



February 2012

## BASELINE ASSESSMENT

# Vulnerability and Impact of Climate Change on Major Tourism Attractions and Activities

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REPORT



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National Department of Tourism - Tourism and Climate Change Documentation



### LIST OF ABBREVIATIONS

Abbreviation	Explanation
ADEME	French Agency for Environment and Energy Management
BBBEE	Broad-Based Black Economic Empowerment
BEEH	School of Bioresource Engineering and Environmental Hydrology
CDM	Clean Development Mechanism
CO2	Carbon Dioxide
CSAG	Climate Systems Analysis Group
DEA	Department of Environment Affairs
eCLAT	Experts on Climate Change and Tourism group
EFIEA	European Forum on Integrated Environmental Assessment
ENSO	El Niño Southern Oscillation
EMS	Environmental management system
EREC	European Renewable Energy Council
ESF	European Science Foundation
EU	European Union
FEDHASA	Federated Hospitality Association of South Africa
FTTSA	Fair Trade in Tourism South Africa
GCMs	General Circulation Models
GDP	Gross domestic product
GEF	Global Environmental Facility
GHG	Greenhouse Gas
GIZ	German Co-operation for International Services
GSTC	Global Sustainable Tourism Council
G-CRT	Golder Climate Risk Mapping Tool
HSSA	Haley Sharpe Southern Africa
HES	Hotel Energy Solutions
IPCC	Intergovernmental Panel on Climate Change
IH&RA	International Hotel and Restaurant Association
IUCN	International Union for Conservation of Nature
NATO	North Atlantic Treaty Organization
NDT	National Department of Tourism
MDTP	Maloti-Drakensberg Transfrontier Conservation and Development Project
RCM	Regional Circulation Model
RIM	Robben Island Museum
SAACI	South African Association for the Conference Industry
SANBI	South African National Biodiversity Institute
SATSA	Southern Africa Tourism Services Association
TMNP	Table Mountain National Park
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization



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Abbreviation	Explanation
VISIT	European Voluntary Initiative for Sustainability
WMO	World Meteorological Organization
WTO	World Tourism Organisation
WTTC	World Travel and Tourism Council
UNWTO	United Nations World Tourism Organisation



### 1.0 INTRODUCTION

Changes in climatic patterns are natural phenomena. However, there is increasing concern about the impact of climate change that has been brought about as a result of human activities (such as burning fossil fuels for energy, use of motor vehicles, etc.). Human-induced changes in climate have been acknowledged as a current global reality and are the subject of significant global attention. Global changes in climate have already been observed that are generally consistent with model projections, and are likely to continue to occur for many decades to come even if mitigation efforts are successful due to lags and inertia in the global biosphere response.

South Africa is a country of extraordinary natural beauty, outdoor lifestyle and activities, warm weather and diversity in terms of culture, and is known as an affordable destination. The broad range of tourism activities, including ecotourism, cultural tourism, sporting activities, historical and geological attractions and business tourism make it a premier destination for domestic and local tourists.

Current climate models predict that in the future South Africa will experience increasing temperatures, changing frequency, intensity and distribution of rainfall events, and sea level rise. Such changes will impact on key regional tourism drivers such as destination attractiveness, product content, business profitability, infrastructure planning and investment. Changes will manifest locally and will uniquely affect individual tourist destinations, communities and businesses.

The Department of Environment Affairs (DEA) and the National Department of Tourism (NDT), with support from the German Co-operation for International Services (GIZ), have identified the need to ensure the tourism industry has the capacity to build resilience against the potential impacts of climate change. The project was initiated through the realisation that a failure to respond to the threats of climate change will place an industry which currently contributes R 67 billion, or 3% of South Africa's gross domestic product (GDP) in jeopardy, and undermine industry's capacity to contribute to the economy. As such, the potential impacts of climate change on South Africa's natural attractions and tourism related infrastructure will need to be considered during the tourism industry's planning processes.

Golder Associates Africa (Pty) Ltd. (Golder), in partnership with Haley Sharpe Southern Africa (HSSA), was appointed on 20 September 2011 by the GIZ to conduct the *Baseline Assessment of the Impacts and Vulnerability of Climate Change on Major Tourism Attractions and Activities*.

#### 1.1 Project Approach

The project comprises a series of phases and tasks designed to achieve the objectives specified in the Terms of Reference. These phases and tasks are represented graphically in Figure 1.

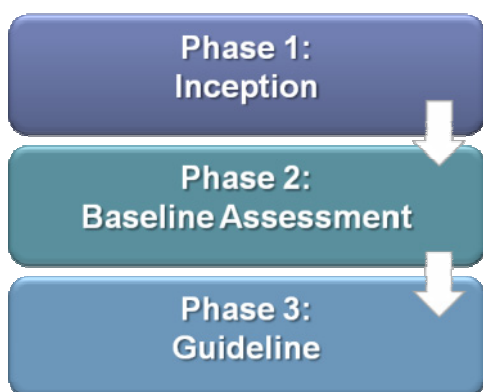


Figure 1: Overview of project phases and tasks

- **Phase 1:** Inception
- **Phase 2 (current phase):** Baseline Assessment



- Task 1: Identification and assessment of climate risk factors
- Task 2: Tourism sector vulnerability to climate change
- Task 3: Review of current response programmes and initiatives
- Task 4: Vulnerability workshop

■ **Phase 3:** Development of a guideline document

It is important to note that this project does not address the implications of climate change policies on tourism operators. Neither does it consider the global flow-on effects of climate change impacts and policies in other parts of the world and their potential effects on tourist arrivals and their destination choices. Some of these issues may be addressed in subsequent projects.

This report represents the baseline assessment phase and seeks to identify the climate risks to, and vulnerability of the tourism sector within South Africa. The report consolidates previous local and international studies regarding climate change and the tourism industry and presents new findings on the subject, specific to South African tourism attractions and activities.

This report is the product of a short-term preliminary baseline assessment. It is not an exhaustive assessment of the tourism sector's vulnerability to climate change, but represents a first step towards assisting the tourism industry to build its resilience and capacity to adapt to climate change impacts and to prepare for a carbon constrained future. The report is linked to Phase 3 of the project, the Guideline Document, which has been developed in order to assist tourism facility operators or developers to preliminarily assess their vulnerability to the physical impacts of climate change.

The report is structured as follows:

- **Section 1:** Introduction;
- **Section 2:** A discussion on climate change and tourism (literature review);
- **Section 3:** Climate change in South Africa (projections for changes in climate and how this information is derived);
- **Section 4:** Impact and vulnerability assessment (incorporating results of a vulnerability workshop);
- **Section 5:** Responding to climate change;
- **Section 6:** Recommendations for future studies; and
- **Section 7:** Conclusion.



## 2.0 CLIMATE CHANGE AND TOURISM

A review of international literature highlights the importance of both weather and climate to tourism, as tourists often base their travel decisions on perceived and experienced climatic conditions (see Box 1). Specific weather conditions affect tourist seasons, tourism spending, whether tourists can participate in tourist activities, their level of satisfaction and their safety. In many destinations tourism is closely linked with the natural environment. Climate affects a wide range of the environmental resources that are critical attractions for tourism, such as wildlife productivity and biodiversity, water levels and quality. Climate also has an important influence on environmental conditions that can deter tourists, including infectious disease, wildfires, insect or waterborne pests, and extreme events such as tropical cyclones (WTO and UNEP, 2008).

Climate change has the potential to exacerbate adverse weather conditions, but may also result in more favourable climates in some parts of the world.

### Box 1: Weather and Climate

Simply put, weather can be seen as what is happening in the atmosphere at any given moment in time. The climate can be considered as the “average weather” over a period of time, usually exceeding 30 years.

World Meteorological Organisation (WHO)

## 2.1 The wider effects of tourism - impacts on other sectors

It is important to note that the potential negative impacts of climate change on the tourism sector are likely to affect several other areas of the economy, including elements such as job creation and livelihoods dependent on the sector, and consequently wealth and wellbeing. Should tourism be threatened by the physical impacts of climate change, this could mean a considerable loss of employment opportunities, and wider reaching economic effects on communities supported by tourism jobs and livelihoods. Conversely, other economic sectors affected by climate change are likely to have knock-on effects on tourism, such as agriculture, transport, commerce and other factors.

