



Department of Environmental Affairs
MINISTRY OF ENVIRONMENT AND TOURISM

The Economics of Ecosystems and Biodiversity (TEEB)

NAMIBIA'S NATIONAL TEEB STUDY VOLUME II

**IMPROVING STATE PROTECTED AREA FINANCING
THROUGH PRICING AND INSTITUTIONAL CHANGES**

Namibia's National TEEB (The Economics of Ecosystems and Biodiversity) Study

The development of strategies to maintain and enhance the protection of ecosystem services in Namibia's state, communal and freehold lands

Volume II: Improving state protected area financing through pricing and institutional changes

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List of Acronyms

BMUB	German Federal Ministry for Environment, Nature Conservation, Building & Nuclear Safety
CB	Contingent Behaviour
CBD	United Nations Convention on Biological Diversity
CBNRM	Community Based Natural Resource Management
CE	Choice Experiment
CVM	Contingent Valuation Method
DAFHR	Directorate of Administration, Finance and Human Resources, MET
DANIDA	Danish International Development Agency
DEA	Directorate of Environmental Affairs, MET
DPTS	Directorate of Planning and Technical Services, MET
DRFN	Desert Research Foundation of Namibia
DSS	Directorate of Scientific Services
DTG	Directorate of Tourism and Gaming, MET
DWNP	Directorate of Wildlife and National Parks, MET
DNPW	Department of National Parks and Wildlife Services, Zambia
EIF	Environment Investment Fund
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GEF	Global Environment Facility
GIZ	Deutsche Gesellschaft für internationale Zusammenarbeit GmbH
GDP	Gross Domestic Product
GPTF	Game Product Trust Fund
HWC	Human Wildlife Conflict
IFAD	International Fund for Agricultural Development
KAZA	Kavango-Zambezi Transfrontier Conservation Area
KfW	German Development Bank
KWS	Kenya Wildlife Services
MET	Ministry of Environment and Tourism
MoF	Ministry of Finance
NACSO	Namibian Association of CBNRM Support Organisations
NBSAP 2	National Biodiversity Strategy and Action Plan
NGO	Non-Governmental Organisation
NNF	Namibia Nature Foundation
NWR	Namibia Wildlife Resorts
PA	Protected Area
PAN	Protected Area Network
ResMob	Resource Mobilisation for Biodiversity Conservation Project of the MET
SADC	Southern African Development Community
SANParks	South African National Parks
SPAN	Supporting the Protected Area Network Project
TANAPA	Tanzania National Parks
TEEB	The Economics of Ecosystems and Biodiversity
TEV	Total Economic Value
TFCA	Transfrontier Conservation Area
TMNP	Table Mountain National Park
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WP	Work Package
WTP	Willingness to Pay
WTTC	World Travel and Tourism Council
WWF	World Wide Fund for Nature
ZAWA	Zambia Wildlife Authority
ZPWMA	Zimbabwe Parks and Wildlife Management Authority

Preface

The Economics of Ecosystems and Biodiversity (TEEB) study for Namibia was compiled in five volumes.

The first study is a national assessment of Namibia's ecosystem services, three volumes are on protected areas, communal and freehold lands, respectively, and the final volume addresses the cross-cutting issue of conservation hunting in the context of the biodiversity economy.

Volume I is a national assessment of Namibia's ecosystem services aimed at identifying and valuing the important ecosystem services being provided by Namibia's ecosystems across different land tenure types.

Volume II reviews optimal park pricing and institutional arrangements surrounding the park entry fee system, determines willingness to pay and optimal park prices based on data collected from tourist surveys and provides recommendations for improving Namibia's protected area financing.

Volume	Title	Authors
I	A national assessment of Namibia's Ecosystem Services.	Forsythe, K., Letley, G. & Turpie, J.
II	Improving state protected area financing through pricing and institutional changes.	Letley, G. & Turpie, J.
III	Potential for the use of a Payments-for-Ecosystem Services system in Namibia's Communal Conservancies.	Turpie, J., Brick, K., Letley, G. & Maclaren, C.
IV	Incentives for sustainable practices and conservation in Namibia's freehold rangelands.	Turpie, J., Letley, G., Ijambo, B., Venter, R. & Lindeque, P.
V	The value of hunting for conservation in the context of the biodiversity economy	Ijambo, B. & Middleton, A.

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Executive Summary

Introduction

Namibia's national protected area system provides the core protection for the country's most important habitats and species of national and global significance. As with many other eastern and southern African countries, national parks and other protected areas are the backbone of the nature-based tourism industry and contribute significantly to the national economy. However, despite the importance of these protected areas to tourism, only a small fraction of their value is captured in terms of park revenues, with the direct revenue from park use and accommodation fees amounting to less than half of the park-related costs. Namibia's parks, like many others in southern Africa, are under constant threat from insufficient funding and increasing land use pressures.

In Africa, most national parks rely heavily on government funding, which in recent years has decreased in favour of other social and economic priorities. The increasing competition for securing funds from government and the cut in environmental budgets has resulted in a general decrease in conservation funding for national parks and other protected areas. More efficient park pricing policies can increase the financial self-sufficiency of protected areas to reduce their dependence on fiscal subsidies. The challenge for park agencies is to search for other sources of revenue beyond government funding with the priority of maximising revenues for efficient management. While park entry fees are an obvious potential source of revenue, they are not retained directly by parks in Namibia, but go to central coffers. Furthermore, prices of Namibia's parks are low compared to neighbouring countries. Changes are needed to address these issues and improve the financial self-sufficiency of Namibia's parks.

The aim of this study was to advance discussions on park pricing, improve the institutional arrangements surrounding Parks, and provide recommendations to determining the most appropriate park fees in Namibia. This study provides recommendations based on the review conducted and on empirical data collected through survey based methods.

Namibia's protected area system

Approximately 17% of Namibia is formally protected within 20 state-run protected areas. The protected area network contributes significant value to Namibia's economy as it underpins the tourism industry which is the second largest contributor to national income and the fastest growing economic sector. The tourism industry in Namibia has grown rapidly since the 1980s, with the most recent estimates from the World Travel and Tourism Council (WTTC) suggesting that tourism directly contributed 3.0% of GDP in 2014 and its total contribution (direct plus indirect) amounted to 14.9% of GDP. Nature-based tourism activities are the top-stated reasons for coming to Namibia, and it has been estimated that more than two thirds of visitors are nature-based tourists, accounting for a significant portion of all holiday expenditures.

In 2008, the overall expenditure by wildlife-viewing protected area tourists was in the order of N\$2.35 billion. The direct value added to the Namibian economy, i.e. the contribution to GDP by the protected area tourism sector, was estimated to be N\$1.11 billion, roughly 2.1% of GDP in 2008, and the total contribution to GDP was estimated to be N\$2.05 billion, or 3.8% of GDP. As part of this study (see Vol I, Forsythe et al. 2017) it was estimated that about N\$5.9 billion of the tourism value in Namibia is directly attributable to the natural environment. The nature-based tourism value associated with national parks was estimated to be N\$2.18 billion or 42% of this overall value.

The Ministry of Environment and Tourism (MET) is the government agency charged with managing all protected areas in Namibia. Within MET, the Department of Natural Resources Management oversees the Directorate of Wildlife and National Parks (DWNP). The main objectives of the DWNP include sustainable management of Namibia's Protected Areas, monitoring and implementation of park and wildlife management plans, sustainable management and regulation of the utilisation of renewable natural resources, preventing wildlife crime and enforcing national wildlife protection legislation in Namibia; and managing human wildlife conflict (HWC). Namibia Wildlife Resorts (NWR) is a state-owned enterprise that is mandated to run the tourism facilities within the protected areas. There are currently 19 resorts in total that are owned and managed by NWR in the national parks and smaller game reserves across the country.

A daily entrance fee is payable at all national parks, game reserves and game parks throughout Namibia, collected by MET. Park prices are differentiated for domestic visitors, regional visitors (SADC) and international visitors, with SADC visitors paying twice, and international visitors paying almost three times that of domestic visitors. At present the prices are the same for all of the larger Namibian parks, with lower prices being charged for the smaller parks, reserves and heritage sites. Whilst park entry fees are higher for regional and international tourists, they remain very low in comparison with those in other African countries. International visitors are charged N\$80 for entry into the larger parks, the equivalent of just over US\$6 at the current exchange rate. Although it is understood that in setting park entry fees, the high cost of travelling to and within Namibia is considered, the current entrance fees charged across all visitor groups are significantly understated.

Park entry fees in Namibia have remained unadjusted since 2005, despite previous recommendations that fees should be revised every three years. As a result, park fees have not tracked inflation and this has resulted in cheaper fees for domestic and regional tourists, and while the exchange rate has fluctuated over the last 12 years there has been an overall weakening of the Namibian Dollar against all major currencies, resulting in even cheaper fees for international tourists.

Park entrance fees make up the majority of non-tax revenues collected by MET. Wildlife utilisation permits contribute about 5% and concession fees about 2%. The total park revenue represented less than 10% of the total MET expenditure. Income generated by the parks goes to the central Government Treasury with only a small proportion being channelled back into park management via trust funds.

The protected area network in Namibia relies on funding from fiscal revenues, the Game Product Trust Fund (GPTF) and donor funds. The overall MET budget allocation as a percentage of Namibia's total development budgetary allocations has remained at around 2% since the early 2000s. Treasury allocations to the environmental sector have decreased over recent years, when compared to other economic sectors. A disconnect between budgetary allocations and the actual cost of maintaining protected areas continues to persist. Currently the government budget allocation to MET is the main source of funding for parks, however protected areas continue to experience substantial underfunding. Funding for protected area management, i.e. the amount allocated to DWNP by MET, is currently in the order of N\$215 million, equating to 48% of the total MET budget.

Based on updated estimates, an annual recurrent expenditure of N\$274.9 million is required for park management, which is 22% more than the current budget allocated to DWNP and an estimated shortfall of about N\$60 million. This suggests that more needs to be done to bridge the park financing gap, and increased revenues from entrance fees could help towards self-sustainability.

Non-tax revenues such as park entry fees and concession fees are collected by the DWNP and transferred to the State Revenue Fund. Of this, 25% of park entrance fees are then transferred from the Ministry of Finance (MoF) to the GPTF. Over the years, MET has been reasonably successful in leveraging grant funding from development partners such as Global Environmental Facility (GEF), World Bank, UNDP, and Denmark's development cooperation, DANIDA. In addition, international and national NGOs such as WWF, NACSO, NNF, and DRFN provide donor-funded support to the sector.

Regional comparison of fees and administration

A review of park pricing structures across the region reveal that Namibia has the lowest park entrance fees. The prices charged for international visitors in Namibia are half the amount charged in Botswana, a third of what parks charge in Zimbabwe, South Africa and Zambia, and about a tenth of the price of parks in Kenya and Tanzania. The park entry fee for local tourists in Namibia is similar to fees charged in neighbouring Zambia and Botswana but lower than local fees in South Africa and Zimbabwe. The entry fee for regional tourists in Namibia is significantly lower than those in all the other southern and east African countries.

The institutional arrangements for park revenues varies considerably across the region. In some countries the government is responsible for the management of protected areas and wildlife, whereas in other countries statutory bodies which are external to the public service are legally mandated to perform this role inclusive of tourism and related commercial activities. In addition to this, the more recent approach in some countries has been to set-up a long term

contractual agreement with a non-government organisation who has direct responsibility for the management of the protected area(s) in that country. An example of such an organisation is “African Parks” which now manages ten parks in seven different countries in sub-Saharan Africa.

Parastatal protected area agencies and long term contractual agreements provide an alternative to the dependence on governments for conservation funding. Parastatal agencies, such as South African National Parks (SANParks) and Kenya Wildlife Service (KWS) are semi-autonomous organisations that receive some funding from government but also raise and retain all of their own revenues. The revenue generated by protected areas is reinvested into the organisation and the management of national parks. This arrangement is fundamentally different to the Namibian situation where protected areas are managed by MET and park revenues go directly to central government with only a portion of these revenues being reinvested back into the management of parks. Greater financial independence allows parastatals the advantage of diversifying their sources of revenue beyond the collection of park entrance fees.

Review of park pricing literature

Given the declining availability of government and donor funding, park entry fees are becoming an increasingly important source of funds to park agencies, with more efficient, well-designed park fee systems helping to make protected areas more financially self-sufficient. When it comes to the pricing of protected areas there are generally four main objectives that the charging of a user fee aims to achieve: to impute value to visitation, to manage parks at economically efficient levels, to operate within an ecological carrying capacity, and to achieve social equity.

Most earlier studies relating to park pricing relied on contingent valuation to estimate mean WTP. In these studies, mean or median WTP has typically been compared with current prices, often in order to inform pricing policy. The more recent studies have mostly used the contingent behaviour method because it has the ability to take substitutability effects into consideration when estimating price elasticity and visitation demand functions. This has allowed the estimation of revenue maximising prices. Most studies have found that current park entry fees fall significantly below both average willingness to pay and revenue maximising fees.

It is important to note that park pricing strategies need to consider social equity, ecological sustainability, and ecological and tourist carrying capacities of the parks. Determining optimal prices means having a pricing strategy that meets all of the stated objectives. These usually include maximising revenues subject to the constraint of meeting certain social objectives and limits to environmental damage. Social objectives can be achieved by tiered pricing, while, environmental objectives mean that overall numbers have to be limited (either with quotas or through higher pricing).

Optimal pricing for Namibia’s National Parks

Holiday-makers were interviewed at four Namibian National Parks (Etosha National Park, Namib-Naukluft Park, Waterberg Plateau Park and Hardap Game Park) and at Hosea Kutako International Airport in Windhoek in December 2017. The focus of the survey was to estimate visitor willingness to pay for entrance into Namibia’s national parks and to determine the revenue maximising park fee for international, regional and national tourists. Contingent valuation and contingent behaviour methods were used. Respondents were asked how they would have changed their trip to Namibia had park prices been higher than present and followed this up with a payment card WTP question for flagship parks and an open-ended WTP question for secondary parks.

In total, 689 questionnaires were completed at the airport and national parks, representing 1715 visitors. Overseas visitors made up the majority of respondents interviewed. The average group size was highest amongst SADC and Namibian visitors. Most overseas visitors were on multi-destination trips and spent an average of 14 days in Namibia, compared with 12 days for SADC visitors. Just over half of the overseas and SADC visitors were on their first trip to Namibia, and more visitors were on self-drive versus organised trips.

A total of 648 respondents were visiting flagship parks and spent on average 5.3 days of their trip in these parks. A total of 187 respondents visited secondary parks and spent on average 2.5 days of their trip in these parks. Etosha National Park was the most popular park visited by holiday-makers followed by the Namib-Naukluft National Park, with 82%

and 68% of respondents having visited these parks, respectively. The most visited secondary park was Dorob National Park with 11% of holiday-makers indicating they had visited this park.

More than half of the respondents had visited parks in neighbouring countries, with parks in South Africa and Botswana being the most popular. Fewer respondents had visited national parks in Zimbabwe, Kenya, Tanzania, Zambia and Malawi. One third of the respondents had not visited any other national parks in the region. Just more than half of the respondents indicated that the cost of getting to Namibia and park costs were not factors in their choice to visit the country. More than half of the Namibian holiday-makers indicated that the cost of visiting different parks did influence their choice of which parks to visit. Of those that said it had influenced their decision, the majority (59%) indicated that accommodation costs were the most important factor, followed by the amount of time needed to get to the park and then only park fees.

Visitors rated the scenic/landscape attractions, wildlife attractions and level of congestion in parks highly favourably. More than half of the respondents indicated that the scenic/landscape attractions in national parks had been much better than expected, with 43% and 33% of respondents indicating that wildlife attractions and (lack of) congestion had been much better than expected. The accommodation was the only factor not to have the highest number of responses in the “much better than expected” category, with most respondents (35%) rating accommodation as being “as expected”. Respondents were also asked to rate the accommodation and facilities in Namibia’s national parks in terms of value for money, on a scale from 1 to 10. Overseas visitors gave higher ratings than SADC and Namibian visitors. Visitors that gave lower ratings commented that the accommodation offered by the parks was expensive and not well maintained.

Respondents were presented with a proposed fee increase and asked if this price would have affected their visit. This dichotomous choice question allowed estimation of WTP using a range of econometric methods. For flagship parks, the estimated mean WTP ranged from N\$332 to N\$399 per day for overseas visitors (compared with current fee of N\$80), N\$153 to N\$174 for SADC visitors and N\$117 to N\$151 for Namibian residents. These align with the park fees currently charged in neighbouring countries, such as in Botswana, South Africa and Zimbabwe. For secondary parks, the average amount overseas respondents were willing to pay was N\$147 per day, almost four times the current price (N\$40). SADC visitors were willing to pay N\$77 (current fee is N\$30) and Namibians were willing to pay N\$35 (current fee is N\$10).

Based on the contingent behaviour questions, demand curves were derived for each visitor group in order to calculate the revenue-maximising price. For overseas and regional visitors, this was higher than the mean WTP (N\$536 and N\$202, respectively), whereas for Namibians it was similar to mean WTP (N\$115). The revenue maximising price was also calculated for overseas visitors to secondary parks, as N\$165 (US\$12), which also higher than the estimated mean WTP of N\$147. The results suggest that international demand for Namibia’s parks is fairly inelastic, and would allow a low volume high cost policy which is both beneficial to biodiversity and could allow a certain amount of discounting of prices for Namibians in order to meet social objectives. All of the above included the notion that children and pensioners would be half the price.

Willingness to pay for Namibian conservation outside Protected Areas

A final question was posed to international visitors in the interest of Work Packages 2 (communal conservation areas) and 3 (freehold land), particularly in order to investigate how easy it would be to raise the funding required for a payment for ecosystem services programme. (This section can be moved to the WP2 report in the final round)

Visitors were asked if they would support the proposal to charge all visitors to Namibia a once-off conservation fee on arrival in the country. 76% of overseas and 71% of SADC respondents were in favour of this. Those visitors that said “no” felt that the conservation fee should be included in the park entrance fee or that a voluntary donation would be more appropriate. A number of visitors also had concerns that the fee would be misused if collected on arrival at the border or at the airport, and many said that the involvement of a trustworthy NGO was an important factor. Amongst those who said that they would support the implementation of a once-off conservation fee, the average willingness to pay was N\$190 (US\$15) for overseas visitors and N\$66 (US\$5) for SADC visitors. If this was reduced to a nominal US\$10 and US\$2.50, it would raise at least US\$5 million per year for conservation (provisional estimate to be updated).

Conclusions and recommendations

1. Change pricing structure and increase prices

Based on this study it is recommended that the pricing structure and prices are changed as follows (Table I):

Table 1 Recommended conservation fees (N\$) to be charged to overseas, SADC and local visitors to the different parks in Namibia. Current prices are given in brackets

Sector	Conservation Fee (N\$ pppd)		
	Overseas visitors	SADC visitors	Namibian residents
Sector 1 Parks (Flagship Parks)	(80) 400	(60) 180	(30) 90
Sector 2 Parks	(80) 320	(60) 120	(30) 60
Sector 3 Parks	(40) 160	(30) 60	(10) 30

2. Improve the management of visitor facilities

It will be important improve visitor accommodation and other facilities in order to maintain visitor satisfaction.

3. Improve revenue collection and management

Namibia's parks should be equipped with computerised systems and be set up to receive online payments. Revenues from entrance fees, tourism and hunting concession fees, and voluntary contributions from tourists funds need to be retained entirely by the managing authority.

4. Collect rentals and royalties from all accommodation facilities

Currently the NWR resorts are exempt from any payments to MET. All resorts should be paying a percentage of turnover towards financing park management.

5. Change the institutional set-up

The current institutional arrangement for Namibian parks is outdated and inefficient. It is recommended that DWNP be given more autonomy as a park management agency or that park management is outsourced to a for profit company. In addition, it is recommended that NWR resorts are sold to competing private sector operators.

1

Introduction



1 Introduction

1.1 Project background

The Resource Mobilisation for Biodiversity Conservation Project of the Ministry of Environment and Tourism (MET), in partnership with GIZ - commissioned by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), is focused on making the case for investing in biodiversity conservation.

