada in 2007.

Table 21: Landed (catch) value of seal hunting in Canada (2007)

Product	Units	Quantity	Price per unit (USD)	Landed value (CAD)	Landed value (USD)
Seal skins (all types) - pelts	Skins	205,163	\$53.20	\$10,914,588	\$10,148,569
Penis	Penises	142	\$19.72	\$2,800	\$2,603
Flippers	Flipper	145,279	\$0.98	\$142,162	\$132,185
Seal Shoulders	tonnes	1	\$690	\$704	\$655
Seal meat	tonnes	51	\$456	\$23,341	\$21,703
Seal fat	tonnes	520	\$546	\$283,529	\$263,630
TOTAL				\$11,367,124	\$10,569,345

Source: Fink (2007)

As shown in Table 22 below, seal pelts appear to contribute a lower percentage of total values in Namibia. This is due to a lower price for pelts in Namibia, as well as a bigger slaughter of adult seals and accompanying values for products derived from adult seals.

Table 22: Comparison of landed (catch) values in Namibia and Canada (USD)

	NAMIBIA			CANADA
	2005 Warren and Ladle (2006)	2007 This report	2008 This report	2005 Fink (2007)
Seal skins/pelts	65%	66%	71%	96%
Penis/Genitalia	10%	15%	10%	0%
Seal fat / oil	1%	1%	1%	2%
Flippers	NA	NA	NA	1%
Seal Shoulders	NA	NA	NA	0%
Seal meat	23%	17%	19%	0%
Total catch value (USD)	\$428,627	\$341,949	\$512,674	\$10,569,345
Seal pups slaughtered	59,204	29,171	58,129	329,829
Landed value per seal pup (USD)	\$5.69	\$7.88	\$6.77	\$32.05

Source: EcoLarge analysis

6.10 Tax revenue from seal hunting

The Namibian government would derive tax revenue from sealing via a number of ways:

- Taxation on sealing derived products
- Taxation of businesses involved in the sealing industry (assuming they are profitable)
- Taxation on individuals employed by the sealing industry, where the positions are regular, formal positions and not temporary cash jobs.

Due to the uncertainty surrounding both final and export values, the estimate of the tax revenue accruing to the Namibian government from seal hunting is given below based on landed values.

Table 23: Estimated tax revenue (2005, 2007 and 2008)

	2005	2007	2008
Estimated tax revenue (15% of landed value)	\$64,240	\$51,292	\$76,901

The figure of 15% in the table above is based on the value added tax (VAT) in Namibia that is currently 15%²³.

²³

<https://www.pkf.com/site/webdav/site/pkf/shared/Intranet/International%20Tax%20other%20attachments/Country%20Tax%20Guides%20in%20PDF/Namibia%20Tax%20Guide%202009.pdf>

6.11 Employment supported by seal hunting

Warren and Ladle (2006) report that a sole proprietor structure is the most common business type among seal concession holders, with owners typically also acting as managers. A few foremen are also employed with general labourers used for the slaughtering and factory work. Few women are reported to be employed by the industry and their roles are typically administrative.

The bulk of the employment supported by sealing is involved in the slaughtering and processing of seals. Warren and Ladle (2006) estimate that 117 people are employed by the sealing industry on a seasonal basis. It is reported that the factory on Lüderitz relies much more on manual labour to remove fur from the seals, however, the number of employees at Henties Bay is much higher. This may indicate that most of the seal processing occurs at Henties Bay. Table 24 below shows the breakdown of employment reported by Warren and Ladle (2006).

Table 24: Estimated employment from seal hunting in Namibia

Location	Role	Number of jobs supported	Duration of job
Cape Cross	Slaughtering	10 - 15	1 st Jul to 15 th Nov
Wolf Bay and Atlas Bay	Slaughtering	10 - 15 ²⁴	(4.5 months)
Henties Bay	Processing	65	
Lüderitz	Processing	22	
Windhoek	Shoe making	15 - 20	All year round
TOTAL		122 (low) 137 (high)	

Source: Warren and Ladle (2006)

Warren and Ladle (2006) state that employees involved in slaughtering and processing are paid USD\$10 per day, while jobs in shoe making earn USD\$14 per day. This differs from Canada, where sealers are paid per pelt. The total annual cost of wages for slaughtering and processing is estimated at USD\$119,190, while the total annual cost of wages for seal

²⁴ It is unclear from Warren and Ladle (2006) whether 10 – 15 are employed at both sites but we have assumed this for our estimates.

leather products is estimated at USD\$59,000. Based on these figures, we have estimated the average yearly wages for employees involved in seal hunting.

Table 25: Estimated annual wages in seal hunting industry

Industry	Role	Total wages paid per season (USD)	Average wages per employee per season (USD)
Seal hunting	Slaughtering	\$2,740 - \$8,220	\$274
Seal hunting	Processing	\$110,970 - \$116,450	\$1,307
Seal hunting	Leather products	\$59,000	\$3,442
		\$178,190 (total)	

Source: Warren and Ladle (2006) with EcoLarge analysis. For calculations, see appendices.

Although the table above separates slaughtering from processing for the purposes of analysis, it is unclear if this role is completely separate from processing (factory) jobs. Although it couldn't be confirmed, it is possible that after concluding the slaughter each day, the herders, clubbers and stickers involved in the slaughtering work at the factory where they process the seals.

6.12 Growth trends for seal hunting

In terms of the value received from seal products, seal hunting in Namibia is intrinsically linked to both the international markets for pelts and genitalia and locally, markets for fodder. For fur, demand tends to fluctuate greatly due to both economic cycles and also seasonal impacts from year to year. For fodder, Namibia is reported to be volatile prices and although currently high, it is unclear if they'll return to historically lower prices. Finally, markets for seal genitalia may expand as China's economy grows, however it has been suggested equally that substitute products such as Viagra may threaten demand for this product.

The seal hunting industry in Namibia appears to have little room for growth in terms of the number of seals slaughtered or concessions granted. Although it could arguably grow in terms of revenue through increasing the processing (and so value adding) that occurs locally,

it is unclear in what areas it would have a competitive advantage. Value adding to pelts (i.e. making fur products) is likely to remain something that occurs outside of Namibia because of the specialised skills and a history of fur industries that exists in other countries. For other products such as meat and bone meal (MBM) fodder, processing is already occurring and there would appear to be little room for further value adding.

The research for this report indicates that markets for products derived from adult seals are more steady and predictable and that markets for products derived from pups can fluctuate from year to year. This lack of predictability in the higher value area of sealing (pelts) is a potential inhibitor to further entrants into the marketplace in indeed there was any room.

The demand side risks for the seal pelt industry appear to present a significant future challenge. In August 2010, the European Union implemented a ban on seal product trade, removing a significant market for the Namibian sealing industry. There are also active campaigns to achieve trade bans in other existing or potential markets for Namibia's sealing industry. As a result, the current industry values are very likely to remain at the maximum possible revenues unless seal populations expand or international demand for seal products grows leading to higher pelt prices. The current outlook would indicate that neither option is likely thus limiting the growth prospects for the seal hunting industry.

6.13 Impact of proposed EU ban on seal products

The composition of major export countries for Namibian products is likely to change in the future as the European Union (EU) has adopted a ban on import of and trade in seal products. Under the ban only products from seals caught in specific, traditional hunts such as Inuit hunts in Northern Canada and Greenland will be able to be traded in the EU. Namibia is not included in any exemptions (European Parliament 2009).

Of the major export destinations listed in Table 11 above, the ban will only affect Greece, which between 2004 and 2007 accounted for 25% of seal pelt exports from Namibia. As discussed in section 6.8.1.2, Turkish imports appear to have already displaced Greek imports in 2008, possibly in anticipation of the EU ban. However, as Turkey is a candidate country

for EU membership, if Turkey does accede to the EU, its seal imports will probably be phased out.

The Namibian Minister of Fisheries and Marine Resources claims that the EU ban will not affect the hunt as there are other markets for seal products²⁵. Our analysis would give limited support to that position over the short run for two reasons; firstly, because as we have shown, alternative export markets such as Turkey can displace Greece and secondly, because China and Russia now account for a large majority of demand for fur products (Galbraith, 2007).

6.14 Conclusions

Further growth of the seal hunting industry in Namibia is likely to be slight if at all. This is due to key constraints on the industry as outlined in the previous sections:

- The market prices for seal products are highly volatile
- Much of the products are of a low value
- The sustainability of the total allowable catch is uncertain, but there are signs that it may be at its upper limit
- There is therefore little room for an expanded slaughter
- The global market for seal products is limited with many products facing competition from non-seal alternatives.

Nevertheless, despite the limited growth prospects, the strength of the current industry is in the jobs it supports. Although it is mostly low paid, low skilled and seasonal work, employment is nonetheless important in Namibia.

²⁵ See <http://www.bloomberg.com/apps/news?pid=20601082&sid=a0G1vHmNBfQo&refer=canada>

7 Tourism and Nature tourism in Namibia

Tourism is the fastest growing economic sector in Namibia and is expected to be the largest contributor to GDP within 10 years (MTI, 2010c). Tourism has been flagged by *Vision 2030* and the *National Development Plan 3*²⁶ as being a priority sector for Namibia (World Travel and Tourism Council, 2006).

This section of the report will look at the broader tourism and nature tourism markets in Namibia as background to the seal watching tourism industry.

7.1 Size of Namibia's tourism industry

The size of tourism is measured by economic impact in the Tourism Satellite Accounts with total number of visitors measured by international arrivals. Figures for key indicators of the size of the Namibian tourism industry and the change over time are provided in the table below.

Table 26: Direct impacts and size of tourism in Namibia (2005 - 2008)

Direct impacts	2005	2006	2007 ²⁷	2008 ²⁸
Tourism demand (USD / millions)	\$1,241	\$1,387	\$1,557	\$1,570
Visitor spending/exports (USD / millions)	\$514	\$597	\$695	\$727
Gross domestic product (USD / millions)	\$245	\$271	\$302	\$304
Employment (jobs)	20,000	21,000	22,000	22,000
Number of visitors	777,890	833,345	928,912	1,031,092 ²⁹

Sources: World Travel and Tourism Council (2006), Namibia Tourism Board (2008) and Namibia Tourism Board (2008b).

Overall, tourism to Namibia over the four years since 2005 has shown a constantly increasing trend at an average rate of 17% (as measured by tourism demand). The direct impact figures in Table 26 above for 2006 represent around 3.9% of Namibia's gross domestic product (GDP) and 5.1% of all employment in Namibia (Namibia Tourism Board, 2008) and (World Travel and Tourism Council, 2006).

²⁶ Long-term strategic planning documents for Namibia.