It should also be noted that the negative effects of climate change on South Africa and a decline in visitors to the area will also affect the African sub-region, as visitors to neighbouring countries in particular often pass through South Africa, or visit other parts of southern Africa as an addition to their trip to South Africa.

## 2.2 Defining tourism

The United Nations World Tourism Organisation (UNWTO) is a specialised agency of the United Nations and the leading international organisation in the field of tourism defines tourism as “a collection of activities, services and industries which deliver a travel experience comprising transportation, accommodation, eating and drinking establishments, retail shops, entertainment businesses and other hospitality services provided for individuals or groups travelling away from home”

*“The sum of the phenomena and relationships arising from the interaction of tourists, business suppliers, host governments and host communities in the process of attracting and hosting these tourists and other visitors”*

UNWTO defines tourists as “people travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes”.

Tourism is an inter-related system of supply and demand factors and a broad range of societal/environmental influences. These concepts are further discussed in the sections that follow.

### 2.2.1 Supply

The supply-side of tourism focuses on the most basic resources that attract tourists to a region and what the tourism industry has on offer by way of attractions, experiences and facilities. This includes the suppliers of the goods and services that enable the delivery of products to consumers (tourists and/or visitors) from their home to, and including all aspects of, the destination.

The tourism supply chain involves many components, such as accommodation, transport and excursions, bars and restaurants, handicrafts and other retail shopping and food production, as well as the infrastructure





that supports tourism to, from, and at destinations (including water supply, access routes, waste management, energy provision, etc.).

Tourism agencies and operators have a significant influence on the supply chain and, as such, have the opportunity to promote enhanced sustainability performance as a critical factor of business management and continuity through business-to-business relationships.

### 2.2.2 Demand

The demand side of tourism comprises those needs and motivations that drive individuals to become tourists. Factors influencing the demand side include availability of disposable income, the motivation and ability to travel, as well as other emerging factors, i.e. destination preferences, quality expectations and booking behaviour. These factors are constantly evolving as personal choice, new destinations and new products with competitive prices compete with established tourism offerings.

#### *Demand related to environmental performance*

Transport by air, land and sea is considered to have a major environmental impact in the tourism industry. This environmental impact can affect demand if sought by tourists who are aware of and concerned about these issues. Ideally, plans should be put in place to promote a model change towards the use of forms of transport with lower environmental impacts. Examples include using trains instead of aeroplanes (for domestic travel) as the preferred form of transport for certain tourism products; however this is not always immediately possible due to cost and logistical implications.

## 2.3 How can climate change affect tourism?

In terms of recreational tourism, it is acknowledged that tourists base their decisions to travel on whether a destination meets their interests and purpose of travel, and to a large extent on weather conditions at the destination at the time of their visit. As such, climatic trends (as determinants of subsequent weather conditions) influence a traveller's preferred destination, the timing, duration and frequency of the visit(s). Furthermore, weather conditions will determine what sort of activities will be undertaken by the tourist, and preferred levels of personal comfort, safety and stability. The natural environment that exists within certain climatic conditions often underpins the attractiveness of a region as a destination.

Climate change may have an impact on key regional tourism drivers such as destination attractiveness, product features and presentation, operational profitability, infrastructure planning and investment. Climate change can have a number of impacts on the natural, man-made and socio-economic environments within which the tourism sector and destinations function. According to Becken *et al.* (undated), these changes mostly manifest locally, and will uniquely affect individual tourist destinations, communities and businesses. The sensitivity of tourism to those climatic changes and their direct biophysical consequences depends on a range of factors including:

- How tourists respond to certain climatic conditions;
- How important weather and weather-related natural hazards are to tourism businesses for the successful operation of specific services and activities (e.g. scenic flights, cableways, etc.); and
- How tourism support, operational infrastructure and/or the utilization of natural resources such as water are relevant to their enterprise and how their operations might be temporarily or permanently affected as a result of climatic conditions and episodic events.

There are certain aspects that influence a visitor's experience at a destination. These include:

- **Transport** – all types of transport and associated accessibility infrastructure may be affected by weather events and climatic trends, e.g. cruise ships retained in port, airports closed and flights delayed, roads closed, rail services disrupted, and bridge crossings discontinued or delayed;
- **Activities** – both commercial and leisure activities may be affected e.g. cancellation of flights and boat cruises. Extreme tidal and dam, lake or river water levels may affect aquatic sports, recreational fishing,



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events and outdoor pursuits. Some commercial activities are vulnerable to high winds (sky diving, boat trips, bungee jumps, etc.), which impact on enjoyment of experiences and on visitors' safety;

- **Extremes** in temperature (hot and cold) and episodic extreme precipitation – these may determine whether suitable conditions prevail for active and passive recreational and niche interest pastimes. In instances when the probability of activity is lessened through adverse weather conditions, the tourist may question the merits of the destination and their degree of satisfaction whilst staying there. In some instances, however (e.g. higher volumes of snow in alpine areas), such extremes can improve the consumer desire to undertake in winter sports; and
- **Changes in weather patterns** – higher prevalence of days with rain or low level cloud cover can affect the attractiveness of a destination. Fewer sunny days will affect the appeal of a coastal destination in summer, for example. More erratic rainfall patterns potentially affecting vegetation and water supply can also affect the attractiveness of an area for tourists.

### 3.0 CLIMATE CHANGE MODELLING

Modelling of climate change in South Africa is carried out by a limited number of institutions, but these are seen to be at the forefront of global research, modelling and responses, particularly in terms of adaptation. The processes used in the construction of the applied models used in this project are described in APPENDIX B, as well as the uncertainties associated with this process.

#### 3.1 Climate projections for South Africa

In order to ascertain the climate change sensitivity of the tourism sector at each destination climate models were used to determine potential shift in climatic variables into the future. The quinary catchment level climate change projections were provided the School of BEEH at the University of KwaZulu-Natal. The projections were ready to use, having been downscaled by CSAG and fed through the ACRU agrohydrological model.

Projected changes in climate parameters, including projected temperature, rainfall and flood anomalies were assessed and mapped using ESRI ArcGIS 9.3, allowing the data to be expressed spatially. Five GCMs, listed in Table 1, were used in the assessment. These models are available at three time steps, namely:

- Present/historical: 1971 – 1990
- Intermediate future: 2045 – 2065; and
- Distant future: 2081 - 2100

It must be noted that statistically downscaled climate scenarios are not available for closer periods (for example, 2020) due to naturally occurring decadal variations such as El Niño and La Niña. These anomalies skew short term trends, reducing the confidence of the projection. Over longer intervals, for example, 30 years, these anomalies are mitigated by the overall climatic trends, increasing the confidence of the projection. It is for this reason the closest available timeframe is that of the intermediate future; 2045 – 2065.

**Table 1: GCMs used for climate change projections presented in this project**

Institute	GCM
Canadian Center for Climate Modelling and Analysis (CCCma), Canada	<b>Name:</b> CGCM3.1(T47) <b>First published:</b> 2005 <b>Website:</b> <a href="http://www.cccma.bc.ec.gc.ca/models/cgcm3.shtml">http://www.cccma.bc.ec.gc.ca/models/cgcm3.shtml</a>
Meteo-France/Centre National de Recherches Meteorologiques (CNRM), France	<b>Name:</b> CNRM-CM3 <b>First published:</b> 2004 <b>Website:</b> <a href="http://www.cnrm.meteo.fr/scenario2004/indexenglish.html">http://www.cnrm.meteo.fr/scenario2004/indexenglish.html</a>
Max Planck Institute for Meteorology (MPI-	<b>Name:</b> ECHAM5/MPI-OM



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Institute	GCM
M), Germany	<b>First published:</b> 2005 <b>Website:</b> <a href="http://www.mpimet.mpg.de/en/wissenschaft/modelle.html">http://www.mpimet.mpg.de/en/wissenschaft/modelle.html</a>
NASA/Goddard Institute for Space Studies (GISS), USA	<b>Name:</b> GISS-ER <b>First published:</b> 2004 <b>Website:</b> <a href="http://www.giss.nasa.gov/tools/modelE">http://www.giss.nasa.gov/tools/modelE</a>
Institut Pierre Simon Laplace (IPSL), France	<b>Name:</b> IPSL-CM4 <b>First published:</b> 2005 <b>Website:</b> <a href="http://mc2.ipsl.jussieu.fr/simules.html">http://mc2.ipsl.jussieu.fr/simules.html</a>

The five GCMs vary in the degree to which the projected changes are likely to occur. This chapter will present the average results of the five GCMs at the intermediate future (2045 – 2065) time step, providing a more conservative projection for the South African climatic parameters.

