



Whale Watching Tourism in the Kingdom of Tonga

A report for IFAW and Opérations Cétacés
June 2008



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The opinions expressed in this publication are those of the author and do not necessarily reflect the views of IFAW. This report is based on data gathered and analyzed by Economists @ Large through interviews with operators, government and other stakeholders as well as a literature review. The findings of this report are dependent on that data which was available at the time of research (early 2007).

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Whale Watching Tourism in the Kingdom of Tonga

Whale and Dolphin Watching in the Pacific Islands
Region Phase 2: Country Case Study

Table of Contents

Acronyms	4
Executive Summary	5
Acknowledgements	8
Introduction	9
Research Methods	11
Discussion	13
Economy Of Tonga	13
Tourism In Tonga	14
Whales In Tonga	16
Economics Of Whale Watch Tourism In Tonga	22
Conclusions	28
References	30
Appendix	31

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Acronyms

AAGR	Average Annual Growth Rate – the calculation of a constant rate of growth extrapolated over the number of years between reporting periods. Due to lack of data for every consecutive year, the AAGR is used which assumes a constant rate of growth over the period being investigated.
GDP	Gross Domestic Product – market value of all goods and services produced within a country.
IFAW	International Fund for Animal Welfare
SPREP	Secretariat of the Pacific Regional Environment Programme
SPTO	South Pacific Tourism Organisation
SPWRC	South Pacific Whale Research Consortium
TOP	Tongan Pa’anga – the local Tongan currency, issued by the Reserve Bank of Tonga.
TVB	Tongan Visitors Bureau – The official Tongan government tourism organisation. Part of the Ministry of Tourism.
TWWOA	Tongan Whale Watch Operators Association
USD	United States Dollars – used in this report as a secondary currency due to its lower volatility to the TOP.

Executive Summary

Whale watching in the Kingdom of Tonga continues to contribute strongly to the country's economy, with whales an iconic species for the tourism industry. The following report sets out findings of the extent of economic activity attributable to the whale watching industry.

In 2006, there were more than 9,800 whale watch participants in Tonga, representing annual average growth of 20% since 1998. These whale watchers generated a total estimated expenditure of approximately Tongan Pa'anga (TOP) 3.82 million (USD 1.89 million).

Key findings are presented below:

Year:	Operators:	Whale Watchers	AAGR ¹ (%)
1994	2 ²	200	NA
1998	5	2,334 ³	103
2006	14	9,804	20

Year:	Direct Expenditure:		Government Revenue:		Indirect Expenditure:		Total Expenditure:	
	TOP	USD	TOP	USD	TOP	USD	TOP	USD
1994		10,000		NA		NA		35,000
1998		55,000		NA		NA		422,000
2006	1,515,069	749,959	25,606	12,675	2,283,673	1,130,418	3,824,348	1,893,052

Economics:

- Direct expenditure on whale watching tours in Tonga in 2006 is estimated at TOP 1,515,069 (USD 749,959).
- Indirect expenditure due to whale watching tours in Tonga in 2006 is estimated at TOP 2,283,673 (USD 1,130,418).

	TOP	USD
Indirect Expenditure (excl. travel):	1,892,172	936,625
Travel Expenditure:	391,501	193,793
Total Indirect Expenditure:	2,283,673	1,130,418

¹ AAGR – refers to annual average growth rate – see methodology for explanation.

² Reported by IFAW, and supported by whale watch operator interviews.

³ 1994 & 1998 figures are taken from: Hoyt, E. (2001), *Whale Watching 2001: Worldwide tourism numbers, expenditures and expanding socioeconomic benefits*, a report for IFAW – Hoyt uses figures taken from: Orams, M. (1999), *The Economic Benefits of Whale Watching in Vava'u, The Kingdom of Tonga*, Centre for Tourism Research, Massey University at Albany, New Zealand.

- Conservatively, the Tongan government earned an additional estimated TOP 25,606 (USD 12,675) in revenue due to whale watching through departure taxes and whale watch license fees, without taking into account income, consumption or fuel taxes.
- Total expenditure derived from the whale watch industry is estimated at TOP 3,824,348 (USD 1,893,052) in 2006, having grown from USD 422,000 in 1998.
- Using data gathered from interviews with operators, along with the data provided by the Tongan Visitors Bureau, there were an estimated 9,804 participants on whale watch tours in the 2006 season across the country, approximately 740 or 8% of which were tours undertaken outside of the main whale watching region of Vava'u.
- This equates to an annual average growth rate (AAGR) in whale watchers of 20% since 1998 levels of 2,334 whale watchers. This compares favourably against the AAGR of visitor arrivals in Tonga (by air) of 4.05% between 2000 and 2005.
- Despite these strong growth rates it is important to note that repeat whale watchers, undertaking multiple trips during their stay in Tonga, are the drivers of this growth. Research indicated that approximately 3,200 individuals visited Tonga in 2006 to whale watch. On average, whale watchers undertake three trips during their stay.
- It is assumed that this rate of growth is approaching a plateau at around 3,200 visiting whale watch tourists annually. Growth is now being generated from repeat whale watch episodes, with expenditure growth driven by increasing prices of whale watching participation.
- Our research indicates that of majority of holiday-maker tourists visit Vava'u during the whale watching season, and of these, approximately 70-80% undertake a whale watch trip during their stay. This figure therefore indicates that whales are a key attraction to holiday-maker tourists.
- The numbers of employees directly engaged by the industry across the country is approximately 44 – 32% foreigners and 68% Tongans.

Industry Dynamics:

- Results show that the industry may be facing some capacity constraints in the Vava'u Island group that are restricting continued strong growth. The growth in this base level of 3,200 tourists travelling to Tonga for whale watching appears to have slowed down over recent years.
- These capacity issues relate to a combination of factors including: access constraints to certain regions (particularly consistency and regularity of flights into Vava'u), a limited number of whales limiting appropriate whale watch opportunities, availability of hotel beds, whale watch vessel capacity and, in Vava'u, capped number of licenses.
- Despite these constraints, operators report high demand for whale watch tours, with many being booked out well in advance of the season. In response to this high demand as well as to reflect the increase in operational costs (particularly fuel costs), the Tongan Whale Watch Operators Association reports many operators are increasing their ticket price for the 2007 season by 50%, from TOP 150 to TOP 225. This will increase direct expenditure in the 2007 season to an estimated TOP 2 million or just below USD 1 million - an increase of approximately 30% compared with 2006.

- It is therefore likely that growth in the short term will primarily be driven by an increase in revenue per tourist rather than additional tourists.
- As a large proportion of whale watch companies are foreign owned or managed businesses (being Tongan registered) and as many of the bookings are made in advance from overseas, it is possible that some government revenue through taxation has the potential to be missed if undeclared in the country, or if income remains offshore (e.g. through booking agents). This is then considered an economic leakage, of which there is very little information to calculate accurate estimates and as a result this has not been accounted for in this report. We would assume this figure to be low. However, to offset any potential leakage, these foreign managers bring with them capital, skills, business experience and tourism distribution networks that assist in developing the Tonga “brand” of tourism which has also not been accounted for in this assessment. We see these intangibles as offsetting any lost income for the country through leakage.
- With debate still occurring regarding the impact of whale watching, particularly “swim-with” whale activities, on the marine mammals, it is likely that growth in revenue per tourist, as opposed to growth in numbers of international arrivals, will be a more sustainable option in the longer term.
- Our findings indicate that with a continuation of the same dynamics of the industry in Tonga (i.e. numbers and size of vessels, and focus on swimming with whales), and without substantial increases in whale abundance levels in Tongan waters, levels of whale watching will remain close to those reported in this study with little capacity for continued growth. Revenue per tourist growth will continue to drive up revenues for the industry, but in order to increase whale watcher participant numbers, the dynamics of the industry will be required to change. Most importantly, this would mean a stronger emphasis on whale watching (as opposed to swimming with whales) which can provide higher numbers of tourists with whale watching opportunities on the same number of vessels as currently exist for a negligible increase in impact on the whales. With a constant number of vessels (and hence an assumed constant rate of vessel - whale interaction), larger vessels would be required to carry more passengers to view whales.