²⁷ Preliminary figures as reported by Namibia Tourism Board

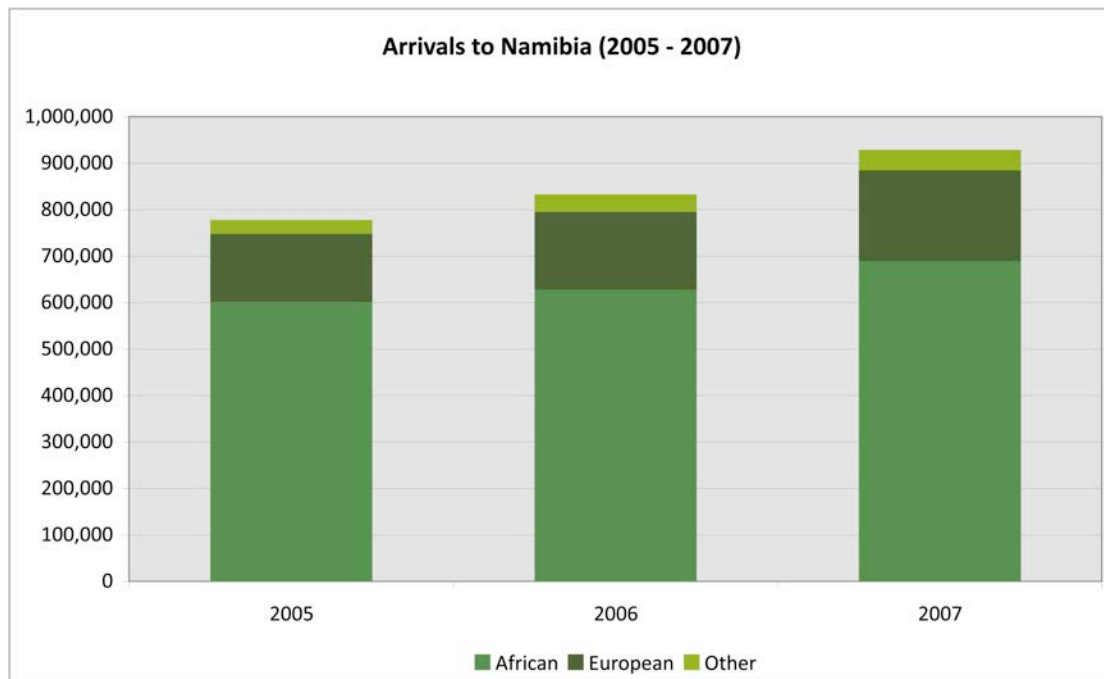
²⁸ Estimated figures as reported by Namibia Tourism Board

²⁹ Based on 11% increase between 2007 and 2008, as per 2006-2007 growth rate reported by Namibia Tourism Board (2008b)

7.2 Number of visitors

In 2007 – the most recent year for which data was available – there were a total of 929,000 international visitors to Namibia. African visitors accounted for 74% of this, with a clear majority of these arriving from Angola and South Africa (see Chart 12 below) followed by European visitors (21%) and other visitors (5%). This represents an increase in visitors of 12% from 2006 and 19% since 2005 (Namibia Tourism Board, 2008b).

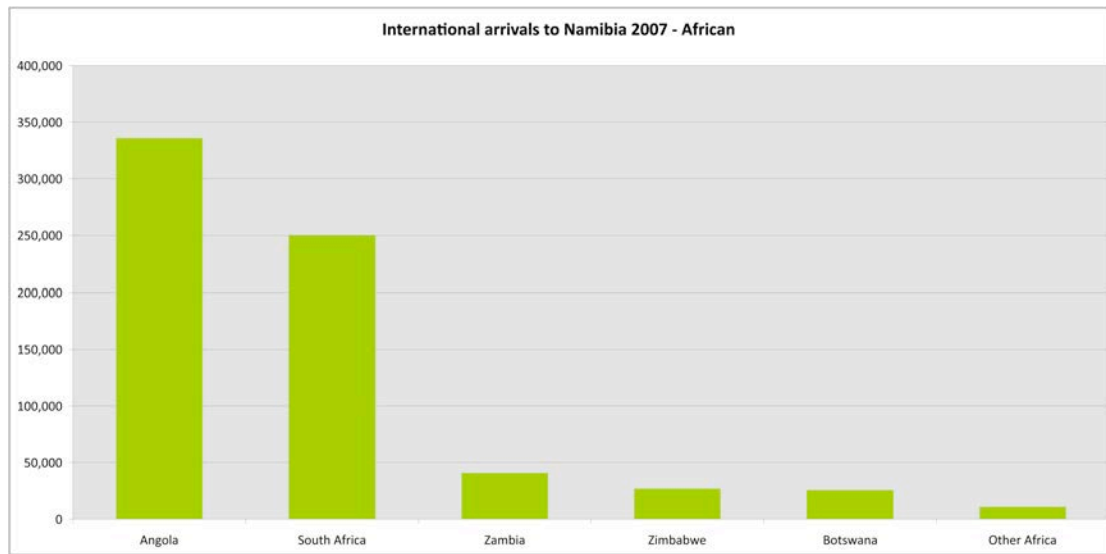
Chart 11: International visitor arrivals to Namibia (2005 - 2007)



Source: Namibia Tourism Board (2008b)

The charts below show the visitation to Namibia in 2007 from African and non-African destinations by country of origin. These provide an indication of the major tourism markets for Namibia.

Chart 12: International arrives to Namibia by Country of Origin - African

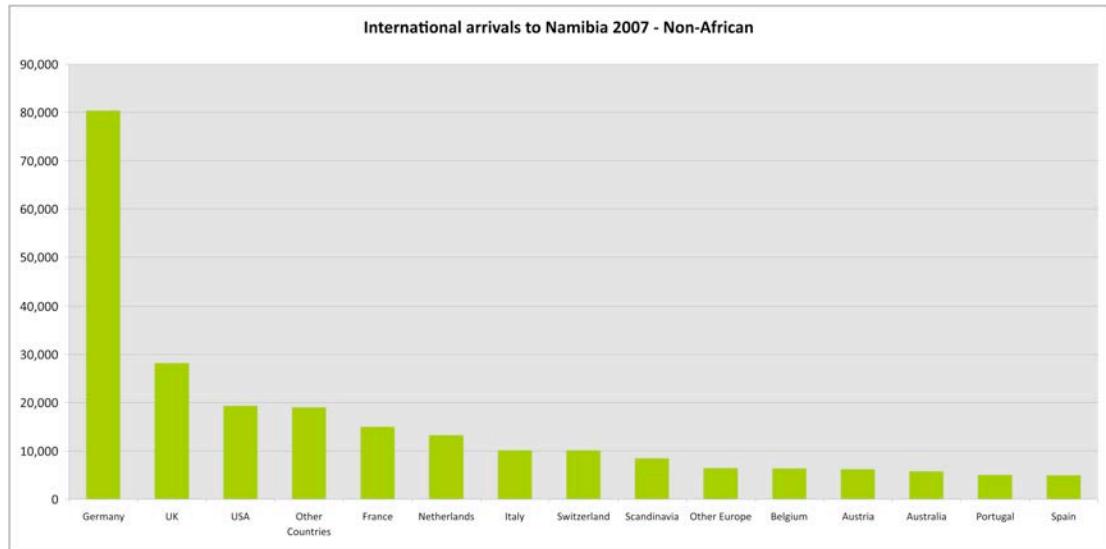


Source: Namibia Tourism Board (2008b)

As shown in

Chart 12, African visitors are predominantly from Angola and South Africa, with the two countries accounting for 85% of all African visitors to Namibia and 63% of total international visitors in 2007.

Chart 13: International arrives to Namibia by Country of Origin - Non-African



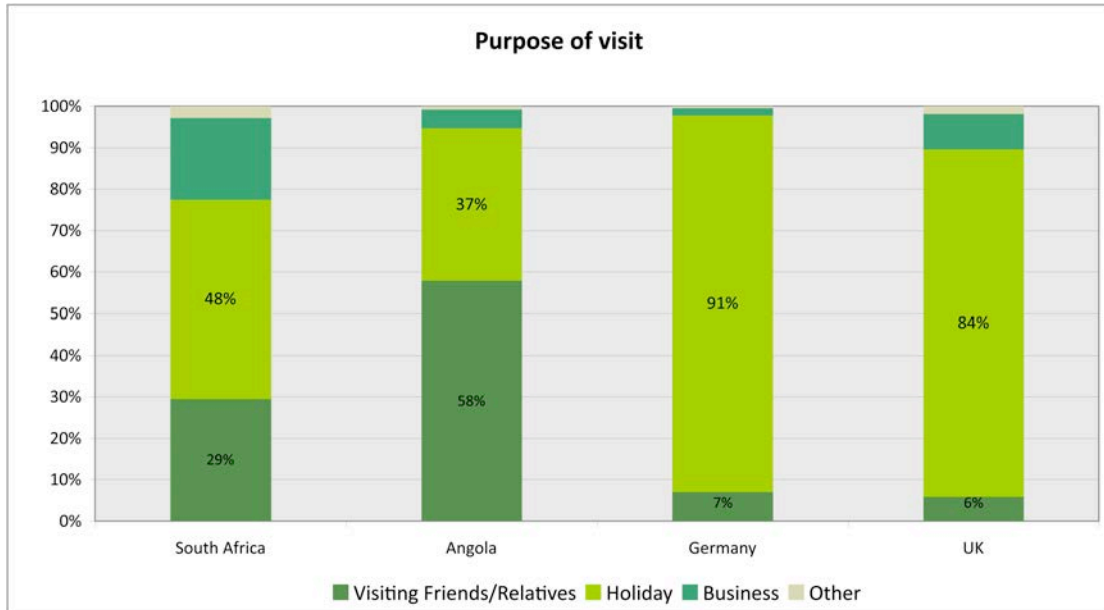
Source: Namibia Tourism Board (2008b)

As shown in Chart 13, non-African visitors are predominantly from Germany, accounting for 34% of all non-African visitors – at around 80,000 visitors per annum, Germans account for approximately 7% of total international visitors to Namibia in 2007. After Germany, the next biggest non-African markets are the United Kingdom (UK) (12%), the United States (USA) (8%), France (6%) and the Netherlands (6%).

7.3 Motivation for travel to Namibia

The top five markets for international arrival numbers to Namibia are Angola (36%), South Africa (27%), Germany (9%), Zambia (4%) and the UK (3%). Chart 14 below shows the purpose of travel for the top two African and non-African arrival countries.

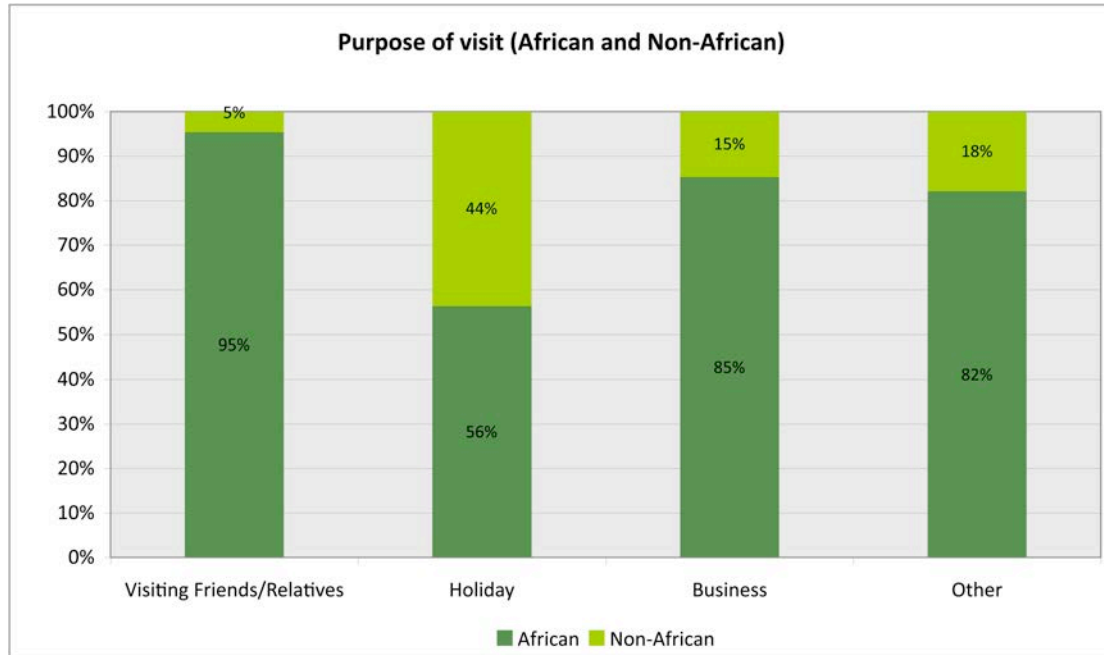
Chart 14: Purpose of visit for top two African and non-African arrivals



Source: Namibia Tourism Board (2007)

South African visitors travel to Namibia for a variety of purposes, with 29% visiting friends and relatives (VFR), and around half travelling for a holiday. South Africa has the largest proportion of tourists travelling for business of the top four source countries. For Angola, business travel is less important, with VFR being the major proportion of visitors (58%) and holiday travellers accounting for over a third of all travellers. German and UK visitors are primarily holiday visitors, with 91% and 84% of all visitors respectively arriving for holiday purposes.