The overarching goal of the ResMob project is to improve Namibia's capacity to mobilise resources for biodiversity conservation, specifically to enable it to implement the objectives outlined in the National Biodiversity Strategy and Action Plan (NBSAP 2). As part of this, the previously commissioned biodiversity expenditure review, carried out by the NNF, demonstrated that biodiversity expenditure in Namibia is expected to decline by almost 25% by 2020 under the business as usual scenario.

This makes it essential to better understand the values of biodiversity, ecosystems and their services in order to inform and be incorporated into national accounts and planning. To this end work has been done on Natural Capital Accounting, delineating Ecosystems and their Services in Namibia and reviewing mechanisms for payments for environmental goods and services. The centre piece of the project will now be "The Economics of Ecosystems and Biodiversity" (TEEB) country studies that bring together the arguments for and potential mechanisms by which critical investments can be made into key environmental goods and services, in this case protected areas and wildlife, which form the backbone of the tourism industry.

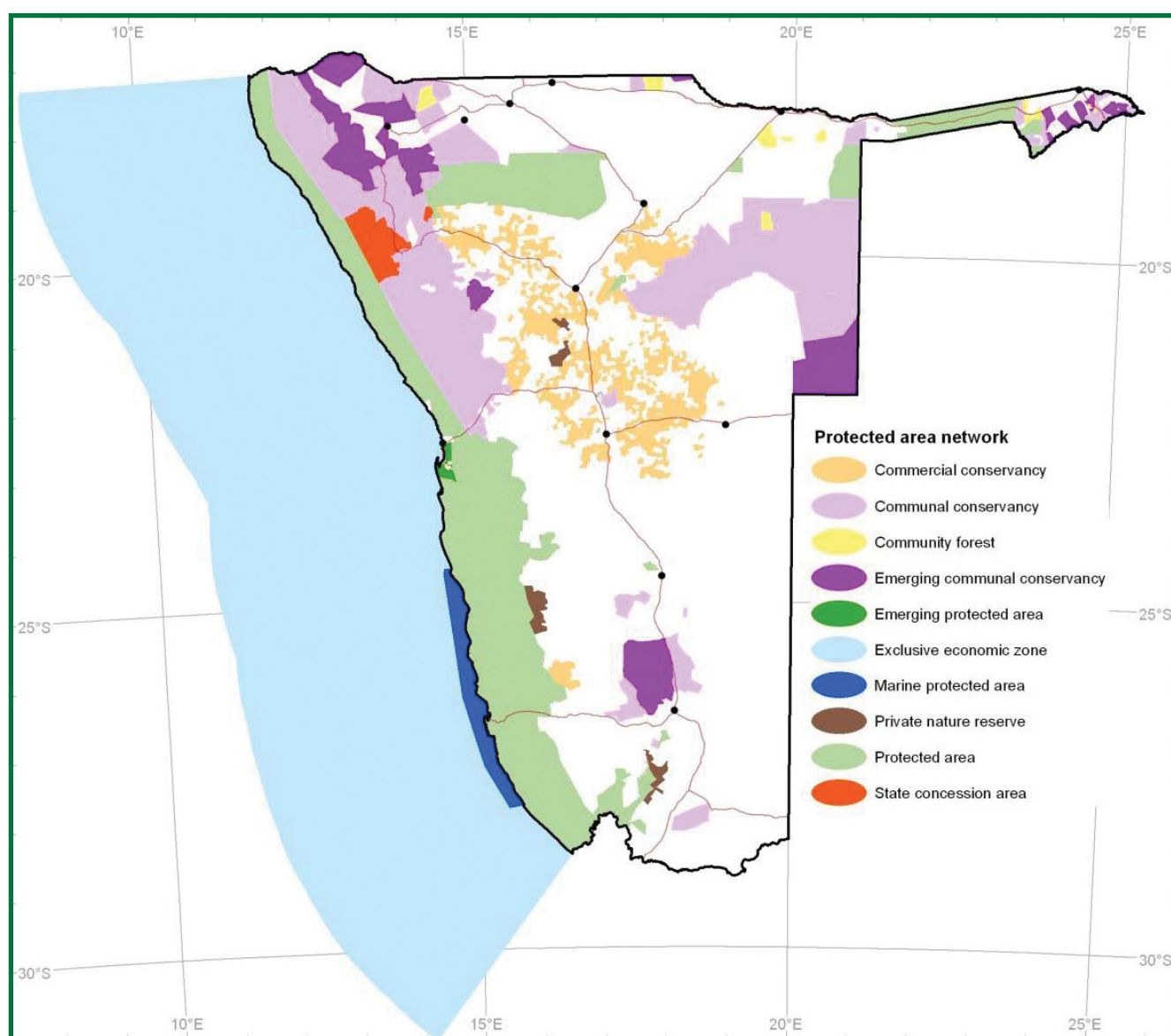
Namibia's natural assets fall under three main types of land ownership: the state-owned system of national parks and marine protected areas, the communal land areas, and freehold rangelands (Figure 1.1). The national parks network (also called the protected areas network or PAN) covers some 16.6% of the terrestrial area of the country. However, the PAN is not the only form of conservation in Namibia.

The state has created a policy and legislative framework for freehold farms, communal conservancies and community forests to acquire rights over wildlife, trees and non-timber products, and tourism. These rights confer both responsibilities and economic benefits to the legal custodians of these resources. Communal conservancies now cover about 15.7% of the country and community forests about 0.5%.

The amount and distribution of freehold land under exclusive wildlife management, under mixed farming systems of wildlife and domestic livestock, and under mainly livestock with low levels of wildlife management, are not presently recorded. However, the total area managed for wildlife either exclusively, or as part of mixed farming systems is significant, as over 80% of Namibia's wildlife (estimated at more than 2 million head) occurs on freehold land, almost 700 farms covering over 3.5 million ha are registered as trophy hunting farms and, in 2005, over 80% of accommodation facilities for tourists were on freehold land.

The objective of the overall study was to evaluate the potential of and develop proposals for the introduction of specific policy measures for each of the four priority sectors, as summarized in the table on the next page.

Figure 1.1 Areas under various kinds of conservation management in Namibia



Priority sector	Policy issues/measure
National parks	The improvement of the park entrance fee system
Community conserved areas	The introduction of a payments for ecosystem services
Conservation efforts and wildlife use on private farms	The introduction of economic incentives for the sustainable use of game and wildlife on private farms
Conservation hunting as a sustainable use of biodiversity	Conservation hunting as a sustainable use of biodiversity in the context of of the biodiversity economy

The main part of the study is broken down into four work packages, each addressing one of the above topics. The importance of hunting as a key source of biodiversity finance will also be analysed as a cross-cutting issue in order to inform the ongoing debate on the import of hunting trophies, e.g. in the EU.

1.2 Financing challenges of Namibia's protected area system

Namibia's national protected area system provides the core protection for the country's most important habitats and species of national and global significance, and forms the core strategy in meeting the country's conservation obligations under the Convention on Biological Diversity (Turpie et al. 2010a). As with many other eastern and southern African countries, national parks and other protected areas are the backbone of the nature-based tourism industry in Namibia and contribute significantly to the national economy. In fact, the protected area system has been estimated to contribute some 3.8% of Namibia's Gross National Income (Turpie et al. 2010b).

However, despite the importance of these protected areas to tourism, only a small fraction of their value is captured in terms of park revenues, with the direct revenue from park use and accommodation fees amounting to less than half of the park-related costs. Namibia's parks, like many others in southern Africa and in other developing countries across the globe, are under constant threat from insufficient funding and increasing land use pressures (Krug et al. 2002, Alpizar 2006, Chacha et al. 2013, Chikumbi 2013, Muchapondwa et al. 2016).

In Africa, most national parks rely heavily on government funding, which in recent years has decreased in favour of other social and economic priorities such as poverty reduction, education, transportation and health. This increasing competition for securing funds from government and the cut in environmental budgets has resulted in a general decrease in conservation funding for national parks and other protected areas. More efficient park pricing policies can increase the financial self-sufficiency of protected areas to reduce their dependence on fiscal subsidies.

Government funding varies significantly from country to country and in most cases is seemingly lower than the actual economic value generated by protected areas (Turpie et al. 2005). Generally there tends to be a lack of knowledge about the recreational benefits and economic value associated with protected areas. Indeed, a recent study by Balmford et al. (2015), which estimated the global extent and economic significance of protected areas, found that visits to national parks and other protected areas generate approximately US \$600 billion per year in direct in-country expenditure and US \$250 billion per year in consumer surplus, dwarfing the current spend of <\$10 billion per year in safeguarding these protected areas. While these figures are "unavoidably imprecise" (Balmford et al. 2015), they do quantify the scale and economic importance of protected areas and highlight the need for significantly increased investment in their conservation.

The challenge for park agencies is to therefore search for other sources of revenue beyond government funding with the priority of maximising revenues for efficient management. While park entry fees are an obvious potential source of revenue, they are not retained directly by parks in Namibia, but go to central coffers (Turpie et al. 2010a). Furthermore, prices of Namibia's parks are relatively low compared to other countries. Changes are needed to address these issues and improve the financial self-sufficiency of Namibia's parks. In doing so, it is important to be cognisant of the social and ecological objectives of parks, such as generating additional revenue for local community livelihoods, reducing congestion in parks and increasing environmental education (Dikgang & Muchapondwa 2013).

1.3 Aim of the study

The aim of this study was to advance discussions on park pricing, improve the institutional arrangements surrounding Parks, and provide recommendations to determining the most appropriate park fees in Namibia. The outcomes of this study are especially important for the most popular national parks such as Etosha and Namib-Naukluft Park which attract high numbers of tourists throughout the year. This study provides recommendations based on the review conducted and on empirical data collected through survey based methods.

1.4 Overall approach

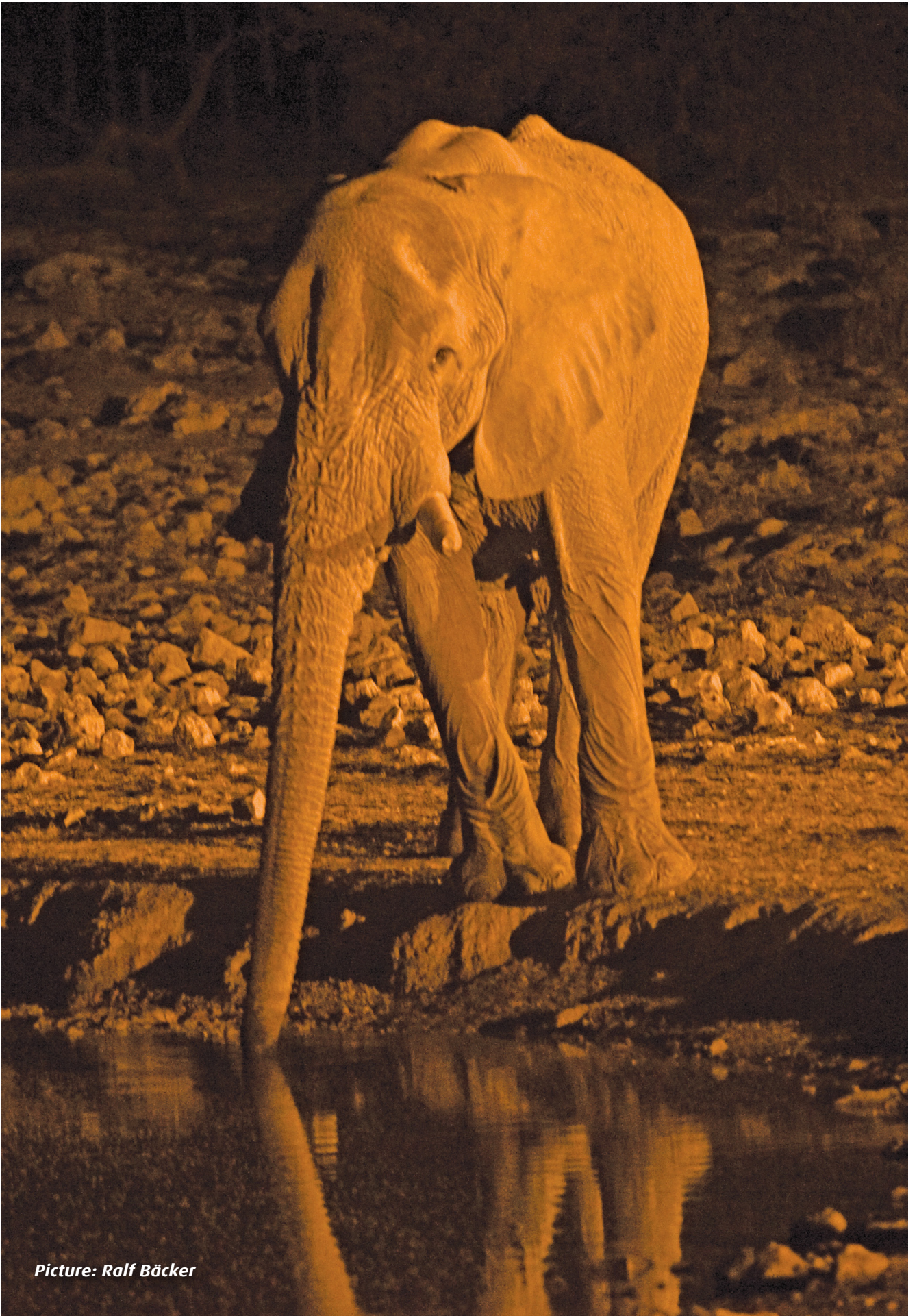
The study was based on an accompanying report on the value of ecosystem services in Namibia, a review of the national and international literature on park administration and pricing, and a survey of park users undertaken in December 2017. The latter aimed to elicit willingness to pay for major and minor protected areas in Namibia, as well as user preferences regarding park facilities.

1.5 Structure of the report

The study starts with a review of protected areas in Namibia and the value of the protected area system. Following this, current park administration and financing is reviewed. The Namibian park pricing system and institutional framework is then compared with park pricing systems across southern and eastern Africa. Following this, the methods and results of the tourist survey conducted in Namibia in December 2017 are presented and from this recommendations are made for improving state protected area financing through pricing and institutional changes.



Picture: Ralf Bäcker



Picture: Ralf Bäcker

2

Namibia's protected area system



2 Namibia's protected area system

2.1 Protected areas

Approximately 17% of Namibia is formally protected within 20 state-run protected areas, including the entire 1500 km coastline of the country (MET 2014, Table 2.1). The protected area network contributes significant value to the national economy as it underpins the tourism industry which is the second largest contributor to national income and the fastest growing economic sector in Namibia (Aribeb et al. 2016). The protected areas can be classified into four main categories based on the attractions on offer, infrastructure and accessibility (adapted from Turpie et al. 2010b and Krug et al. 2002). The developed wildlife parks and desert parks are considered the most important in terms of attracting tourists, with Etosha National Park being Namibia's flagship protected area.

The protected area system provides an important core to a greater system of conservation areas which are both economically and ecologically linked (Turpie et al. 2010b). The parks are supplemented by adjoining conservancies, private protected areas, and transfrontier conservation areas. Transfrontier conservation areas (TFCAs) have the potential to contribute significantly to regional biodiversity conservation, economic development through tourism, social and cultural cross-border cooperation, and information sharing (MET 2010). Namibia is involved in three transfrontier conservation initiatives: Iona-Skeleton Coast Transfrontier Park, /Ai-/Ais-Richtersveld Transfrontier Park, and The Kavango Zambezi Transfrontier Conservation Area (KAZA TFCA).

The role of protected areas in biodiversity and conservation has been clearly recognised in Namibia's second National Biodiversity Strategy and Action Plan (NBSAP2) 2013 – 2022 with the main vision being for "Namibia's biodiversity to be healthy and resilient to threats, and for the conservation and sustainable use of biodiversity to be key drivers of poverty alleviation and equitable economic growth, particularly in rural areas" (MET 2014).

2.2 The value of Namibia's protected area system

2.2.1 Wildlife and tourism in Namibia

The tourism industry in Namibia has grown rapidly since the 1980s, with an average 9% increase in international tourist arrivals from 1995-2015 (World Bank 2016). In 2015 there were just under 1.4 million international tourist arrivals in Namibia, a 5% increase from 2014. Expenditure by tourists in Namibia provides the turnover in the tourism industry, which in turn provides the direct value added to the economy. The total contribution of tourism also includes wider impacts (i.e. indirect impacts). The indirect contribution is a result of linkages to other sectors and consequent multiplier effects. The most recent estimates from the World Travel and Tourism Council (WTTC) suggest that tourism directly contributed 3.0% of GDP in 2014 and its total contribution (direct plus indirect) amounted to 14.9% of GDP (WTTC 2015). Nature-based tourism activities are the top-stated reasons for coming to Namibia. Protected areas feature strongly in the attractions cited by visitors to Namibia (Turpie et al. 2010b). It has been estimated that some 73% of visitors are

Table 2.1 A list of the protected areas in Namibia and their characteristics (adapted from Turpie et al. 2010b and Krug et al. 2002, updated from MET)

Protected Area	Area (km ²)	Distance from Windhoek (km)	Big game viewing
Desert Parks			
Namib-Naukluft Park	49 768	300	
Skeleton Coast Park	16 390	500	
Dorob National Park	7 800	400	
Tsau //Khaeb National Park (formally Sperrgebiet)	22 000	500	
/Ai-/Ais Hot Springs Game Park	4 611	630	
Developed Wildlife Parks			
Etosha National Park	22 935	530	X
Waterberg Plateau Park	405	250	X
Less Developed Wildlife Parks			
Nkasa Rupara National Park (formally Mamili)	320	1200	X
Mudumu National Park	1 010	1150	X
Bwabwata National Park (formally Caprivi Game Park & Mahango Game Reserve)	6 100	900	X
Mangetti National Park	420	611	
Khaudum National Park	3 842	760	X
Small game parks and recreational areas			
Popa Falls Game Park	0.25	920	
Hardap Game Park	252	260	
Daan Viljoen Game Park	40	25	
Von Bach Game Park	43	60	
Gross-Barmen Hot Springs	1	85	
Naute Game Park	225	554	
South West Nature Reserve	0.12	0	
Cape Cross Seal Reserve	60	500	

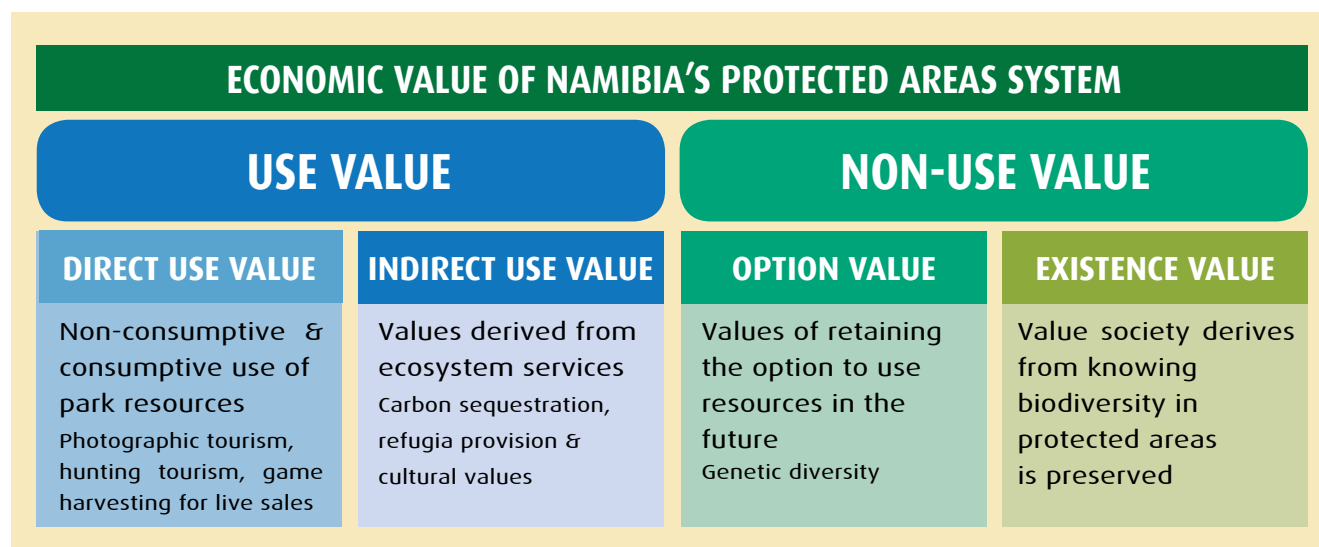
nature-based tourists, accounting for 65-75% of all holiday expenditures (Turpie et al. 2010b). Wildlife viewing tourism was estimated to be worth N\$280 million to Namibia in 1995, and in comparison, consumptive use of wildlife was estimated to be worth N\$335 million in 1996. Protected areas were estimated to be worth N\$245 million in terms of all wildlife use in 1996. Since these estimates the development of conservancies on communal lands has considerably raised the contribution of wildlife to the Namibian economy (Turpie et al. 2010b).