Acknowledgements

A great deal of assistance has been provided by many people and organisations in order to produce the following report. Due to the challenges of gathering and compiling data on an infant industry in the Pacific Islands, in a period of transition and growth, this contribution is greatly appreciated and was an essential part of undertaking a comprehensive assessment of the industry.

The following people and organisations have generously given of their time and knowledge: Government Ministries in the Kingdom of Tonga, including the Ministry of Finance and Planning, Ministry of Fisheries, Ministry of Tourism and the Tongan Visitors Bureau (particularly Acting Director Mr Sione Finau Moala-Mafi and Mr Bruno Toke of TVB Vava'u), and the Ministry of Labour, Commerce and Industry (and in particular the Deputy Secretary Mr Sione Mauman). Further contributions were generously made by Dr Mark Orams, Dr Claire Garrigue of Opération Cétacés and from IFAW, Mr Filipe Tonga, Ms Sue Miller Taei, Mr Darren Kindleysides, Ms Olive Andrews and Ms Tania Duratovic.

In addition, the whale watching industry in Tonga was also generous of its time and information, contributing critical data for this assessment; in particular Whales in the Wild, Dolphin Pacific Diving, Whale Watch Vava'u, Whale Song, Melinda Sea Adventures, Beluga Diving, Dive Vava'u and Ocean Blue Adventures. Much appreciation also goes to the Tongan Whale Watch Operators Association, and its president and secretary, Mr Allan Bowe and Ms Christy Butterfield.

Introduction

Humpback whales, *Megaptera novaeangliae*, have long visited the islands in the Kingdom of Tonga on their seasonal cycle of migration to and from their feeding grounds in Antarctica. The Kingdom is an important breeding ground for these whales, despite many years of hunting of whales in the Kingdom. Hunting was banned by royal decree in 1978 and protection of all marine mammals is embodied in the Tongan Fisheries Conservation and Management Act 1993. Since the early 1990s, tourism operators have been taking people to see these whales close up in their natural environment, particularly in the protected waters of the northern Vava'u Island group.

The industry has grown strongly since that time and is often held up as a successful case study of whale watching in the Pacific due to the economic benefits accrued to the country. Much attention has been paid to its development with a major study having been undertaken on the socioeconomic benefits of the industry in Vava'u in 1998⁴.

The International Fund for Animal Welfare's (IFAW) Asia-Pacific office and New Caledonia's Opération Cétacés⁵ have commissioned this country case study to ascertain the socioeconomic value of whale watching in the Kingdom of Tonga through the non-consumptive use of whales as an attraction for tourism.

The study has been undertaken with the key aim of providing a comprehensive socioeconomic assessment of the whale watching industry in the Kingdom of Tonga as at 2006. The project aimed to provide detailed estimates of the economic contribution of the whale watch industry in Tonga (through expenditure estimates) as well as detail the broader industry dynamics.

Importantly, it is hoped that this report can assist other emerging whale watch regions that may learn valuable lessons from the Tonga experience.

Background:

In 2006, Economists at Large & Associates (EcoLarge) prepared an assessment of the whale and dolphin watching industry in the Pacific Islands region⁶ for IFAW, South Pacific Tourism Organisation (SPTO), Secretariat of the Pacific Regional Environment Programme (SPREP) and the South Pacific Whale Research Consortium (SPWRC)⁷. The assessment established a baseline of the size of the whale watching industry across the region for the 2005 season, and provided initial estimates of the numbers of whale watchers participating in this tourism activity, the numbers of operators involved and the economic value of the industry to the region.

⁴ Op.Cit., Orams, M. (1999)

⁵ Opération Cétacés, New Caledonia, see: <http://operationcetaces.lagoon.nc>

⁶ For the purposes of the report under discussion, the Pacific Islands region referred to the SPREP member countries (plus Pitcairn Island) and encompassed 22 distinct countries, states and/or territories across the South and North Pacific Ocean, including: American Samoa, Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Guam, Kiribati, Marshal Islands, Nauru, New Caledonia, Niue, Northern Marianas, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, Wallis & Futuna and Pitcairn Islands.

⁷ Economists @ Large (2007), *Pacific Islands Whale Watch Tourism: 2005 – A Region Wide Review of Activity*, a report for IFAW, SPREP, SPTO & the SPWRC.

The report built upon an earlier study of the global whale watching industry by Eric Hoyt (the Hoyt Report⁸) which provided a global assessment of whale watching tourism expenditures and participant numbers in 1998. The Hoyt Report set a baseline from which it is possible to estimate growth rates of the industry in the region across this seven year time period.

The EcoLarge Pacific Islands report demonstrated that the region had experienced an average growth rate of 45% per annum in the period between 1998 and 2005. It estimated that in 2005, over 110,700 people participated in whale watching in the Pacific Islands region and that the industry generated over USD 21 million through tourism expenditure.

The study provided baseline estimates of whale watching numbers in each of the 22 countries, states & territories assessed, including the most established whale watching industry in the region – that of the Kingdom of Tonga. Findings estimated 9,000 whale watchers in 2005 in Tonga, with an industry that generated approximately USD 1.8 million.

This analysis was combined with the research of Opération Cétacés to produce another report in 2007 detailing the extent of *humpback-specific* whale watching across the South Pacific region including Australia and New Zealand and estimates of the level of economic expenditure generated by these activities⁹. This report, which included the large number of Australian humpback whale watchers, found a total of 171,387 humpback whale watchers across eight countries, generating USD 38.3 million of total expenditure in 2005.

The following report comes as a recommendation from the Pacific Islands report, which concluded that there would be benefit in undertaking a detailed case study of a leading whale watch country in the Pacific Region. It is hoped that from such a case study, other emerging whale watch countries or regions would be able to learn some valuable lessons from the Tongan experience.

⁸ Op.Cit., Hoyt 2001.

⁹ Schaffar,A. & Garrigue,C.(2007), *Review of Commercial Humpback Whale Watching Activities in the South Pacific: a report for Fonds Français pour l'Environnement Mondial*, in conjunction with Economists @ Large & Associates.

Research Methods

The research for this report was undertaken as a combination of desktop study and a period of in-country research. The desktop study included direct contact with key stakeholders, literature reviews, and preliminary discussions with Tongan whale watch operators. The in-country research took place in mid-March 2007 and involved one week in the Kingdom of Tonga, with time spent in both Nuku'alofa and Vava'u. The regions of Ha'apai and 'Eua were not visited due to time constraints despite the occurrence of licensed whale watching activities in these island groups.

Interviews were held with four government ministries, seven operators and two local organisations. Other discussions were held with local stakeholders including guesthouse owners, hoteliers, restaurateurs, local handicraft makers, cafes, internet cafes and taxi operators for a broader impression of the socioeconomic impact of the industry (see Appendix for details). In total, formal interviews and informal discussions were held with approximately 24 stakeholders.

Economics:

Growth: Growth patterns are assessed based on numbers of whale watch participants in 2006 compared to 1998 figures presented in the global whale watch report by Hoyt. Hoyt refers to data collected and reported by Mark Orams in a previous report¹⁰. Growth is calculated as an annual average growth figure that assumes a constant rate of growth across the eight years from 1998 to 2006.

Growth is based on numbers of whale watchers. Our aim is to estimate whale watcher participants, counting a whale watcher repeatedly if he/she undertakes more than one trip. Hoyt describes this as counting whale watch "visits", rather than "visitors". This is done in order to capture the additional expenditure for each whale watch episode. This is particularly relevant for Tonga as many participants repeatedly undertake whale watching trips during their stay.