Chart 15: Purpose of visit for African and non-African arrivals (average)



Source: Namibia Tourism Board (2007)

Aggregated tourism arrival numbers (Chart 16) show non-African arrivals (comprised mostly of European arrivals) accounting for 44% of holiday visitors. This equates to approximately 207,000 holiday visitors, out of a total of 474,000 holiday visitors and 929,000 visitors in total for 2006.

7.4 Tourism growth trends

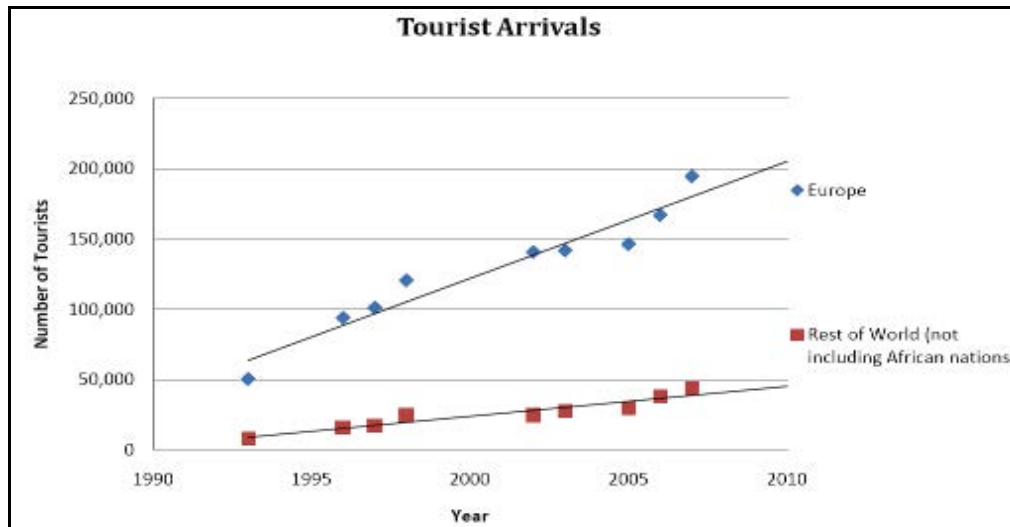
According to the Namibian Tourism Satellite Accounts, the travel and tourism economy grew in real terms by 15% in 2006, and was forecast to grow by 9% as the world economy slowed in 2007 (Namibia Tourism Board, 2008). Eita and Jordaan (2007) highlighted that growth in tourism to Namibia between 1996 and 2005 was largely due to increases in the incomes of trading partners, a depreciating currency, improvements in infrastructure and sharing a border with South Africa.

Analysis by the Namibia Tourism Board (2008b) shows that between 2005 and 2007, growth was strongest from the non-European visitors, with an average annual rate of 22% - albeit

from the lowest base. Over the same time period, European arrivals increased by 15% while African arrivals also registered an average annual increase of 7%.

Longer-term growth rates shown in the chart below indicate higher rates of growth in tourists from Europe compared to the rest of the world (not including Africa) based on total number of tourists.

Chart 16: International Tourist Arrivals to Namibia



Source: Namibia Tourism Board (2009b)

Long term projections for tourism growth in Namibia between 2006 and 2016 estimate that total demand will increase at a real, annual rate of 6.9% by 2016 to USD\$2.9 billion, up from USD\$1.5 billion (World Travel and Tourism Council, 2006).

7.5 Nature-based tourism attractions³⁰

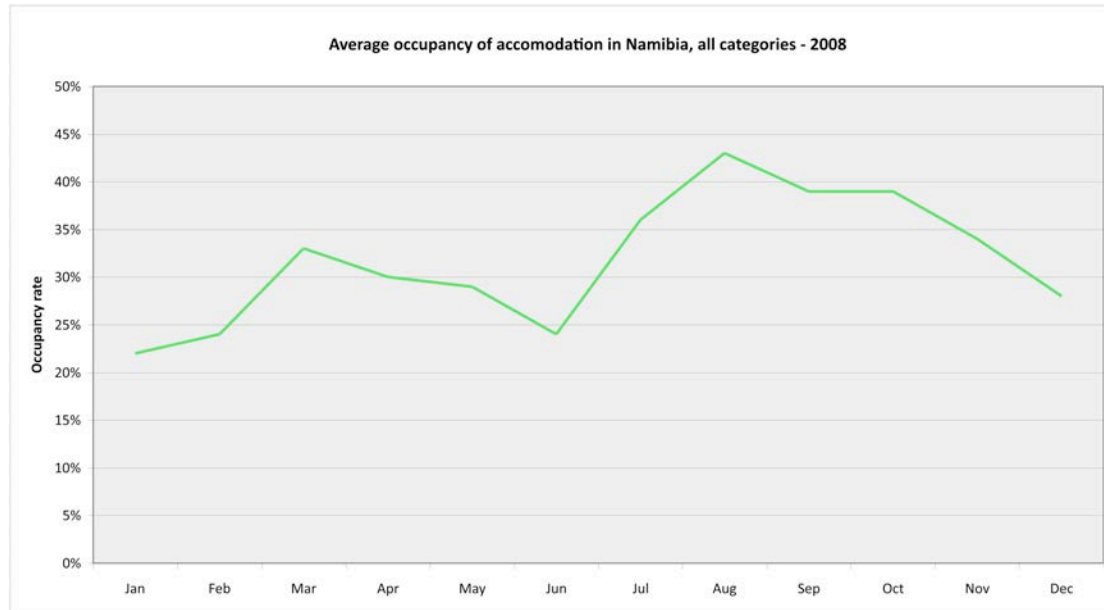
The Namibian government has earmarked nature-based tourism as a key sector of the Namibian economy due to its famous national parks and abundant wildlife (Ministry of Environment and Tourism, 2009b).

³⁰Information in this section is from www.namibia-travel.net and www.namibiaturism.com.na

7.6 Seasonality in Namibian Tourism

Namibia's tourism market has a distinct international high season between July and November. Traditionally the busiest time has been the European summer holiday season, which coincides with cooler weather in Namibia. In recent years the season has extended into October and November, perhaps due to marketing and increased tourism offerings (World Travel and Tourism Council, 2006).

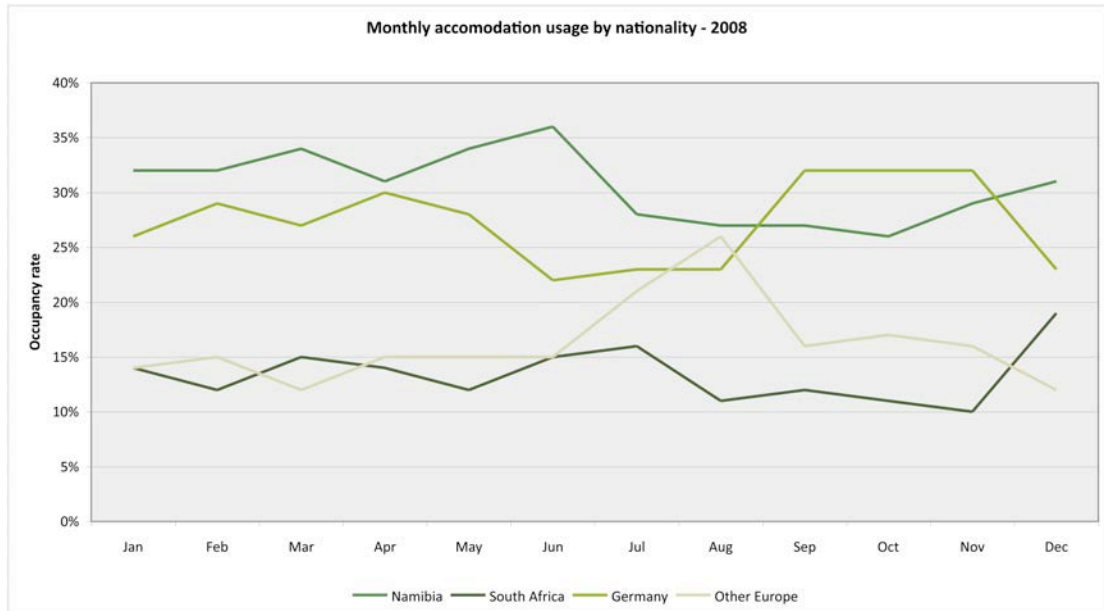
The chart below demonstrates this seasonality based on occupancy rates for accommodation in Namibia.

Chart 17: Seasonality in Namibian Tourism - occupancy rates (2008)

Source: Namibia Tourism Board (2009a)

Domestic and South African tourism is focused outside these peak international times, during March, April, May and December. Many tourism operators offer discounts to Namibians in these times to extend the tourism season and encourage domestic tourism (Moseley et al., 2007). The following chart shows peaks for European tourism from July through to November (green lines) and increased domestic and South African tourism in April, May, June and December (grey lines).

Chart 18: Seasons for European and Domestic/South African tourism



Source: (Namibia Tourism Board 2009a)

8 Seal watching tourism in Namibia

Seal watching in Namibia can potentially occur year-round, since the major locations for seal watching are all colonies with seal populations present in all months of the year. However, the seal watching season is largely driven by the key tourist seasons, being July through to August for European visitors and December and January for African visitors.

The Cape Cross Seal reserve was established in 1968, and has been popular with visitors since that time (Ministry of Environment and Tourism, n.d.). P.D. Shaughnessy (1982) quotes various sources claiming that 6,308 visitors went to Cape Cross in 1972.

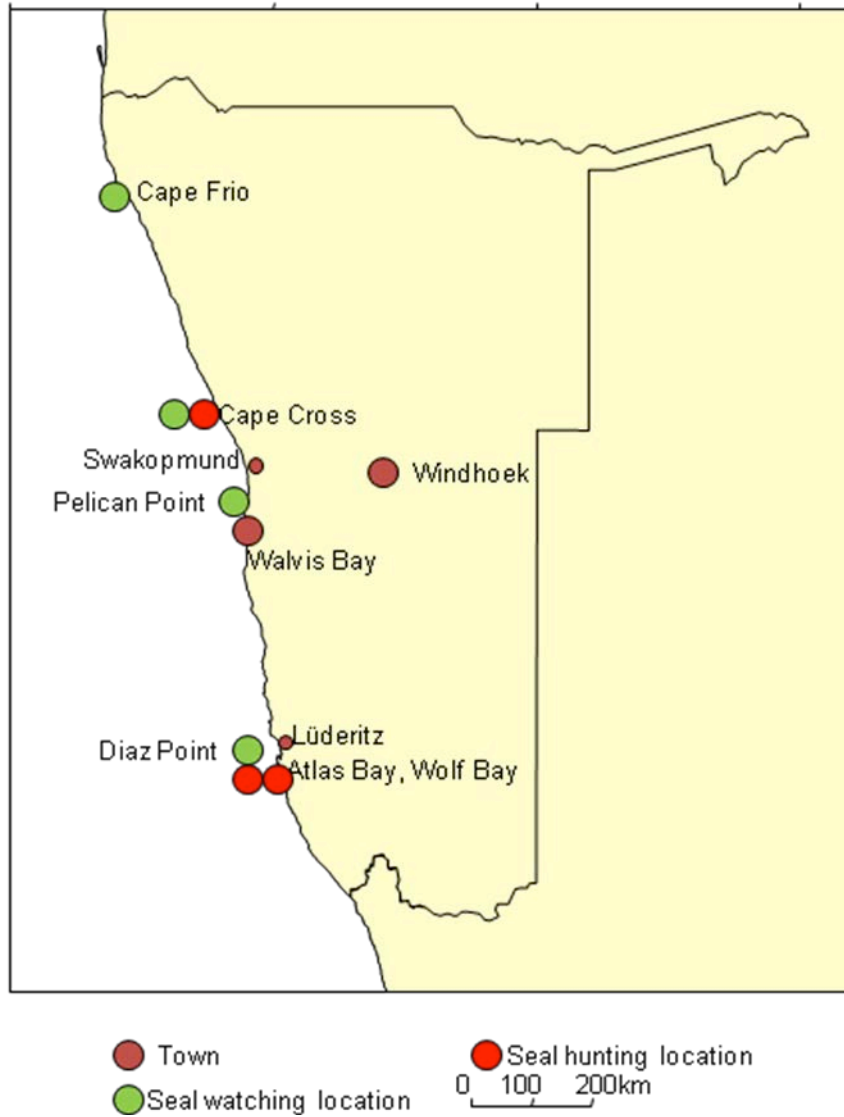
Kirkwood et al. (2003) reported that by the 1990s four sites in Namibia were being visited by seal watching tourists: Cape Cross, Cape Fria, Atlas Bay and Dolphin Head. The last of these sites, Dolphin Head, is south of Walvis Bay, but has not been identified in more recent tourism sources and is only visited occasionally as part of tailored tours.