2.2.2 Values generated by Namibia's protected area system

The total economic value generated by protected areas can be categorised into different types of value (Figure 2.1). Direct use values are generated by the non-consumptive and consumptive use of park resources. Most of this value is non-consumptive photographic tourism value. Consumptive values include tourism value generated by hunting concessions within protected areas. In addition, protected areas provide game harvesting for live sales. These are sold to private enterprises, supply game to neighbouring conservancies through translocation programmes and provide game meat to drought relief programmes.



Picture: Ralf Böcker

Figure 2.1 The different types of economic value generated by Namibia's protected area system

Indirect use values are generated by outputs from the protected area system that form inputs into production by other sectors of the economy, or that contribute to net economic outputs elsewhere by saving on costs. Ecosystems potentially provide a wide range of such services. Namibia's protected areas may contribute to carbon sequestration, water regulation, and provide refugia for species that are valued elsewhere. Non-use values include option and existence value (Figure 2.1). Option value is the value of retaining the option to use resources in the future, and is often associated with genetic diversity of protected areas, the future potential value of which is unknown. Existence value is the value society derives from knowing that the biodiversity within protected areas is protected. These values are measurable to an extent and are often larger than direct use values. Some partial estimates of these values have been made for Namibia. Namibian tourists have been shown to be willing to pay a total of N\$28.7 million and international willingness to pay, reflected in donor contributions to the wildlife sector, amounted to some N\$54 million in 2003/4 (Turpie et al. 2010b).

2.2.3 Tourism value of the protected area system

The main direct use values associated with the protected area system are derived from tourist activities. Tourists visiting protected areas spend money both within and outside of them, generating value added in the tourism industry and further value added for the Namibian economy as a whole through linkage and multiplier effects (Turpie et al. 2005). Turpie et al. (2010b) used visitor exit surveys, data from NWR and surveys of park visitors to estimate the total number of visitors to Namibian parks in 2008. The study found that foreign visitors dominated at six national parks, with overseas visitors making up more than half of visitors to Etosha and Namib-Naukluft, and almost half of the visitors to Waterberg Plateau. Domestic visitors were found to make up more than 75% of visitors to some of the smaller parks such as Gross-Barmen Hot Springs, Dorob National Park and Von Bach Game Park. Etosha was found to attract the highest number of visitors (approximately 220 000 in 2008) followed by Cape Cross, Namib-Naukluft, Waterberg and Ai-/Ais Hot Springs (all 40 – 85 000, Turpie et al. 2010). It was estimated that a total of about 918 000 visitor-days were spent in parks (Turpie et al. 2010b). About 22% of visitors to parks were regional and 47% were overseas visitors (Turpie et al. 2010b). Domestic tourists were estimated to make up 31% of visitors to parks in a given year.

The trophy hunting market is a small but significant part of the nature-based tourism industry in Namibia, contributing 14% to the value associated with the tourism industry as a whole and 18% to nature-based tourism (Humavinda & Barnes 2003). Hunting tourism is therefore a high value per capita activity, with relatively small numbers of visitors engaged in trophy hunting activities, but contributing a significant portion to nature-based tourism and tourism value as a whole. Indeed, hunting lodges have been found to be the most important segment of the accommodation market in terms of numbers of businesses and employment within the accommodation sector (Stubenrauch Planning Consultants 2004).

Turpie et al. (2005) estimated that in 2003 the expenditure made by park visitors resulted in an annual direct contribution to GDP of between N\$0.55 and N\$1.1 billion (equivalent to 1.7% and 3.4% of GDP, respectively). The total an-

nual contribution to GDP resulting from these expenditures was estimated to range between N\$1.1 and N\$2.0 billion (Turpie et al. 2005). Using visitor surveys and, based on then, recent estimates of average trip expenditure, Turpie et al. (2010b) updated these previous estimates and found that the overall expenditure by wildlife-viewing protected area tourists was in the order of N\$2.35 billion. An additional N\$96 million was estimated to be spent by tourists in protected area hunting concessions. Visitor exit survey data was used to estimate the distribution of this expenditure, which suggested that 36% of overall expenditure was on accommodation, with the rest being on a variety of other industries such as restaurants, car rentals and shopping (Turpie et al. 2010b). The direct value added to the Namibian economy, i.e. the contribution to GDP by the protected area tourism sector, was estimated to be N\$1.11 billion, roughly 2.1% of GDP in 2008, and the total contribution to GDP was estimated to be N\$2.05 billion, or 3.8% of GDP (Turpie et al. 2010b). As part of the broader study (see Forsythe et al. 2017) the nature-based tourism value was determined using geo-tagged photo data uploaded to Flickr. From this it was estimated that about N\$5.9 billion is directly attributable to the natural environment. The nature-based tourism value associated with national parks was estimated to be N\$2.18 billion or 42% of this overall value.

2.3 Park administration

2.3.1 Administration of parks

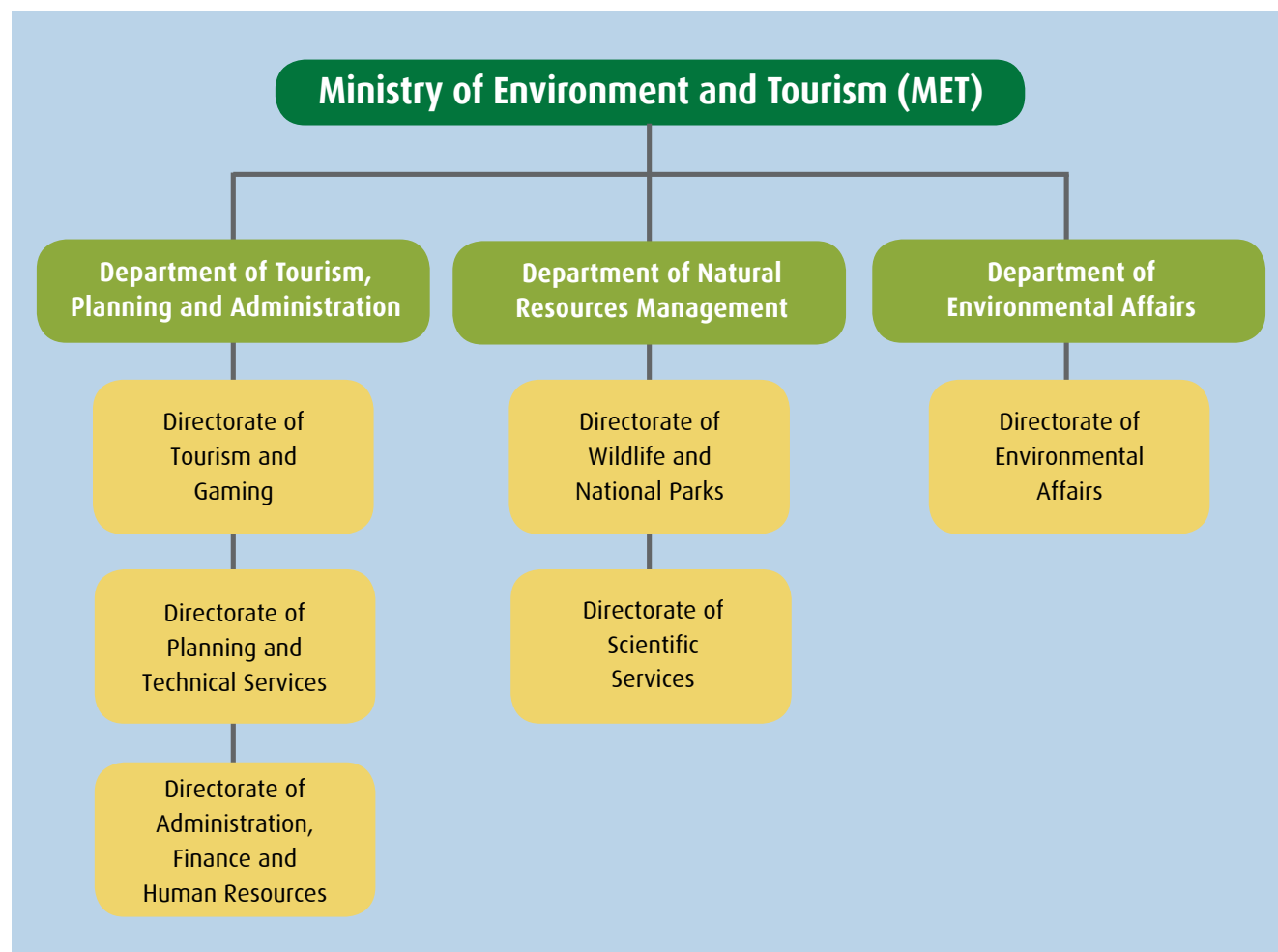
The Ministry of Environment and Tourism (MET) is the government agency charged with managing and running all protected areas in Namibia. The MET also manages wildlife outside of the PA network.

MET is charged with policy development, planning, drafting and enforcement of environmental regulations, budgeting, and international obligations with respect to sustainable development. It coordinates environmental management activities, including parks and wildlife, and tourism. Its directorates include Wildlife and National Parks, Environmental Affairs, Planning and Technical Services, Scientific Services, Tourism and Gaming, and Administration, Finance and Human Resources (Figure 2.2 on the next page). Its mandates include rural development around parks; management of protected areas, habitats and species; development and support of Community-Based Natural Resource Management (CBNRM), environmental management and regulation, and development and support of tourism.

The Department of Natural Resources Management oversees the Directorate of Wildlife and National Parks (DWNP) and the Directorate of Scientific Services (DSS). The Directorate of Scientific Services (DSS) is the scientific branch of MET and supports protected area management by providing technical information and support for conservation and resource management programs throughout Namibia. The main objectives of the Directorate of Wildlife and National Parks include:

- Sustainable management of Namibia's Protected Areas;
- Monitoring and implementation of park and wildlife management plans;
- Management and regulation of the utilisation of renewable natural resources on a sustainable basis;
- Protection and facilitation of the sustainable use of biodiversity outside of protected areas (in commercial and communal areas) as a basis for sustainable development;
- Increasing revenues earned by MET through the expansion of tourism and activities that promote the sustainable utilisation of natural resources;
- Conservancy formation and management of Community Based Natural Resource Management (CBNRM);
- Preventing wildlife crime and enforcing national wildlife protection legislation in Namibia; and
- Managing human wildlife conflict (HWC).

Figure 2.2 Organisational chart for the Ministry of Environment and Tourism (MET, www.met.gov.na)



The Department of Tourism, Planning and Administration oversees the Directorate of Administration, Finance and Human Resources (DAFHR), the Directorate of Planning and Technical Services (DPTS) and the Directorate of Tourism and Gaming (DTG). The Directorate of Tourism and Gaming is responsible for promoting environmentally sustainable tourism, including tourism within PAs. The DTG was restructured in 2011 and also focuses on the development of tourism policy and legislation, the collection of tourism statistics and the regulation of the gaming industry.

The Directorate of Environmental Affairs (DEA) falls within the Department of Environmental Affairs. The main functions and objectives of the DEA include promoting sustainable development, protecting biological diversity, improving environmental awareness, promoting natural capital accounting as a decision-making support tool, and encouraging participatory environmental planning and management. The DEA promotes environmental sustainability across all other ministries, the private sector and non-governmental organisations.

2.3.2 Administration of tourism facilities

Namibia Wildlife Resorts (NWR) is a state-owned enterprise that is mandated to run the tourism facilities within the protected areas of Namibia (www.nwr.com.na). The company was created in 1998 through an Act of Parliament; the Namibia Wildlife Resorts Company Act. The vision of NWR is to provide reliable, welcoming and appealing tourism service in the prime tourism destinations of Namibia. There are 19 resorts in total that are owned and managed by NWR in the national parks and smaller game reserves and game parks across the country.

The Strengthening the Protected Areas Network Project (SPAN) is a MET project that aimed to improve park management in Namibia. The study found that while there had been improvements within NWR, such as the online booking system and corporate branding and advertising, the maintenance of tourism facilities and the coordination between NWR and MET was lacking at both the national and local levels.

2.4 Park fees and revenues

A daily entrance fee is payable at all national parks, game reserves and game parks throughout Namibia, collected by the Ministry of Environment and Tourism. Park fees are payable for every day, for visitors and vehicles. The entry fee is valid for a 24-hour period beginning at the time of entry into the park, per person. In terms of overall revenue generation, a daily entry fee is generally preferable to a once-off entry fee as they capture more accurately the value of use of parks and provide a more effective monitoring of park use and the regulation of total visitor numbers (Turpie et al. 2005).

Similarly to other southern and east African countries, studies in Namibia have found that foreign tourists have a higher consumer surplus compared to local and regional tourists, and account for the majority of uncaptured consumer surplus (Turpie et al. 2005, Chacha et al. 2013, Chikumbi 2013, Dikgang & Muchapondwa 2013, Brown & Dikgang 2015, Kibira 2015, Muchapondwa et al. 2016). As a result, park prices are differentiated for domestic visitors, regional visitors (SADC) and international visitors (i.e. all visitors outside of the SADC region), with SADC regional visitors paying twice, and international visitors paying almost three times that of domestic visitors (Table 2.1). Whilst park entry fees are higher for regional and international tourists, they remain very low in comparison with those in other African countries (see section 3). International visitors are charged N\$80 for entry into the larger parks, the equivalent of just over US\$6 at the current exchange rate (1 US \$ = N\$13.08). Although it is understood that in setting park entry fees, the high cost of travelling to and within Namibia is considered, the current entrance fees charged across all visitor groups are significantly understated.

At present the prices are the same for all of the larger Namibian parks, with lower prices being charged for the smaller parks, reserves and heritage sites (Table 2.2). However, increasing the price differentiation further, into more tiers amongst the different parks, could be a more effective approach. For example, in South Africa there are seven price tiers across the 19 National Parks. The larger, most popular parks which are considered substitutes, such as Kruger NP and Kgalagadi Transfrontier NP charge the highest fees, whereas smaller, less popular parks charge significantly lower fees. Differential pricing across parks serves to spread tourists more evenly throughout the protected area network, avoiding congestion in some of the more popular parks. By increasing prices at the prime visitor destinations, domestic and regional tourists may be discouraged by the higher prices and prefer to utilise other, smaller parks with more affordable entry fees (Turpie et al. 2005). Experimental pricing studies aim to identify these patterns of visitation in order to determine optimal entrance fees.

Table 2.2 Current daily entrance fees for domestic, regional and international tourists into Namibian parks (N\$, MET)

Park	Daily entrance fees (2017 N\$)		
	Citizen	SADC	International
Etosha NP, /Ai-/Ais Hot Springs Game Park, Skeleton Coast Park, Namib-Naukluft Park, Waterberg Plateau Park	30	60	80
All other parks, reserves and heritage sites	10	30	40

Park entry fees in Namibia have remained unadjusted since 2005 (Aribeb et al. 2016), despite recommendations in 2010 that fees should be revised every three years (Turpie et al. 2010a). As a result, parks have become cheaper for most users. Park fees have not tracked inflation resulting in cheaper fees for domestic and regional tourists and while the exchange rate has fluctuated over the last 12 years there has been an overall weakening of the Namibian Dollar against all major currencies, resulting in cheaper fees for international tourists. Indeed, in 2010 entry fees for international tourists would have been close to US \$12, in January 2016 they were as low as US \$5 per person, and currently they are just over US \$6 per person. With around 70% of visitors to the larger parks being international or regional tourists (Turpie et al. 2010b) the potential foregone income is significant.

There are two tiers for pricing of accommodation within parks. Prices are reduced during the low season (November – June) and increased during the high season months (July – October). NWR has introduced the NamLeisure Card, an annual membership which entitles visitors to discounts on accommodation within the NWR portfolio. The discount is only applicable to accommodation and not camping sites, entry fees or restaurants. The card can be bought for a single

person, a couple, or a family of four. The card entitles domestic visitors to a 50% discount, SADC visitors a 25% discount, and international visitors a 10% discount on accommodation. The cost of the NamLeisure cards are shown in Table 2.3. The once-off fee includes a N\$100 contribution to the Enviro-Fund and the annual renewal fee is half the cost of the once-off fee in year one of purchase.

Table 2.3 The price of the NamLeisure Card for domestic, SADC and international visitors, which entitles them to discounts on accommodation in the NWR portfolio (www.nwr.com.na)

Tourist group	Family card		Partner card		Single card	
	Price (one-off fee)	Annual renewal fee	Price (one-off fee)	Annual renewal fee	Price (one-off fee)	Annual renewal fee
Namibian	1200	600	700	350	400	200
SADC	1800	900	1400	700	700	350
International	2500	1250	2100	1050	1000	500

Park entrance fees made up 90% of non-tax revenues collected by MET in 2014/15 (Aribeb et al. 2016,

Table 2.4). Wildlife utilisation permits contributed 5% and concession fees made up about 2%. Other revenue sources made up the remainder. These included film fees, wildlife registrations and licenses, registration of culling teams and professional hunters, departmental fines, application fees for gambling, and sales of trophies. The state-owned Namibia Wildlife Resorts company (NWR), which currently owns and manages tourist facilities inside most parks, does not pay rentals to the parks (Aribeb et al. 2016). Remaining income generated by the parks, outside of the income generated by the NWR, goes to the central Government Treasury with a small proportion being channelled via trust funds (Figure 2.3).

Table 2.4 MET revenues for 2014/15 (Source: Aribeb et al. 2016)

Revenue Source	2014/15 Actual Income (N\$)	% of total
Miscellaneous	780 719	1.2%
Department fines	2 200	0.0%
Park entrance fees	56 410 374	90.3%
Registration of professional hunters	168 400	0.3%
Registration of culling team	15 850	0.0%
Film fees	209 360	0.3%
Tourism concessions	1 146 443	1.8%
Gambling application fees	42 000	0.1%
Wildlife registration and licences	357 050	0.6%
Wildlife utilisation permits	3 328 171	5.3%
TOTAL	62 460 567	

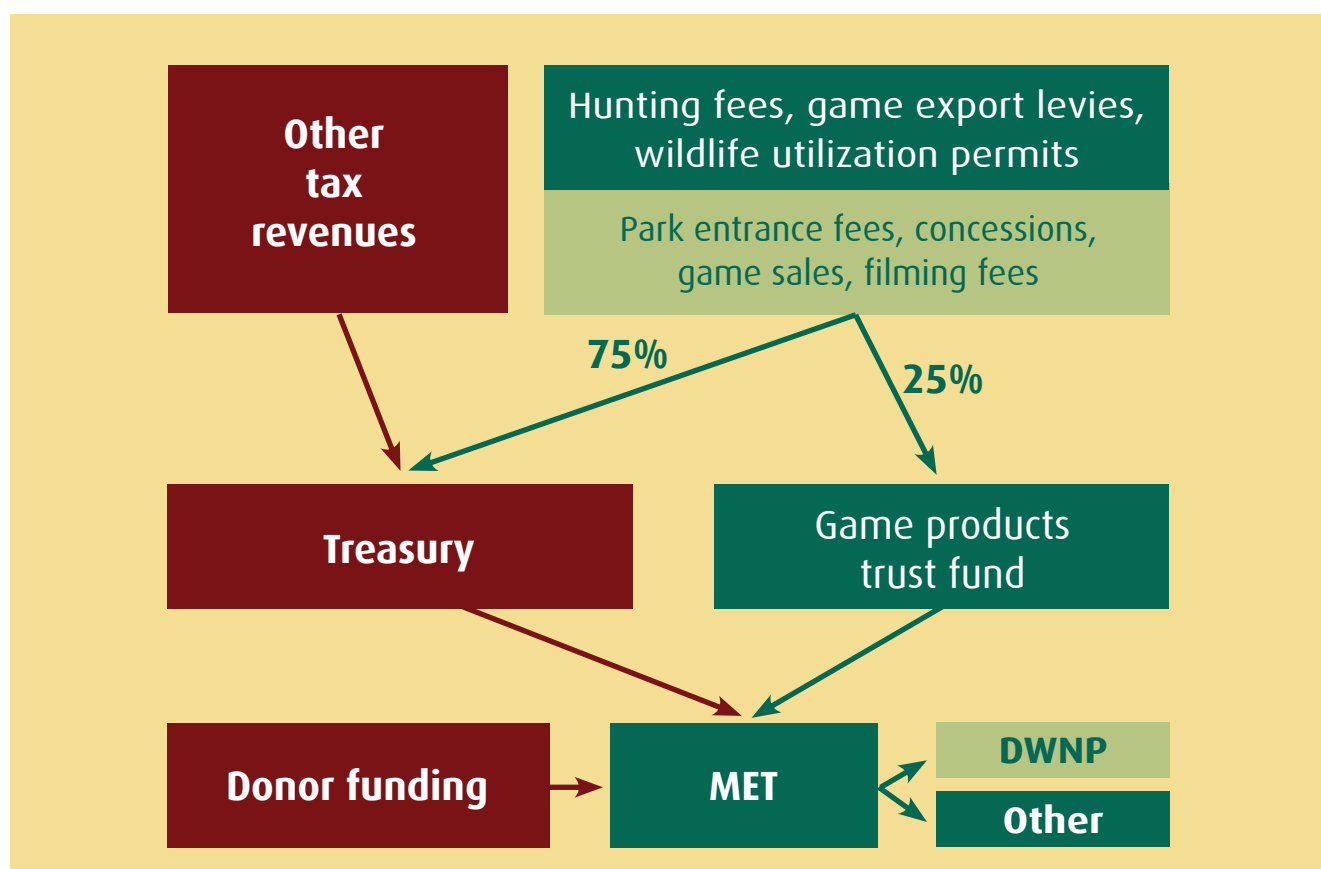
In 2014/15 the total park revenue represented only 9% of the total MET expenditure on everything (Aribeb et al. 2016). However, Aribeb et al. (2016) estimated that the revenue from park entrance fees represented 24% of the total protected area expenditure if the Programme for Wildlife and Protected Area Management was used as a proxy for the protected area system. During 2014/15 the protected area system was estimated to generate approximately N\$56.4 million from entry fees (Aribeb et al. 2016). This is only N\$4 million more than the amount collected nine years ago during 2008. This is due to the fact that park entrance fees have remained unchanged since 2005 resulting in park entrance becoming cheaper over time for most tourists.