Projections for **mean annual rainfall and temperature** are presented in the following sections. More detailed projections for the wet and dry seasons are presented in APPENDIX C, and it should be noted that these seasonal variations are extremely important for the tourism sector, as many South African tourist attractions are dependent on seasonal weather, e.g. outdoor sightseeing, flower seasons etc.

### 3.1.1 Rainfall

Rainfall is an extremely important hydrological factor in South Africa, which is generally a dry country with heavy reliance on regular rainfall for agricultural use, for the maintenance of its varied ecosystems and water supply for domestic use.

It should be noted that the distribution of rainfall across the country, both in spatial and temporal terms, is likely to change, in particular with higher rainfall projected for the winter period in the summer rainfall regions. This implies that rainfall is likely to become more erratic and less reliable when compared to current rainfall patterns. Furthermore, the rainfall is projected to fall in more frequent heavy, high energy rainfall events.

#### **Mean annual rainfall**

Mean annual precipitation for the country currently ranges from around 50 - 100 mm in the drier northeast of the country below the border with Namibia to far higher rainfall regions in eastern and northern KwaZulu-Natal and the Eastern Cape. The far west of the country is generally a winter rainfall region, with the east being a summer rainfall region. Areas such as the southern Cape experience rainfall all year round.



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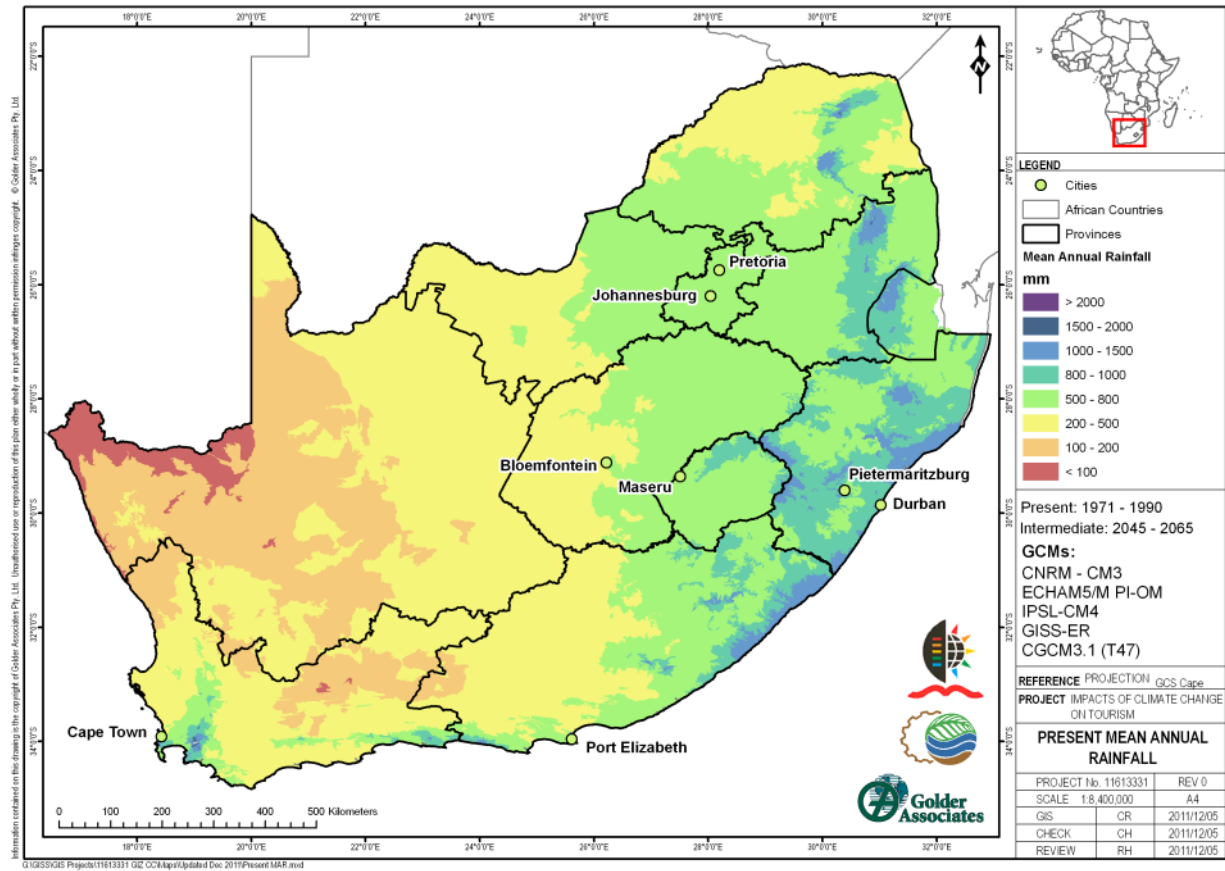


Figure 2: Modelled “present” (1970 -1990) mean annual precipitation (multiple GCMs)



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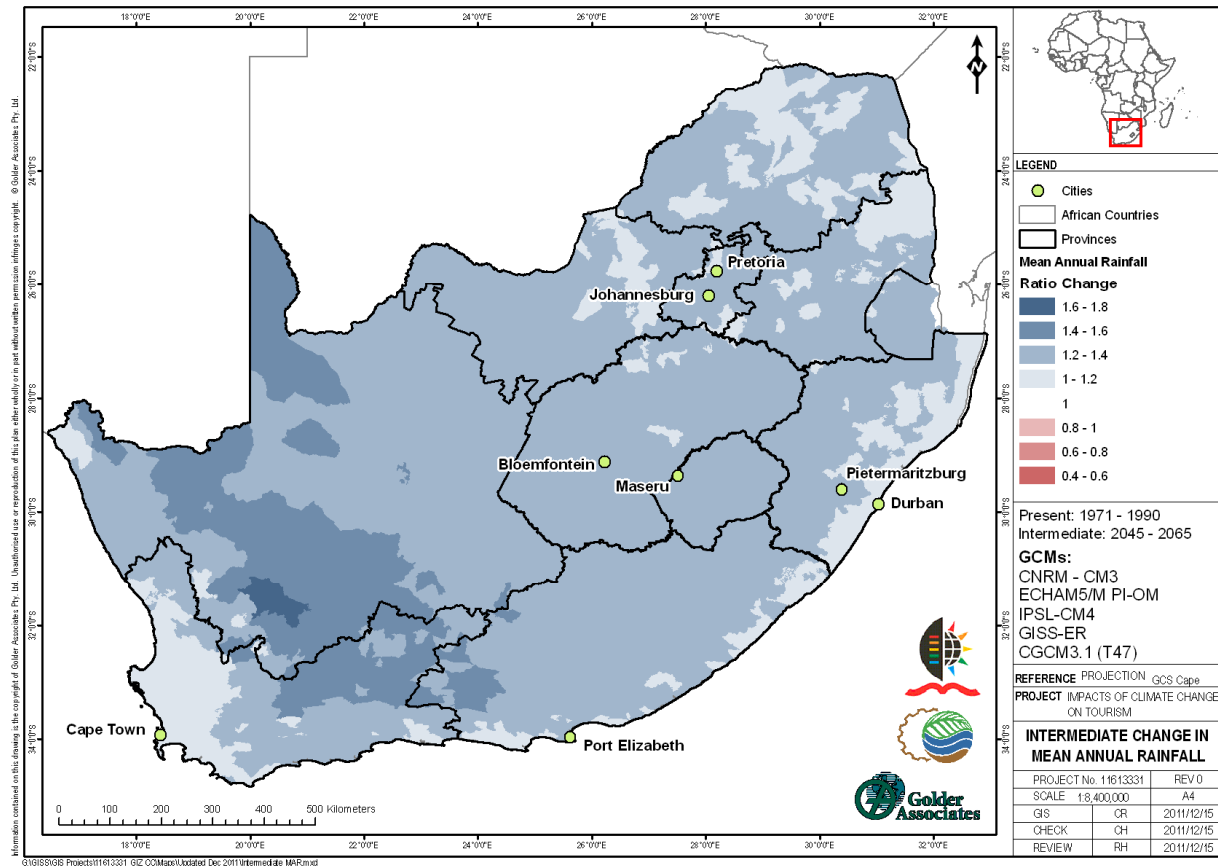


Figure 3: Projected Mean Annual Precipitation into the intermediate future (2045 – 2065, multiple GCMs)

Into the intermediate future, rainfall is projected to increase slightly across the country, particularly inland, with slightly higher increases in the western interior.