Hoyt (2000) noted that seal watching was well established by 1998 with three operators working out of Walvis Bay, offering trips to see seals and dolphins in motorised boats and kayaks. This number had grown to 11 operators by 2008 (O'Connor et al., 2009)³¹.

The main sites for seal watching are now Cape Cross, Pelican Point, Cape Frio and other areas around Lüderitz, mainly Atlas Bay and Dias Point. Peaks in seal watching tourism to these locations largely follow the key tourism seasons outlined in Chart 18 above.

³¹ O'Connor et al. (2009) reported 10 cetacean watching operators, although they identified 11 operators who offered seal watching. One operator did not offer cetacean watching so was excluded from analysis.

Figure 4: Map showing locations for seal watching tourism



Source: EcoLarge Analysis, based on maps and data provided by Seal Alert, WSPA and Google maps.

The table below provides a summary of locations and the nature of the trips offered.

Table 27: Summary of seal watching locations and trips in Namibia

Location	Number of operators	Nature of trip
Cape Cross	NA. Facility managed by MET.	Land-based Day trips to Cape Cross, departing from Swakopmund or Walvis Bay. Trips are also offered to tourists staying at the nearby Cape Cross Lodge.
Pelican Point	11	Boat-based Scenic boat trips including seal watching at Pelican Point as well as other landmarks and marine animals. Departing from Swakopmund or Walvis Bay.
Cape Frio	Informal air based operators	Air/land-based Informal air-based seal watching during fly-in to a resort 20km inland that offers land based seal watching.
Atlas Bay	Tailored tours only	Land-Based Seal watching formerly included on tours in the diamond mining area. Now available only through tailored tours.
Dias Point	1	Boat/Land-Based Public access to a seal colony in a public park and one operator offering boat-based seal watching as part of nature cruises.

8.1 Seal watching at Cape Cross

The major land-based seal watching location in Namibia is at Cape Cross. The sandy cape is named after the cross that was erected there in 1486 by Portuguese navigator Diego Cão. Located within the West Coast National Park, Cape Cross is 120km north of Swakopmund and 60km north of Henties Bay and was originally an important location for a guano industry. In 1968, the Cape Cross Seal reserve was established to protect the largest breeding colony of Cape fur seals in the world (Ministry of Environment and Tourism, n.d.). While the site is of historical interest, the main attraction is the colony of up to 210,000 Cape fur seals. The Seal Reserve is managed by the Ministry of Environment and Tourism (MET).

While there are seals at Cape Cross year round, the population swells during the breeding season in November and December. Bulls migrate to Cape Cross in October and establish territories. Cows arrive in November and give birth in late November or early December.

Mating season begins shortly after new pups are born (Ministry of Environment and Tourism, n.d.).

Sealing is also conducted annually at Cape Cross, with the season running from the 1st of July to the 15th of November. For most of the year the seal reserve is open from 8am to 5pm. However, between July 1st to November 14th it is open between 10am and 5pm, with the likely reasons being to avoid tourists from seeing sealing hunting operations that occur in the mornings (Ministry of Environment and Tourism, n.d.).

8.1.1 Offering

A popular day trip north of Swakopmund and Walvis Bay and also flown over by aeroplane tours going further north³², Cape Cross receives consistently high ratings from travellers, many considering it a “must see” for visitors to Swakopmund³³. Some tourists view the seals at Cape Cross from the air on plane-based safaris, but most arrive in their own vehicles or in tour buses. Fees are paid at an entry gate some distance from the car park and seal colony. Visitors are unsupervised while viewing the seals, though they are asked not to leave the marked walkways and paths (Ministry of Environment and Tourism, n.d.) and (Kirkwood et al., 2003).

In 2007 a new walkway was constructed to replace the ageing sea wall that separated the tourists from the seals. The new walkway is slightly elevated allowing good photos opportunities of the seals. It is hoped this will reduce numbers of tourists entering into the colony and disturbing the seals. Picnic sites and new toilets were also constructed using recycled plastic materials. This project was co-funded by the Namibian Coast Conservation and Management Project (NACOMA) and the Namibian Ministry of Environment and Tourism, NACOMA (2009).

Unlike the second most popular seal watching location, Pelican Point in Walvis Bay, Cape Cross is a breeding colony.

³² <http://www.namibian.org/travel/namibia/swakopmund.htm>

³³ http://www.virtualtourist.com/travel/Africa/Namibia/Things_To_Do-Namibia-Cape_Cross-BR-1.html

Table 28: Cape Cross entrance fees³⁴

Nationality	Price (per person)	Vehicle	Price (per vehicle)
Namibian	NAD\$30 (USD\$4.05)	Sedan cars	NAD\$10 (USD\$1.35)
SADC ³⁵	NAD\$60 (USD\$8.10)	Buses 11-25 seats	NAD\$40 (USD\$5.40)
Other	NAD\$80 (USD\$10.80)	Buses 26–50 seats	NAD\$300 (USD\$40.50)
		Buses 50+ seats	NAD\$500 (USD\$67.60)

NOTE: It is assumed that the Namibian value added tax (VAT) of 15% is included in the prices above.

Based on prices in the table above obtained for this report, prices seem to have increased significantly since the visit of Bass (2007) and other sources³⁶ who listed the following prices with no vehicle charges:

Table 29: Cape Cross entrance fees (2007)

Nationality	Price
Namibian	NAD\$10 (USD\$1.35)
SADC	NAD\$30 (USD\$4.05)
Other	NAD\$40 (USD\$5.40)

8.1.2 Profile of visitors

High-end visitors stay at the nearby Cape Cross Lodge. As no further detailed information on the visitor profile to Cape Cross was available, the visitor profile was assumed as similar to that of Swakopmund as provided in Namibia Tourism Board (2009a). As a result, we assume that 36% of tourists are Namibian, 20% are from southern African nations and 45% are from mostly outside of Africa (mostly Europe).

8.1.3 Visitor numbers

There is considerable disparity between published estimates and recent Ministry of Environment and Tourism statistics for Cape Cross. MET representatives contacted for this study suggested that 56,000 people visited Cape Cross in 2009 (Ministry of Environment and Tourism, 2009a). The most recent published estimate of Cape Cross visitor numbers is provided by Kirkwood et al. (2003) who quote unpublished local data claiming 105,000

³⁴ <http://www.namibia-1on1.com/information/namibiawildliferesorts.html>

³⁵ Southern African Development Community member states are: Angola, Botswana, the Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia and Zimbabwe (www.sadc.int).

³⁶ for example www.namibweb.com/nwrdailyfees.htm

visitors per year. Neither MET contacts or the authors of Kirkwood et al. (2003) were able to explain this difference, as some time had passed since publication, but suggested the recent MET figures would be more accurate. MET representatives noted that there had been a decline in tourism numbers generally following the global economic downturn in 2008. For the purpose of this report, we have assumed the lower and more recent figure obtained from the MET of 56,000 visitors.

8.1.4 Economic impact

This report focuses on the direct economic impact in the form of ticket prices for entry into the Cape Cross reserve.

Table 30: Estimate of ticket revenue from entry fees at Cape Cross reserve

Nationality	Price	Proportion of visitors to Cape Cross ³⁷ (Namibia Tourism Board 2009a)	Number of visitors	Ticket revenue (NAD)	Ticket revenue (USD)
Namibian	NAD\$30 (USD\$4.05)	36%	20,160	\$604,800	\$81,648
SADC ³⁸	NAD\$60 (USD\$8.10)	21%	11,760	\$705,600	\$95,256
Other	NAD\$80 (USD\$10.80)	43%	24,080	\$1,926,400	\$260,064
TOTAL			56,000	\$3,236,800	\$436,968

Source: EcoLarge analysis

Using a conservative estimate of each tourist paying NAD\$4 of parking fees, Table 31 below shows that the Cape Cross Seal Reserve generates tourism revenues of NAD\$3,460,800 (USD\$467,208). Because Cape Cross also holds historical significance as well as its seal watching attractions, we have attributed only 70% of tourism revenue to the seal colony at Cape Cross.

³⁷ as per distribution of visitor arrivals to Swakopmund

³⁸ Southern African Development Community member states are: Angola, Botswana, the Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia and Zimbabwe (www.sadc.int)

Table 31: Estimated tourism revenue at Cape Cross reserve

	NAD	USD
Total ticket revenue	\$3,236,800	\$436,968
Estimate of parking revenue, assuming each visitor is liable for NAD\$4 of parking fees	\$224,000	\$30,240
Total	\$3,460,800	\$467,208
Total attributable to seals (70%)	\$2,422,560	\$327,046

Source: EcoLarge analysis

8.2 Seal watching at Pelican Point

Pelican Point is a sandy peninsula on the west side of Walvis Bay. Walvis Bay is the only sizable natural harbour along the Namibian coastline and also the name of a city situated on the bay. A colony of seals lives on the tip of the peninsula and is regularly visited by boat cruises operating out of Walvis Bay or Swakopmund. Unlike Cape Cross, Pelican Point is not a breeding colony, but rather it is a “haul out” colony where seals rest when not searching for food or migrating to other areas. Because of this, there is less chance of tourists seeing seal pups at Pelican Point, with Kirkman (2007) reporting that no more than 100 seal pups would generally be present at haul out colonies such as Pelican Point each year.

8.2.1 Offering

Eleven operators offer cruises to Pelican Point that include seal watching. The boats generally accommodate between 10 and 30 passengers, although some use smaller vessels such as kayaks to give tourists a closer view of seals and a more adventurous experience. The cruises are not dedicated seal watching trips, but the seals are a major attraction, along with large bird colonies, dolphins, whales and sunfish.

Most operators advertise that they leave every morning, although outside of the main tourist season departures may be less frequent. Trips cost on average NAD\$430 (USD\$57) for adults and NAD\$200 (USD\$26) for children.

Tourists on all boats get a close view of seals with some operators advertising that the seals will “haul out” aboard the tour boats providing tourists the ability to feed them³⁹.

Whales and dolphins are also seen on boat-based trips. The most common species of cetaceans are humpback whales and southern right whales (seasonal between July and November), bottlenose dolphins, dusky dolphins and Heaviside’s dolphins O’Connor et al. (2009).

8.2.2 Profile of visitors

Higher end international tourists tend to account for the majority of tourism to Pelican Point. O’Connor et al. (2009) reported that for most operators, during the whale watching season (July to November) between 80% and 90% of tourists were international. Elwen and Leeney (2008) found that outside of the season for European visitors, South African visitors made up a large proportion of passengers, primarily during December and January.

8.2.3 Visitor numbers

O’Connor et al. (2009) estimated that 44,000 people took part in marine-wildlife boat-based trips in Namibia in 2007. In 2008, Elwen and Leeney (2008) reported that 45,000 people took part in such trips in Walvis Bay. Because these trips all included seal watching and seal watching is generally one of the highlights year-round, this number is a useful indicator of the number of seal watching tourists annually. In this report, we use the more recent figure (based on year of data) provided by Elwen and Leeney (2008), and estimate that 45,000 people take part in seal watching in Walvis Bay.