The average annual growth rate (AAGR) is calculated as the average of a series of growth rates that allows the data to grow steadily from the first survey period (1998) and achieve the result specified in the next survey period (2006) (the 'interpolated' period). This interpolation is based on the assumption that growth in whale watcher numbers is constant over all years between 1998 and 2006.

Economic Value: An economic estimate is derived for this report that provides a value of the Tongan whale watching industry in 2006 through a calculation of expenditures. This is calculated based on the direct economic expenditure on whale watching activities as well as an estimate of indirect expenditure that can be attributed to the person ('whale watcher') undertaking the whale watch activity.

In the calculation of the economic benefits of whale watching, there are a range of issues that need to be clarified. The sale of tickets to travel on a whale watching vessel is a gross financial benefit resulting from whale watching. The purchase of food, accommodation and travel expenses (amongst others) to participate in a whale watching event can also be attributed (subject to conditions) to whale watching on many occasions. These expenses can be called 'direct' expenditure. Indirect expenditure is undertaken when the business that earned the direct expenditure spend the revenue on goods and services as inputs to their activities.

¹⁰ Op.Cit., Orams, M. (1999).

The Hoyt Report, however, uses a definition of expenditure different to that used in general economic literature. That report, relying on conventions from previous assessments, defines indirect expenditure as expenditure that supports the whale watch trip such as accommodation, transport and food and direct expenditure is expenditure on tickets and items directly related to the trip itself. This report adopts the same approach as Hoyt to allow direct comparison with that report. Therefore:

Direct Expenditure: is the direct whale watch ticket purchase price by participants.

Indirect Expenditure: adds expenditure into the local economy that can be attributed to the person participating in the whale watch activity. The expenditure the tourist makes on that day in addition to the whale watch ticket price can in part be attributed to the whale watch activity.

Total Expenditure: is calculated from the sum of direct whale watch expenditure plus the indirect whale watch expenditure by whale watchers. This reflects the fact that there is more economic benefit gained by the host country from the whale watching activity than merely the ticket price.

All dollar values in this report are US dollars (USD) and Tongan Pa'anga (TOP). Exchange rates used are as of April 2007, where TOP 1 = USD 0.495; USD 1 = TOP 2.02. Where exchange rates vary, this is reported.

Limitations:

The data in this report aim to provide an estimate of economic expenditure from whale watching tourism development in Tonga. There are a number of factors that need to be considered that impact on the reliability of data collected for this report. The report was undertaken on a short time frame, using literature reviews and stakeholder interviews – no tourist interviews were conducted. For a more comprehensive assessment, a detailed tourism survey would be required.

The Tongan Visitors Bureau (TVB) is making concerted efforts to improve tourism data, however there is still a significant paucity in comprehensive, time series data for the country. This is particularly the case in regards to data on tourists' motivation for travelling to Tonga. These limitations are described further in the following report.

A lack of comprehensive data has provided some challenges to estimating tourism expenditure on whale watching. This lack of data has been accounted for by the use of multiple data sources where possible, including those from stakeholder interviews, TVB and regional tourism reports.

As a result of the lack of data, it has been necessary to rely heavily on stakeholder interviews. Such data tends to be more qualitative in form and has been used only in this manner, not as a basis for economic calculations.

As an outcome of these limitations, a number of assumptions have been drawn from available evidence. Where assumptions are made, this has been stated in the text of the report.

Although efforts have been made to keep calculation methodologies consistent with the Hoyt Report, total expenditure figures in this report are based on a more comprehensive calculation methodology and as such, direct comparison between reports should be used for trend analysis rather than for exact expenditure growth. For this reason, the annual growth rate has been calculated using the numbers of whale watchers across the time period as opposed to expenditure levels.

Discussion

Economy of Tonga:

The Kingdom of Tonga (Tonga) is an island nation located in the South Pacific close to Samoa and Fiji. The country is made up of four main island groups; Tongatapu (including 'Eua), Ha'apai, Vava'u and the Niua spread across 700,000 km² of Pacific Ocean exclusive economic zone.



Map of Tonga¹¹

The most recent population estimates for Tonga cite 100,000 Tongans, living on 36 inhabited islands covering a total land area of 800km². Approximately two-thirds of the population live in Tongatapu, the country's main island which includes the capital city, Nuku'alofa¹². It is estimated that approximately another 100,000 Tongans live overseas, predominantly in New Zealand, Australia and the United States of America. The population growth rate is 2%, which is close to the net migration rate of 1.9-2%, resulting in a relatively stable population¹³.

Key economic indicators are reported in the table below¹⁴:

Indicator	TOP	USD
Gross Domestic Product (GDP) (04/05)	455.9 million	235 million
GDP per capita (04/05)	4,560	2,350
Remittances (2004)	42.5% of GDP	
Tourism (2004)	Approx. 15% of GDP	
Labour Force	Approx. 36,500	

¹¹ Taken from www.appliedlanguage.com, accessed June 2007 - www.appliedlanguage.com/maps_of_the_world/map_of_tonga.shtml

¹² Kingdom of Tonga, Strategic Development Plan Eight (SDP8): 2006/07-2008/09

¹³ *ibid.*, Kingdom of Tonga, SDP8.

¹⁴ Table data taken from *ibid.* (SDP8), except Tourism as a proportion of GDP, sourced from Ministry of Finance and Planning, *Budget Statement for Year Ending 30th June 2006 - Budget Paper No1: Review of Tongan Economy and Outlook 2005/06*

Tourism in Tonga:

The tourism industry in Tonga is a growing and important sector to the economy contributing an estimated 15% of gross domestic product (GDP) in 2004. Agriculture, fisheries and remittances from Tongans living overseas are the other major contributing sectors. As such, tourism plays a growing role in the economy of Tonga, providing foreign exchange earnings and spurring economic activity across the Kingdom.

Tourism receipts: Estimates of tourism receipts vary in government reporting, from the official estimates of the Statistics Department of T\$24 million (US\$11.8 million) in 2004, to the TVB's more detailed assessment that estimates total tourist expenditure in 2004 at T\$49.1 million (US\$24.2 million)¹⁵. At the level estimated by the TVB, it is clear that this forms a significant level of activity in the economy when compared to GDP in 2004/05 of USD 235 million.

Visitor numbers: In 2005, the country received 41,862 air visitors, up 1.59% on the previous year. With the inclusion of private yachts and excursionists (cruise ship arrivals), total visitor arrivals in 2005 were 65,687, an increase of 16% against 2004 (due largely to an increase in cruise ship visitors). The arrival method most often used by tourists who participate in whale watching activities is air. Cruise ship excursionists tend only to visit for a number of hours, and are unlikely to be able to undertake a whale watching trip in this time frame, as the majority of whale watch tours in Tonga are undertaken as full day trips. Private yachts are more likely to watch whales with their own vessels than undertake a whale watch tour. This is supported by the Orams report of 1999 which reported that only 4% of private yacht visitors undertook commercial whale watch tours in Vava'u in 1998 - cruise ship passengers didn't feature in the study¹⁶. That said, private yacht visitors make a substantial contribution economically in the local Tongan economy. For the purposes of this report, that economic activity has not been considered due to its indirect relation to whale watching.

At the time of this study, 2006 data was not yet available. Visitor arrival data for air visitors for the previous five years is listed below¹⁷. Calculated from the data below, **the average annual growth rate of visitor arrivals over this period at 4.05%:**

Year	Visitor arrivals by air	% change
2000	34,694	
2001	32,386	-6.65
2002	36,585	12.97
2003	40,110	9.64
2004	41,208	2.74
2005	41,862	1.59

¹⁵ *ibid.*, Ministry of Finance and Planning, *Budget Statement for Year Ending 30th June 2006*.

¹⁶ *Op.Cit.*, Orams, M. (1999).