In addition to revenues generated through park fees, there are a number of tourism and hunting concessions within protected areas in Namibia that generate some revenue for MET. Turpie et al. (2010a) indicated that the fee structure and payment structures vary between concessions and that there was no standard system for determination or collection of these fees. There is no evidence to suggest that this has changed since then. According to Aribeb et al. (2016) MET has developed almost 20 tourism concessions potentially worth N\$5 million based on the mandatory minimum fee of N\$250 000. However, MET's 25% concession fee share is paid directly to Treasury (Aribeb et al. 2016).

2.5 Park financing

There are three main sources of funding for financing Namibia's protected areas; government funding, donor funding, and park revenues channelled via a trust fund (Figure 2.3, Turpie et al. 2010a).

Figure 2.3 Sources of funding for Namibia's Protected Area Network (Source: authors own)



2.5.1 Direct fiscal transfers

The protected area network in Namibia relies on funding from fiscal revenues, the Game Product Trust Fund (GPTF) and donor funds.

During the period 2002/3 to 2006/7, about two thirds of the MET budget was financed by domestic resources, including Government fiscal revenues, and a small amount through the GPTF, which in 2005/6 amounted to only 5.2% of the MET's total domestic resources (Turpie et al. 2010a). The amount of money allocated to DWNP from the GPTF is only a proportion of the total fund, as other NGOs and conservancies also benefit from the fund (Turpie et al. 2010a).

A baseline assessment supporting the review by Aribeb et al. (2016) found that Treasury allocations to the environmental sector have decreased over recent years, when compared to other economic sectors. The same review found that disconnect between budgetary allocations and the actual cost of maintaining protected areas continues to persist. There were significant increases in the budgetary allocations to MET from 2006/07, mostly attributed to large increases in investment into Community Based Natural Resources Management (CBNRM, Aribeb et al. 2016). The trend in increasing budgetary allocations continued through the 2012/13 period when government funding to the Directorate of

Wildlife and National Parks more than doubled during the 2011 – 2013 medium term expenditure framework (MTEF, Aribeb et al. 2016). These budgetary allocations also remained relatively stable throughout the 2014/15 and 2015/16 financial years. This increase in funding since 2010 is believed to be owing to the results presented on the economic value of Namibia's protected area and the sustainable financing plan for the protected area network which advocated for increased investment in Namibia's protected area system (Turpie et al. 2010a, Turpie et al. 2010b). However, government allocations to MET have been drastically reduced during 2016/17 resulting in a significant gap in the funding required by parks and the amount of money allocated by the Treasury (Aribeb et al. 2016). Historically, the budget laid out by MET in their Strategic Plan tends to be about three times higher than the actual budgetary allocation by Treasury (Aribeb et al. 2016). The overall MET budget allocation as a percentage of Namibia's total development budgetary allocations has remained at around 2% since the early 2000s (Aribeb et al. 2016).

Table 2.5 MET allocations as a % of the total development budget (Source: Aribeb et al. 2016, Development Budget MTEF 2016/17-2018/19)

	2016/17	2017/18	2018/19
MET allocation	187 206	213 525	185 644
Total development budget	9 354 214	11 556 065	11 573 211
Percentage of total	2.0%	1.8%	1.6%

2.5.2 Trust and investment funds

Non-tax revenues generated by the MET are collected by the DWNP and transferred to the State Revenue Fund (Figure 2.3, Turpie et al. 2010). These include park entry fees and concession fees as discussed above. However, revenues collected from trophy hunting concessions, the sale of game and game products, registration fees of professional hunters, and levies from the export of game are collected by MET and transferred into the Game Product Trust Fund (GPTF, Figure 2.3). In addition to this, 25% of park entrance fees that are transferred to the Ministry of Finance (MoF) are paid into the GPTF. However, according to Aribeb et al. (2016) these earnings have not been received since 2009 due to complications with the MoF. To date a total of N\$53 million in earnings from seven hunting concessions has been deposited into the GPTF, and wildlife sales from exports and auctions have added N\$12 million to the Fund (Aribeb et al. 2016).

A second fund, the Environment Investment Fund (EIF) was officially launched in 2012 with the purpose of investing funds in the protection and management of the environment, promoting sustainable use of natural resources for economic development, and conserving biological diversity.

2.5.3 Donor funding

Over the years, the MET has been reasonably successful in leveraging grant funding from development partners (Aribeb et al. 2016). Most of the support provided by the development partners focuses on capacity building and institutional reform (Turpie et al. 2010a). Total donor aid in 2006/7 was estimated to be about N\$33 million, of which 66% was provided by Global Environmental Facility (GEF) through the World Bank and the UNDP, 29% was from Germany, and 9.5% was from Denmark's development cooperation, DANIDA (Turpie et al. 2010a). Other donors include the EU, Spain, Finland, Norway, UK, France, Luxembourg, Netherlands, Iceland, USAID, IFAD and FAO. In addition, international and national NGOs such as WWF, NACSO, NNF, and DRFN provide donor-funded support to the sector (Turpie et al. 2010a). Since 2010, the MET has successfully secured donor funding to the amount of N\$192 million, 30% of which was from the German development bank, KfW, and 70% from GEF (Aribeb et al. 2016).

2.5.4 The park financing gap

Currently the government budget allocation to MET is the main source of funding for parks, however protected areas continue to experience substantial underfunding (Aribeb et al. 2016). Turpie et al. (2010a) estimated that the financing gap to maintain the status quo in park management was, at the time of the study, in the order of N\$8.8 million per annum and was in the order of N\$113 million per annum to achieve sustainability. A recent report on sustainable protected area financing strategies in Namibia (Aribeb et al. 2016) indicates that the situation has not improved much

since 2010 with the environmental sector ranked low on the Namibian government's list of spending priorities when compared to social sectors such as health, safety and education.

Funding for protected area management, i.e. the amount allocated to DWNP by MET, is currently in the order of N\$215 million, equating to 48% of the total MET budget (Namibia Development Budget MTEF 2016/17-2018/19). Based on updated estimates from Turpie et al. (2010b), an annual recurrent expenditure of N\$274.9 million is required for park management, which is 22% more than the current budget allocated to DWNP and an estimated shortfall of about N\$60 million. This suggests that more needs to be done to bridge the park financing gap, and increased revenues from entrance fees could help towards self-sustainability.



Picture: Ralf Bäcker

3

Regional comparison of fees and administration



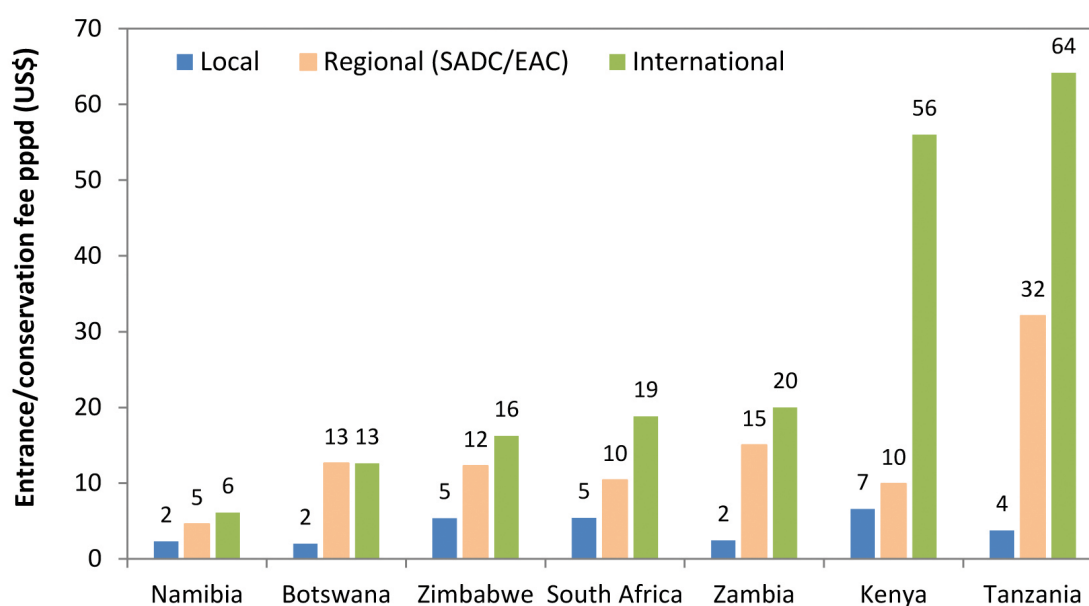
3 Regional comparison of fees and administration

3.1 Park prices

A review of park pricing structures across the region reveal that Namibia has the lowest park entrance fees (Figure 3.1). The prices charged for international visitors in Namibia are half the amount charged in Botswana, a third of what parks charge in Zimbabwe, South Africa and Zambia, and about a tenth of the price of parks in Kenya and Tanzania. The park entry fee for local tourists in Namibia is similar to fees charged in neighbouring Zambia and Botswana but lower than local fees in South Africa and Zimbabwe. The entry fee for regional tourists in Namibia is significantly lower than those in all the other southern and east African countries (Figure 3.1).

In Botswana, National Parks and Game Reserves are run by the government through the Department of Wildlife and National Parks (DWNP). The DWNP pursues a policy of high cost – low volume in their protected area network (Mmopelwa et al. 2007) with the aim to avoid mass tourism and to maintain an exclusive tourism product (Main & Warburton-Lee

Figure 3.1 Park entrance fees (per person per day, US\$) for countries in southern and eastern Africa (based on entrance fees for the larger, more popular parks in each country)



2002). In Botswana there is no differentiation made between international and SADC visitors with a single fee being employed for all “non-residents”. However, price differentiation between regional and international visitors is made for accommodation and camping within the national parks. A significant proportion of visitors to Botswana are South African, indicating that this pricing strategy aims to maximise revenues by capturing the highest fees from those that have the ability to pay. Since the introduction of the high price policy, Botswana has not updated their park entrance fees.

South African National Parks (SANParks) manages 19 national parks across South Africa. The daily conservation fee, which is charged on entry, is priced differently across the park network to maximise revenues as well as to control carrying capacity and address social equity issues. There are seven price tiers across the parks with the most sought-after parks charging significantly higher rates than the smaller, less popular parks. The Kruger National Park and Kgalgadi Transfrontier National Park charge international visitors R328 per day, the equivalent of US\$25 at the current exchange rate. Regional visitors to these two parks are charged half this amount and local South African residents are charged a quarter of this. The average local visitor conservation fee in South Africa is more than double the amount charged for local tourists in Namibia.

South Africa has a very large domestic market (roughly 80% domestic and 20% international, Muchapondwa et al. 2016) and as a result fees are set in accordance with these market segments with the aim of maximising revenues. With a relatively large middle class, by developing country standards, the tourism industry is dominated by domestic tourists throughout the year (Muchapondwa et al. 2016). Fees are set lower for domestic tourists but remain at a high enough level that controls visitor numbers into parks as well as producing maximum revenues. At other parks a different pricing structure is applied. For example, the conservation fee charged at visitor sites within the Table Mountain National Park (TMNP) is the same across all tourist groups (i.e. no price discrimination, R145 at Cape Point, R75 at Boulders and R50 at Silvermine). This pricing structure controls visitor numbers at these sites where the environment is particularly sensitive to overcrowding, by limiting domestic and regional tourists with higher entrance fees. However, local residents that utilise these sites on a regular basis are typically in possession of a SANParks Wild Card which on presentation permits free access.

In Zimbabwe, all park entrance fees are charged in US dollars and are therefore less affected by fluctuations in the markets. Park fees in Zimbabwe are similar to those in South Africa and vary across the different parks, with the most popular destinations (Victoria Falls, Hwange and Mana Pools) having the highest entrance fees upwards of US\$20 per day for international visitors.

In Zambia the entrance fees into national parks remain low for local tourists with the intention of trying to encourage Zambian residents to visit parks, especially outside of the peak tourist season. For international visitors, the entrance fees are charged at a set US dollar rate and are not charged in the local currency (Zambian Kwacha). Due to the constant fluctuations in the Kwacha, maintaining a set US dollar fee for international tourists, who make up the highest percentage of visitors, is an effective mechanism for maximising revenues over time. Fees for regional tourists are three times higher than those charged in Namibia.

In Kenya and Tanzania, park entrance fees are significantly higher for international tourists when compared to those across southern Africa. International visitors are charged US\$56 in Kenya and US\$64 in Tanzania, ten times more than the fees charged in Namibia and three times more than the fees charged in South Africa. In Kenya there are three pricing tiers for national parks; Premier Parks, Wilderness Parks A, and Wilderness Parks B and park fees are set based on a set of defining characteristics. The entry fee for regional tourists (i.e. visitors that are part of the East African Community, EAC) in Kenya is similar to regional fees charged throughout southern Africa, but in Tanzania the regional fees are much higher. Unlike South Africa, the majority of visitors to the larger national parks in Kenya and Tanzania are international tourists and therefore the pricing structure aims to maximise revenues from those with the highest WTP, while still maintaining relatively low prices for local tourists. Park entry fees in Kenya and Tanzania are charged at a set US dollar rate for international tourists.

It is important to note that tourism can be an unstable source of revenue, particularly when it is primarily dependent on income from foreign tourists. This revenue source is vulnerable to changes in markets, health concerns, political instability, and terrorism threats (Chikumbi 2013). It is therefore vital that adequate pricing policies are employed for local tourists to increase domestic visitation during unstable times.

3.2 Institutional arrangements for park revenues

The institutional arrangements for park revenues varies considerably across the region. In some countries the government is responsible for the management of protected areas and wildlife, whereas in other countries statutory bodies which are external to the public service are legally mandated to perform this role inclusive of tourism and related commercial activities (Aribeb et al. 2016). In addition to this, the more recent approach in some countries has been to set-up a long term contractual agreement with a non-government organisation who has direct responsibility for the management of the protected area(s) in that country. An example of such an organisation is “African Parks” which now manages ten parks in seven different countries in sub-Saharan Africa and aims to be managing 20 parks by 2020 (see www.african-parks.org).

Parastatal protected area agencies provide an alternative to the dependence on governments for conservation funding (Anderson & James 2001) and with corporate legal standing are removed from the hierarchy of government administration. Parastatal agencies, such as South African National Parks (SANParks), Kenya Wildlife Service (KWS), Tanzania National Parks (TANAPA) and Zimbabwe Parks and Wildlife Management Authority (ZPWMA) are semi-autonomous organisations that receive some funding from government but also raise and retain all of their own revenues, including park entrance fees (Anderson & James 2001) and therefore have greater authority over their own resources, staff and budget. The revenue generated by protected areas is reinvested into the organisation and the management of national parks. This arrangement is fundamentally different to the Namibian situation where protected areas are managed by MET and park revenues go directly to central government with only a portion of these revenues being reinvested into the management of national parks (Aribeb et al. 2016). The situation is similar in Botswana where the national parks are managed by the Department of Wildlife and National Parks (DWNP) through the Ministry of Environment, Wildlife and Tourism (MEWT). In this instance revenues all accrue to central government which funds an operating budget for the national parks.

Greater financial independence allows parastatals the advantage of diversifying their sources of revenue beyond the collection of park entrance fees, including investment and trust fund income, donations, and foreign assistance (Anderson & James 2001). Because parastatal agencies usually do not pay taxes, surplus revenues from operations can be reallocated to conservation activities within protected areas (Anderson & James 2001). Government control over these parastatals comes in the form of protected area legislation and representation on the Board of Directors who provide oversight in the form of guidance and regulation. SANParks, for example, is governed by the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003), and TANAPA is governed by the Tanzanian National Parks Act of 2002 and the Wildlife Conservation Act of 2009.

Typically, these agencies are created to improve and facilitate the management of protected areas and wildlife, particularly where state management is considered too centralised, inefficient and ineffective. Formal institutions between government and parastatal agencies differ in the structure of property rights over park revenues (Anderson & James 2001). When parastatals are formed property rights are transferred from the government to the conservation agency providing them with control over the revenue stream generated by the protected area network. In doing so, incentive to optimise the value of the revenue stream from the protected area assets is created (Anderson & James 2001). However financial improvement is not a given once property rights have been transferred from the government to the conservation agency (Anderson & James 2001). The success of these agencies depends on cooperative governance, effective management, and their ability to optimise and diversify revenue streams in order to add value while controlling costs.

The Zambia Wildlife Authority (ZAWA) is an example of a parastatal organisation that has over the years struggled to deliver on its mandate. In 1999 the Department of National Parks and Wildlife Services (DNPW) in Zambia was transformed into an autonomous body, ZAWA, governed by the Zambia Wildlife Act of 1998 and its own Board of Directors. However, in 2015 ZAWA was replaced by the DNPW within the Ministry of Tourism and Arts as a result of declines in wildlife numbers, under-funding and unsatisfactory management. Indeed, Lindsey et al. (2014) concluded that Zambia’s protected areas were “under-performing in ecological, economic and social terms”. Recommendations from this study included elevating government funding for ZAWA and shifting ZAWA’s role such that their primary focus would be the management of national parks (Lindsey et al. 2014). There are two parks in Zambia that are currently managed directly by African Parks; Bangweulu Wetlands Park and Liuwa Plain National Park. African Parks has proven to be a highly successful model (based on tried and tested business principles) to protected area management in that through entering into long-term agreements, of usually 20 years, with government they are able to take on the direct day-to-day running of the entire park including all activities required to protect and sustain the park.

SANParks took a strategic decision in 1999 to focus all of its energy and resources on its core function of managing biodiversity in protected areas and to withdraw management of commercial operations (Aribeb et al. 2016). This successful strategy has resulted in the transfer of management of commercial operations within national parks to commercial operators who are “better qualified and equipped to run such facilities” (Aribeb et al. 2016). This is comparable to the arrangement between MET and NWR in Namibia, with the rather important exception being that MET does not currently receive any revenue from the resorts operated by NWR (Aribeb et al. 2016).