8.2.4 Economic impact

This report estimates the economic impact in the form of ticket prices for seal watching tours.

³⁹ <http://www.levotours.com/gallery/Seals%20+%20Skippers/default.htm>

Using data on operator revenues from Elwen and Leeney (2008), we have estimated the direct revenue attributable to seal watching at Pelican Point.

Table 32: Estimated tourism revenue from Pelican Point (2007 and 2008)

	NAD	USD
Total revenue from marine-wildlife tours (2008)	\$18,368,000	\$2,261,027
Revenue attributable to seals (2008)	\$12,857,600	\$1,582,719

Source: EcoLarge analysis, based on Elwen and Leeney (2008) and O'Connor et al. (2009).

The calculations above estimate that 70% of total revenues for marine wildlife trips in Walvis Bay can be attributed to seal watching. This figure is an estimate based on the prevalence of marketing materials promoting seal watching and the extensive use of seals in imagery on marketing materials.

8.3 Seal watching at Cape Frio

Cape Frio (also known as Cape Fria) is located in the remote Northern area of the Skeleton Coast National Park. There is minimal access by road and visitors typically arrive via fly-in safari tours. Cape Frio has not always been a seal breeding colony, however breeding now occurs and it is one of the fastest growing seal colonies in Namibia. Kirkman et al. (2007) report over 16,000 pups born at Cape Frio in 2004.

Cape Frio and its seal colony are mentioned in most marketing material advertising visits to the area. Some sources claim that it is one of the biggest seal colonies in the world⁴⁰ while other numbers suggest that it remains smaller than Cape Cross. One website claims that Cape Frio is the “primary wildlife attraction of the Skeleton Coast ... harbour(ing) a seal colony numbering in the tens of thousands.”⁴¹

⁴⁰ See <http://www.namibweb.com/skeleton.htm>

⁴¹ See http://www.southernafricatravel.co.uk/destination.jsp?destination_id=2034

8.3.1 Offering

The Cape Frio area is part of a government-allocated tourism concession, allowing the concessionaires exclusive use of the area. While two companies operate fly in safaris in the area, Wilderness Safaris Namibia have exclusive access to seal watching Cape Frio. Seal watching is conducted as part of extensive 4WD tours of the area, which include shipwrecks and remote, geologically interesting areas (Wilderness Safaris Namibia, 2009).

The camp where tourists stay is aimed at top end tourism, being a luxurious and exclusive camp, with capacity for only 12 people whilst employing 23 people. At the time of research, the four day / three night safari cost USD\$4,439⁴².

8.3.2 Profile of visitors

Tourists are predominantly high-end international visitors, with very few domestic or South African visitors (Wilderness Safaris Namibia, 2009).

8.3.3 Visitor numbers

The operators take approximately 35 tourists per month (420 per year) to visit the seals (Wilderness Safaris Namibia, 2009).

8.3.4 Economic impact

The tourism expenditure estimated below focuses on revenues from 4WD tours that include seal watching. Promotional materials for the Skeleton Coast Camp focus on in a minor manner on the seal colony in photos and written material. The operators interviewed stated that whilst seals are a draw card for some tourists, the majority visit for the isolated location, spectacular scenery and shipwrecks (Wilderness Safaris Namibia, 2009). As a result, no value is attributed to these visitors staying at the Skeleton Coast Camp.

Table 33: Estimated tourism revenue at Cape Frio

	NAD	USD
Visitors (people)	420	420
Price per person	\$32,671	\$4,439

⁴² <http://www.namibweb.com/scc.htm>

Percentage attributable to seals	5%	5%
Revenue attributable to seals	\$686,091	\$93,219

Source: EcoLarge analysis

8.4 Seal watching at Dias Point and Atlas Bay area

South of the town of Lüderitz, seals can be sighted on several rocky islands, bays and capes. There are breeding colonies at Atlas and Wolf Bays and one offshore on Long Island (Kirkman et al., 2007). Both Atlas and Wolf Bays are also locations for commercial seal hunting. Other haul out colonies can be found along the coastline, including at Dias Point, a rocky point where Portuguese navigator Bartholomeu Dias sheltered in 1487 (Pienaar, 2009).

8.4.1 Offering

Tour operators in Lüderitz have offered tours of seal colonies at Atlas Bay in the past, but at time of research there was minimal activity. Tours to Kolmanskop, a deserted diamond mining town, or to Elizabeth Bay, have also included visits to the seal colonies in the past, but tour agents reported these were currently unavailable (Lüderitzbucht Safaris and Tours, 2009) and (Kolmanskop Tour Company, 2009). Some multi-day Namibian tours include one or two nights in Lüderitz and frequently visit Dias Point.

At least one boat-based tour operator⁴³ runs cruises that encounter seals at Dias Point. Advertised to run for 2.5 hours, the cruises cost NAD\$340 (USD\$48) and can take from 6 to 20 passengers.

Dias point has convenient car access from Lüderitz and no entry fee. Visitors cross an historic wooden bridge to view a lighthouse and the seal colony (Pienaar, 2009).

⁴³ <http://www.namibweb.com/sedina.htm>

8.4.2 Profile of visitors

Namibia Tourism Board (2009a) shows that 39% of Lüderitz’s visitors are German, with 27% from Namibia and 19% from South Africa. Visitors are predominantly German due to Lüderitz’s strong German colonial heritage.

8.4.3 Visitor numbers

Kirkwood et al. (2003) estimated 1,250 tourists per-year visited seals in the area. No response was received from the boat-based operator for this research, however operators with similar sized boats in Swakopmund reported similar numbers and so figures appear to be best available estimates for this region.

8.4.4 Economic impact

The estimates for economic impact below focus on revenue from ticket prices of which we attribute 20% to seal watching due to the relative promotional significance placed on seals by this operator. Seal watching at Pelican Point and Cape Cross is much more heavily promoted to tourists and as such it is unlikely that many tourists would be visiting Lüderitz due to seal watching.

Table 34: Estimate of tourism revenues at the Atlas Bay area and Cape Dias

	NAD	USD
Visitors (people)	1,250	1,250
Price per person	\$272.5	\$33.5
Percentage attributable to seals	20%	20%
Revenue attributable to seals	\$68,125	\$8,386

Source: EcoLarge analysis

8.5 Summary of seal watching tourism in Namibia

8.5.1.1 Total number of tourists

Across all regions, an estimated 102,000 tourists took part in seal watching in Namibia in 2008, as shown in the table below. Of these, approximately 71% were international visitors.

Chart 19: Estimate of seal watching tourists in Namibia in 2008

Site	Boat-based	Land-based	Air-based	Total tourists	International tourists (%)	Domestic tourists (%)
Cape Cross	-	✓	✓	56,000	64%	36%
Pelican Point	✓	-	-	45,000	80%	20%
Cape Frio	-	✓	✓	420	100%	0%
Lüderitz	✓	✓	-	1,250	80%	20%
TOTAL				102,670	71%	29%

Source: EcoLarge analysis

8.5.2 Economic impact of Seal Watching Tourism

The table below provides the regional estimates of the gross direct revenue (tourism expenditure) from seal watching in Namibia, based on values estimated in the preceding section. In total, it is estimated that tourism expenditure in Namibia due to seal watching is approximately USD\$2 million in 2008.

Table 35: Estimate of tourism expenditure on seal watching in Namibia

Site	Total tourists	Revenue estimate (NAD)	Revenue estimate (USD)	Revenue estimate per tourists (USD)
Cape Cross	56,000	\$2,422,560	\$327,046	\$6
Pelican Point	45,000	\$12,857,600	\$1,582,719	\$35
Cape Frio	420	\$686,091	\$93,219	\$222
Lüderitz	1,250	\$68,125	\$8,386	\$7
TOTAL (2008)	102,670	\$16,034,376	\$2,011,370	\$20 (average)

Source: EcoLarge analysis

As shown in Table 35, Pelican Point is the most significant of the locations by tourism expenditure, accounting for 79% of total expenditure on seal watching in Namibia. In terms of total tourists, Cape Cross and Pelican point account for 98% of all seal watching tourists in Namibia.

The reason for the large difference in average revenue per tourist is due to the type of tourist traveling to watch seals in the different regions and nature of the trips offered. As discussed in the previous sections, Cape Frio tourists attract high-end travelers, albeit in smaller numbers, to a remote and luxurious hotel. Pelican Point stands out as having higher average revenue to the remaining two locations, due to the higher ticket price of boat-based trips compared to prices for the Cape Cross Seal reserve. Compared to trips in the Lüderitz area, Pelican Point also has a greater emphasis on seal watching.

8.5.3 Tax revenue from seal watching

Gross revenue figures from Table 35 above include a value added tax (VAT) of 15% (PKF, 2009) and so direct taxation revenue from seal watching tourism is estimated at USD\$302,000. These values represent an estimate of the gross tax revenue accruing to the Namibian government from seal watching tours.

Taxation accruing to the Namibian Government from the profit of businesses involved in seal watching or from the wages of individuals employed by seal watching operators has not been estimated in this report but would add to the values above.

8.5.4 Gross export value

Gross export value is a value that indicates what revenues from seal watching occur from international tourists coming to Namibia. This is a useful value as tourism provides valuable foreign exchange earnings and revenues to local businesses, particularly important where domestic incomes are low, such as in Namibia.

FINAL

To calculate the gross export value of seal watching tourism to Namibia, we need to isolate the revenue attributable to international tourists from all tourism revenue. These estimates are shown in the table below.

Table 36: Gross export value of seal watching tourism in Namibia 2008

Site	Percentage attributable to international tourists	Total revenue (NAD)	Estimated export revenue (NAD)	Estimated export revenue (USD)
Cape Cross	64%	\$2,422,560	\$1,550,438	\$209,309
Pelican Point	80%	\$12,857,600	\$10,286,080	\$1,266,175
Cape Frio	100%	\$686,091	\$686,091	\$93,219
Lüderitz	80%	\$68,125	\$54,500	\$6,709
TOTAL		\$16,034,376	\$12,577,109	\$1,575,412

Source: EcoLarge analysis. NOTE. Conservative estimates of international visitors have been used, resulting in a conservative estimate of export value.

The figures above show that seal watching in Namibia is estimated to have generated export revenue of USD\$1.6 million in 2008.

Because the figures are gross, they do not account for leakage in the form of imports purchased by the tourism industry or repatriated profits where tourism operators are foreign nationals. The net impact would therefore be lower than this.

8.5.5 Growth trends for seal watching tourism

From this research, we can conclude that seal watching tourism growth is likely to grow in-line with international visitor arrivals to Namibia. Our research indicates that international visitors form a majority of the participants in the seal watching industry.

In most locations, it appears that the population of seals is likely capable of coping with further tourism growth. Unlike other marine wildlife watching tours (e.g. whales), sightings of seals are more reliable due to their resident colonies at well-identified locations resulting in the ability of operators to more certainly guarantee sightings.

It has been noted, however, that for Pelican Point, some stakeholders reported that seal watching is approaching capacity in terms of available tourism sightings due to the large number of operators and boats.

At Cape Cross, it is difficult to assess the potential for growth but with recent infrastructure improvements and further promotion of the area, it is possible that tourism growth to this area has strong potential.

Other areas such as Lüderitz and Cape Frio have a lower base of seal watching tourists so could potentially have room for continued growth, particularly in the high end of the international tourist market, although these areas are further away from major tourism destinations.

Because seal watching tourism in Namibia is so reliant on international arrivals, impacts on tourism globally such as that caused by the global financial crisis in 2007 and 2008 are likely to continue to impact on tourism from time to time. Perceived travel safety in Namibia, and Africa more broadly is also likely to influence international arrivals. In the context of this report, a major risk for a growing nature-based tourism industry is that it receives reputational damage from the seal hunt. Although evidence from operators would indicate that tourists are not currently concerned and seal derived products are even sold to tourists, this could change if exposure of the slaughter increases, particularly in the European market.