### 3.1.2 Temperature

South Africa has a mild climate, with generally warm temperatures seasons, conducive to plentiful agricultural yields, rich ecosystem diversity and pleasant weather for tourist activities.

#### Mean annual temperature

Mean annual temperature for the country currently ranges from between 5 and 10 degrees Celsius in the high alpine regions of the Drakensburg to up to 25 degrees Celsius in the northern parts of KwaZulu-Natal.



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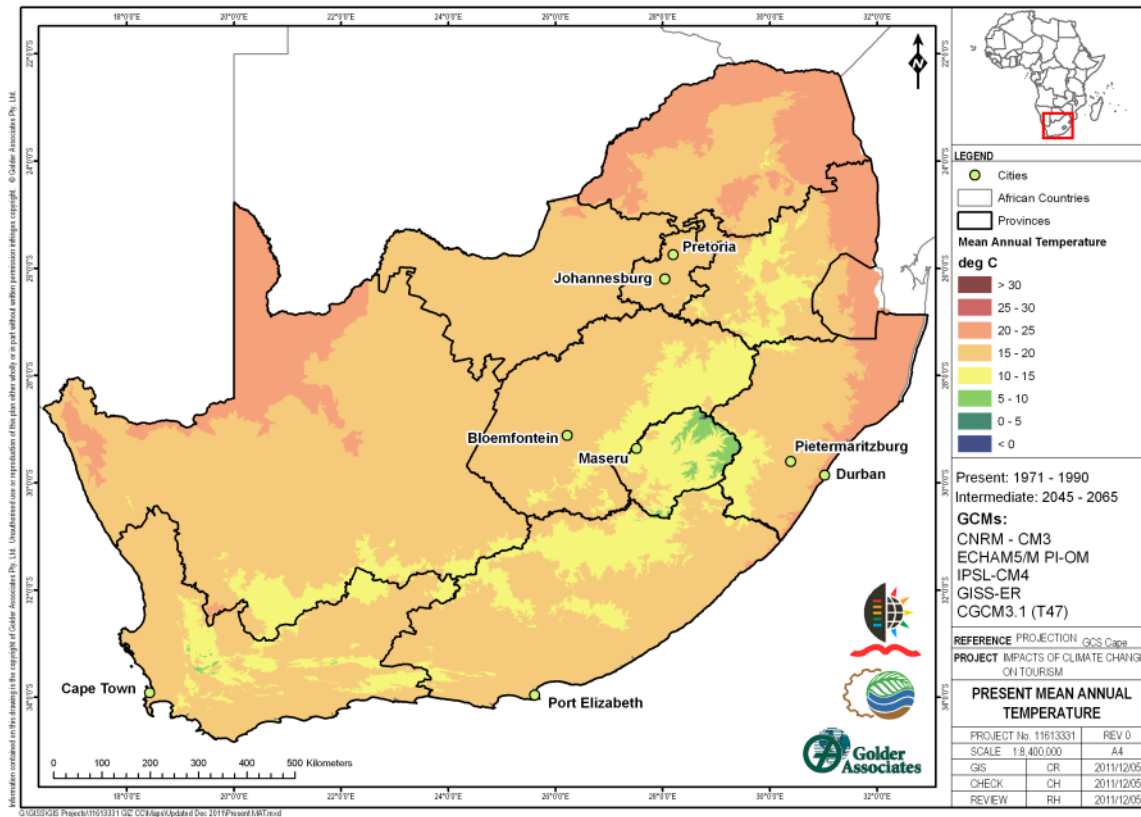


Figure 4: Modelled "present" (1970 -1990) mean annual temperature (multiple GCMs)



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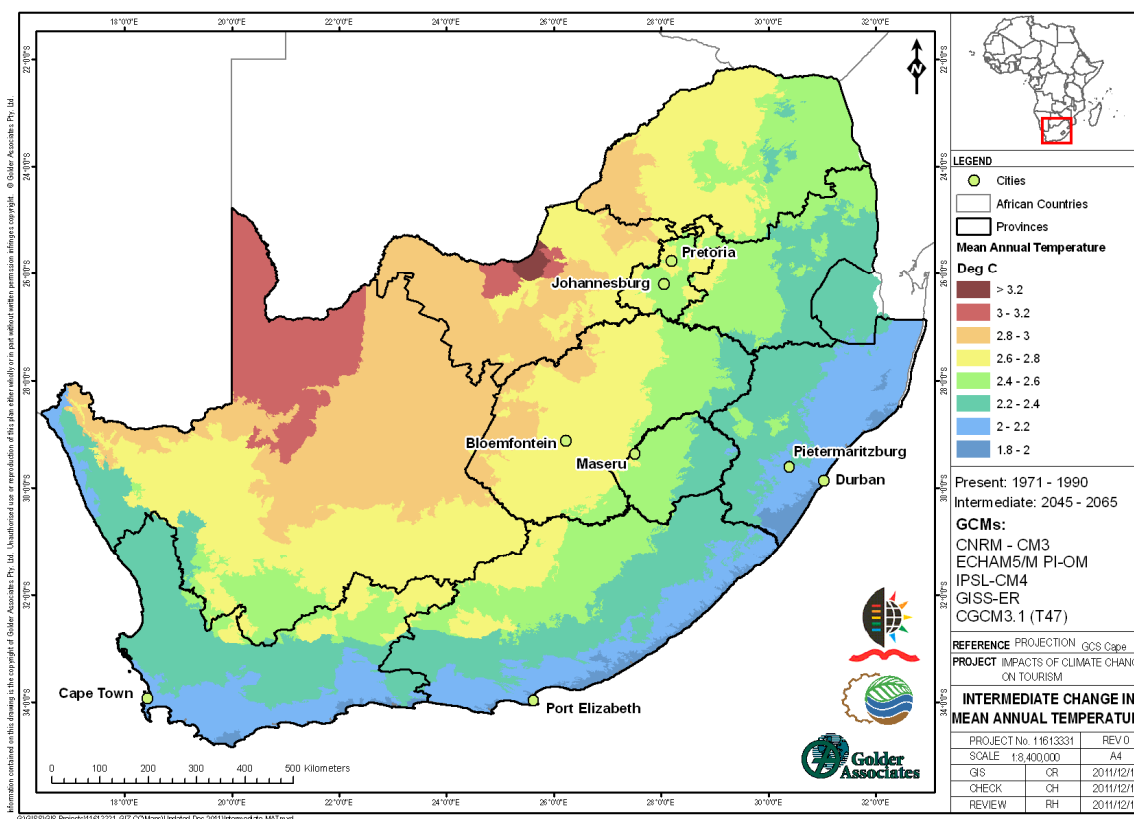


Figure 5: Projected Mean Annual Temperature into the intermediate future (2045 – 2065, multiple GCMs)

Into the intermediate future, mean annual temperatures are projected to rise by approximately 2°C at the coast and as much as 3°C in the interior towards mid-century.

## 4.0 IMPACT AND VULNERABILITY ASSESSMENT

The South African National Tourism Strategy (National Department of Tourism, 2011a) indicates that the natural environment is one of South Africa's greatest tourism resources; therefore there is a need for the tourism industry to be actively involved in conserving and protecting the natural environment. The Strategy states that visitors, both domestic and international, can be encouraged to participate in the protection and conservation of South Africa's natural environment, and to enjoy a responsible travel experience while in South Africa, that contributes to the achievement of sustainability measures (economic, environmental and social) of the various tourism businesses.

South Africa offers a number of key tourism experiences usually aligned to:

- Coastal or beach areas;
- Heritage and cultural experiences, including "township tourism";
- Scenery, nature and wildlife;
- Urban landscapes; and
- Entertainment, events and leisure, including sports events.