Picture: Ralf Bäcker



Picture: Ralf Bäcker

4

Review of park pricing literature



4 Review of park pricing literature

4.1 Rationale

Throughout Africa, government funding for conservation and protected areas has dwindled in real terms and, as a result, creating the need to reform tariff structures and institutional arrangements of national parks (Kibira 2015). Given the declining availability of government and donor funding, park entry fees (or user/conservation fees) are becoming an increasingly relevant source of funds to park agencies (Alpizar 2006, Muchapondwa et al. 2016), with more efficient, well-designed park fee systems helping to make protected areas more financially self-sufficient. Under-pricing results in poorer, less developed countries effectively subsidising the visits of wealthier visitors from developed nations, who tend to make up the majority of visitors at national parks in most developing countries (Alpizar 2006, Dikgang & Muchapondwa 2013, Kibira 2015).

When it comes to the pricing of protected areas there are generally four main objectives that the charging of a user fee aims to achieve: to impute value to visitation, to manage parks at economically efficient levels, to operate within an ecological carrying capacity, and to achieve social equity (Dikgang & Muchapondwa 2013). The differential between what visitors are willing to pay and what they actually pay is the consumer surplus, and if the aim is to maximise revenues from park fees, then this consumer surplus could be captured through higher prices (Kibira 2015). However, determining the optimal park fees is not easy and requires understanding demand, demand elasticity and cross-price elasticities within the region. With work in this regard being limited, there tends to be little experience to guide park agencies in designing effective pricing strategies and often no formal criteria or analyses are used to determine park fees (Dikgang & Muchapondwa 2013, Kibira 2015).

Although many studies have been undertaken to value national parks, including in Namibia, most have focused on estimating park visitors' average willingness to pay (WTP) for the recreational experience. However, determining the optimal park entry fee requires understanding the individual preferences of park visitors and factors such as park substitutes and individual demand elasticities. Own- and cross-price elasticity are critical components of determining optimal pricing policies (Chikumbi 2013, Dikgang & Muchapondwa 2013). It is useful to understand how the change in price of one park leads to changes in the demand for alternative destinations, and how different parks complement one another in terms of overall tourism experience (Turpie et al. 2005). Understanding visitor preferences and how demand relates to certain aspects of the quality of the experience and services offered by parks is also important.

Most studies on park pricing have used stated preference methods (contingent valuation, contingent behaviour and choice experiment methods) to elicit user willingness to pay, rather than revealed preference methods (e.g. the travel cost method) which estimate consumer surplus (see Perman et al. 2011). All of these are survey-based methods. Contingent valuation involves asking individuals about their willingness to pay to obtain a specific good or service in order to determine a value for that good which cannot be priced directly through markets (Perman et al. 2011). Contingent behaviour methods elicit a behavioural response to a change in price (e.g. change in time spent visiting parks). Choice experiments confront survey respondents with a number of discrete alternatives, which are described in detail, and individuals are asked to identify their most preferred alternative (Perman et al. 2011).

4.2 Determining willingness to pay

Most earlier studies relating to park pricing relied on contingent valuation to estimate mean WTP. Contingent valuation methods (CVM) elicit respondents willingness to pay (WTP) for an improvement, or their willingness to accept compensation (WTA) for negative change. WTP can be elicited by a range of question formats:

- *Open-ended format* - these are the easiest format (from an analytical point of view), but respondents sometimes find it hard to answer, resulting in a range of possible biases.
- *Dichotomous choice* (yes/no) format in which participants are asked to accept or reject a price offer (or bid amount) – these are easier to answer and less prone to bias, but they require that different respondents be presented with different price levels, and they are more complex to analyse.
- *Payment card format*, which involves asking respondents to choose from a list of amounts or ranges ordered from lowest to highest - this reduces starting point bias and other problems associated with open-ended and iterative bidding methods.

For open-ended questions, a mean or median is typically calculated. However, the last two formats are generally more acceptable from an econometrics standpoint. The dichotomous choice approach determines the probability of a respondent being willing to pay some stated amount to ensure that a given environmental change occurs, or is avoided. As the nominated money amount (or bid) is increased, the proportion of respondents willing to pay for the change is expected to decrease. Note that the reverse is observed for a WTA probability distribution in that the probability of selecting yes increases as the bid amount increases. The probability of obtaining a 'yes' or 'no' response can be represented by:

$$\text{Probability (no)} = \pi^n = G(\text{BID}; \theta)$$

$$\text{Probability (yes)} = \pi^y = 1 - G(\text{BID}; \theta)$$

Where $G(\text{BID}; \theta)$ is some statistical distribution function with parameter vector θ which is estimated using a qualitative choice model such as a logit model used for this analysis. The logit model takes the form of a log-logistic cumulative density function:

$$G(\text{BID}) = \frac{1}{[1 + e^{a-b(\ln \text{BID})}]}$$

where $\theta = (a, b)$ and a and b are the intercept and slope coefficients to be estimated. The model can be interpreted as a utility maximisation response within a random utility context, where $G(\text{BID}; \theta)$ is the cumulative density function of the respondents true WTP because utility maximisation implies that an individual will say 'yes' to a BID only if the BID is less than or equal to their maximum WTP, and will say 'no' if the BID is larger (Hanemann 1984).

With the payment card approach, the true WTP of the respondents is assumed to be located above the selected value and below the next higher one (Hu 2006). The interval midpoint WTP model can be used to analyse payment card data. This method assumes that the individual's WTP is systematically distributed within the given interval of bid amounts. Because the respondent's true point valuation lies somewhere in the interval between the chosen value and the next highest one (Cameron & Huppert 1989) this assumption is reasonable. The mean WTP value under this assumption can

$$\text{Interval midpoint WTP} = \sum_{i=0}^{H-1} \frac{A_i + A_{i+1}}{2} * P_i + \frac{A_H + A_T}{2} * P_H$$

be computed as:

The interval midpoint WTP represents the mean WTP, A_i represents the different values from the payment card and P_i represents their respective frequencies within the sample data. A_H represents the highest value from the payment card and A_T the upper limit value.

In contingent valuation studies on park pricing, mean or median WTP has typically been compared with current prices, often in order to inform pricing policy (see Barnes et al. 1999, Krug et al. 2001, Krug et al. 2002, Alberts 2007, Turpie 2009). Most studies have revealed that current park entry fees fall significantly below what visitors are willing to pay and what is required to cover operational costs. For example, in Sangha Tri-National Park, Cameroon, DR Congo and CAR, tourists WTP was 46% - 149% more than the current entry fee charged, foreign tourists had the highest WTP, and if park facilities were

improved park entry fees could be increased significantly (Tieguhong & Zwolinski 2008). However, the method does not take potential effects of price on time spent visiting into account, does not provide information about elasticity and does not give any information on whether changing prices to the mean WTP would actually increase or decrease park revenues.

4.3 Estimating demand elasticity and revenue-maximising price

The more recent studies have mostly used the contingent behaviour method because it has the ability to take substitutability effects into consideration when estimating price elasticity and visitation demand functions. This approach involves specifying a change in entrance fees and asking respondents how they would vary their visitation rates and patterns (Chase et al. 1998, Dikgang & Muchapondwa 2013, Kibira 2015). The responses from the hypothetical questions provide data that allow for estimating demand elasticity, which is crucial for understanding the effects of change in entrance fee on park visitation patterns (Kibira 2015). The respondent is assumed to maximise a utility function, which is derived from the consumption of a good or service (visits to national parks) subject to his or her budget constraint (Perman et al. 2011). Solving the utility maximising equation gives a set of Marshallian demand functions, which when aggregated, yields a market demand function for park visitation where the demand for a park is a function of a park's entrance fee, entrance fees to other parks, park visitor income, demographic characteristics and other trip-related factors:

$$Q_i = f(M, P_i, Z)$$

Where Q_i is the park visitation rate by tourists at park (i), P_i is the park entrance fee at park (i), M is the tourists' disposable income, and Z captures the socio-economic and trip-related characteristics (Chase et al. 1998, Dikgang & Muchapondwa 2013).

The revenue maximising price is calculated from a demand curve with the assumption that the relationship between price and quantity demanded (i.e. time spent visiting parks) is linear. A linear demand function is given as follows:

$$Q = I - m(p)$$

where Q is the quantity, I is the intercept, m is the slope and p is the price. The price elasticity of demand equation over a range of demand and prices can be given as the percentage change in quantity demanded divided by the percentage change in price. Since the quantity demanded and the price are inversely related this gives a negative result thereby confirming a downward sloping demand curve (Chikumbi 2013). From the demand curve the price at which revenues are maximised can be calculated.

In recent years, a number of experimental studies have been conducted in southern and east Africa to determine the optimal park entry fee that visitors are willing to pay that will maximise revenues and cover operating costs. The approaches and results of these studies have varied from country to country. However, the common outcome has been that current park entrance fees tend to be significantly lower than the revenue maximising fees suggested by the model outputs:

- In Lake Nakuru National Park, Kenya, a 307% increase in international tourist park fees in the medium term would yield revenues of more than US\$30 million without a major decline in overall visitation days (Chacha et al. 2013).
- In four Zambian parks (South Luangwa NP, Mosi-oa-Tunya NP, Lower Zambezi NP, and Kafue NP), demand elasticities were quite different and current pricing structures were inadequate, with international tourists having higher WTP at all four parks. The optimal fee for South Luangwa NP was significantly higher compared to other parks, increasing from US\$25 to US\$107 per day (Chikumbi 2013).
- In South Africa, fees for international visitors could increase from US\$23 to US\$144 for the Kgalagadi National Park, from US\$23 to US\$73 for the Kruger National Park, from US\$13 to US\$92 for the Augrabies Falls National Park, and from US\$6 to US\$80 for the Pilansberg National Park (Dikgang & Muchapondwa 2013)
- In Kruger National Park, the revenue maximising daily fee for international tourists was estimated to be US\$191 (compared with current fee of \$25). However, a substantial raise would lead to competition from local and regional parks (Brown & Dikgang 2015).

- Another study from Kruger National Park, estimated consumer surplus of international visitors to be US\$232, and a revenue maximising daily conservation fee of US\$167 (Muchapondwa et al. 2016).
- In Serengeti National Park, Tanzania, the revenue maximising entry fee would be US\$125 without taking substitute parks into consideration, but international fees could only be increased from US\$60 to US\$67 without losing tourists to substitute parks (Kibira 2015).

4.4 Revenue maximising versus optimal prices

It is important to note that park pricing strategies need to consider social equity, ecological sustainability, and ecological and tourist carrying capacities of the parks (Turpie et al. 2005, Chacha et al. 2013, Dikgang & Muchapondwa 2013). Ecological carrying capacity refers to the level of visitation beyond which there are negative impacts on the environment. These levels can be exceeded before the revenue-maximising visitor carrying capacity is reached, i.e. when congestion levels have an impact on visitor enjoyment and WTP (Turpie et al. 2005, Chacha et al. 2013). For local tourists the goal may be to increase local visitors to parks which would require lowering park entry fees. However, while social equity considerations are important, the prices should still be set at sufficiently high levels so as to discourage visitor numbers from exceeding ecological and visitor carrying capacities (Dikgang & Muchapondwa 2013).

Determining optimal prices means having a pricing strategy that meets all of the stated objectives. These usually include maximising revenues subject to the constraint of meeting certain social objectives and limits to environmental damage. Social objectives can be achieved by tiered pricing, while, environmental objectives mean that overall numbers have to be limited (either with quotas or through higher pricing).

Price discrimination refers to a pricing strategy where visitors are charged different prices for the same product or service; in this case, entry into a national park (Chikumbi 2013). Pure price discrimination occurs when the visitor is charged the maximum price that he or she is willing to pay for entry. Price discrimination provides the opportunity to increase park revenues and at the same time satisfy social equity issues (Dikgang & Muchapondwa 2013). A multi-tiered pricing strategy can yield higher revenues than a single fee (Chikumbi 2013). Ideally, price discrimination among visitors enables resource use at different sites, among different time periods and among different user profiles (e.g. foreign versus local visitors, pensioners and students; Chikumbi 2013, Dikgang & Muchapondwa 2013).

Park agencies are able to employ price discrimination because the market tends to be fairly easily segmented (Dikgang & Muchapondwa 2013), and as a result, visitors with different demand elasticities can be identified and treated accordingly. In the absence of environmental limits to visitor numbers, park agencies should charge more to visitors that fall into markets with a lower elasticity of demand (i.e. changes in park entry fees have a relatively small effect on the level of visitation) and charge less to visitors in markets with a higher elasticity of demand (i.e. changes in park entry fees have a relatively large effect on visitation rates). Therefore park agencies may charge a significantly higher price to foreign tourists if demand is estimated to be much more inelastic when compared to the demand of local and regional residents. This tends to be because regional and local tourists are more likely to seek alternatives in response to increasing prices (Turpie et al. 2005). Using demand and marginal revenue curves, optimal pricing strategies aim to charge a profit-maximising price to each of these groups, ultimately increasing total revenues and allowing visitation numbers to be tailored to address site-specific characteristics and objectives (Chikumbi 2013).

Chase et al. (1998) undertook one of the first contingent behaviour studies analysing the impact of increasing park entrance fees and developing a framework for introducing a differential pricing policy at Costa Rican parks. Alpizar (2006) took this further and computed the 'optimal' park entry fee based on welfare maximisation using historical park entry data. The study found that the practice of price discrimination could successfully raise revenues and achieve a more optimal pricing policy in Costa Rica. The model indicated that foreign tourist entry fees could be raised by US\$3 - \$5 per visitor per day (Alpizar 2006).

4.5 Institutional issues

In addition, studies have also found that institutional capacity to efficiently capture park revenues has been lacking and that overall satisfaction with regards to the quality of services provided and facilities within many national parks was

below the standard that should be associated with paying higher prices (Mmopelwa et al. 2007, Tieguhong & Zwolinski 2008). Indeed, Mmopelwa et al. (2007) found that most of the tourists visiting Moremi Game Reserve (and other national parks in Botswana) related the fees that they paid to the quality of the services provided as they were generally dissatisfied with the poor conditions of the ablutions, camping sites, littering and roads. The same study found that return visits to parks are also to a large extent determined by whether the fees paid by tourists are invested back into park maintenance and biodiversity conservation.



Picture: Ralf Bäcker

5

Optimal pricing for Namibia's national parks



5 Review of park pricing literature

5.1 Introduction

This chapter presents the methods and results of a survey of park users in order to inform the optimal prices of parks.

5.2 Methods

5.2.1 Survey and sampling approach

Holidaymakers were interviewed at four Namibian National Parks (Etosha National Park, Namib-Naukluft Park, Waterberg Plateau Park and Hardap Game Park) and at Hosea Kutako International Airport in Windhoek. The surveys were designed and tested during the period 20 - 24 November 2017 and administered in Namibia from 1 - 10 December 2017. Interviews were conducted in English. In total, 689 questionnaires were completed (326 at the airport and 363 at the national parks). In the overseas visitor questionnaires, US\$ were used. These data were converted into N\$ for the analysis. Exchange rates at time of administration were used for all cost data captured during the surveys (1 December 2017).

5.2.2 Structure of the questionnaire

The questionnaires comprised three sections. The first section included basic visitor information about country of origin, type of trip (organised or self-drive), group size, length of whole trip, amount of trip time spent in Namibia, and total trip budget.

The second section focused on Namibia's national parks. The surveys included a list of all Namibia's national parks separated into flagship parks and secondary parks. The flagship parks in Namibia are priced differently to the secondary parks and are the most visited parks within the protected area network. There are six flagship parks and 13 secondary parks. Respondents were asked which parks they were visiting this trip and how many days they were spending in each. Respondents were asked about how much of the reason of their trip was to see Namibia's parks and whether they had visited any other national parks in the region. The importance of overall cost of travel to Namibia and whether the cost of visiting parks contributed to visitors' decision in coming to Namibia was assessed using a scale of 1 - 5. How Namibia's national parks had met visitor expectations was assessed in terms of scenic/landscape attractions, wildlife attractions, accommodation and congestion, using a scale of 1 - 5 where 1 = much worse than expected, 3 = as expected and 5 = much better than expected. The accommodation and facilities in the parks were rated in terms of value for money on a scale of 1 - 10 where 1 = poor, really not worth the money spent and 10 = excellent, well worth the money spent.

The third section focused on park pricing, how increasing park prices at both flagship and secondary parks would influence visitors' decisions regarding their trip, and respondents' willingness to pay for daily park fees. A table showing the current park fees and typical accommodation prices for the region was presented to respondents before asking them how an increase in park prices in Namibia would have affected their decision on how many nights to spend or whether

to come to Namibian parks or Namibia at all. This is explained in more detail below. Overseas, SADC and Namibian visitors were presented different tables showing the current prices as relevant to each group of visitors. Presented with a payment card, visitors were asked what the highest amount they would be willing to pay as a daily park fee for flagship parks without reducing the number of days spent. A similar approach was used for secondary parks but an open-ended question was used to elicit willingness to pay.

Comparison of park rates in some Southern African countries

Country	US\$ per person per day	
	Daily park fees	Typical accommodation price
Namibia (Etosha National Park)	6	85
Botswana (Okavango)	13	400
South Afrika (Kruger National Park)	19	95
Zimbabwe (Hwange)	20	300
Zambia (S. Luangwa)	25	375

To conclude the questionnaire, a closing question was asked about whether visitors to Namibia and Namibia's Parks would support the proposal to charge a conservation fee upon arrival, towards an NGO-managed fund for financing conservation in Namibia. If respondents answered 'yes' to this question they were then asked what the highest amount they would feel happy to pay for this once-off conservation fee would be.

5.2.3 Determination of WTP and revenue maximising price

In this study, we used both contingent behaviour and contingent valuation methods, with more emphasis on the former. Respondents were presented with information relating to the current park fees and typical accommodation prices for flagship parks in the region (see 5.2.2) where the park entry fee and typical accommodation price per person per day were shown for several countries. Referring to a previous question about the total number of days spent visiting flagship parks during their current trip, they were then asked to consider how an increase in park fees would affect their decision on how many nights to spend or indeed whether to come to Namibian parks or Namibia at all. The fee changes given varied among respondents (Table 5.1), and ranged from two to six times the current fees.

Table 5.1 The five bid amounts used in five different versions of the overseas visitor, SADC visitor and Namibian visitor questionnaires

Respondent	Bid amounts
Overseas	US\$ 12, 18, 24, 30, 36
SADC	N\$ 120, 180, 240, 300, 360
Namibian citizen/resident	N\$ 60, 90, 120, 150, 180

Each respondent was asked: "Considering the number of days you are spending in flagship parks on this trip, if the park fees were [2x higher (US\$12/N\$120/N\$60 pppd)], would this have affected your decision on how many nights to spend or indeed whether to come to Namibian parks or Namibia at all?" They were asked to choose one of four options (Note that Namibian respondents were only presented with choices 1 - 3):

1. No, not at all.
2. Yes, would have chosen to spend less time in flagship Parks.
3. Yes, would not have spent any time in Namibia's flagship Parks.
4. Yes, would not have come to Namibia.

Selecting option one illustrated that the respondent was willing to pay the proposed bid amount without changing their trip, while the other three options, if chosen, indicated that the respondent was not willing to pay the proposed price per day for the same trip, and would rather change their trip. If the respondent selected option two they were then asked to state how many days they would spend instead, and if option four was chosen the respondent was asked to indicate where they would have gone instead. Respondents were then shown a list of amounts ordered from lowest to highest

(i.e. a payment card) and asked to pick one that best corresponded to their maximum willingness to pay (Table 5.2).

Table 5.2 The payment card used for overseas, SADC and Namibian visitors to illicit respondent's highest willingness to pay as a daily park fee for flagship parks

Overseas visitors (US\$ pppd)	6	10	15	20	25	30	40	50	60	75	100
SADC visitors (N\$ pppd)	60	90	120	150	200	250	300	400	500	700	1000
Namibian visitors (N\$ pppd)	30	60	90	120	150	200	250	300	400	500	700

A similar approach was used for secondary parks. Those respondents that had visited or were planning to visit secondary parks were asked if they would change their trip if the park fees had been higher. Again, five different bid amounts were presented to respondents (ranging from two to six times higher than the current price of US\$3 for overseas visitors, N\$30 for SADC visitors and N\$10 for local visitors). Instead of using a payment card approach for the follow up question, respondents were asked the following open-ended question: "please indicate the highest amount that you would be willing to pay as a daily park fee for secondary Parks without reducing the number of days spent".