Over the longer term, based on projected growth in tourism demand out to 2016 of 6.9% (World Travel and Tourism Council, 2006), we can forecast an industry in 2016 generating USD\$3.4 million in tourism revenue. Assuming tourist arrivals grow at the same rate, the industry will by 2016 take an estimated 175,000 visitors on seal watching trips.

8.5.6 Employment supported

O'Connor et al. (2009) reported that 60 jobs are directly supported by operators offering boat-based wildlife-watching trips in Namibia. These figures are similar to those reported by Elwen and Leeney (2008), who stated that tourism in Walvis Bay provides over 60 full time equivalent jobs to the local area. Using figures provided by O'Connor et al. (2009), this works out to a ratio of approximately USD\$29,000 in tourist expenditure per employee. Based on this same ratio, it is estimated that seal watching in Namibia directly supports

approximately 69 jobs. Indirectly, seal watching would also support a number of jobs in hotels, restaurants, shops and other tourism related businesses. We estimate that seal watching tourism supports an additional 194 jobs indirectly in Namibia, based on figures from World Travel and Tourism Council (2006).

Table 37: Estimated average wages for seal watching jobs

Industry	Role	Average wages per employee year (USD) LOW	Average wages per employee per year (USD) HIGH
Seal watching tourism	Skipper	\$18,464	\$33,974
Seal watching tourism	Administration	\$10,340	\$10,340
Seal watching tourism	Boat cleaning	\$1,625	\$3,693

Source: Walvis Bay operator

8.6 Conclusions

Seal watching in Namibia has taken place informally since the 1960s, although only since the 1990s did seal watching really expand to become a reasonably significant industry to areas such as Walvis Bay and Swakopmund. Outside of these areas, seal watching contributes to the tourism appeal of areas such as Lüderitz and Cape Frio. Although possible year-round, commercial seal watching tourism tends to be focused around the peak tourism months of December and January for African visitors and July through to August for non-African visitors.

Out of a total of 1 million arrivals to Namibia in 2008, 103,000 tourists took part in formal seal watching activities. This represents approximately 10% of all visitors or 30% of non-African visitors.

Seal watching tourism directly contributed USD\$2 million to the Namibian economy in 2008. From this, there is an estimated contribution of USD\$302,000 in tax revenue and USD\$1.6 million in gross export revenue. Seal watching in Namibia supports an estimated 69 jobs directly and 194 jobs indirectly in other related industries.

Based on projected growth of tourism arrivals to Namibia of 6.9%, we can forecast an industry in 2016 generating USD\$3.4 million in tourism expenditure and taking 175,000 tourists on seal watching trips.

9 References

- Greek Furs: The Past, The Present, The Future. *Greek Furs*. Available at: <http://www.greekfurs.com/en-1fursinfo1past.htm> [Accessed November 9, 2009].
- Annon, 2009. *Seal hunt journalists 'attacked and arrested' by Namibians*. *Daily Mail Online*. Available at: <http://www.dailymail.co.uk/news/worldnews/article-1200432/Seal-hunt-journalists-attacked-arrested-Namibians.html> [Accessed October 27, 2009].
- Asheeke, J.W. & Katjuongua, O., 2007. *Development of Sustainable Tourism Country Report: Namibia*, South Africa: Federation of Namibian Tourism Associations (FENATA) and Namibian Community Based Tourism Assistance (NACOBTA).
- Atlantic Canadian Anti-Sealing Coalition, Atlantic Canadian Anti-Sealing Coalition. Available at: <http://www.antisealingcoalition.ca/namibia.php> [Accessed October 23, 2009].
- Bass, C., 2007. *Clubbing of Cape fur seals in Namibia: WSPA report on a preliminary investigation at Cape Cross*, Namibia: World Society for the Protection of Animals.
- Bosetti and Pearce (2003), 'A Study of environmental conflict: the economic value of Grey Seals in southwest England', *Biodiversity and Conservations*, Vol. 12, p 2361-2392
- CBC News, (2009), *FAQ: The Atlantic Seal Hunt*, Accessible at: <http://www.cbc.ca/canada/story/2009/05/05/f-seal-hunt.html>
- Carino Company Limited, 2007. Prices for seal pelts during 2007 season. Available at: <http://www.carino.ca/newsarchive.php?id=57&order=region> [Accessed October 29, 2009].
- CBC News, 2009. Expect rock-bottom prices for pelts, sealers told. *CBC News website*. Available at: <http://www.cbc.ca/canada/newfoundland-labrador/story/2009/04/03/seal-pelt-prices.html> [Accessed October 30, 2009].
- CBC News, 2006. Seal pelt prices climb despite celebrity pressure. *CBC News website*. Available at: <http://www.cbc.ca/canada/story/2006/04/19/seal-pelt-prices060419.html> [Accessed October 30, 2009].
- Chiriboga, L.M., Kilmer, C., Fan, R. & Gawande, K., 2008. Does Namibia have a comparative advantage in beef production? Bush School of Government and Public Service, Texas A&M University.
- CITES, 2009. CITES Appendices. *Convention on International Trade in Endangered Species of Wild Fauna and Flora*. Available at: <http://www.cites.org/eng/app/index.shtml> [Accessed November 12, 2009].
- Commission of European Communities (2008). 2008 Satellite Account: Recommended Methodological Framework, TSA: RMF 2008. Statistical Commission. February 2008.

- COWI, 2008. Assessment of the potential impact of a ban of products derived from seal species, Denmark: Commissioned by European Commission Directorate-General Environment. Available at: www.cowi.com.
- De Groot, Stuij, Finlayson, & Davidson., 2006. Valuing wetlands. Guidance for valuing the benefits derived from wetland ecosystem services, Ramsar Technical Report No 3. CBD Technical Series No 27.
- Dixon, J. and Pagiola, S., 1998. *Economic analysis and environmental Assessment, Environmental Assessment Sourcebook*. Update, April 1998, Number 23. Environment Dept., the World Bank. 14 pp.
- Eita, J. H & Jordaan, . A.C., 2007. *Estimating the tourism potential in Namibia*. MPRA Paper No. 5788, posted 16 November 2007.
- Elwen, S. and Leeney, R., 2008. *Pilot Study Report, Oct 2008*. Namibian Dolphin Project.
- European Food and Safety Authority, 2007. *Animal Welfare aspects of the slaughtering and skinning of seals*. *EFSA Journal*, 610, 1-123.
- European Parliament, 2009. *Regulation (EC) No 1007/2009 of the European Parliament and of the Council - on trade in seal products*. Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:286:0036:0039:EN:PDF>.
- Fink, S., 2007. *An Overview of the Economic Importance of Canada's Commercial Seal Hunt*, Guelph, Ontario, Canada: International Fund for Animal Welfare. Available at: http://www.ifaw.org/ifaw_southern_africa/publications/program_publications/save_baby_seals.php.
- Fisheries and Oceans Canada, 2010a. *Overview of the Atlantic Seal Hunt 2003 - 2005*. Accessed February 2010. Available at: <http://www.dfo-mpo.gc.ca/fm-gp/seal-phoque/reports-rapports/mgtplan-plangest2003/mgtplan-plangest2003-eng.htm>
- Fisheries and Oceans Canada, 2010b. *Overview of the Atlantic Seal Hunt 2006 - 2010*. Accessed February 2010. Available at: <http://www.dfo-mpo.gc.ca/fm-gp/seal-phoque/reports-rapports/mgtplan-plangest0610/mgtplan-plangest0610-eng.htm>
- Galbraith, K., 2007. That touch of mink is back in demand. *The New York Times*. Available at: http://www.nytimes.com/2007/01/02/arts/02iht-fur.4078865.html?_r=1&pagewanted=2 [Accessed November 6, 2009].
- Government of Namibia, 2000. *Marine Resources Act*. Available at: http://209.88.21.55/opencms/export/sites/default/grnnet/MFMR/Laws_and_Policies/docs/MarineAct2000.pdf.

- Hartman , A., 2009. *Seal meat could be local delicacy. The Namibian*. Available at: http://www.namibian.com.na/index.php?id=28&tx_ttnews%5Btt_news%5D=58608&no_cache=1 [Accessed November 18, 2009].
- Hartman , A. & Weidlich, B., 2009. *Foreign Journalists Arrested for Filming Seal Cull. allAfrica.com*. Available at: <http://allafrica.com/stories/200907171038.html> [Accessed October 27, 2009].
- High North Alliance, 1997. *Prices increase on the Chinese seal penis market. News from the High North Alliance*. Available at: <http://www.highnorth.no/news/nedit.asp?which=154> [Accessed October 27, 2009].
- Hoyt, E., 2000. *Whale Watching 2000: Worldwide Tourism Numbers, Expenditures and Expanding Socioeconomic Benefits*, Crowborough, UK: International Fund for Animal Welfare.
- Hugo, F., 2007. *The Cape Fur Seal Stock of Namibia*.
- Kastorian Fur Association , Greek Furs in the International Market. Available at: <http://www.furfair.gr/index.php> [Accessed October 30, 2009].
- King, J., 1983. *Seals of the World*, Oxford University Press and British Museum (Natural History).
- Kirchner, C., 2007. Seal Stock Assessment .
- Kirkman, S. et al., 2007. Making sense of censuses and dealing with missing data: trends in pup counts of Cape fur seal *Arctocephalus pusillus pusillus* for the period 1972-2004. *African Journal of Marine Science*, 29(2), 161-176.
- Kirkwood, R. et al., 2003. Pinniped-focused tourism in the Southern Hemisphere: A review of the industry. In *Marine mammals: Fisheries, Tourism and Management Issues*. Gales, Nick; Hindell, Mark and Kirkwood Roger (eds). Australia: CSIRO Publishing.
- Kolmanskop Tour Company, 2009. Discussion about seal watching around Lüderitz. Available at: [about: blank](http://www.kolmanskop.com/about:blank) [Accessed January 27, 2010].
- Langford et al (1997), *Multivariate mixed models for open-ended contingent valuation data. A case study on willingness to pay for the conservation of monk seals*, Centre for Social and Economic Research on the Global Environment, Working paper GDC 97-10.
- Lavigne, D., 2003. Marine Mammals and Fisheries: The role of science in the culling debate. In *Marine mammals: Fisheries, Tourism and Management Issues*. Gales, Hindel, Kirkwood (eds). Australia: CSIRO Publishing.

- Lüderitzbucht Safaris and Tours, 2009. Discussion of seal watching tours around Lüderitz. Available at: <http://www.thesafariwebsite.co.uk/crown-tours-and-safaris-namibia-tailor-made-tours-i407.html> [Accessed January 27, 2010].
- Malik, S. et al., 1996. Pinniped Penises in Trade: A Molecular-Genetic Investigation. *Conservation Biology*, 11(6), 1365 - 1374.
- Marketta Group & Namibia Tourism Board, 2004. *Marketta Group Quantitative Research Report*, Namibia. Available at: http://www.namibiatourism.com.na/trade_cat_main.php?main_cat_id=35.
- Ministry of Environment and Tourism, n.d. *Cape Cross Seal Reserve*, Windhoek, Namibia. Available at: <http://www.met.gov.na/dpwm/parkprof/Cape%20Cross/Cape%20Cross%20Brochure.pdf>.
- Ministry of Environment and Tourism, n.d. Cape Cross Seal Reserve: A rich, rough history. Available at: www.met.gov.na.
- Ministry of Environment and Tourism, 2009a. Email regarding Cape Cross attendance figures.
- Ministry of Environment and Tourism, 2009b. MET, Namibia: Introduction. *Ministry of Environment and Tourism Website*. Available at: <http://www.met.gov.na/introduction.htm> [Accessed October 6, 2009].
- Ministry of Fisheries and Marine Resources, 2006. *Annual Report 2005*, Windhoek, Namibia. Available at: <http://www.mfmr.gov.na/> [Accessed October 25, 2009].
- Ministry of Fisheries and Marine Resources, 2007. *Annual Report 2006*, Windhoek, Namibia. Available at: <http://www.mfmr.gov.na/> [Accessed October 25, 2009].
- Ministry of Fisheries and Marine Resources, 2008. *Annual Report 2007*, Windhoek, Namibia. Available at: <http://www.mfmr.gov.na/> [Accessed October 25, 2009].
- Ministry of Fisheries and Marine Resources, 2007a. Fees and Levies. Available at: <http://www.mfmr.gov.na/> [Accessed December 1, 2009].
- Ministry of Fisheries and Marine Resources, 2007b. Quata (sic) fees. *Ministry of Fisheries and Marine Resources*. Available at: http://209.88.21.55/opencms/opencms/grnnet/MFMR/Fees_and_Levies/quatafees.html [Accessed December 1, 2009].
- Ministry of Fisheries and Marine Resources, 2001. *Regulations relating to the exploitation of Marine Resources*, Windhoek, Namibia. Available at: <http://faolex.fao.org/cgi->

FINAL

bin/faolex.exe?rec_id=044363&database=FAOLEX&search_type=link&table=result&lang=eng&format_name=@ERALL [Accessed October 27, 2009].