¹⁷ Data provided by the Tongan Visitors Bureau, Nuku'alofa, March 2007

However, the data above fails to reveal the type of visitor arrivals, whether holiday-makers, business tourists or visiting friends and relatives (VFR). It is known that VFR tourists (predominantly Tongans living overseas) form a significant proportion of the total air arrivals. According to the TVB's survey of visitors in 2004, New Zealand, Australia and USA account for the majority of visitors to Tonga at 37%, 20% and 19% respectively (total of 76%)¹⁸. This data does not reveal the nationality of arrivals, as many of these may be Tongans living in Australia, New Zealand or the US, counted by the country of arrival, not nationality.

Earlier data by the TVB for 2003 suggests that of the total 56,894 visitor arrivals (including cruise ships, air arrivals, yachts, naval and foreign vessels), 44% were actual holiday-makers (25,139) arriving by air, cruise ships and private yachts. The remaining 56% were VFR or on business¹⁹. It is holiday-makers who account for the greatest demand for tourism related facilities such as commercial accommodation, restaurants and tourism activities and hence generate economic revenues.

From this TVB 2003 data²⁰, if we subtract cruise ship passengers (6,473) and private yacht visitors (2,278) from holiday-makers (25,139), we have a more accurate indication of the pool of potential whale watch tourists visiting Tonga – 16,388 in 2003.

Employment: Of the country's population base (100,000 residents), the country's active labour force is estimated at 36,500. Of this labour force, the numbers employed in the tourism industry have been estimated in one study at between 1,500 to 4,000 individuals, or 4% to 11% of the total labour force²¹. This compares to government public sector employment rates of 4,400 at the beginning of 2006²² - 12% of the labour force.

The lower estimate of numbers employed in the tourism industry (1500 or 4% of labour force) is likely to be an underestimate of actual numbers. A 1997 study, cited in the Tongan Strategic Development Plan Eight, estimates that at the time, tourism creates a total local employment of around 2,200 jobs, of which more than 2,000 were for Tongans (both men and women), through both direct (approximately 1,000 jobs) as well as indirect and induced effects²³. This equates to around 6% of the labour force. As this data is nearly a decade old, it is possible that the upper estimate of 4,000 employed in the tourism industry, quoted in the former report, is probable, based on growth of tourist arrival numbers that has averaged 4.05% per annum since 2000.

At this level (11% of total labour force), it is evident that tourism makes a significant contribution to the economy of Tonga, and any growth in this sector, and subsequent employment increases, can have a significant impact on overall economic activity.

Projected growth in tourism in Tonga: At the time of researching this report, the TVB was optimistic about the future development of tourism in Tonga. Although short term forecast growth rates were not available, discussions with the TVB revealed that the Ministry of Tourism has set a target of increasing visitors from existing levels around 60,000, to 300,000 arrivals per annum over the longer term (no precise timeframes were given)²⁴.

¹⁸ Tongan Visitors Bureau (2006), *Annual Report 2005*.

¹⁹ Op.Cit., Kingdom of Tonga, SDP8.

²⁰ Op.Cit., Tongan Visitors Bureau (2007).

²¹ Milne,S.(2005), *The Economic Impact of Tourism in SPTO Member Countries*, prepared for the South Pacific Tourism Organisation by Tourismworx Ltd & New Zealand Tourism Research Institute.

²² Op.Cit, Kingdom of Tonga, SDP8.

²³ *ibid.*

²⁴ Tonga Visitors Bureau, Nuku'alofa, pers.comm., March 2007

Whales in Tonga:

Humpback whales visit the islands of Tonga each year between July and October to mate and calve after feeding during summer in Antarctic waters. Humpback whales in the Pacific Islands region were hunted first during the 19th century by 'Yankee' whaling vessels. This became more intensive during the 20th century by factory ships and modern shore-based operations. The last recorded catches of these whales were by the Kingdom of Tonga, prior to the 1978 royal decree prohibiting this hunt.

During the last century, humpback whales in the South Pacific Ocean have been reduced to less than 5% of their original populations²⁵.

Recovery in the abundance of humpback whales in the Pacific Islands region has been slow and variable. Sightings remain rare around several island groups where they were once common, such as Fiji²⁶.

As part of a systematic programme of illegal whaling, Soviet factory ships killed almost 13,000 humpback whales in the Antarctic waters directly south of Australia, New Zealand and the Pacific Islands during the 1959/60 season. This precipitated a crash in the numbers of humpback whales throughout the region and may have resulted in the extinction of some local populations²⁷.

Humpback whales conservation status now includes their listing as:

- Vulnerable on the International Union for the Conservation of Nature Red List (IUCN)
- Appendix II (Vulnerable) under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Appendix I (Endangered) under the Convention of Migratory Species of Wild Animals (CMS/Bonn Convention)

Most recent estimates report the population of humpbacks in the waters around Vava'u at around 1,000 animals²⁸. The pool of accessible whales for whale watching opportunities is assumed to be a much smaller number of whales who remain resident for the season. Across the entire Oceania region, the humpback population is estimated to be approximately 2,200 (based on research from three key breeding grounds - French Polynesia, New Caledonia and Tonga)²⁹. Reports from whale watch operators indicate that each year, an average of only ten mother and calf pairs are seen in the waters of the Vava'u islands (estimates for other regions not available).

²⁵ Clapham, P.J. and Baker, C.S. 2001. Modern whaling. pp. 1328-32. In: W.F. Perrin, B. Würsig and J.G.M. Thewissen (eds.) *Encyclopedia of Marine Mammals*. Academic Press, New York.

²⁶ Gibbs, N., Paton, D.A., Childerhouse, S., and Clapham, P.J. 2006. Assessment of the current abundance of humpback whales in the Lomaiviti Island Group of Fiji and a comparison with historical data. Paper SC/A06/HW34 presented to the IWC Scientific Committee, Humpback Whale Assessment, Hobart.

²⁷ Yablokov, A.V., Zemsky, V.A., Mikhalev, Y.A., Tormosov, V.V. and Berzin, A.A. 1998. Data on Soviet whaling in the Antarctic in 1947-1972 (population aspects). *Russ. J. Ecol.* 29:38-42.

²⁸ Constantine, R., pers.com., May 2007 & Baker, C. Scott, C. Garrigue, R. Constantine, B. Madon, M. Poole, N. Hauser, P. Clapham, M. Donoghue, K. Russell, T. O'Callahan, D. Paton and D. Mattila. (In prep.), *Abundance of Humpback Whales in Oceania (South Pacific): 1999 to 2004*.

²⁹ Baker, C. Scott, C. Garrigue, R. Constantine, B. Madon, M. Poole, N. Hauser, P. Clapham, M. Donoghue, K. Russell, T. O'Callahan, D. Paton and D. Mattila. (In Prep.), *Abundance of Humpback Whales in Oceania (South Pacific): 1999 to 2004*.

Whales and Tourism:

Whales play a significant role in the attraction of holiday-makers to Tonga. This is difficult to quantify without a targeted tourism survey which was not undertaken as part of this study. However, it is evident through perusal of tourism marketing materials from the TVB and tourism businesses that the whale features strongly as an iconic animal for Tonga and whale watching is commonly held up as one of the main tourism activities in Tonga (along with diving, fishing, sailing and cultural excursions).

It is a source of much debate as to what level of attraction whales play in terms of the motivation of tourists to choose Tonga as a destination. There is little in the way of available data on the key activities undertaken by holiday-makers, however other data can tell some of the story.

TVB air visitor arrival data shows that the peak tourist seasons each year correlate closely with the whale viewing period of July to October. Although in 2005, air arrivals in September and October dropped off, and June and November were peak months, indicating that air arrivals are visiting Tonga for multiple reasons – not solely for whales – and were also influenced by global peak tourism periods such as the northern hemisphere summer holiday period of June/July.

December tends to be the peak arrivals month, however this is likely to be due to VFR tourists travelling home for the Christmas period. This can be supported by 2005 data that shows low levels of foreign exchange earnings from tourism in December compared with June, July and August despite arrivals being much higher in December³⁰.