Nonparametric and parametric models were used to analyse the WTP payment card interval data and a logit model was used to analyse the single-bounded dichotomous choice data on the basis of the utility difference approach in order to validate the results (Hanemann 1984). All of these models were executed in R (R Core Team 2016). Responses from the open-ended WTP questions were analysed in excel.

The nonparametric and parametric approaches for analysing the payment card data were executed using the "iwt" package in R, using the function "iwt(data, dist)" where "data" represents the dataset that contains the upper and lower bounds selected and the argument "dist" is the type of survival function selected (i.e. the Weibull or mixed Weibull/Exponential distributions, Zhou et al. 2012). This returns the parametric estimation of WTP based on the survival function set by the user and nonparametric estimation of WTP based on the empirical survival function. The "iwt.esf" function builds the empirical survival function for a given data list. The mean WTP from the nonparametric model and parametric models (Weibull and mixed Weibull) are presented. The Maximum-Likelihood estimates which are derived are based on the Weibull and the mixed Weibull/exponential parametric families of distributions (Zhou et al. 2012). The advantage of using Weibull distribution is that the value estimates are inferred directly from the data using maximum likelihood estimation.

The single-bounded dichotomous choice data analysis was executed using the function "sbchoice()" included in the "DCchoice" package in R (Nakatani 2016, R Core Team 2016) which internally uses the generalised linear model (GLM) function with a binomial logit argument (i.e. log-logistic distribution). The summary output gives the assumed error distribution, Akaike's and Bayesian information criterion (AIC and BIC, respectively), as well as the value of the log-likelihood at the estimates, pseudo-R² and the likelihood ratio statistic for the current model. The results were analysed in terms of variables such as the amount of time spent in flagship parks, gender, group size and budget in order to validate the WTP results. The sample size was significantly smaller for secondary parks than for flagship parks and as a result only the data collected from overseas visitors for secondary parks could be analysed using the logit model approach for validation.

Finally, the average of the stated number of trip days spent in the parks under the current and hypothetical alternative prices were used to estimate the demand curves from which the revenue maximising prices were calculated for each group.

5.3 Results and discussion

5.3.1 Sample characteristics

Of the 689 holiday-makers interviewed, 49% were female (Table 5.3). The sample of Namibian holiday makers had a significantly higher proportion of male respondents compared to overseas and SADC visitors. Most respondents were believed to be between the ages of 18 and 50 years. Based on the overall budget and total length of trip provided by respondents, the average daily budget was N\$4819. As expected, overseas visitors had the highest average daily budget.

Table 5.3 Demographic characteristics of survey respondents (n=689). The range of daily budgets is shown in brackets

	Overseas visitors	SADC visitors	Namibian visitors	Overall
Gender (%)				
Female	51.3	49.2	28.6	48.7
Male	48.7	50.8	71.4	51.3
Age group (%)				
18-30	22.1	19.7	22.9	22.0
31-40	31.4	27.9	41.4	32.1
41-50	22.1	29.5	17.1	22.3
51-60	14.0	13.1	14.3	14.0
61-70	9.4	9.8	1.4	8.6
70+	0.9	0.0	2.9	1.0
Average daily budget (N\$ pppd)	2 479	1 514	1 143	2 257
	(606 – 14 728)	(508 – 4 167)	(357 – 5 667)	(357 – 14 728)

5.3.2 Visitor numbers, group and trip statistics

A total of 689 tourist groups were surveyed, representing 1715 visitors (Table 5.4). Overseas holiday-makers made up 80% of all visitors interviewed, with SADC and Namibian holiday-makers making up the balance. In fact, of the total number of groups surveyed, only 9% (n = 62) were from the SADC region. This was lower than the number of Namibian groups that were surveyed at the national parks (10%, n = 71). This is surprising given that a similar survey conducted by Turpie et al. (2010c) had a much higher proportion of SADC visitors, in particular South Africans, accounting for the highest number of visitors represented. This could be the result of seasonal differences or a result of the economic decline in South Africa during 2016 - 2017. Of the SADC region, South Africans comprised 85% of the visitors. Europeans comprised the majority of overseas holiday-makers (85%, n = 556, Figure 5.1), followed by North Americans (7%), Australasians (4%) and Asians (3%). Visitors from South America, Africa (excluding SADC) and the Middle East made up only 1.6% of overseas visitor groups (Table 5.4, Figure 5.1). The high number of overseas visitors and the variety of nationalities represented is encouraging and a likely product of the increasing number of international airlines that now fly to Namibia on a regular basis.

Figure 5.1 Origins of overseas holiday makers to Namibia (n = 556)

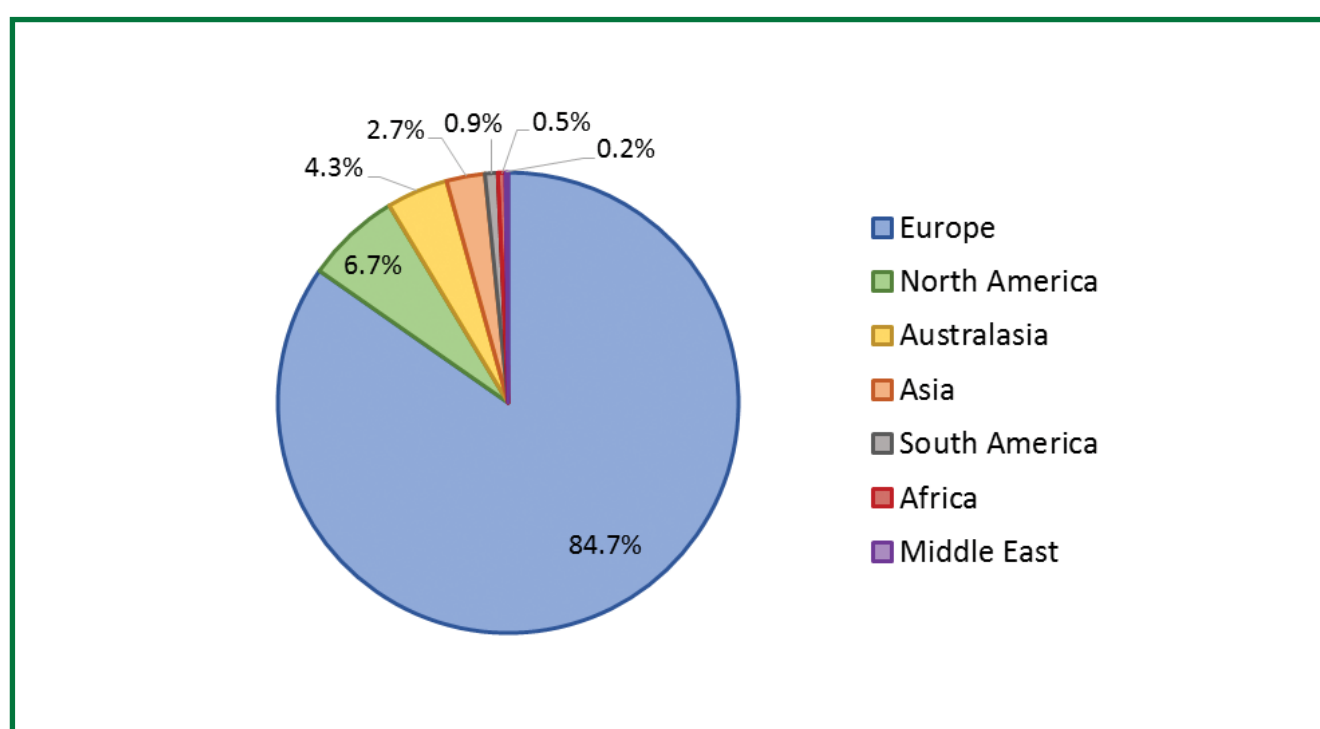
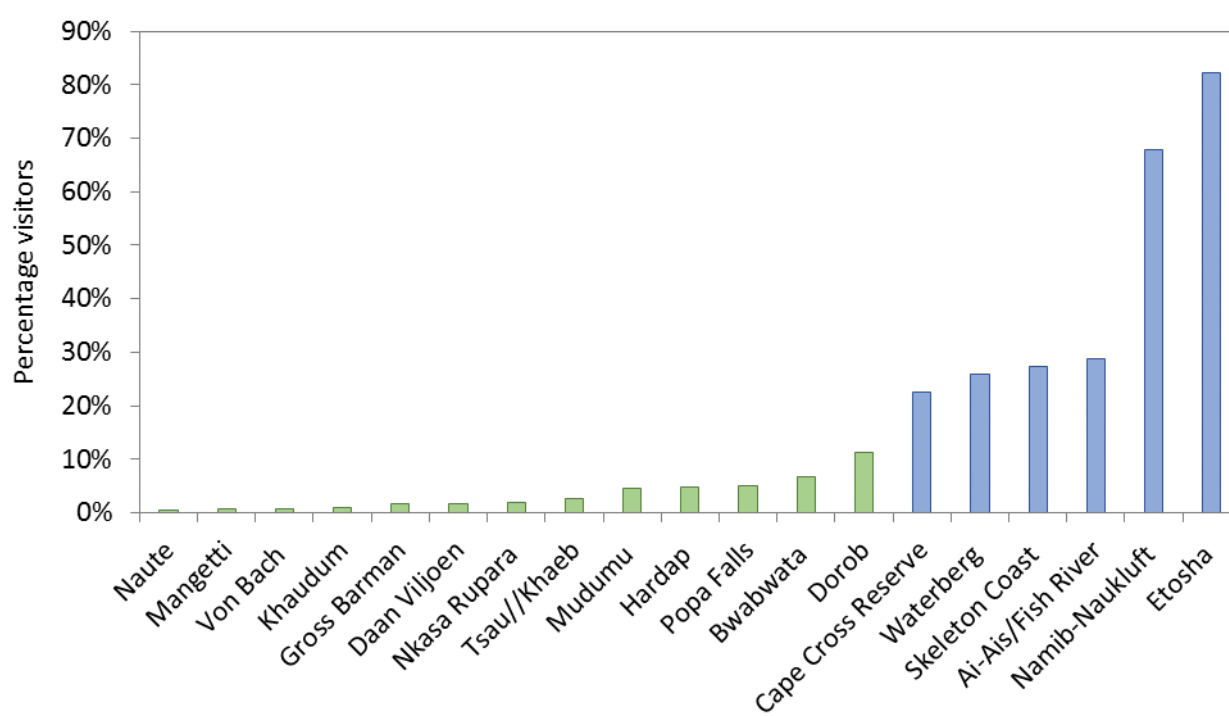


Table 5.4 Demographic characteristics of survey respondents (n=689). The range of daily budgets is shown in brackets

Region	Number of groups surveyed	Percentage of groups surveyed	Number of visitors represented	Average group size	Average length of total trip	Average length of trip in Namibia (days)
Africa (excl. SADC)	3	0.4	4	1.3	38	9
Asia	15	2.2	44	2.9	22	10
Australasia	24	3.5	46	1.9	81	17
Europe	471	68.4	1 046	2.2	28	16
Middle East	1	0.1	1	1.0	90	26
Namibia	71	10.3	337	4.7	5	5
North America	37	5.4	71	1.9	60	13
SADC	62	9.0	155	2.5	16	12
South America	5	0.7	11	2.2	138	10
Overall	689		1 715	2.5	29	16

The average group size for different regions ranged between 1.0 and 4.7 (Table 5.4). Group size was highest amongst SADC and Namibian holiday-makers. Most overseas visitors were on multi-destination trips and on average spent 14 days in Namibia, more than SADC visitors who on average spent 12 days in Namibia. Namibian holiday-makers had an average trip length of 5 days. Just over half of the overseas and SADC visitors were on their first trip to Namibia (57%), and more visitors were on self-drive (75%) versus organised trips (25%). Of the visitors on self-drive trips, 55% were using hired vehicles and equipment.

Figure 5.2 The percentage of holiday-makers that visited the different National Parks in Namibia. Blue bars represent flagship parks and green bars represent secondary parks



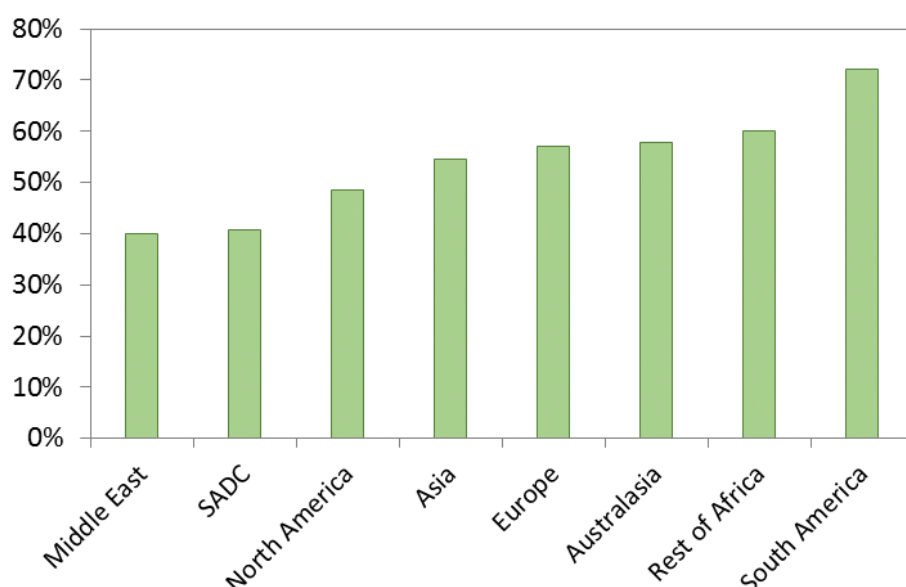
5.3.3 National Parks visited, visitor expectations and value for money

A total of 95% (n = 653) of holiday-makers to Namibia visited one or more of the National Parks. The 6% (n = 36) of holiday-makers who did not visit any of the National Parks were interviewed at the airport. Most of these were in Namibia visiting friends and family. A number of these respondents indicated that they had visited private game reserves, with Erindi Private Game Reserve being the most popular amongst this group of tourists. There were five groups of holiday-makers that had only visited secondary parks and had not visited any of the flagship parks.

Etosha National Park was the most popular park visited by respondents followed by the Namib-Naukluft National Park, with 82% and 68% of respondents having visited these parks, respectively (Figure 5.2). The remaining four flagship parks (Ai-Ais, Waterberg, Skeleton Coast and Cape Cross) had similar numbers of visitors (23 - 29% of respondents). The most visited secondary park was Dorob National Park with 11% of respondents indicating they had visited this park (Figure 5.2). Bwabwata was the second most visited secondary park (7% of respondents) followed by Popa Falls, Hardap and Muduma (5% of respondents). Naute, Mangetti and Von Bach were the least visited parks (<1% of respondents). A total of 648 respondents visited flagship parks whilst on holiday in Namibia and spent on average 5.3 days of their trip in these parks. A total of 187 respondents visited secondary parks and spent on average 2.5 days of their trip in these parks.

Visitors were asked what percentage of the reason for their whole trip was to see Namibia's parks. The average percentage reason ranged from 40% for visitors from the Middle East to 72% for visitors from South America, with an overall average of 58% (Figure 5.3).

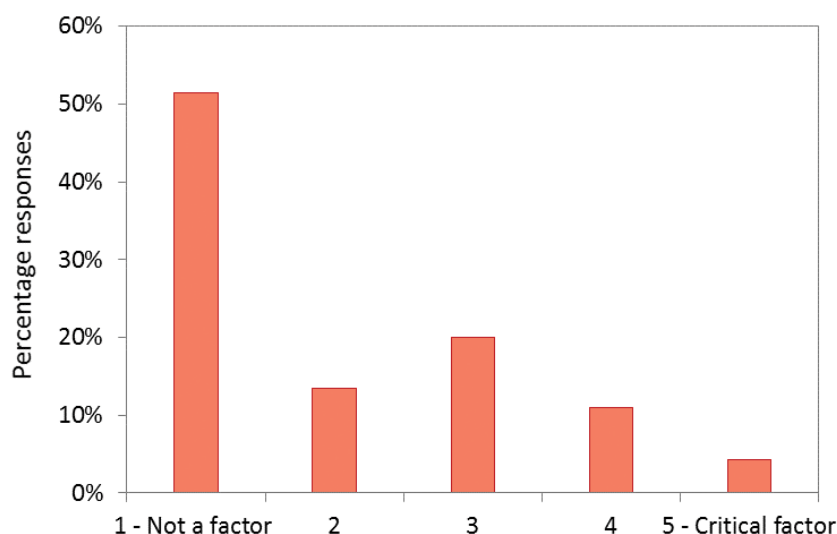
Figure 5.3 Percentage of the reason for different visitor groups whole trip to see Namibia's parks



Respondents were asked whether they had visited any National Parks in the region. More than half of the respondents had visited parks in South Africa (58%) and one third had visited parks in Botswana (30%). Fewer respondents had visited national parks in Zimbabwe (21%), Kenya (17%), Tanzania (15%), Zambia (11%) and Malawi (5%). One third of respondents (32%) had not visited any other national parks in the region.

Overseas and SADC visitors were asked how important overall costs of travel to Namibia were in them choosing it as a destination on a scale of 1 to 5. Just more than half of the respondents indicated that cost was not a factor in their choice to come to Namibia, 20% indicated it was a minor factor and less than 5% said it was a critical factor (Figure 5.4).

Figure 5.4 Percentage responses from overseas and SADC visitors relating to the importance of cost as a factor in choosing Namibia as a destination. 1 = not a factor, 5 = critical factor



The same respondents were then asked if the cost of visiting national parks played a role in their decision to visit Namibia. The majority (70%) said that park costs did not play a role in their decision to visit Namibia and 20% of respondents said that park costs did influence their decision. The remainder of respondents indicated that cost was a factor but it was mainly the cost of getting to Namibia that was a factor and not the cost of parks that influenced their decision.

Namibian holiday-makers indicated that the cost of visiting different parks did influence their choice of which parks to visit. More than half of the Namibian respondents (55%) said that it had influenced their decision and itinerary whereas 45% said it had not. Of those that said it had influenced their choice of which park to visit, the majority (59%) indicated that accommodation costs were the most important factor influencing the decision, followed by the amount of time needed to get to the park (28%) and then only park fees (13%).

All respondents were asked how closely their experience of Namibia's national parks had, so far, met their expectations in terms of scenic/landscape attractions, wildlife attractions, accommodation and numbers of other visitors (i.e. congestion). Respondents were asked to answer using a scale of 1 to 5, where 1 = much worse than expected, 3 = as expected and 5 = much better than expected. Visitors rated the scenic/landscape attractions, wildlife attractions and level of congestion highly favourably (Figure 5.5). More than half of the respondents (53%) indicated that the scenic/landscape attractions in national parks had been much better than expected, with 43% and 33% of respondents indicating that wildlife attractions and congestion had been much better than expected. The accommodation was the only factor not to have the highest number of responses in a category 5, with most respondents (35%) indicating that the accommodation had been "as expected" (Figure 5.5). For the most part, Namibia's national parks did exceed visitor expectations.

Respondents were asked to rate the accommodation and facilities in Namibia's national parks in terms of value for money, on a scale from 1 to 10 where 1 = poor, really not worth the money spent and 10 = excellent, well worth the money spent. Almost one third (29%) of respondents rated the accommodation and facilities an 8 out of 10 in terms of value for money (Figure 5.6). About 25% rated them as being a 5 or 6 out of 10 and only 8% rated them as being below a 4 out of 10 (Figure 5.6). Overseas visitors had higher ratings than SADC and Namibian visitors (Figure 5.6). A large proportion of the Namibian respondents rated the accommodation and facilities as a 5 out of 10 and a large proportion of SADC visitors rated them as a 6 out of 10. None of the SADC respondents gave a rating below 4 out of 10 (Figure 5.6). Visitors that gave lower ratings commented that the accommodation offered by the parks was expensive and not well maintained, especially the ablution facilities. A number of the visitors did not complete this question as they had not made use of the accommodation within the parks but chosen accommodation outside of the parks as it was more affordable.