In relation to these elements, South Africa has a number of key tourism destinations (Figure 6), including<sup>1</sup>:

- **Cape Town and the Winelands:** Scenic beauty and nature-based tourism experiences. Cape Town, as a city that boasts accolades like “Second Best Beach City” in 2011 and “One of the World’s 5 Bluest Sky Destinations”, enjoys a moderate climate, which forms part of its appeal;
- **Garden Route:** The Garden Route stretches on the southern coast from Heidelberg to the Tsitsikamma Forest and Storms River. Adventure activities including scuba diving, abseiling, fishing, whale watching, etc. The Tsitsikamma National Park is located on the Indian Ocean shore and is considered to be one of South Africa’s most dramatic protected areas, that combines marine and land attractions. The Tsitsikamma indigenous forests are a haven for birdlife (KZN DAEA&RD and Oceanographic Research Institute (ORI), 2010, Palmer *et al.*, 2011);
- **KwaZulu-Natal (KZN) Coast:** The KZN coast stretches some 580 km in length, from the Mozambique border near Kosi Bay in the north to the Mtamvuna Estuary on the border with the Eastern Cape. The KZN coast is dominated by sandy beaches mostly located on the North Coast and rocky shores (in the South Coast). In addition to its scenic beauty and recreational opportunities, the KZN coast provides significant economic opportunities linked to the Ports of Durban and Richards Bay (UNESCO, 2007);
- **Maloti-Drakensberg Transfrontier Park:** The Drakensberg Mountains extend from just north of Hoedspruit in the Northern Province to Lesotho, with peaks that are 240 km long, creating the western border of KwaZulu-Natal. The Ukhahlamba-Drakensberg Park, a World Heritage Site, is a mountain range of spectacular natural beauty which is a major centre of endemism and has a great diversity of birdlife and plants;
- **Gauteng:** The majority of visits to Gauteng are for business purposes, family visits or shopping. The province is considered to have a wide variety of tourist attractions, ranging from urban tourism, including shopping, music, dining and sport, to cultural and natural heritage. The province boasts the Blesbokspruit RAMSAR wetland in Ekurhuleni, the Cradle of Humankind World Heritage Site in north-western Gauteng and the Cullinan diamond mine in north-eastern Gauteng; and
- **Kruger National Park, Pilanesberg and Madikwe (and other large game reserves within the Wildlife Eco-Zone):** South Africa’s game reserves provide some of the finest wildlife sanctuaries on the planet. The reserves provide Big Five sightings bird watching and feature numerous lodges and camps, ranging from comfortable to luxurious.

<sup>1</sup> A number of tourism-based websites were consulted in this section, including: <http://www.southafrica.net/sat/content/en/us/top-10-attractions>, [http://www.capetown.travel/guide/accolades\\_and\\_awards](http://www.capetown.travel/guide/accolades_and_awards) (online: accessed December 2011)





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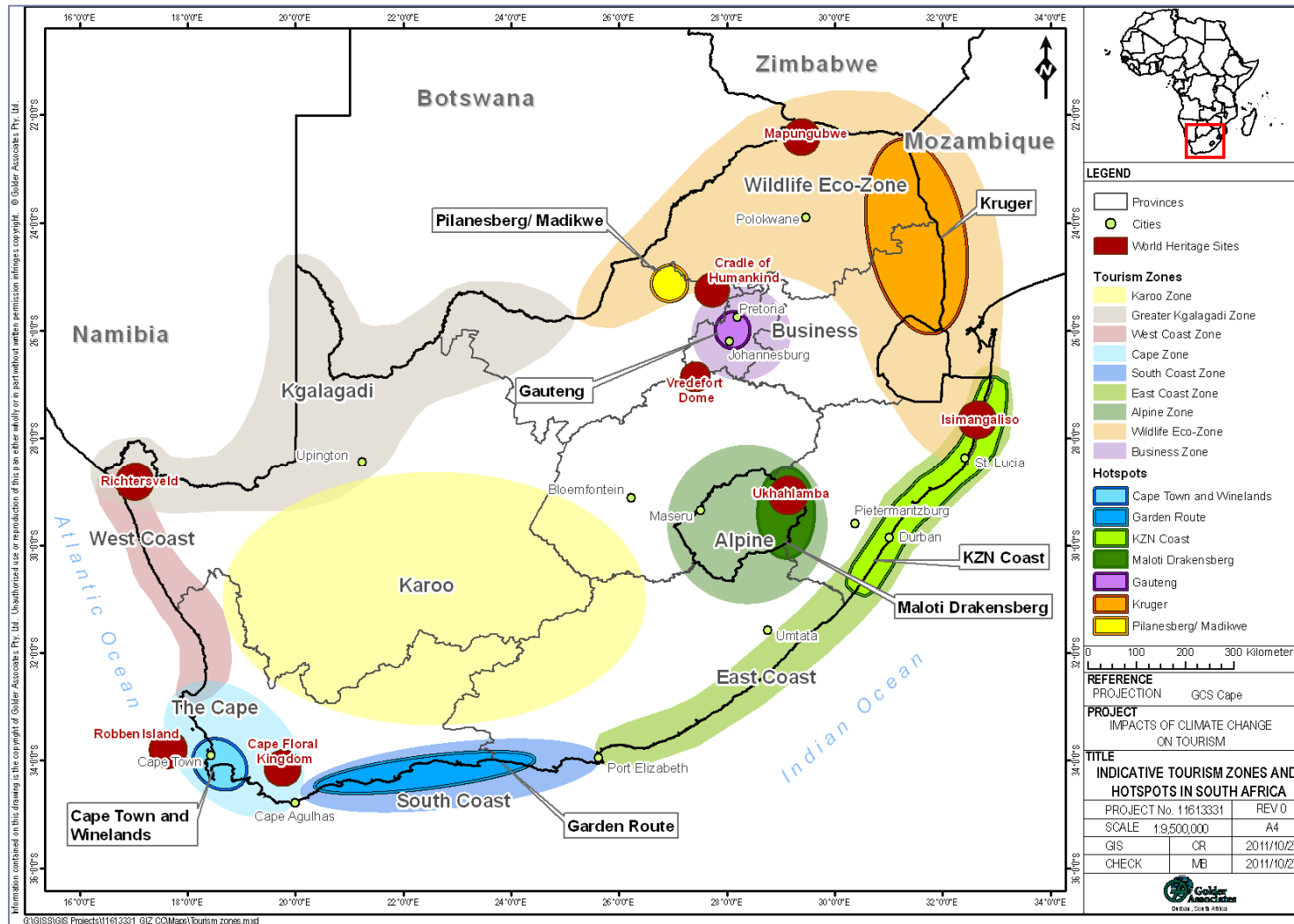


Figure 6: Map of tourism destinations in South Africa



### 4.1 Climate change and the South African tourism industry

According to the National Climate Change Response Green Paper (2010), climate change impacts in the South African tourism sector are likely to manifest through:

- The degradation of environmental resources and conditions such as wildlife, beach, heritage sites, scenic beauty and properly functioning ecosystems;
- Changes in water availability, biodiversity loss, reduced landscape aesthetic, altered agricultural production (e.g. food and wine tourism), increased natural hazards, coastal erosion and inundation, damage to infrastructure and the increasing incidence of vector-borne diseases; and
- The implementation of national and/or international climate change mitigation policies may lead to changes in tourist mobility and flows. Additional international measures, such as the EU Directive on Aviation, and efforts to promote low carbon tourism destinations may also pose a significant risk to South Africa's tourism industry.

The Climate Change Response White Paper<sup>2</sup> subsequently gazetted on 19 October 2011, did not specifically address the tourism sector. While the paper covered the impacts identified in points 1 and 2 (above) under *Chapter 5, Adaptation* and point 3 under *Chapter 6, Mitigation*, a clear link between these impacts and the tourism sector was not established.

Table 2 presents an assessment of the impacts that the projected potential climate changes could have on the country and its various resources, as well as the knock-on effects these impacts could have on the tourism industry.

A vulnerability workshop was held with stakeholders in November 2011 to further explore these vulnerabilities, and the results of this workshop are presented in the following section.