Specific data on air arrivals to Vava'u, the main whale watching region, is not available on a month by month basis, but interviews with the local TVB office and tourism operators indicate that the peak season correlates very closely with the arrival of the whales and their approximate 100 days in Vava'u between July and October. Of the 9,214 air arrivals to Vava'u in 2006, the TVB estimates that approximately 75% arrive in these peak months³¹ - 6,910 visitors. The TVB states that at this time of year, there are additional flights into Vava'u (up to five per day, compared to the usual two or three per day) and that planes (sixteen seat capacity) are regularly close to capacity³².

However, of these air arrivals, we are not able to determine what proportion are VFR and whether this would be the same as for the whole of Tonga (i.e. approximately 45%). It could be argued that air arrivals to Vava'u, a major tourism hub for the country, would be made up of a higher ratio of holiday makers than other regions, particularly during the peak tourist season, however there is no data to support this. It is therefore most prudent to use the same ratio.

³⁰ Data provided by the Tongan Visitors Bureau, Nuku'alofa, March 2007 – see Appendix

³¹ Tongan Visitors Bureau, Neiafu, Vava'u, pers.comm., March 2007

³² Undertaking some conservative calculations, based on an average of four flights per day at 90% capacity, results in approximately 57.6 arrivals per day over 100 days leading to 5,760 air arrivals over the peak whale watching season. As a proportion of total air arrivals to Vava'u, this is 62.5% of annual air arrivals, which comes close to supporting the TVB estimate of 75%. Through calculating the peak season at 120 days, the numbers would equate to 75% of arrivals – 6,912 - and thus support the argument that a large majority of visitors arrive during the peak whale watching season.

Based on numbers of beds in Vava'u's accommodation facilities, we can estimate the tourism capacity of this northern island group. Total beds in 2006 were 470 in the Vava'u Islands, leading to a maximum possible number of visitor nights of 56,400 over the 120 day peak tourist season. TVB research has estimated that visitors stay on average 11.9 nights in Tonga. With 6,910 visitors staying an average 11.9 nights over the 120 day season, there would be a need for accommodation for 82,229 visitor nights – 25,829 more than is available at 100% occupancy with existing accommodation. If, however, we assume that 45% of arrivals are VFR tourists who have accommodation with friends or relatives, then the need is for accommodation for 3,800 tourists, staying for 45,220 visitor nights in total. This number appears more realistic as it can be supported by existing accommodation at an average level of 80% occupancy.

This calculation indicates approximately 3,800 holiday-maker tourists arriving in Vava'u in the peak season. TVB data tells us that in 2006, 2,701 tourists undertook a whale watching trip (this figure counts individuals only once despite the fact that many take multiple trips – discussed in more detail in the following section). We can therefore say that in Vava'u, **71% of holiday-makers visiting Vava'u in the whale season undertake a whale watch trip.**

Data from a study of whale watchers in Vava'u in 1998 support this result and indicate that this may in fact be a slight understatement. The findings of the report by Mark Orams indicate that of air visitors to the island group during the whale season, 80% surveyed undertook a whale watching tour³³.

This figure therefore indicates that whales are a key attraction to holiday-maker tourists, a majority of whom come during the peak season which correlates with the whale season, and of these, a significant majority who visit Vava'u, undertake a whale watching trip (between 71-80%).

Detailed data is not available for any of the other regions where whales are present.

Whale Watch Tourism:

Whales and whale watching in Tonga is therefore a significant attraction to tourists.

Humpback whales migrate from Antarctica to Tonga annually to spend a period of time from the end of July to the end of October in the protected, warm waters to reproduce. As a result, a strong boat-based whale watching industry has grown from its hub in Vava'u to take tourists to view the humpbacks. The recent years have seen the industry expand from the first operators in the early 1990s to a point where there are approximately fourteen licensed operators undertaking tours in Tongatapu, 'Eua, Ha'apai and Vava'u. Anecdotal reports indicate an additional operator in the Niuaus, however, according to discussions with the Tongan Visitors Bureau, there is no license issued in this northern region. Vava'u accounts for a majority of the industry, including eleven of the fourteen licensed operators (2006 figures; thirteen licenses were issued in 2005).

³³ Op.Cit., Orams, M. (1999).

As the industry has grown, it has matured and now includes a representative industry association, the Tongan Whale Watch Operators Association (TWWOA) which has seven members (representing around half of the industry, and approximately 75% of the whale watch episodes in 2006) as well as a marine awareness and education centre in Vava'u managed by a local IFAW representative. Further formalisation of the industry has come through government administered regulations regarding licensing and the development of whale watching guidelines. The guidelines were first implemented voluntarily and had broad stakeholder (government, operator) input to their development, trial and evaluation in the late 1990s. At the time of writing this report, whale watching guidelines have been used as the basis for draft regulations under the Tourism Act 1976 and were in the process of being passed as legislation. It is hoped that they will be passed as law prior to the commencement of the 2007 whale watch season. Licenses have recently been capped at thirteen in Vava'u, although in 2006, this was reduced to eleven. In 2006, there were 14 licenses in the whole of Tonga, although this number fluctuates somewhat each season. Each license holder is able to operate up to two vessels, although some operators are attempting to run up to three boats. Both the cap and the vessel limitation are likely to be tested in the 2007 season.

The waters where whale watching occurs are for the most part sheltered, there is easy access to whales, and tourism infrastructure is of a reasonably high standard (and improving). This is in contrast to many of the world's whale watching locations that are in the open ocean and are often impacted by adverse weather. Due to the well-protected waters in which the humpbacks are found, operators report that over the 2006 season, of approximately 100 whale watching days, only three were lost to poor weather in Vava'u³⁴. Furthermore, many of the world's whale watch locations target migrating whales, whereas in Tonga, the whales are regarded as resident over the 100-120 day season. Much of the whale watching attention is focused on the mother and calf pairs, as they tend to be slow moving and hence easier to approach and track (with calves needing to surface at approximately six minute intervals to breathe). Although numbers change each year, it is estimated that on average, ten pairs are present most years in the waters of Vava'u (numbers not known in other island groups)³⁵. Numbers of males are not known.

An element of the industry in Tonga that is uncommon in whale watch operations globally is the ability to swim with the whales, which is permitted as part of whale watch license conditions. This occurs in very few places globally and a majority of the operators in Tonga offer this as part of their tour. One licensed operator explicitly states that it does not swim with whales. Most other operators report that they do not guarantee "swim-with whale" experiences, however do offer these experiences. Many of the operators claim this to be at the core of the country's competitive advantage when it comes to whale watching, attracting tourists to travel the extra distance to this Pacific Island. This is obviously very difficult to confirm and is a much discussed issue that would be better resolved with detailed market research and/or a detailed tourism survey. There are concerns in regards to the impact of such close contact with the whales, particularly when a small number of mother and calf pairs in a vulnerable period of their life cycle are exposed at length to vessels and humans over the duration of their approximate 100 days in Tongan waters. These issues are discussed in more detail in a review of whale watching in Vava'u undertaken for the Tongan Government in 2006 and are beyond the scope of this report³⁶.

³⁴ Tongan Whale Watch Operators Association (TWWOA), pers.comm., and other whale watch operators, pers.comm., March 2007.

³⁵ *ibid.*, TWWOA, (2007).

³⁶ SPREP & IFAW (2006), *Review of Whale Watching in Vava'u Tonga*, prepared for the Tonga Department of Environment.