Figure 5.5 Percentage responses relating to how closely the experience of Namibia's national parks have met visitor expectations. 1 = much worse than expected, 3 = as expected and 5 = much better than expected

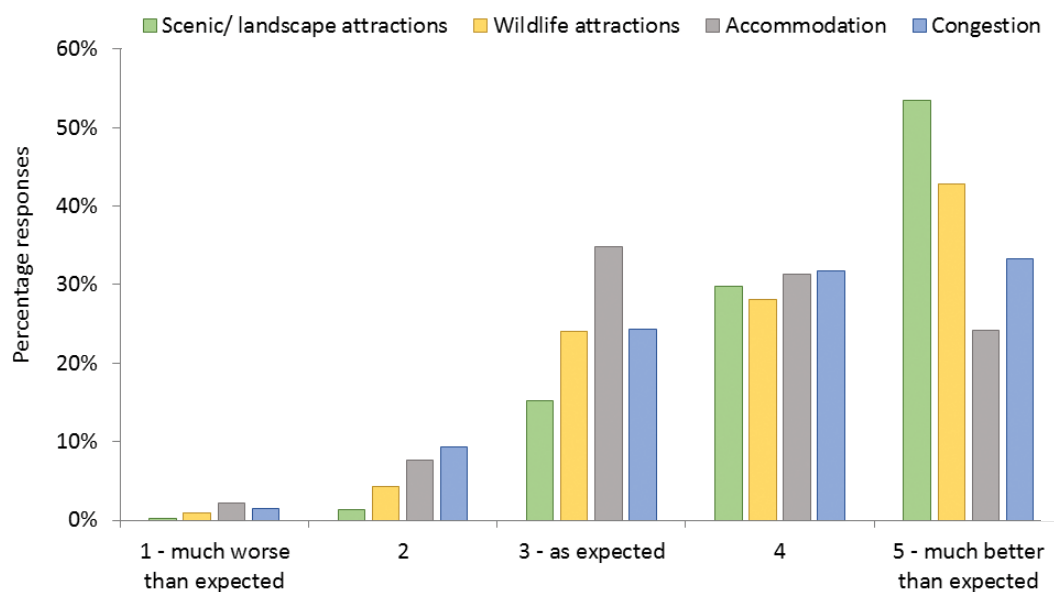
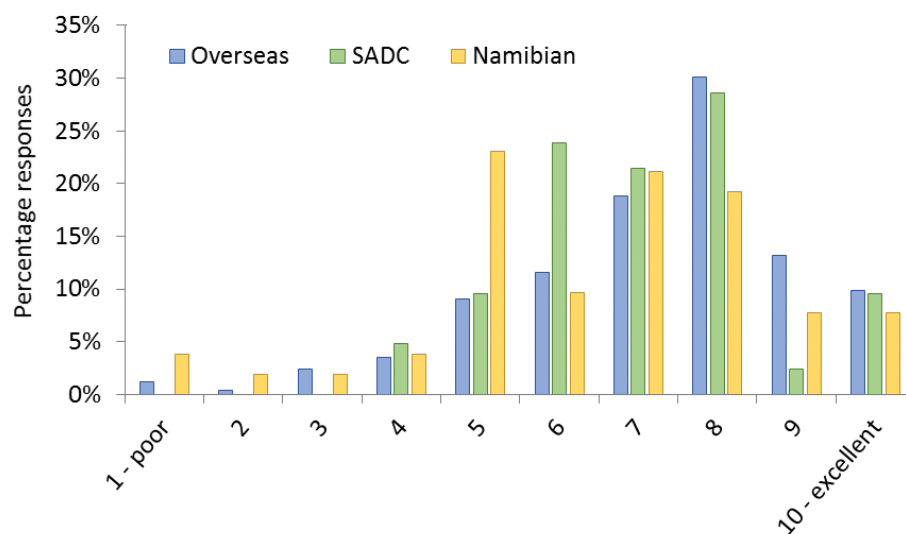


Figure 5.6 Percentage responses relating to respondents rating of accommodation and facilities in Namibia's national parks in terms of value for money where 1 = poor, really not worth the money spent and 10 = excellent, well worth the money spent



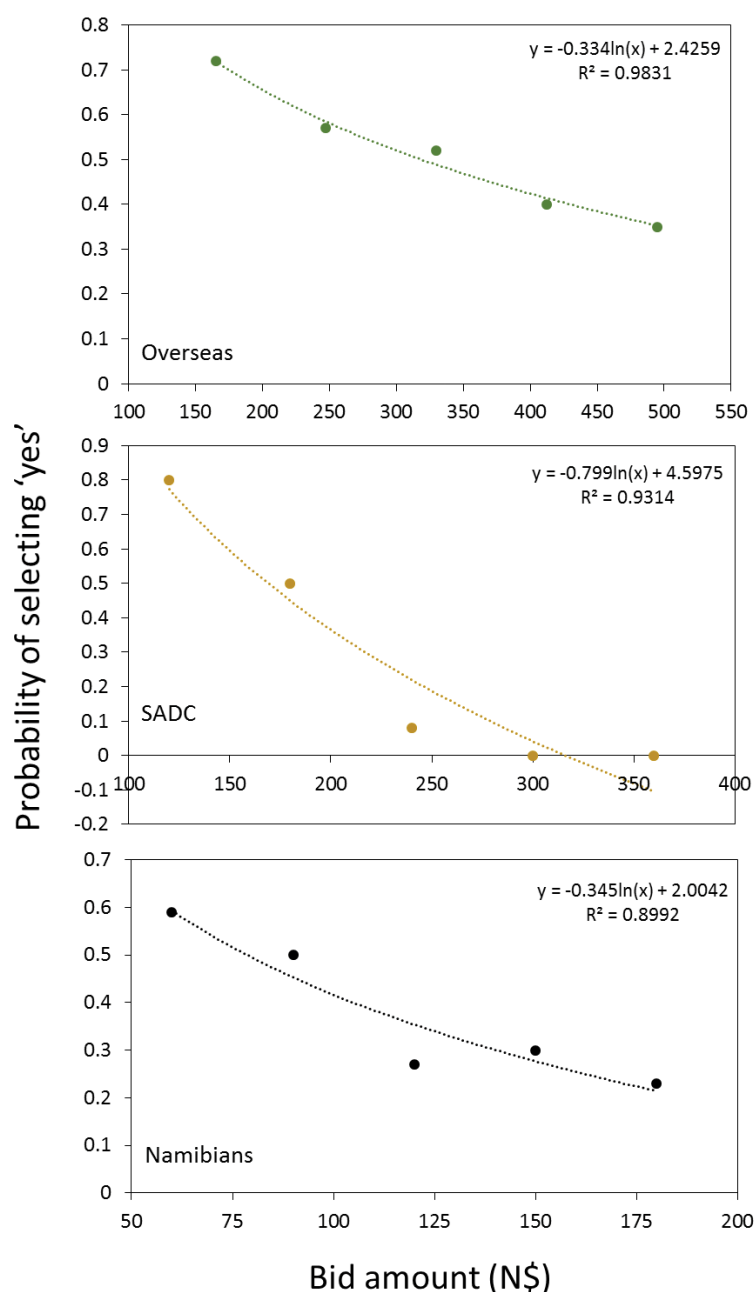
5.3.4 Estimated willingness to pay for Namibia's national parks

The contingent valuation questions were used to estimate how much the respondents were willing to pay as a daily entrance fee for flagship and secondary parks. The analysis was conducted separately for each visitor group (overseas, SADC and Namibian residents) and flagship and secondary parks. In the case of secondary parks, the more complex modelling approach was conducted for the overseas visitor data only as there were too few responses from the SADC and Namibian visitors to conduct the same analysis.

Flagship parks

The WTP probability distribution plotted from the survey data for flagship parks depicts how the likelihood of paying the proposed bid amount decreases as bid amounts increase (Figure 5.7). The probability of selecting yes for the different bid amounts varied across the three visitor groups, however, the three curves are not comparable as each visitor group was provided with different bid amounts based off current park entrance fees for the three groups. The fit of all three models were strong with an R^2 of 0.98 for the overseas visitors, 0.93 for SADC visitors and 0.89 for Namibian visitors (Figure 5.7). A total of 72% of the overseas visitors selected 'yes' for the lowest bid amount of N\$165 (~twice as much

Figure 5.7 WTP probability distribution for flagship parks plotted from survey data for overseas visitors (n = 537), SADC visitors (n = 43) and Namibian visitors (n = 71)



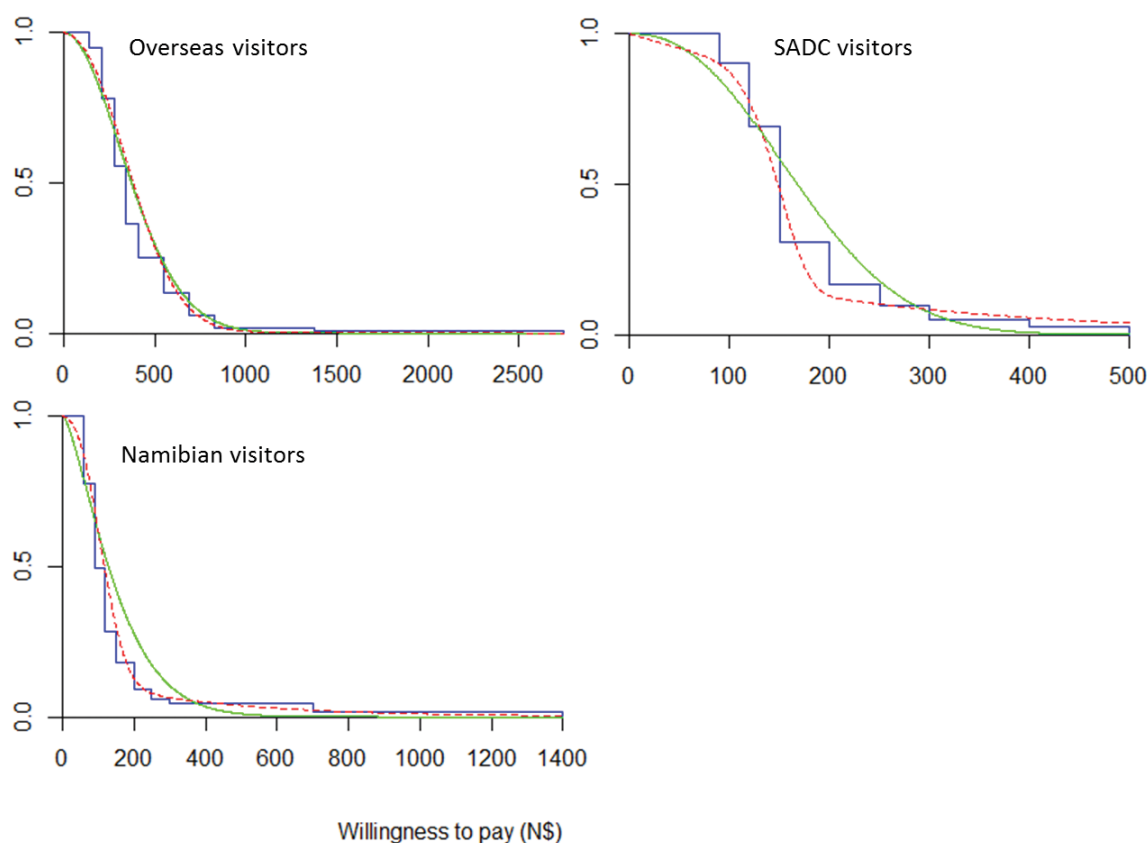
as current fees) and 35% selected 'yes' for the highest bid amount of N\$495 (~six times more than the current fee). None of the SADC visitors presented with the two highest bid amounts of N\$300 and N\$360 selected 'yes' and only 8% of SADC visitors selected 'yes' for the bid amount of N\$240 (~four times the current fee, Figure 5.7). However, 80% of SADC visitors presented with a bid amount of N\$120 selected 'yes' (three times the current fee).

A smaller proportion (59%) of Namibian respondents selected 'yes' for the lowest bid amount (N\$60, double the current fee) compared to the other visitor groups. A total of 23% of respondents selected 'yes' for the highest bid amount (N\$180, six times the current fee). This is lower than the SADC group of visitors where 50% selected 'yes' for the N\$180 bid amount which is three times the current SADC rate (Figure 5.7).

Overall 51% responded positively to the proposed bids, i.e. they selected that they would not change their trip and would be happy to pay the increased fee. Of the 49% that responded negatively, 71% of them selected that they would spend less time in the flagship parks, and on average would reduce the number of days spent in flagship parks by three days if prices increased by the proposed bid amount. A total of 17% of the negative responses said that they would spend no time in flagship parks and 12% said that they would not have come to Namibia at all. When asked where they would have gone instead the majority of respondents (34%) selected Botswana, 24% selected South Africa, 11% selected Zimbabwe, 5% selected Zambia and the remainder (19%) selected countries outside of southern Africa. However, of the 12% of respondents that said they would have chosen to not come to Namibia had the fees been higher, 87% of them had been provided with a bid amount of N\$240 or more.

Willingness to pay was elicited using a payment card approach. The empirical, Weibull and mixed Weibull survival functions are shown in Figure 5.8. The empirical survival function is based on the right-end values of the self-selected intervals of the payment card values presented to respondents. The Weibull and mixed Weibull functions are parametric model estimations and are shown with the empirical function for comparison. Results from all three models are presented below but the parametric Weibull model is considered the best model as it is more efficient and is known to give less variable estimates with smaller absolute bias (Zhao 2008).

Figure 5.8 The empirical (blue), estimated Weibull (green) and mixed Weibull/exponential (red) survival functions for the three visitor groups using the payment card data



The WTP results from the nonparametric and parametric models followed expectations (Table 5.5). The estimated mean WTP for park entrance fees for overseas visitors ranged from N\$332 to N\$344 for the parametric estimates and N\$399 for the nonparametric estimate (Table 5.5). For SADC visitors the mean WTP ranged from N\$153 to N\$174 and for Namibian residents from N\$117 to N\$151. These results align with the current fees charged in neighbouring countries, such as in Botswana, South Africa and Zimbabwe (see section 3).

Table 5.5 Estimated mean willingness to pay for overseas, SADC and Namibian visitors based on the parametric Weibull model, parametric mixed Weibull/exponential model and nonparametric model. *The parametric Weibull model is considered to be the best model

Visitor group	Mean WTP (N\$ pppd)		
	Parametric Weibull estimate*	Parametric mixed Weibull/exponential estimate	Nonparametric estimate of empirical survival function
Overseas visitors (n=533)	343.85	331.57	398.72
SADC visitors (n=42)	153.06	152.89	173.5
Namibian visitors (n=67)	116.93	120.61	151.34

The results of the overseas visitor GLM logit model for flagship parks were highly significant (Likelihood ratio test=88.51 on 4 df, $p < 0.0001$, Table 5.6). The results followed expectations in that the coefficient of the bid variable was negative, indicating that as the bid amount increased the probability of a respondent selecting 'yes' declined (as shown in Figure 5.7). The number of days spent in flagship parks, gender and average daily budget were significant in the model. The coefficient of the number of days in flagship parks was negative indicating that as the number of days spent in flagship parks increases the probability of selecting yes decreases, i.e. those visitors that are spending more time in parks are more likely to say no to the increasing bids. Male respondents were more likely to select yes than female respondents, i.e. males had a higher willingness to pay than females. As expected, the probability of selecting yes increased as the average daily budget of respondents increased.

Table 5.6 Results of the logit model of single-bounded dichotomous WTP choice dataset for overseas visitors to flagship parks

Overseas visitor model	Coefficient	Std. Error	z-value	P	
Intercept	9.439	1.454	6.494	8.37E-11	***
Days in flagship parks	-0.139	0.037	-3.791	1.50E-04	***
Gender (Male)	0.402	0.190	2.119	0.034	*
Avg. daily budget	3.34E-05	1.99E-05	1.678	0.093	.
Log(bid)	-1.553	0.248	-6.271	3.58E-10	***

The results of the Namibian visitor willingness to pay GLM logit model for flagship parks were also significant, but only just (Likelihood ratio test=9.604 on 2 df, $p < 0.01$, Table 5.7). The results followed expectations in that the coefficient of the bid variable was negative, indicating that as the bid amount increased the probability of a respondent selecting 'yes' declined. While the number of days spent in flagship parks was not significant, it did improve the overall model fit (comparing AIC and BIC values). All other variables were not significant and did not contribute to the overall model fit and were therefore excluded.

Table 5.7. Results of the logit model of single-bounded dichotomous WTP choice dataset for Namibian visitors to flagship parks

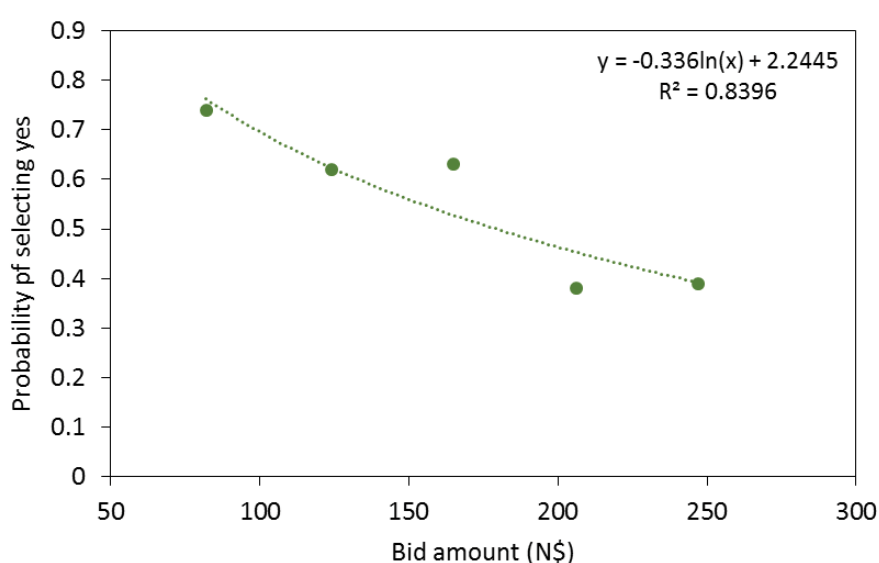
Namibian visitor model	Coefficient	Std. Error	z-value	P	
Intercept	8.956	3.412	2.625	0.009	**
Days in flagship parks	0.185	0.196	0.942	0.346	
Log(bid)	-2.083	0.749	-2.783	0.005	**

The results of the SADC visitor willingness to pay GLM logit model were not significant due to the low number of observations (n=43).

Secondary parks

As with flagship parks, the WTP probability distribution plotted from the overseas visitor survey data for secondary parks depicts how the likelihood of paying the proposed bid amount decreases as bid amounts increase (Figure 5.9). Within the survey sample, too few SADC and Namibian respondents had visited secondary parks and therefore were not included in the model analysis. The fit of the model for overseas visitors was strong with an R² of 0.84 (Figure 5.9). A total of 74% of the overseas visitors selected 'yes' for the lowest bid amount of N\$82 (~twice as much as current fees) and 39% selected 'yes' for the highest bid amount of N\$247 (~six times more than the current fee).

Figure 5.9 WTP probability distribution for secondary parks plotted from survey data for overseas visitors (n = 149)



A total of 53% of overseas visitors responded positively to the proposed bids, i.e. they selected that they would not change their trip and would be happy to pay the increased fee for secondary parks. Of the 47% that responded negatively, 30% of them selected that they would spend less time in the secondary parks, and on average would reduce the number of days spent in these parks by two days if prices increased by the proposed bid amount. The remainder (70%) who responded negatively to the fee increases selected that they would not spend any time in secondary parks if the fee was increased to the proposed bid amount. This was opposite to what was found for flagship parks in that the majority of those that responded negatively selected that they would still visit flagship parks but would reduce the number of days.

The average willingness to pay for each visitor group was estimated using straight-forward methods in excel. From our surveys we found that the average amount overseas respondents were willing to pay per day for entrance into Namibia's secondary parks was N\$147 (Table 5.9). This is almost four times the current fee of N\$40 that is being charged. SADC visitors were willing to pay N\$77 which is more than double the current fee of N\$30 and Namibians were willing to pay N\$35 which is three times the current fee of N\$10 for residents. However the sample size for SADC and Namibian visitors to these parks was limited.