<sup>2</sup> The Climate Change Response Strategy White Paper was published in Notice 757 of Government Gazette 34695, dated 19 October 2011



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**Table 2: Climate risk factors and potential impacts (Affected areas are specified by abbreviation. These correspond to, but are not limited to, those areas shown in Figure 6)\***

Projected change	Services and energy	Affected Zone/s	Human health	Affected Zone/s	Food security, water and agriculture	Affected Zone/s	Business continuity	Affected Zone/s	Biodiversity	Affected Zone/s
<b>An increase of 0 – 1.5 °C in daily maximum temperatures for January and 0 – 1.5 °C in daily minimum temperatures for July</b>	Increase in requirements for cooling (air conditioning) in summer	ALL	Increase in heat-related vector and water-borne illnesses	ALL	Damage to crops	ALL	Larger numbers of visitors to coastal areas due to these areas having less extremes in temperatures – pressure on infrastructure and services	EC WC SC	Impacts on species/ ecosystem goods and services which affect tourist attractions	ALL
	Decrease in heating requirements in winter	ALL	Possible spread of malaria to previously unaffected areas (dependent on maintenance of spraying programmes)	WEZ EC BZ	Need for better food hygiene (refrigeration)	ALL			Increase in the number and extent of invasive species in natural areas	WC CZ SC EC AZ WEZ GK KZ
	Higher rates of refuse decay - more frequent waste collection required	ALL	Increase in requirements for cooling (air conditioning) in summer	ALL	Land use conflicts between agricultural land and conservation areas used for tourism	WC CZ SC EC AZ WEZ GK KZ			Altitudinal migration of species	WC CZ SC EC WEZ GK KZ
	Greater number of fires – service disruption and damage	ALL	Decrease in heating requirements in winter	ALL	Changes in demand, supply and quality of water	ALL			Extended range of pests and diseases	ALL
			Heat stress	ALL	Increased demand for water for irrigating green	ALL				



## BASELINE ASSESSMENT

Projected change	Services and energy	Affected Zone/s	Human health	Affected Zone/s	Food security, water and agriculture	Affected Zone/s	Business continuity	Affected Zone/s	Biodiversity	Affected Zone/s
					spaces (golf courses, parks)					
			Deteriorating air quality due to different dispersion patterns	BZ CZ EC SC	Loss of certain crops	ALL				
			Exacerbation of poverty, crime due to poorer weather conditions and reduced resources	BZ CZ EC SC						
			Greater number of fires – safety hazard	ALL						
<b>Increased frequency and intensity of short duration heavy rains</b>	Local flooding, storm water overflow and ground and surface water pollution	ALL	Basement and foundation level flooding	BZ CZ EC SC	Damage to crops and reliability of harvest for food supply	ALL	Golf courses, open space systems and other tourism infrastructure at risk of flooding	ALL	Ability of parks and green spaces to provide flood attenuation (positive)	ALL
	Stress on sewage systems and stormwater infrastructure	BZ CZ EC SC	Breeding of malaria and cholera vectors in ponding water	EC WEZ	Changes in demand, supply and quality of water	ALL	Disruption of access routes	ALL	Stress on green spaces and the critical loss of flood attenuation amongst other services	
	Increases in landslides and mudslides and associated damage to property	ALL			Affected ability of dams to store and capture water	ALL	Increased insurance claims or inability to obtain insurance	ALL		
	Increase in storms and lightning strikes affecting electricity	ALL			Erosion and sedimentation in green areas		Increase in business risk and emergency situations	ALL		



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Projected change	Services and energy	Affected Zone/s	Human health	Affected Zone/s	Food security, water and agriculture	Affected Zone/s	Business continuity	Affected Zone/s	Biodiversity	Affected Zone/s
	supply and other services									
<b>Prolonged periods with no rain (rainfall variability and less reliable rainfall patterns) and heat waves</b>	Stress on sewage systems	ALL	Increase in cooling load	ALL	Reduced food production	ALL	Fewer visitors due to higher temperatures and drought	WEZ EC GK KZ		
	Infrastructure heat stress	ALL	Increase in individual and family risk and emergency situations	ALL	Changing disease vectors and possible increase in food poisoning Increased water demand and purification requirements	ALL	Business risk to reduced water availability	ALL		
	Increased cooling energy demand	ALL	Increased load on health care facilities	ALL	Increase in water-borne diseases	ALL				
	Reduction in heating requirements	ALL								
	Increase in emergency services	ALL								
<b>Sea level rise</b>	Increased erosion, and coastal flooding of infrastructure – access routes, buildings, services	WC EC SC	Inundation of coastal resorts	WC EC SC	Salination of agricultural lands – lower productivity	WC EC SC	Impact on beaches/tourist attractions	WC EC SC	Permanent inundation of some natural ecosystems.	WC EC SC
					Disruption to estuarine functioning – change in marine	WC EC SC	Inability to obtain insurance	WC EC SC	Expected coastal erosion will increase the impacts on coastal vegetation which could potentially include	WC EC SC



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Projected change	Services and energy	Affected Zone/s	Human health	Affected Zone/s	Food security, water and agriculture	Affected Zone/s	Business continuity	Affected Zone/s	Biodiversity	Affected Zone/s
					ecosystems and attractions				destruction and displacement of sensitive dune vegetation leaving coastal infrastructure vulnerable	
					Water supply and wastewater disposal disruption	WC EC SC				
<b>Carbon pressures</b>	Pressure to reduce energy and carbon emissions (could be positive in terms of energy cost savings)	ALL	Pressure to use less energy (lower service delivery levels, air conditioning, transport, electricity supply)	ALL	Import of food constrained ("food miles")	ALL	Need for changes in transport modes (away from motor vehicles)	ALL	Atmospheric carbon affecting species distributions – woody and invasive species favoured and encroachment into grassland areas, affecting traditional tourist attractions and game viewing	WEZ EC SC AZ GK WC
	Carbon taxes could affect facility profitability	ALL					Carbon taxes could discourage people from utilising private vehicles	ALL		
	Carbon pressure on long haul flights could reduce passenger numbers coming to SA (especially from traditional markets of UK and Europe)	ALL								

\*Tourism Zone abbreviations include: ALL – entire country, WC – West Coast, CZ – Cape Zone, KZ – Karoo Zone, GK – Greater Kgalagadi, SC – South Coast, EC – East Coast, AZ – Alpine Zone, WEZ – Wildlife Eco-Zone and BZ – Business Zone



### 4.2 Vulnerability workshop

A vulnerability workshop was held at the South African National Biodiversity Institute (SANBI) Botanical Gardens in Pretoria, Gauteng on 24 November 2011 and was attended by the representatives listed in Table 3.

**Table 3: List of attendees at the Tourism and Climate Change Vulnerability Workshop**

NAME	REPRESENTING	EMAIL	TEL NO.
Mpho Moeti	Gauteng Tourism	mpho@gauteng.net	011 639 1600
Mbuyi Kona	Gauteng Tourism	mbuyiselo@gauteng.net	011 639 1600
Joseph Moloto	National Department of Tourism	jmoloto@tourism.gov.za	012 444 6428
Ndhuma Makamu	National Department of Tourism	nmakamu@tourism.gov.za	012 444 6428
Ramavhona Nkohiseni	Department of Environment Affairs	rramavhona@environment.gov.za	012 310 3177
Vincent Cupido	Northern Cape Department of Economic Development, Environment and Tourism	vincent.dtec@gmail.com	027 718 8800
Sipho Mampe	Northern Cape Department of Economic Development, Environment and Tourism	smampe@ncp.gov.za	082 414 0293/053 830 4839
Greg McManus	Heritage/FEDHASA	mac@heritagesa.co.za	082455 4161
Jennifer Seif	FTTSA	jennifer@fairtourismsa.org.za	084 581 1056
Kevin Mearns	UNISA	kevin.mearns1@gmail.com	082 337 0074
YN Ndlhovu	SABS	yvonne.ndlhovu@sabs.co.za	073 446 4397
F Mtakati	SABS	Nkule.mtakati@sabs.co.za	083 776 6300
TJ Mbekeni	SANAS	thamsanqam@sanas.co.za	082 588 5740
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Rob Hounsorne	Golder Associates	rhounsorne@golder.co.za	031 717 2790
Catherine Hughes	Golder Associates	chughes@golder.co.za	011 254 4984
Candice Russell	Golder Associates	carussell@golder.co.za	031 717 2790
Nosipho Malamlala	Haley Sharpe	nosipho@haleysharpe.co.za	031 764 0600
Mike O'Brien	Haley Sharpe	mike@haleysharpe.co.za	031 764 0600
Bhekithemba Langalibalele	National Department of Tourism		012 444 6514



The workshop was held in conjunction with a feedback session on the National Department of Tourism (NDT) Climate Action Plan, which has been released in draft, for comment (National Department of Tourism, 2011b, provided in APPENDIX D).