The whale watch tours tend to be reasonably consistent in style. The average style of tour is from 10am until 4 pm, involving swimming with the whales. Many operators reported that swimming with the whales is not guaranteed as part of the tour. **The industry has reasonably consistent pricing, particularly in Vava'u, averaging T\$150 (US\$74) per day trip. According to the TWWOA, most industry association members will be increasing their price in 2007 to T\$225 (US\$111) per trip (50% increase) in response to consistently high demand and input cost inflation (particularly fuel costs), and due to their industry association's informal review of whale watch pricing around the world.**

As was demonstrated earlier, approximately 11% of the labour force in Tonga is employed in tourism. On average, whale watch businesses employ one foreigner and 1.8 local Tongans for each vessel. For many of the businesses, there are additional staff employed in administration and customer service and gear or equipment maintenance – averaging an additional one local Tongan per company. From this data, **the numbers of employees directly engaged by the industry is approximately 44 – 32% foreigners and 68% Tongans.**

However, the most significant employment impact of the industry is in those associated industries that service the tourists including accommodation, restaurants, local markets, handicrafts, taxis and domestic airlines. In such businesses, the employment impact is more substantial, however precise estimates are not known beyond the aforementioned 11% employment due to tourism. Interestingly, the following data shows rather slow growth in associated tourism facilities in Vava'u. In the period between 1998 and 2006 in Vava'u, licensed accommodation facilities have grown from 20 to 23 (this doesn't capture any growth in bed numbers in existing accommodation facilities in this time), and restaurant, bars and cafes have grown from 8 to 14³⁷.

It is likely that the slow relative growth of such facilities over this period is associated with the slow growth of overall tourist arrivals to the country (4.05% p.a since 2000) which have included some years of decreasing arrivals, creating some uncertainty for investment in tourism infrastructure. Furthermore, the tourism industry in Vava'u has become highly seasonal, restricting a large proportion of tourism to 100 days per year. Such an industry produces little revenue for tourism related businesses for the remaining 265 days per year. Such a short season restricts earning capabilities for tourism businesses and therefore could slow investment in this area. This was a concern raised by some operators, claiming that the industry has restricted itself by promoting the whales so heavily, and hence, the tourist season has become shorter than the peak season climatically, being June to November or in the vicinity of 170 days.

Capacity constraints:

Through interviews with operators, it appears that the industry may be facing capacity constraints that are restricting growth in numbers of tourists travelling to Tonga to whale watch. Although the following section demonstrates a strong growth in participants in whale watch episodes, the base number of whale watchers (most of whom undertake multiple whale watching trips during their stay) no longer appears to be growing as strongly. This would appear to correlate with the data above indicating a slow growth in accommodation facilities. Research indicates that these capacity issues relate to a combination of factors (particularly relevant in Vava'u): a limited number of whale watch opportunities (low numbers of accessible whales to view), availability of hotel beds, availability and consistency of flights, vessel capacity and capped license numbers. In regards licenses, prior to 2006, no operator had been rejected on their application for a whale watch license. At the time of this research, TVB stated that license numbers were likely to be reduced in Vava'u (from 13 to 11) potentially resulting in some rejections of applications.

³⁷ Op.Cit., Orams, M. (1999) & TVB, Neiafu, March 2007

Reflecting these constraints are the reports by operators that demand remains extremely strong, with many operators interviewed in Vava'u indicating that they are booked out well in advance of the whale watch season. Many of the group bookings request a whole boat exclusively, often for undertaking dedicated whale photography. This, therefore, limits the numbers of tourists able to whale watch, as often it may be a small group booking a vessel with a larger capacity. This last point is a critical factor limiting the growth in additional numbers of whale watch tourists. TWWOA has stated an approximate capacity of 150 people per day in ten vessels across 100 days of the whale watching season. This equates to 15,000 as the maximum possible whale watchers per year³⁸. Estimates given in this report (see section following) indicate numbers well below this level. This is in part explained by the group bookings that take a whole vessel for an exclusive small group whale watching episode. Importantly, such a booking, although limiting total numbers of whale watchers, would not restrict revenue growth as it is assumed that operators would demand equivalent fees to a fully booked vessel.

Along with this, the TVB has also restricted vessel numbers per whale watch license to a maximum of two. Nevertheless, the strong bookings enable operators to demand high prices for pre-booked packages, reportedly often above the average ticket price, and as a result, earnings growth is assumed to be strong for operators. Details of such confidential business data was not requested of operators as part of this study, and as such, income growth has not been estimated beyond direct expenditure in the following sections.

As it is unlikely that whale viewing opportunities will increase in the short term, continued growth for the industry is likely to come through an increase in revenue per tourist, rather than increasing numbers of international arrivals. In order to increase revenue per tourist, ticket prices will ultimately be driven up, as is occurring (refer to following section). However, a large proportion of earnings growth will be consumed by inflation of input costs, particularly fuel that

Perhaps driven by these constraints in Vava'u, more recent growth is seen also through the expansion of whale watching to other regions of Tonga, with one operator in Ha'apai (since the late 1990s), two in Tongatapu, one in 'Eua and one who brings tourists from Fiji. Although no license was reported to be issued for the Niuaas, anecdotal reports indicate the presence of a whale watch operator in this northern region.

³⁸ TWWOA, pers. comm., 2006

Economics of Whale Watch Tourism in Tonga:

Estimated Numbers of Whale Watch Tourists to Tonga in 2006:

Whale watch license holders in Vava'u are required to report annual numbers of whale watch participants to the local TVB office. In 2006, this was reported to be 2,701 whale watchers in Vava'u undertaking an unreported number of whale watch episodes. Communications with operators in other regions indicate an estimated additional 500 whale watchers across the rest of the country (including Tongatapu, 'Eua, Ha'apai) and therefore **total numbers of whale watchers in 2006 were approximately 3,201.**

However, for the purposes of this report, our aim is to estimate the total expenditure of whale watching in Tonga. A significant portion of this comes from tourists' direct expenditure on purchasing a ticket for a whale watching cruise and as a result, our aim is to estimate the number of people participating in whale watch episodes (see methodology for further detail). Uniquely in Tonga, operator responses indicate that most tourists who participate in whale watching trips during their stay will undertake a tour multiple times. The TVB indicates an average stay of 11.9 nights by air arrivals in Tonga, and interviews with operators in Vava'u report average stays of 7-10 days in Vava'u by their customers. Operators report that it is not uncommon for whale watchers to undertake whale watch tours on five consecutive days. Through interviews with operators, it is clear that the majority of whale watchers undertake multiple trips. Some operators stated that their customers would undertake a minimum of five trips, others that their guests would undertake whale watching every day for a week, very few stated that their customers undertook whale watching only once.

For the purposes of this report, our aim is to calculate the numbers of participants on whale watching trips in the 2006 season, not excluding those undertaking multiple trips. In keeping with the methodology of previous studies, those undertaking repeat tours will be counted repeatedly in order to capture the full economic benefit to the country of repeated purchase of tickets.

Using averages of data gathered from surveying operators, along with the data provided by the TVB, we have calculated an estimate of total numbers of whale watch trips in Tonga for the 2006 season at 9,804 participants on whale watch tours, approximately 740 undertaken outside of Vava'u. This equates to an annual average growth rate (AAGR) of 20%³⁹ since 1998 levels of 2,334 whale watchers.

Year	Number of whale watchers
1994	200
1998	2,334 ⁴⁰
2005 (est.)	9,000 ⁴¹
2006	9,804

³⁹ AAGR is calculated from the 1998 and 2006 data. See Methodology section for explanation of AAGR.

⁴⁰ Op.Cit., Hoyt,E.(2000) – for both 1994 and 1998 data.

⁴¹ Estimate taken from Economists @ Large (2007).

Despite this strong growth in total participants on whale watch tours, our research indicates that growth has reached a plateau at around this point of 3,000 individual whale watchers per year across the country, with slow growth on these figures in recent years. This most likely reflects capacity constraints in the key region of Vava'u as discussed in the previous section. Although global tourism demand witnessed a serious dent in the 2000-2004 period due to September 11, SARS and the Iraq war (with a low AAGR of 2.9%⁴²), tourism to the Pacific region remained strong in the same period (AAGR of 7.3%⁴³). As a result, these exogenous issues can be dismissed as a cause of slowing growth in arrivals for whale watching in Tonga. It is therefore probable that capacity issues are the leading constraint on arrivals.