Table 5.8 Average estimated WTP for secondary parks for overseas, SADC and Namibian visitors

Visitor group	n	Mean WTP (N\$ pppd)	S.D (N\$ pppd)
Overseas visitors	148	147.17	27.47 - 549.45
SADC visitors	16	77.39	30.00 - 150.00
Namibian visitors	13	34.61	10.00 - 150.00

The results of the overseas visitor GLM logit model for secondary parks were significant (Likelihood ratio test=14.059 on 2 df, $p < 0.001$, Table 5.9). The results followed expectations in that the coefficient of the bid variable was negative, indicating that as the bid amount increased the probability of a respondent selecting 'yes' declined (as shown in Figure 5.9). The number of days spent in secondary parks was the only variable found to be significant in the model. The coefficient of the number of days in secondary parks was negative indicating that as the number of days spent in secondary parks increases the probability of selecting yes decreases, i.e. those visitors that are spending more time in parks are more likely to say no to the increasing bids.

Figure 5.10 The demand curve and revenue maximising curve for overseas visitors, SADC visitors and Namibian visitors for Namibia's flagship parks. Note that the top two graphs are in US\$ whereas the rest are in N\$

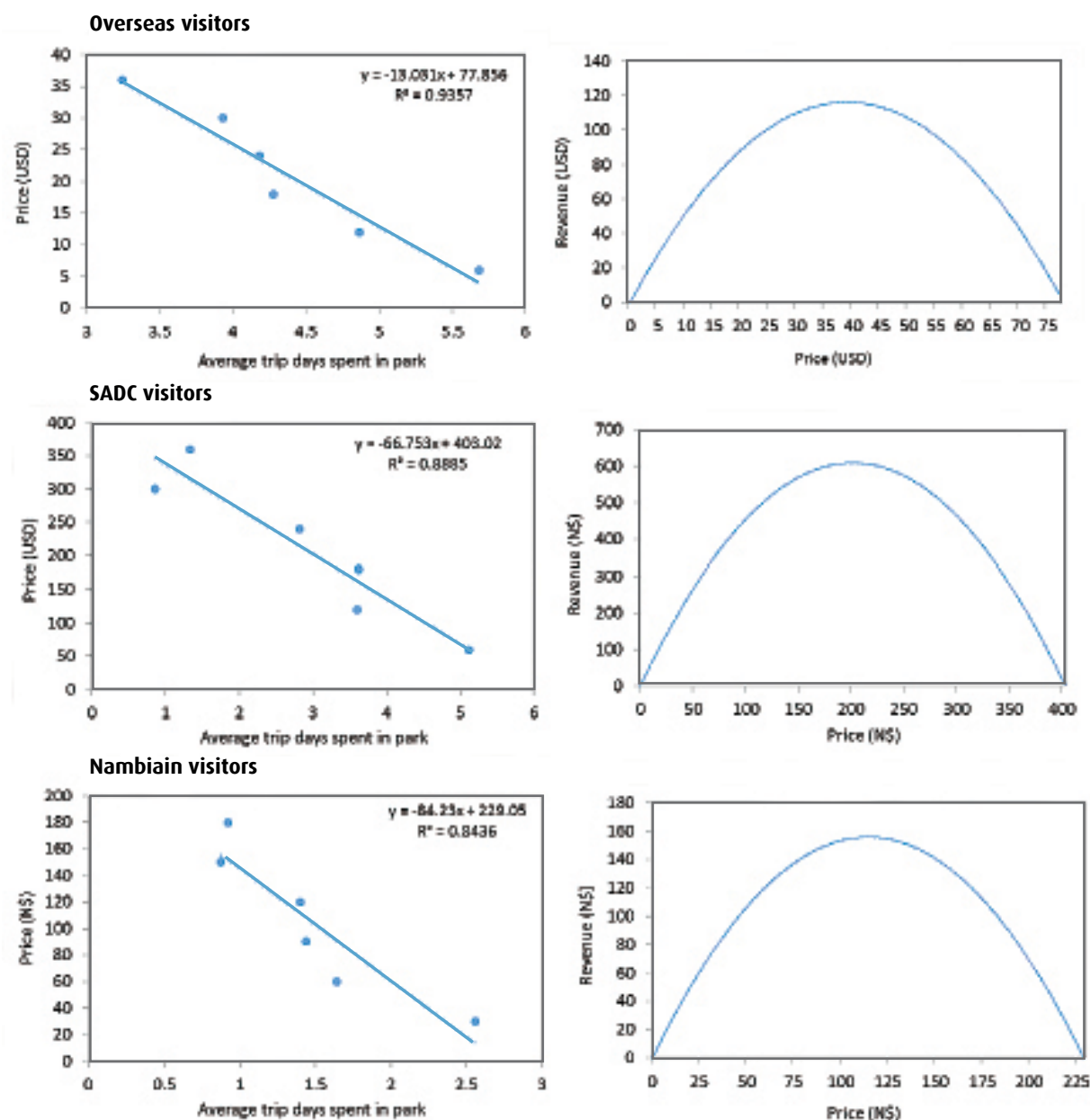


Table 5.9 Results of the logit model of single-bounded dichotomous WTP choice dataset for overseas visitors to secondary parks

Overseas visitor model	Coefficient	Std. Error	z-value	P	
Intercept	8.113	2.292	3.540	0.0004	***
Days in secondary parks	-0.139	0.083	-1.683	0.0922	.
Log(bid)	-1.505	0.451	-3.341	0.0008	***

5.3.5 The revenue-maximising price for Namibia's national parks

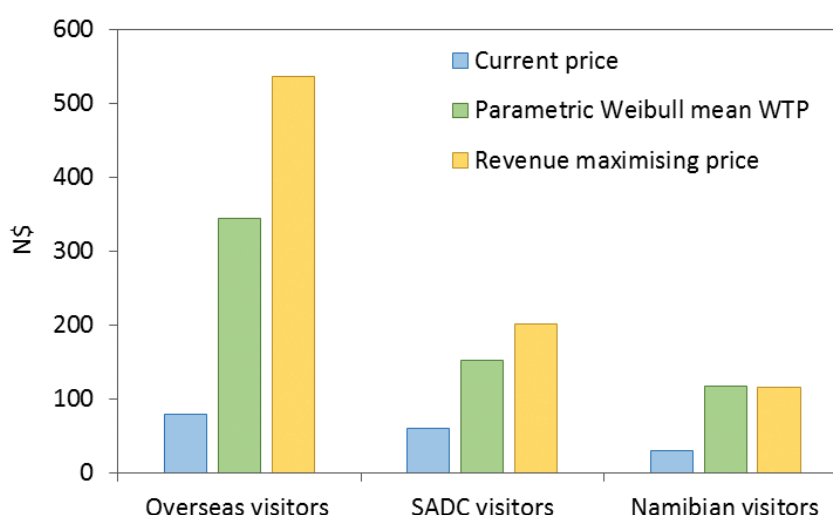
A demand curve (price versus average trip days spent visiting parks) was generated for each price change and for each visitor group for flagship parks and for overseas visitors for secondary parks (Figure 5.10). The demand curves all have a good fit and are highly significant ($p < 0.005$).

The demand curve equations were used to calculate the price at which revenues would be maximised (i.e. the point at which the slope of the revenue maximising curve is equal to zero, Figure 5.10). For overseas and regional visitors, the revenue-maximising price was higher than the mean WTP, whereas for Namibians it was similar to mean WTP. In all cases, the revenue maximising price is very much higher than the current price (Table 5.10, Figure 5.11). For overseas visitors, the revenue maximising price is equivalent to about US\$39, compared to US\$6 at present.

Table 5.10 The calculated optimal revenue maximising price (N\$) for each visitor group compared to the current prices and the mean parametric Weibull WTP estimates for Namibia's flagship parks. The prices have been rounded to the nearest Namibian dollar

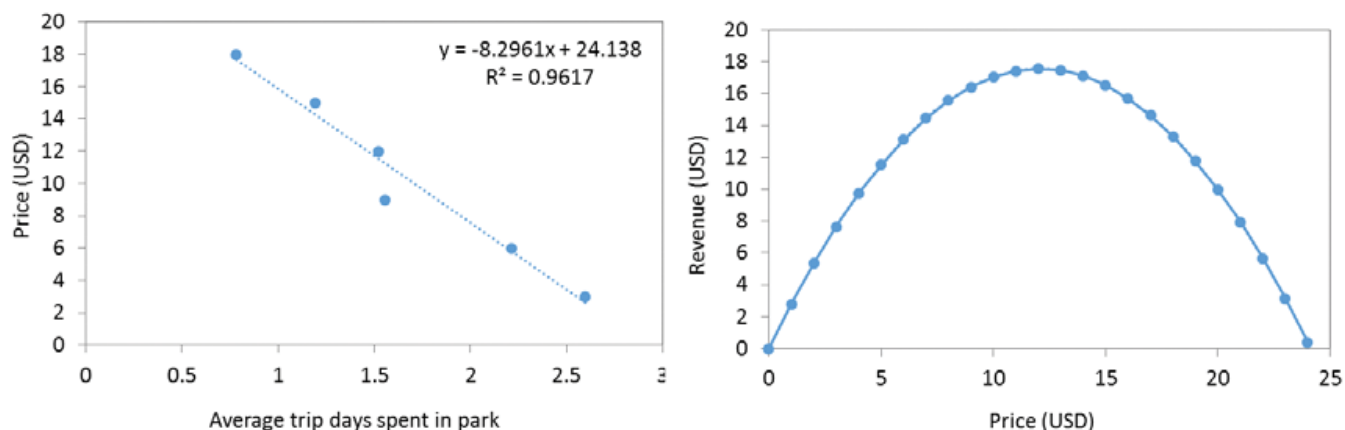
Visitor group	Current price (N\$ pppd)	Parametric Weibull mean (N\$ pppd)	Revenue maximising WTP estimate price (N\$ pppd)
Overseas visitors (n=533)	80.00	344.00	536.00
SADC visitors (n=42)	60.00	153.00	202.00
Namibian visitors (n=67)	30.00	117.00	115.00

Figure 5.11 A comparison between current park prices, estimated mean WTP and revenue maximising prices for overseas, SADC and Namibian visitors



The optimal price was also calculated for overseas visitors to secondary parks (Figure 5.12). From the demand curve it was found that the revenue maximising price is N\$165 (US\$12), which is four times the current entrance fee for secondary parks but only slightly more than the estimated mean WTP of N\$147 (see Table 5.8).

Figure 5.12 The demand curve and revenue maximising curve for overseas visitors for Namibia's secondary parks



The WTP probability curves and demand curves for the three visitor groups show that the overseas visitors have a much more inelastic demand compared to regional and local visitors. The steep demand curve shows that for the overseas visitors, a change in price causes a much smaller percentage change in demand, suggesting that they would be less likely to seek alternatives when compared to the SADC and Namibian visitors who have a more elastic demand. This is also evident in the range shown between the current prices, the estimated mean WTP and the optimal revenue maximising price, which is significantly steeper for the overseas visitors compared to the SADC and Namibian visitors (Figure 5.11). For Namibians, the revenue maximising price is similar to the estimated mean WTP (Figure 5.11).

5.3.6 Willingness to pay for conservation outside parks

The final question of the questionnaire asked visitors if they would support the proposal to charge all visitors to Namibia a once-off conservation fee on arrival in the country or the parks, respectively. It was explained that that this revenue would go towards an NGO-managed fund for financing conservation in the whole of Namibia. Totals of 76% of overseas and 71% of SADC respondents were in favour of this. Those visitors that said "no" felt that the conservation fee should be included in the park entrance fee or that a voluntary donation would be more appropriate. A number of visitors also had concerns that the fee would be misused if collected on arrival at the border or at the airport, and many said that the involvement of a trustworthy NGO was an important factor. Visitors who said that they would support the implementation of a once-off conservation fee were then asked to indicate the highest amount that they would be willing to pay from a list of ten amounts ranging from US\$1-50 (overseas visitors) and N\$5-200 (SADC visitors). Amongst those who said that they would support the implementation of a once-off conservation fee, the average willingness to pay was N\$190 (US\$15) for overseas visitors and N\$66 (US\$5) for SADC visitors. If this was reduced to a nominal US\$10 and US\$2.50, it would raise at least US\$5 million per year for conservation.

6

Conclusions and recommendations



6 conclusions and recommendations

Namibia needs to review and update its park fees and address other institutional issues influencing the efficiency of park revenue systems. Most of these issues were identified by Turpie et al. (2010a, b) and presented in an action plan for financing protected areas. Many of the actions and recommendations relating to park revenue systems were reiterated by Aribeb et al. (2016). The key recommendations are discussed below and are based on the findings from the review and the national park tourist surveys that were conducted to determine willingness to pay for entrance into Namibia's national parks as well as optimal revenue maximising prices for Namibia's flagship and secondary parks.

6.1 Change pricing structure and increase prices

It is clear that the current pricing structures for protected areas in Namibia are inadequate and that there are significant opportunities for increasing current tariffs. The results from the national park tourist survey indicate that visitors are willing to pay substantially more than the current fees charged and that the revenue maximising price is even higher than the mean WTP. Opportunity therefore exists to increase park fees in Namibia to levels that are more comparable with neighbouring parks in Botswana, South Africa, Zimbabwe and Zambia.

Entrance fees into Namibia's national parks have remained unchanged since 2005 and are the lowest in the region. By charging low entrance fees the Directorate of Wildlife and National Parks has potentially foregone substantial revenue over the last decade that is crucial for conservation, particularly in the face of decreasing environmental budgets and other important challenges such as poaching. Changes are needed in order to improve the financial self-sufficiency of Namibia's parks and to address the many other issues facing protected areas.

The results of this study indicate that the revenue maximising price for overseas visitors for both flagship and secondary parks is significantly higher than current fees, and that the pricing structure currently used in Namibia is therefore highly inefficient. The majority of overseas and SADC visitors indicated that cost was not a factor and that park fees did not play a role in their decision to visit Namibia. Namibians, on the other hand, were sensitive to costs, but more to do with accommodation and travel than entrance fees. This suggests that fee increases should be heavier for international than for national visitors.

The pricing structure of parks relates to the level of fees charged at the different parks as well as the level of fees charged to the different visitor groups (overseas, SADC and Namibian). A multi-tiered pricing strategy is likely to yield higher revenues as it aims to target visitor groups with a lower elasticity of demand (i.e. increases in park fees have a small effect on the level of visitation) and target the most popular parks which have unique features where price increases are also unlikely to impact on visitation rates. The most popular parks are Etosha and Namib-Naukluft National Park, both of which received more than double the number of visitors than the next most popular park (see section 5.3.3). These parks are truly representative of Namibia with unique features that attract tourists throughout the year. These two parks should be considered Namibia's flagship parks. It is therefore recommended that Namibia defines

three sectors of parks rather than two, in order to maximise revenues (Table 6.1). This would mean separating the flagship parks from the “primary” parks.

Table 6.1 The multi-tiered pricing strategy recommended for Namibia’s national parks

Tier	National Parks
Sector 1 – Flagship Parks	Etosha and Namib-Naukluft
Sector 2	Ai-Ais, Waterberg Plateau, Skeleton Coast, Cape Cross Seal Reserve
Sector 3	All other parks, reserves and heritage sites

While the results indicate high willingness to pay and even higher revenue maximising prices, it is important to note that there could be some degree of yeah-saying bias in the responses, and that fee increases should be applied incrementally as a precaution. It is possible that tourists may find alternatives in response to increasing prices. For example, increasing fees would increase the competition from private game reserves within Namibia and from other parks in the region.

The fees recommended here (Table 6.2) are therefore slightly lower than the estimated revenue-maximising prices estimated here. The recommended fee for overseas tourists to flagship parks (Sector 1) is five times the current fee of N\$80, but well aligned with other parks in the region, such as Kruger and Kgalagadi in South Africa which charge R328 per day for all international visitors. The fees for primary parks (Sector 2) and secondary parks (Sector 3) are four times higher for overseas visitors. The recommended increases are less severe for SADC and local visitors (Table 6.2), ranging from double to triple the current prices.

Table 6.2 Current daily entrance fees for domestic, regional and international tourists into Namibian parks (N\$, MET)

Sector	Conservation Fee (N\$ pppd)		
	Overseas visitors	SADC visitors	Namibian residents
Sector 1 Parks (Flagship Parks)	(80) 400	(60) 180	(30) 90
Sector 2 Parks	(80) 320	(60) 120	(30) 60
Sector 3 Parks	(40) 160	(30) 60	(10) 30

Given that willingness to pay was related to trip length, a discount could be considered for those spending longer in the parks.

6.2 Improve management of visitor facilities

The quality of services and facilities provided within Namibia’s National Parks also needs to match the higher prices. Tourists are concerned with the general maintenance and upkeep of accommodation facilities in the parks. This needs to be addressed as a matter of urgency. The overall experience in parks (with regards to services, facilities, roads and litter) have an influence on visitor satisfaction and on whether or not visitors decide to return to Namibia.

6.3 Improve revenue collection and management

The current payment system is out of date, inefficient and exposed to numerous security risks (Aribeb et al. 2016). There tends to be weak capacity of staff in revenue management which results in delays and mismanagement of funds. The absence of computerised systems at the parks limits the reliability of data collection. In 2014 the MET introduced a pilot computerised recording system in Etosha national park which has been reported to be working well and has improved efficiency. These systems need to be in place at all of the national parks collecting entrance fees. For this to be effective staff need to be equipped with the necessary skills to manage new systems. A centralised online booking and payment system for use by multiple agencies should also be developed for the park system as a whole..

In addition to the collection of park fees, there is a need to create a secure financial system that is designed to receive, hold and manage funding leveraged from various funding sources and ring-fenced for protected area financing. These revenues include entrance fees, tourism and hunting concession fees, and voluntary contributions from tourists. These funds need to be retained entirely by the managing authority.

6.4 Expand revenue collection to accommodation facilities

The possibility of NWR making a financial contribution towards park management was raised as early as 2010 (Aribeb et al. 2016). The reasons for this include the fact that NWR operations impact on protected area management, and that NWR shares in the responsibility of creating first class tourism services and facilities within the protected areas where they operate. However, currently MET is solely responsible for providing the services such as solid waste and sewerage management, water and electricity supply, and security within parks from which NWR clients benefit. NWR potentially generates substantial revenue given its monopoly within parks across Namibia and the ever-increasing tourist numbers to parks. As a result it has been recommended (see Aribeb et al. 2016) that MET explore the possibility of imposing a royalty on NWR which represents a percentage of their annual gross income. Aribeb et al. (2016) suggested a minimum royalty of 15% be implemented. If NWR resorts were to be sold to private operators, then the same would be applicable – all accommodation resorts operating within the parks should pay rental and royalties directly to Parks.

6.5 Change the institutional set-up

The current institutional arrangement for Namibian parks is outdated and inefficient. Park systems that are managed entirely with a government allocation that is not related to their performance tend to operate suboptimally from a financial perspective. In fact park managers under those circumstances have little incentive to please tourists, since tourism elevates management costs. There is also little incentive for the DWNP to introduce more efficient fee collection, since park budgets are not related to their revenues either at park or system level.

It is therefore recommended that DWNP be given more autonomy as a park management agency. This could be in the form of a parastatal protected area agency that has greater authority over park resources, staffing and budget. Such a move would ensure that the revenue that is generated by parks is reinvested back into their management and will incentivise the parastatal to optimise and diversify the value of the revenue stream from protected area assets. This has been successful in South Africa. Another option would be for government to sign a long-term contract agreement with an organisation such as African Parks. African Parks has proven effective in a number of countries, such as Malawi and Zambia. They are a non-government organisation that takes on the direct responsibility for the management of parks and their finances, as well as for law enforcement staff. Their model is based on sound business principles, is effective and self-sustaining.

In addition to the above, it is recommended that NWR resorts are sold to competing private operators who pay concession fees for operating within national parks. NWR have not been particularly successful at investing in or maintaining infrastructure and accommodation facilities in the parks and it is believed that a private operator would be more successful at achieving these outcomes. Visitors to the parks, in particular SADC and Namibian visitors, rated the accommodation and services provided within national parks poorly in terms of value for money, with a number of these visitors being of the opinion that accommodation outside of parks was not just more affordable but that the product on offer was superior than the options available inside parks. This creates a poor impression of the parks.



Picture: Ralf Bäcker

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