The workshop was attended by various industry stakeholders, role-players and decision makers. The content presented at the workshop and discussion which followed was based on HSSA's knowledge of the tourism industry within South Africa, on Golder's knowledge of climate change science and the requirements for the NDT's draft Climate Action Plan.

The workshop aimed to achieve the following objectives:

- To highlight the tourism sector's vulnerability to climate change;
- To assess the industry perspectives on the tourism sector's vulnerability to climate change;
- To expose existing initiatives in progress across South Africa; and
- To provide a platform for discussion and co-operation for the response of the tourism industry to the threats and opportunities presented by climate change.

The Golder Climate Risk Mapping Tool (G-CRT) was used to guide the stakeholder group's discussion with regard to the tourism sector's vulnerability to climate change.

G-CRT is a screening matrix which is used to evaluate an industry or sector's business functions in relation to projected climate risk at a high level. Vulnerabilities is broadly assessed according to the following criteria, which deal with a range of business functions and their continuity in the event of a potential climate-related disruption:

- Governance and legal: Negative impacts to management of facilities and organisations, legal, regulatory and management responses;
- Competition and market: Business competitiveness, organisational and product success in the marketplace;
- Finance: Costs of operations and infrastructure within the sector. Wider economic impacts are not assessed here;
- Health, safety and environment: Negative impacts on human health and safety, including occupational health, as well as impacts on the receiving environment;
- Stakeholders and labour: Level of public response to operations, and relations with the workforce; and
- Infrastructure, process and logistics: Impacts on physical infrastructure relevant to the industry and disruptions to actual processes required during operations and transport processes.

The vulnerabilities explored through the G-CRT process are described in the sections which follow. For each section, the framing questions used to guide the discussion are provided above. The responses to the questions were derived from the discussions with stakeholders, and are comprised of the opinions of those stakeholders attending the workshop.

### 4.2.1 Governance and legal

***Does the South African tourism sector have a forum at which climate change is discussed?***

***Is there an awareness programme run for the tourism industry in South Africa?***





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The tourism industry within South Africa is reportedly particularly well organised in terms of communication and the grouping of various tourism bodies within the industry. This situation has improved over the past decade. There is a feeling that the relationship between government departments and the private tourism organizations and operators is not as robust and transparent as in past years.

Climate change issues are not discussed at the various levels within the sector. The sector is reportedly currently occupied with various other important aspects of the industry, including, for example, marketing and Broad-based Black Economic Empowerment (BBBEE) initiatives. In addition, the industry is currently experiencing a downturn when compared to the three past years. The controversy regarding climate change has also led to a certain resistance to discussion and response initiatives within the sector. Climate change and sustainability initiatives are seen as something of a “nice to have,” rather than a necessity.

***Are any tourism facilities known to be reporting or addressing its carbon emissions?***

***Are any companies disclosing their data?***

Several of the larger international hotel chains and car hire companies are known to be recording and reporting on their carbon emissions according to the Global Reporting Initiative<sup>3</sup>. These initiatives are, however, new to the industry, but are becoming more common. There is a lack of awareness in terms of how to calculate carbon emissions and uncertainty as to which of the various Scopes of emissions (Scopes 1, 2 and 3<sup>4</sup>) to report. At this stage, the reporting is perceived to be largely for internal purposes, as an ethical initiative as opposed to being in response to international pressures or tourist expectations.

***Are there any initiatives to control carbon emissions in the industry at facility level?***

Initiatives to control carbon emissions are largely related to energy saving. Any initiatives are generally limited by conventional fuel and electricity within the country, although there are some examples of differential fuel use, including the mixing of standard fuel and biofuels, but this is generally on a small scale. Very few tourism facilities are separate from the national electricity grid, e.g. the Wild Coast. South Africa's neighbouring countries have reportedly had some successes in terms of the use of renewable energy sources or off-grid generators. There are some projects involving wind and solar power generation, but this is at a small scale.

***Are tourist facilities currently prepared to deal with measurement of carbon emissions management?***

***Are there any courses in place?***

There are no known initiatives within the industry in terms of climate change and carbon training. Private sector training of staff does take place, however this is largely in terms of the hospitality industry and does not deal with climate change preparedness or responsible tourism.

<sup>3</sup> The Global Reporting Initiative (GRI) is a network-based organization that produces a comprehensive sustainability reporting framework that is widely used around the world. GRI is committed to the Framework's continuous improvement and application worldwide. GRI's core goals include the mainstreaming of disclosure on environmental, social and governance performance (<http://www.globalreporting.org/AboutGRI/WhatsGRI/>)

<sup>4</sup> Scope 1 - Direct emissions from sources that are owned or controlled by the company, Scope 2 - emissions from the generation of electricity purchased by the company, Scope 3 - allows for the reporting of all other indirect emissions (<http://www.co2benchmark.com/wri-ghg-protocol-scope-definitions>).



### 4.2.2 Competition and market

***What initiatives are in place in terms of green marketing?***

***How might South Africa's reputation for high carbon emissions affect the tourism industry?***

The stakeholders reported three known systems of certification within the tourism industry in South Africa<sup>5</sup>, namely:

- Fair Trade in Tourism South Africa;
- Heritage; and
- Greenleaf.

It was the general opinion of the stakeholders at the workshop that these initiatives have low market penetration.

These initiatives are reportedly aligned with the recently released South African National Standard: Responsible Tourism (SANS 1162:2011, September 2011), and there is reportedly a strong movement towards “culturally responsible tourism.”



Fair Trade in Tourism South Africa (FTTSA) is a non-profit organisation that promotes sustainable tourism development through raising awareness, research and advocacy, capacity building, and by facilitating the world's first tourism Fair Trade certification programme.



The Heritage Environmental Management Company was established to provide operators of all types of businesses with an effective environmental management system (EMS) designed to reduce and limit the impact that their operations have on their environment



The Green Leaf Environmental Standard is an international standard that measures green accommodation, green business, green products, green conferencing and green events

In terms of South Africa's international reputation for high carbon emissions which could affect perceptions of potential visitors to the country, this issue is of concern. Visitors from western countries are becoming increasingly aware of countries' performance in terms of carbon emissions and “green” practices, and it is possible that tourists could choose not to visit South Africa for this reason. However, it is evident that numbers of visitors to South Africa are already in the process of changing from European travellers to those from more regional (neighbouring African) markets, and there are also strong indications that the emerging markets of India and China may be more important into the future.

***What is the likelihood that international visitors will choose regional destinations over South Africa (e.g. visitors from the United Kingdom choosing to visit Spain or other countries)?***

As mentioned above, numbers of tourists from neighbouring African countries and emerging markets are anticipated to increase, and traditional international visitors such as from the United Kingdom and Europe could decline, particularly with a view towards the likely increase in taxes on flights which will effect long haul destinations.

It is also important that planning for tourism takes into account the constant evolution of technology, for example the introduction of larger capacity aircraft by certain airlines into the country from eastern destinations. This indicates a continued healthy demand for tourism in the country.

<sup>5</sup> <http://www.fairtourismsa.org.za/>, <http://www.heritageesa.co.za/>, <http://www.greenleafecostandard.net/> Accessed 07/11/2011



***To what degree is the tourism sector reliant on international investment?***  
***Could climate change-related factors affect international investment in tourism?***

International investors generally operate within South Africa's borders under licence, although the tourism industry within the country is largely driven by domestic investment. Into the future however, international investment is certainly likely to be influenced by reputational issues associated with carbon management and responsible tourism.

### 4.2.3 Finance

***To what degree are tourism facilities and transport routes reliant on external financing?***  
***What is the risk to tourism as a result of refusal of insurance (particularly in terms of coastal facilities)?***

Access to insurance is particularly important to tourism activities, for example:

- Hotels located on the coast (vulnerable to damage from storm surge);
- Resorts with thatched roofs which are vulnerable to lightning strikes;
- Hunting or game farming which involves the insurance of game animals.

It is likely into the future that compulsory mitigation measures will need to be put in place in order for facilities to obtain insurance in the future.