Estimated Direct Expenditure in the Industry:

For the purposes of this report, the direct expenditure on whale watching is calculated based on the ticket price for participating in whale watching multiplied by the number of whale watching episodes. For the bulk of the whale watching industry in Tonga, the figure of TOP 150 (USD 74) is used as this is the rate that most TWWOA members charge. Where data is available, the precise figure for each of the operators is used to calculate revenues from ticket sales.

Direct expenditure on whale watching tours in 2006 is estimated at TOP 1,515,069 (USD 749,959).

	TOP	USD
Total Direct Expenditure:	1,515,069	749,959

With the TWWOA's proposed increase in the ticket price by 50% in 2007, this will increase direct expenditure in the 2007 season to around TOP 2 million or just below USD 1 million⁴⁴ - an increase of approximately 30% compared with the 2006 season.

Estimated Indirect Expenditure in the Industry:

Having identified the significant role of whales in terms of attracting tourists to Tonga, an important part of the benefit to the economy is the additional expenditure by these whale watch tourists that is induced as a result of their participation in the whale watch activity. This includes, for example, accommodation, restaurants, markets, handicrafts, taxis and domestic airlines.

According to the TVB Visitor Expenditure Survey, the average expenditure per tourist during their stay in Tonga was TOP 1,045 in 2004. This data aggregates all tourist arrivals, including business, VFR and holiday-makers. The same survey indicates that the average daily expenditure of holiday-makers is TOP 90-100 (for the purposes of this report, the average of TOP 95 is used).

⁴² Data relates to 'International Tourist Arrivals – World': World Tourism Organisation, *Tourism Market Trends 2005 Edition - Annex*, www.world-tourism.org, accessed August 2006

⁴³ *ibid.* - Average annual growth in international tourist arrivals in the Asia Pacific Region between 2000-2004: World Tourism Organisation, *Tourism Market Trends 2005 Edition - Annex*, www.world-tourism.org, accessed August 2006

⁴⁴ Based on no growth in whale watch participant numbers, where the TWWOA members increase their ticket price to TOP 225, and all other operators hold their prices constant at an average of TOP 150.

Research for this report indicates that these figures are not representative of whale watch tourists, who spend on average TOP 150 for a whale watch tour, often on a daily basis for up to five days. This indicates that whale watch tourists are perhaps at the high end of the holiday-makers travelling to Tonga with larger expense budgets. A probable reason for the TVB underestimating expenditures is that most of the whale watch tourists book and pay for their trips to Tonga, as well as their whale watching schedule, prior to arriving in the country. As a result, most of the holiday is pre-booked and the major expense items – accommodation, travel and the whale watch trip - are pre-paid. This then leaves daily expenditure to be directed only to food, souvenirs, local travel and other activities, which is likely to equate to this TOP 95 per day figure.

In order to incorporate accommodation expenses into our calculations of indirect expenditure, a review of hotel prices on Vava'u was undertaken to determine average prices per person per night – findings were TOP 98 (USD 48.50)⁴⁵. Hence, the daily expenditure figures provided by TVB are already totally consumed by accommodation expenses and so confirm that in the case of whale watch tourists, actual expenditure is underestimated by this TVB data.

As a result, an assumption has been made that pre-paid bookings for accommodation and tours are not captured in the average daily expenditure budget of TOP 95 as reported by TVB. It is assumed for this report that the figure of TOP 95 per day is the cash expenditure in country by tourists, on items such as food, souvenirs, local transport and other activities. In light of this, in order to calculate indirect expenditure for this report, we have used the TVB reported average expenditure of TOP 95 plus the average accommodation price of TOP 98 giving a **total average indirect expenditure per day for whale watch tourists of TOP 193**. Accommodation expenditure is only attributed for the day of the whale watch episode, not the full stay in Tonga.

For those whale watchers undertaking tours in Vava'u and Ha'apai, we have calculated a proportion of the domestic travel (flight from Nuku'alofa or equivalent) and incorporated this into the indirect expenditure value⁴⁶. As a result, an additional TOP 391,501 (USD 193,793) is added to indirect expenditure data.

As we have demonstrated that there were 9,804 whale watch trips undertaken in 2006, this can thus be multiplied by the average daily expenditure (TOP 193) to achieve a preliminary estimate of indirect expenditure – TOP 1,892,172 (USD 936,625).

If we then add to this the attributable amount of domestic travel, our final estimate for indirect expenditure is TOP 2,283,673 (USD 1,130,418).

	TOP	USD
Indirect Expenditure (excl. travel):	1,892,172	936,625
Travel Expenditure:	391,501	193,793
Total Indirect Expenditure:	2,283,673	1,130,418

⁴⁵ Undertaken through internet research of accommodation facilities.

⁴⁶ This has been calculated as 25% of the flight cost (average of TOP 505 /USD 250 for return flight) which represents the 3 days whale watching out of 11.9 days in Tonga. This is then multiplied by the 3,101 whale watchers undertaking tours in Vava'u and Ha'apai so that 25% of the domestic flight cost is attributed to the whale watching activity.

Government Revenues from Whale Watch Tourism:

Another important factor in indirect benefit to the country is the additional revenue through taxation and administration of the industry. For example, consumption tax is charged at a rate of 15% in the Kingdom and income tax is charged on those companies earning over TOP 100,000. Another important income stream for the government in regards whale watching is fuel excise tax. However, for the purposes of this report, we have not calculated these figures due to the variability of taxation levels on whale watch businesses due to their size, annual revenues, fuel consumption etc and the inaccessibility of such data. Furthermore, as a large proportion of whale watch companies are foreign owned or managed (all being Tongan registered), and as many of the bookings are made in advance from overseas, it is possible that some government revenue has the potential to be missed if undeclared in the country, or if the income remains offshore (e.g. through booking agents). This is then considered an economic leakage, of which there is very little information to calculate accurate estimates. This is a likely a small impact for the country, and all businesses pay taxes including consumption tax, PAYE, income tax and fuel excise.

Within this report, we have not been able to accurately calculate this leakage due to the inaccessibility of operator's financial data. Our economic expenditure calculations have not discounted any potential revenue retained offshore. However, to offset this somewhat, these **foreign businesses bring with them capital, skills, business experience and tourism distribution networks that assist in developing the Tonga "brand" of tourism which has also not been accounted for in this assessment.**

There are no reports of tax exemption status to attract foreign investment. Companies setting up in Tonga are eligible for a development license that allows for imports of equipment exempt from duty.

A conservative calculation of government revenue is possible through departure taxes and annual whale watch license fee renewals.

Departure tax revenues from the 3,201 whale watch tourists is TOP 20,006.25⁴⁷.

Furthermore, each operator must renew their license annually by paying a fee of TOP 400 leading to an additional TOP 5,600 in revenues to the government.

Conservatively, the Tongan government earns an additional TOP 25,606 (USD 12,675) in revenues annually due to whale watching, without consideration of income or consumption tax or fuel excise.

Total Expenditure

For the purposes of this report, total expenditure is calculated as the sum of direct and indirect economic expenditure, and Government revenues.

	TOP	USD
Direct Expenditure:	1,515,069	749,959
Indirect Expenditure:	2,283,673	1,130,418
Government Revenue:	25,606	12,675
Total Economic Expenditure:	3,824,348	1,893,052

⁴⁷ For calculating the departure tax, we have assumed that as the average whale watch number of trips is three in a stay, and average stay is 11.9 days, this forms 25% of the total stay. As a result, we have attributed 25% of the departure tax (25% of TOP 25 = TOP 6.25) as a tax attributable to whale watching – 3,201 whale watchers x TOP 6.25 = TOP 20,006.25.

Dynamics of the Industry:

It appears from our research that the industry has reached a point of maturity where growth is steady yet stabilising. Although having achieved an average annual growth rate of 20% since 1998, our analysis appears to be showing a slowing down of this rapid growth to more stable proportions as would be expected.