Moseley, J., Sturgis, L. & Melissa, W., 2007. *Improving Domestic Tourism in Namibia*, Published by Namibian Tourism Board.

MTI, 2010a. Website of Ministry of Trade and Industry - Namibia - Labour Environment, accessed January 2010. <http://www.mti.gov.na/subpage.php?linkNo=53>

MTI, 2010b. Website of Ministry of Trade and Industry - Namibia - Incentives, accessed January 2010. <http://www.mti.gov.na/subpage.php?linkNo=22>

MTI, 2010c. Website of Ministry of Trade and Industry - Namibia - Incentives, accessed January 2010. <http://www.mti.gov.na/subpage.php?linkNo=73>

NACOMA, 2009. Email regarding development of Cape Cross tourism facilities .

Namibian Census, 2001, Available online at: <http://www.npc.gov.na/cbs/index.htm>, Accessed January 2010.

Namibia Tourism Board, 2006. Namibia Tourism Board - About. *Namibia Tourism Board Home>about*. Available at: <http://www.namibiatourism.com.na/about.php> [Accessed October 6, 2009].

Namibia Tourism Board, 2007. *Tourist Arrival Statistics 2006: Summary analysis*, Windhoek, Namibia. Available at: http://www.namibiatourism.com.na/trade_docs/summary_analysis_2006.pdf.

Namibia Tourism Board, 2008a. *Namibia Tourism Satellite Account: 2nd Edition 2008*, Windhoek, Namibia. Available at: http://www.namibiatourism.com.na/trade_docs/ntb_report_contents.pdf.

Namibia Tourism Board, 2008b. *Tourist Arrival Statistics 2007: Tables*, Windhoek, Namibia. Available at: http://www.namibiatourism.com.na/trade_docs/tourist_arrival_tables_2007.pdf.

Namibia Tourism Board, 2009a. *Tourism Accommodation Statistics: Table Annexure Jan-Dec 2008*, Windhoek, Namibia. Available at: http://www.namibiatourism.com.na/trade_docs/tables_report_janjun09.pdf.

Namibia Tourism Board, 2009b. *Tourism Barometer Q1*, Windhoek, Namibia. Available at: http://www.namibiatourism.com.na/trade_docs/ntb_q1_2009_tourism_barometer.pdf.

- National Agricultural Statistics Service, 2009. Mink, Agricultural Statistics Board, National Agricultural Statistics Service (NASS), United States Department of Agriculture, July 2009.
- New Zealand Ministry for the Environment, 2009. *Option and Existence Values for the Waitaki Catchment*, accessible at:
<http://www.mfe.govt.nz/publications/water/waitaki-option-existence-values-jan05/html/page3.html>
- O'Connor, S. et al., 2009. *Whale Watching Worldwide: Tourism numbers, expenditures and expanding economic benefits*, Yarmouth MA, USA: prepared by Economists at Large.
- Pienaar, Y., 2009. Coastal Bays Around Lüderitz Peninsula Namibia: Beaches, Rocky Bays, Diaz Point and Penguin Sightings. *Suite101.com*. Available at: http://namibia-travel.suite101.com/article.cfm/coastal_bays_around_luederitz_peninsula_namibia [Accessed November 17, 2009].
- Shaughnessy, P., 1982. The status of seals in South Africa and Namibia. In *Mammals in the Seas: Small Cetaceans, Seals, Sirenians and Otters*. Rome: FAO Advisory Committee on Marine Resources Research, Working party on Marine Mammals. Available at: http://books.google.com.au/books?id=j-Je25qovO8C&pg=PA397&lpg=PA397&dq=Cape+Cross+Seals+concession&source=bl&ots=GV3AWYiTkT&sig=Eq0sPNmAjuzDOaK_nD4p94ifqhM&hl=en&ei=yW7hSqrINlv s6AOa-7nrAQ&sa=X&oi=book_result&ct=result&resnum=7&ved=0CCAQ6AEwBg#v=onepage&q=Cape%20Cross%20Seals%20concession&f=false [Accessed October 23, 2009].
- Shidiwe, P. & Kavembi, S., 2006. Namibian Labour Force Survey 2004. Data provided by the Institute for Public Policy Research. Available online at: <http://www.ippr.org.na/Database%20files/page3.html>
- Toy, M., 2008. How about a dish of seal penis? *The Age - Travel*. Available at: <http://www.theage.com.au/news/news/how-about-a-dish-of-seal-penis/2008/07/28/1217097201112.html> [Accessed October 27, 2009].
- Von Hippel, W. et al., 2005. Exploring the use of Viagra in place of animal and plant potency products in traditional Chinese medicine. *Environmental Conservation*, 32, 235-238.
- Warren, N. & Ladle, R., 2006. *Namibia's Fur Seal Trade: A trade Chain Analysis*, Oxford University, England: Oxford University Center for the Environment.
- Wilderness Safaris Namibia, 2009. Email and phone conversation with Danette Torr regarding seal watching at Cape Frio.

FINAL

World Travel and Tourism Council, 2006. *Namibia The impact of travel and tourism on jobs and the economy*, Windhoek, Namibia: Commissioned by Government of Republic of Namibia, Ministry of Environment and Tourism.

Yavuz, H., 2009. Discussion by phone with Hatem Yavuz.

10 Appendices

10.1 2005, 2007 and 2008 prices for seal products

Table 38 and Table 39 below show the prices used in calculations in this report. Where a low and a high price are provided (a range), we have used the simple average of the two. Because updated figures were obtained for the price of pup pelts and leather skins from the Ministry of Fisheries and Marine Resources, the figures below for 2008 for these products was replaced with the figures provided by the Ministry.

Table 38: Prices for seal products in 2005

2005	Value	Unit	Products	Unit Price (USD)	Unit Price (NAD)
USD\$1 =	7.8	NAD\$	Pelts	\$4.70	\$36.66
			Shoes/Leather (low)	\$27.50	\$214.50
			Shoes/Leather (high)	\$62.50	\$487.50
			Genitalia (adult)	\$145.00	\$1,131.00
			Genitalia (pup)	\$115.00	\$897.00
			Oil medicinal (low)	\$0.07	\$0.55
			Oil medicinal (high)	\$0.14	\$1.09
			Oil fodder	\$0.01	\$0.08
			MBM fodder	\$500.00	\$3,900.00

Source: Warren and Ladle (2006)

Table 39: Estimated prices for seal products in 2007

Prices converted from 2005 prices using updated USD exchange rates, except for pup pelts and adult skins, for which updated pricing obtained from the Namibian Ministry of Fisheries and Marine Resources is used.

2007	Value	Unit	Product	Unit Price (USD)	Unit Price (NAD)
NAD\$1 =	0.141807	USD\$	Pup pelts	\$5.20	\$47.25
			Adult skins	\$5.41	\$38.13
			Shoes/Leather (low)	\$30.42	\$214.50
			Shoes/Leather (high)	\$69.13	\$487.50
			Genitalia (adult)	\$160.38	\$1,131.00
			Genitalia (pup)	\$127.20	\$897.00
			Oil medicinal (low)	\$0.08	\$0.55
			Oil medicinal (high)	\$0.15	\$1.09
			Oil fodder	\$0.01	\$0.08
			MBM fodder	\$553.05	\$3,900.00

Source: Warren and Ladle (2006) with forex rates obtained online from:
<http://www.chartflow.com/fx/historybasic.asp> AND <http://www.chartflow.com/fx/averageRate.asp>

Table 40: Estimated prices for seal products in 2008

Prices converted from 2005 prices using updated USD exchange rates, except for pup pelts and adult skins, for which updated pricing obtained from the Namibian Ministry of Fisheries and Marine Resources is used.

2008	Value	Unit	Product	Unit Price (USD)	Unit Price (NAD)
NAD\$1 =	0.123096	USD\$	Pup pelts	\$5.20	\$47.25
			Adult skins	\$5.41	\$38.13
			Shoes/Leather (low)	\$26.40	\$214.50
			Shoes/Leather (high)	\$60.01	\$487.50
			Genitalia (adult)	\$139.22	\$1,131.00
			Genitalia (pup)	\$110.42	\$897.00
			Oil medicinal (low)	\$0.07	\$0.55
			Oil medicinal (high)	\$0.13	\$1.09
			Oil fodder	\$0.01	\$0.08
			MBM fodder	\$480.07	\$3,900.00

Source: Warren and Ladle (2006) with forex rates obtained online from:
<http://www.chartflow.com/fx/historybasic.asp> AND <http://www.chartflow.com/fx/averageRate.asp>

10.2 Estimated value of seal hunting (2005, 2007 and 2008)

Table 41: Estimated value of seal hunting (2005, 2007 and 2008)

	2005	2007	2008
Landed value (total)	\$428,267	\$341,949	\$512,674
Final value (total)	\$2,242,892	\$341,949	\$512,674
Export value (total)	\$870,000	\$249,892	\$389,433
Landed value per seal	\$6.67	\$9.86	\$8.06
Final value per seal	\$34.95	\$9.86	\$8.06
Export value per seal	\$13.56	\$7.21	\$6.12
Landed value per seal pup	\$5.69	\$7.88	\$6.77
Final value per seal pup	\$5.69	\$7.88	\$6.77
Export value per seal pup	\$4.84	\$6.86	\$5.95
Landed value per adult seal	\$18.44	\$14.99	\$16.96
Final value per adult seal	\$384.07	\$14.99	\$16.96
Export value per adult seal	\$117.52	\$9.08	\$7.88
Total seals	64,167	34,664	63,622
Seal pups	59,204	29,171	58,129
Adult seals	4,963	5,493	5,493

Source: Warren and Ladle (2006) and EcoLarge analysis

10.3 Actual figures from Warren and Ladle (2006)

The actual figures reported from Warren and Ladle (2006) in this report are based on calculations using the unit prices and volumes provided by Warren and Ladle (2006). Where a range of prices was given, we instead used an average. In Warren and Ladle (2006), they provide a range for the profit of the industry at between USD\$0.9 million and USD\$2.3 million, based on gross revenues given in the table below.

Table 42: Gross revenues from Warren and Ladle (2006)

Product	Low (USD)	High (USD)
Fur	\$278,259	\$278,259
Leather	\$1,100,000	\$2,520,000
Genitalia	\$44,760	\$44,760
Oil	\$40,000	\$65,000
Fodder	\$100,000	\$100,000
TOTAL	\$1,563,019	\$2,943,019

Source: Warren and Ladle (2006)

10.4 TAC and actual slaughter levels (1990-2008)

Table 43: TAC and actual slaughter levels (1990 - 2008)

Year	TAC	Seals Slaughtered	TAC	Pups Slaughtered	Pup pelts exported ⁴⁴	% of TAC filled	TAC	Adults Slaughtered	% of TAC filled
1990	28,610	11,694	27,000	9,784	-	36%	1,610	1,910	119%
1991	29,000	17,306	27,000	15,292	-	57%	2,000	2,014	101%
1992	41,200	23,359	39,000	21,063	13,141	54%	2,200	2,296	104%
1993	50,850	35,737	48,000	33,017	43,478	69%	2,850	2,720	95%
1994	55,000	37,650	43,000	32,554	43,547	76%	12,000	5,096	42%
1995	17,450	16,769	13,200	13,263	37,251	100%	4,250	3,506	82%
1996	20,500	20,776	17,000	17,225	42,611	101%	3,500	3,551	101%
1997	30,000	25,708	26,000	21,997	29,950	85%	4,000	3,711	93%
1998	40,000	29,424	35,000	24,441	5,860	70%	5,000	4,983	100%
1999	35,000	24,580	30,000	20,550	2,104	69%	5,000	4,030	81%
2000	67,000	41,911	60,000	38,340	48,686	64%	7,000	3,571	51%
2001	65,000	43,736	60,000	39,926	20,654	67%	5,000	3,810	76%
2002	65,000	39,578	60,000	35,082	117,409	58%	5,000	4,496	90%
2003	65,000	33,582	60,000	29,577	22,070	49%	5,000	4,005	80%
2004	70,000	59,407	65,000	54,496	66,516	84%	5,000	4,911	98%
2005	70,000	64,168	65,000	59,205	43,906	91%	5,000	4,963	99%
2006	91,000	83,071	85,000	77,800	85,525	92%	6,000	5,271	88%
2007	91,000	34,664	85,000	29,171	26,081	34%	6,000	5,493	92%
2008					58,129				
TOTAL	931,610	643,120	845,200	572,783	648,789 ⁴⁵	70% ⁴⁶	86,410	70,337	88% ⁴⁶

Source: Kirchner (2007), Ministry of Fisheries and Marine Resources (2008) and (www.usnews.com/science/articles/2009/07/06/namibian-seal-hunt-to-go-on-90000-to-be-clubbed.htm)

⁴⁴ CITES (2009)

⁴⁵ Totals for this column don't include figures for 2008, to allow comparison to official reported figures between 1990 and 2007. Including 2008 figures, the total between 1990 and 2008 for seal pelts exported is 706,918.

⁴⁶ Average percentage of quota filled between 1990 and 2007.

10.5 Application process for sealing concessions

In line with the Marine Resources Act 2000, the ministry periodically advises it is accepting applications for harvesting marine resources. Applicants need to submit an application that, among other things, is considered in light of:

- whether or not the applicant is a Namibian citizen;
- the ability of the applicant to exercise the right in a satisfactory manner;
- the advancement of persons in Namibia who have been socially, economically or educationally disadvantaged by discriminatory laws or practices which were enacted or practised before the independence of Namibia;
- regional development within Namibia;
- the conservation and economic development of marine resources;
- whether the applicant has successfully performed under an exploratory right in respect of the resource applied for;
- socio-economic concerns;
- the contribution of marine resources to food security

Source: (Government of Namibia 2000)

Informed by the above criteria, the rights are allocated at the discretion of the minister.

10.6 Estimated wages

SHOE SHOP ESTIMATED WAGES	All \$ values in USD
Wages and salaries	\$59,000
Employees at Windhoek (low)	15
Employees at Windhoek (high)	20
Daily wage per employee (USD)	\$14
Wages per employee per year (low)	\$2,950
Cost per employee per year (high)	\$3,933
Estimated days worked per year (low)	211
Estimated days worked per year (high)	281

Source: Warren and Ladle (2006) and EcoLarge analysis.

FACTORY ESTIMATED WAGES	All \$ values in USD
Wages and Salaries for factory workers (low)	\$110,970
Wages and Salaries for factory workers (high)	\$116,450
Total employees	87
Hour rate (USD)	1
Daily rate	10
Days worked per year	137
Wages per employee (low)	\$1,276
Wages per employee (high)	\$1,339

Source: Warren and Ladle (2006) and EcoLarge analysis.

ESTIMATED WAGES FOR SEAL HUNTING	All \$ values in USD
Employed in Slaughter (low)	10
Employed in Slaughter (high)	30
Hours worked per day	4
Days worked per year	69
Total hours	274
Hourly rate USD	\$1
Total wages	\$274
Total wages (low)	\$2,740
Total wages (high)	\$8,220
Wages remaining for factory workers (low) ⁴⁷	\$110,970
Wages remaining for factory workers (high)	\$116,450

Source: Warren and Ladle (2006) and EcoLarge analysis.

⁴⁷ Based on total wages (non shoe shop) per annum of USD119,190, deducting wages from harvesting to arrive at an estimated amount remaining for factory salaries.

10.7 Socio-economic profile

This section aims to provide some context for the socio-economic profile of the region of analysis in this report. The research focused on areas where sealing or seal watching takes place, although other areas are provided in this section for comparison sake.

Table 44: Regions of analysis

Region	Area of interest	Details
Kunene Region	Cape Frio	No socio-economic data is provided in this section due to the small scale of seal watching tourism that occurs at Cape Frio.
Erongo Region	Swakopmund, Walvis Bay, Cape Cross	Primary region for boat and land based seal watching, as well as sealing.
Karas Region	Lüderitz	Small scale seal watching and sealing.

10.7.1 Population

The population of Namibia is estimated at 2.2 million in 2010 (see appendices for data). The regions this research focuses on account for 27% of the population of Namibia. The Erongo region has an estimated population of 295,000 while the Karas and Kunene regions have populations of approximately 81,000. In Erongo region, Swakopmund and Walvis Bay have estimated populations of 34,000 and 50,000, while Henties Bay has a small population of only 2,700. Further south in the Karas region, Lüderitz has an estimated population of 30,000.

Table 45: Population in Namibia and key regions (2001 and 2010)

Area	2001 (Census)	2010 (Projection)
NAMIBIA	1,830,330	2,157,202
Khomas Region	250,262	294,955
Windhoek	233,529	275,234
Erongo Region	107,663	126,890
Walvis Bay	42,015	49,518
Swakopmund	n/a	34,326
Henties Bay	n/a	2,700
Karas Region	69,329	81,710
Lüderitz	n/a	30,000
Kunene Region	68,735	81,010

Sources: Namibian Census (2001) and informal sources for Swakopmund⁴⁸, Henties Bay⁴⁹ and Lüderitz⁵⁰ due to lack of other data. Growth rates projected based on analysis of World Bank⁵¹, CIA⁵² and African Development Bank⁵³ growth forecasts.

10.7.2 Employment in Namibia

The 2001 Namibian census reported that 54% of Namibian's were in the Labour force, with an unemployment rate of 31%. In the Erongo and Karas region, the figures for unemployment are similar, at 34% and 29% respectively. However, in these regions, participation in the labour force is much higher, at 71% and 67%. In the Kunene region, labour force participation is 56% with an unemployment rate of 23%.

⁴⁸ <http://world-gazetteer.com/wg.php?x=&men=gpro&lng=en&dat=32&geo=-154&srt=npan&col=aohdq&pt=c&va=&geo=242407452>

⁴⁹ <http://www.places.co.za/html/hentiesbay.htm>

⁵⁰ <http://en.wikipedia.org/wiki/L%C3%BCderitz>

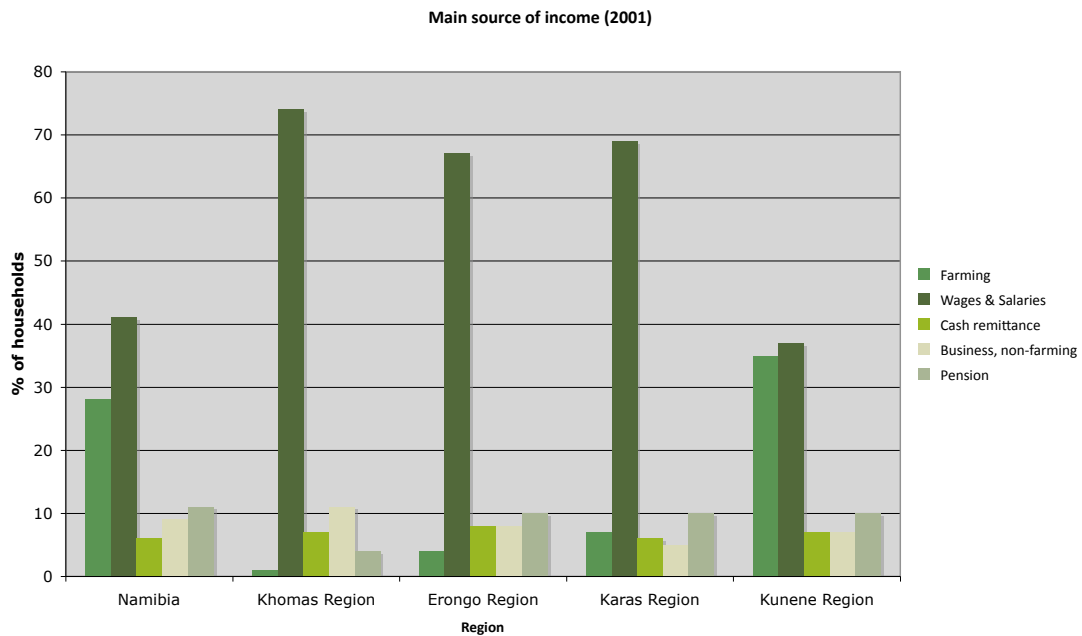
⁵¹ http://ddp-ext.worldbank.org/ext/ddpreports/ViewSharedReport?&CF=&REPORT_ID=9147&REQUEST_TYPE=VIEWADVANCED

⁵² <https://www.cia.gov/library/publications/the-world-factbook/geos/wa.html>

⁵³ <http://www.afdb.org/en/countries/southern-africa/namibia/>

10.7.3 Sources of income

As shown in the chart below, for Namibia as a whole, farming makes up nearly 30% of income earned while wages and salaries account for approximately 40%. In the regions of analysis in this report, wages and salaries account for a much higher percentage of income, at between 65-75%. The Kunene region however, shows a profile similar to Namibia as a whole, with income from farming being close to wages and salaries.



Source: (Namibian Census 2001)

10.7.4 Namibian labour market

The Namibian labour market is characterised by a high number of young workers, with approximately 63% of the population of Namibia being under 30. For the sake of comparison, in England, approximately 38% of the population are under 30⁵⁴. The data in the following table is from the Namibian labour force survey for 2004, and demonstrates the industrial breakdown of employment in Namibia.

Table 46: Employment by industry in Namibia

	Namibia (%)	Urban (%)	Rural (%)
<i>Agriculture</i>	26.6	3.4	57.6
<i>Wholesale and Retail Trade, Repair of motor vehicles</i>	14.0	18.6	7.9
<i>Education</i>	8.1	8.1	8.0
<i>Public Administration, Defence & Social Security</i>	8.0	11.7	2.9
<i>Manufacturing</i>	6.2	7.9	3.9
<i>Private households with employed persons</i>	6.2	7.9	4.1
<i>Construction</i>	5.1	6.5	3.2
<i>Transport, Storage and Communication</i>	4.1	6.0	1.6
<i>Health and Social Work</i>	3.6	4.9	2.0
<i>Hotels and Restaurants</i>	3.4	3.4	3.4
<i>Fishing</i>	3.3	5.3	0.6
<i>Other Community, Social & Personal Services</i>	3.3	4.9	1.2
<i>Real Estate, Renting and Business Activities</i>	2.4	3.8	0.6
<i>Mining and Quarrying</i>	2.0	2.1	1.7
<i>Financial Intermediation</i>	2.0	3.2	0.3
<i>Electricity, Gas & Water</i>	1.6	2.1	0.9
<i>Not Reported</i>	0.1	0.1	0.1
TOTAL	100	99.9	100

Source: (Shidiwe, P. & Kavembi, S., 2006)

⁵⁴ <http://www.statistics.gov.uk/census2001/pyramids/pages/64.asp>