As shown through discussions of capacity issues, the market may be becoming saturated having reached the carrying capacity relative to the number of 'watchable whales' and the type of whale watching offered (predominantly small boats). Furthermore, there is little room for continued growth when licenses have now been capped (at thirteen in Vava'u, although this may be reduced to the eleven held in 2006), and vessel numbers also capped at two per license holder. The other key constraint is whale viewing opportunities which are limited by the number of whales visiting the area.

There is no indication of a dramatic change in the demographics of tourists participating in Tongan whale watching compared to Mark Orams' 1999 report, but one major development is the strong growth in Japanese tourists. Some operators are targeting the Japanese market almost exclusively and report full bookings to Japanese groups in 2007. The other change is the prevalence of package tourists who pre-book their trips to Tonga, which, through interviews with operators, appear now to be the majority. Orams reported that a majority were "free and independent" tourists in 1998.

In terms of marketing to tourists, interviews with operators indicate that due to the short supply of whale watching opportunities, there is little need for directed marketing strategies. Most tourists are referred by word of mouth, and many are being booked through well known dive tour agencies, particularly in Australia, New Zealand, Europe and the US. Due to the uniqueness of whale watching in Tonga, the activity has been largely self-marketed, with little to indicate significant marketing budgets or targeted campaigns from any of the operators or TVB.

Although direct employment levels are relatively low, there are some important opportunities for locals including increased training in areas such as boat handling and general tourism skills. Some of the operators employ only seasonally, and thus the industry may be seen to be failing to offer consistent employment. However, those operators with year round businesses such as dive companies, offer stable year round employment.

In terms of threats to the industry, it appears that the unrest in Nuku'alofa in November 2006 have not affected bookings for the 2007 season. Demand, therefore, appears reasonably inelastic to exogenous factors such as political instability where this doesn't occur directly in whale watch locations.

Moves to unblock some of the capacity constraints seem to be underway. A major new resort is being developed in Vava'u by Warwick International Hotels. This project will increase hotel capacity by an estimated 200 beds. This will be the first large-scale, luxury hotel in the Kingdom. Further improvements for the industry are the plans to start direct flights from Fiji to Vava'u, as opposed to current flights via Nuku'alofa. This will certainly streamline travel time and provide fast and easy access to an international airport hub that services key markets in North America, Europe and Asia. As a result of these developments, the TVB is very optimistic about future growth of the industry⁴⁸.

⁴⁸ Op.Cit., TVB, Nuku'alofa, pers.comm. 2007

An increased demand for whale watching, however, cannot be met with the existing limited whale viewing opportunities. Carrying capacity of whales is unclear and it is therefore difficult to promote any increase in whale watching until detailed studies on impacts are conducted in Tonga. Previous research has recommended capping licenses at their current levels to avoid over exposure and harassment of whales to vessels and humans⁴⁹. With a continuation of the same dynamics of the industry in Tonga (i.e. numbers and size of vessels), and without substantial increases in whale abundance levels in Tongan waters, levels of whale watching will remain close to those reported in this study with little room for continued growth.

One suggestion for enabling further growth of the industry is a two-tiered license system that allows for whale swim operators, as well as whale watching operators who are not able to swim with the whales. This was suggested by the TWWOA during our research and is also reported in the 2006 review of the Vava'u whale watch industry⁵⁰. There are many more opportunities for watching whales from boats than direct swim with whale opportunities, and vessels dedicated to whale watching can carry higher numbers of tourists than those dedicated to swimming with whales (due mainly to the time required to allow tourists to swim). As has been demonstrated in many other regions of the world, boat-based whale watching can provide whale watching opportunities for high numbers of tourists with minimal additional impact on the animals when appropriately managed. Furthermore, there is a chance to ease the pressure on mother and calf pairs, by whale watching focused also on male humpbacks. Importantly, any increase in vessel numbers around whales could have negative impacts on the animals and thus until appropriate behavioural impact studies have been conducted, it would be imprudent to increase the number of whale watch vessels beyond current levels, particularly in Vava'u.

Further potential for future growth of the industry is in the expansion of whale watching activities into new regions such as Ha'apai and 'Eua. There was little data on the availability of whale watch opportunities in these regions and this may already have reached capacity. Further information is required on whale watching opportunities throughout the Kingdom.

⁴⁹ Op.Cit., SPREP & IFAW (2006).

⁵⁰ Ibid.

Conclusions

Key conclusions are listed below (economic findings are listed in the executive summary):

- Humpback whales continue to play a major part in attracting tourists to Tonga and are an iconic species for the country. A large number of economic benefits flow from the presence of these whales in Tongan waters. As a result, in such a relatively small economy, where 15% of GDP is earned through tourism, it is strongly recommended that whales continue to be protected and conserved.
- With a continuation of the same dynamics of the industry in Tonga (i.e. numbers and size of vessels), and without substantial increases in whale abundance levels in Tongan waters, levels of whale watching will remain close to those reported in this study with little room for continued growth. However, with development of a new international hotel and direct international flights to Vava'u, demand will continue to be strong for whale watching in Tonga. Revenue per tourist growth will continue to drive up incomes for the industry, but in order to increase whale watcher participant numbers, the dynamics of the industry will be required to change which will require a restructuring of the license system if continued growth (in both numbers of whale watchers and earnings) is desired (particularly in Vava'u). Most importantly, this would mean a stronger emphasis on whale watching (as opposed to swimming with whales) which can provide higher numbers of tourists with whale watching opportunities on the same number of vessels as currently exist for a negligible increase in impact on the whales. With a constant number of vessels (and hence an assumed constant rate of vessel - whale interaction), larger vessels would be required to carry more passengers to view whales.
- This restructuring would best allow for a two tiered license system, for both whale watching and whale swim license holders (this is detailed further in the SPREP/IFAW report⁵¹).
- The development of additional whale watching opportunities in other parts of Tonga would assist in continuing the growth of this industry. It would also spread the economic benefits to other parts of Tonga, whilst providing a 'gentler' introduction to tourism as a business and export opportunity for smaller islands and communities. Further research into the whale watching opportunities in other regions is required before any change in the status of licenses in these regions.
- Growth in numbers of tourists is a benefit, but so is growth in the revenue per tourist. In a world of increasing demand and a fixed supply of tropical island whale watching, the appropriate response to increased demand will sometime mean raising prices rather than increasing the access for international visitors. This form economic growth is probably more sustainable in the long run – so long as the benefits are spread widely amongst the community.
- Despite the strong reported growth rates since 1998, this research indicates that capacity constraints have resulted in whale watch numbers approaching a plateau. However, whale watch tour participants numbers continue to increase but at a slowing rate due to tourists undertaking multiple trips during their stay.
- Operators are experiencing very strong demand, with many booked out well in advance of the season. As a result, prices are edging upwards with a number of operators increasing their price by 50% to T\$225 for the 2007 season.

⁵¹ *ibid.*

- There is a risk that Vava'u could damage its reputation if vessels are seen to be queuing for whale viewing opportunities or harassing mother and calf pairs. Tourists paying a significant amount of money will be sensitive to the "mass market" model of whale swimming/watching. In response to this, prudent management of licenses and vessels is recommended in accordance with the SPREP/IFAW 2006 assessment and recommendations.
- Importantly, the industry contributes strongly to the economy as reported in the economic results of this study, and the induced effects of the tourists coming to whale watch are dispersed to smaller regions outside of the capital city. This provides significant local benefits, including employment and revenues through the many associated tourism businesses. The industry also contributes strongly to government income through taxation.

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Appendix

Tongan air visitor arrival data by month

Month	2004	2005
January	2,684	2,578
February	1,933	1,910
March	2,035	2,250
April	2,840	2,634
May	3,771	2,730
June	4,696	4,777
July	4,297	4,155
August	3,289	3,357
September	3,310	2,911
October	3,191	2,614
November	3,562	3,675
December	5,600	8,271
TOTAL:	41,208	41,862

Source: Tongan Visitors Bureau, Nuku'alofa, March 2007



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