It is further likely that premiums for travel insurance could change with climate change risk, for example hiking trips in the Drakensberg during periods with high lightning risk.

### 4.2.4 Health, safety and environment

***How could changes in weather conditions affect tourist visits to various parts of the country?***  
***This could include heat/humidity/cold/rain? Could these visits be affected by extreme events?***

Examples of areas within the country which are deemed to be vulnerable from a climate change perspective (sensitive ecosystems/flora and fauna, as well as areas highly dependent on good weather for tourism value) include (amongst others):

- **Durban, KwaZulu-Natal and Eastern Cape coastal resorts:** cooler weather and cloud affecting ambient conditions, fishing, diving and water sport conditions;
- **The Kruger National Park:** ecosystem, flora and fauna prevalence, weather conditions;
- **The Richtersveld Transfrontier Park:** sensitive ecosystems, flora and fauna;
- **Marine attractions such as whale watching, shark diving and the sardine run:** maintenance of healthy marine ecosystems and species prevalence is an important source of revenue in many parts of South Africa;
- **Cape Floral Kingdom:** highly sensitive fynbos communities and tourist attractions, conditions at wine estates and for grape growth, weather conditions for visitors;



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- **Orange River:** sufficient river flow for river rafting and other activities; and
- **Namaqualand:** flower season, highly dependent on weather conditions for economic turnover).

These changes are not all necessarily likely to be negative. There is likely however to be a tourism shift in terms of seasons and geographic location.

### ***Could there be a risk with climate change in terms of health conditions, diseases or increased pest load?***

Certain areas of the country may become more vulnerable in terms of malaria, however this is deemed unlikely as malaria is currently controlled through spraying programmes.

With higher temperatures, more frequent rain in most of the country and with this rain falling in the form of short, sharp events, there is likely to be collection of water in containers and depressions, leading to the breeding of disease vectors (such as cholera, etc.). Water-borne diseases are also likely to become more prevalent with warmer, wetter conditions more suited to their spread.

Discomfort is likely to become problematic for tourists, for example, humidity and heat can be unpleasant in Skukuza (Kruger National Park) during the month of January, and days with this type of discomfort are likely to become more prevalent.

#### **4.2.5 Infrastructure, process and logistics**

##### ***What are the main elements of the tourism supply chain?***

##### ***How could these be affected by climate changes and/or extreme events?***

Arguably, the most important element of the tourism supply chain is airline flights. Further important supply chain aspects include:

- Food;
- Infrastructure supply (building materials);
- Access provision – roads and bridges susceptible to weather damage and disruption, e.g. Van Reenen's Pass which, if closed, can disrupt the national N3 highway; and
- Water for irrigation (golf courses, green areas), domestic and wildlife consumption (as illustrated recently in the southern Cape)

In times of restricted water supply (droughts), it should be noted that large-scale establishments such as hotel chains are generally able to supplement their water supply through the import of water to the drought-stricken area. However, local communities and smaller establishments such as guesthouses are more vulnerable. It is possible that, to supplement water supply, deeper boreholes could be sunk. However it is not certain whether this practice would place major pressure on the groundwater resource, which could pose problems for sustained water supply into the future.

Access to facilities is an area of major concern, with large hotels reportedly carrying a stock of 5 - 7 days worth of food supply. Once again, smaller institutions may not have sufficient stock to maintain food supply should transport routes be disrupted due to heavy storms, for example.

Should certain climate projections become a reality, it is important to note that there could be conflict over water or food in poorer communities, which could also lead to the movement of "climate refugees". This,



despite having large-scale socio-economic consequences, could also impact on South Africa's image as a tourism destination if this leads to unrest.

### ***Could future land use conflicts affect the tourism industry?***

***The conversion of natural land currently used to draw tourists (nature reserves) for agricultural land for example, due to changes in climate affecting suitability for agriculture.***

At present, the tourism industry is known to be facing land use conflicts in the form of land claims (e.g. Dinokeng Game Reserve). There are known cases of this in Mpumalanga, KwaZulu-Natal and Limpopo. Although this issue is not currently related to climate change, it is important to note that with poorer conditions for agriculture and livelihoods, it is possible that communities will move into areas in better condition, which may include areas set aside for biodiversity conservation and tourism.

Potentially farmlands which are becoming marginal in terms of agricultural productivity may be converted to game farming, which could present increased opportunities for tourism.

An increased demand for biofuel in a carbon-constrained future could lead to the preferential use of land previously used for tourism for planting of crops for biofuel,

### ***How could extreme events such as thunderstorms, lightning or hailstorms affect business processes?***

Tourist facility accessibility and safety of access could be severely problematic into the future. Examples of facilities which may be vulnerable in this sense include key destinations such as Table Mountain, Robben Island and the Drakensberg.

The uncertainties in terms of access disruption and poorer weather conditions in coastal areas could lead to increased tourism benefits to the inland provinces of South Africa. The cruise ship industry is a fast growing sector in South Africa, and coastal conditions could affect South Africa's reputation as a destination for this type of tourism.

Although South Africa's inland provinces may benefit from poorer conditions at the coast, more frequent large inland storms (such as on the Highveld) could lead to more frequent electricity supply disruption, causing pressure on services such as wastewater treatment works and water supply pumps.

## **4.3 Summary of key vulnerabilities at the tourism hotspots**

Figure 7 indicates the key tourism hotspots within South Africa, as well as a broad generalisation of the projected climatic changes in the country. In summary, the key vulnerabilities associated with these hotspots include:

- **Cape Town and the Winelands:** Weather conditions (drier, warmer), compromised crop growth in key economic sectors such as the wine industry, effects on biodiversity such as fynbos, accessibility issues in poor weather conditions (Table Mountain, Robben Island, etc.);
- **Garden Route:** Biodiversity effects, potential poor weather effects, water supply;
- **KwaZulu-Natal Coast:** Weather conditions, storm surge, infrastructure vulnerability, poor conditions for shipping and coastal recreation;
- **Maloti-Drakensberg Transfrontier Park:** Dangerous conditions for hiking and camping, increased frequency of fires, accessibility and safety, alpine biodiversity;



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- **Gauteng:** Effects on business tourism, accessibility, continuity of electricity supply and access, potential unpleasant weather conditions; and
- **Kruger National Park, Pilanesberg and Madikwe (and other large game reserves within the Wildlife Eco-Zone):** Uncertain biodiversity effects on flora and fauna – species composition and health, uncertain ecosystem and food chain effects, discomfiture indices, access.

The West Coast, Kalahari and Karoo areas are also highly vulnerable, particularly due to the fact that these are arid areas which may be prone to lower rainfall rates under climate change. Effects on these ecosystems may have far reaching effects, and lower water supply may have implications in terms of ease and comfort of visitors.







### 4.4 Vulnerability assessment case studies

Four South African tourism hotspots were selected based on their geographic location, services offered and popularity amongst local and international tourists as case studies for a high level climate change vulnerability assessment. This has been carried out using the principles outlined in the Guideline Document prepared as Phase 3 of this project. These hotspots include:

- Robben Island;
- Table Mountain;
- The Kruger National Park; and
- The uKhahlamba Drakensberg Park.

#### 4.4.1 Robben Island

Robben Island is situated some 9 kilometres offshore of Cape Town. Historically, Robben Island functioned as a place of exile. Between the 17th and 20th centuries, the Island hosted a prison, a hospital for the treatment of those suffering from socially unacceptable illnesses and a military base. Robben Island gained international infamy during the apartheid years when anti-apartheid activists including Nelson Mandela and Robert Sobukwe were imprisoned on the island. When apartheid ended and South Africa became a democracy in 1994, the island became a symbol of the struggle for freedom and the triumph of over oppression and racism ([www.robbenisland.org.za](http://www.robbenisland.org.za), undated). According to the Robben Island Museum (RIM), Robben Island has since been declared:

- A South African National Monument (1996);
- A World Heritage Site (1999); and
- A National Heritage Site (2006).

A high level climate change vulnerability assessment for Robben Island is presented in Figure 9. As a result of the Island's somewhat 'isolated' location and reliance on the mainland for food and services, key climate change vulnerabilities were largely related to potential infrastructure damage (including the harbour and tourist attractions such as the prison and historical buildings), and extreme weather events which would prevent access to the island. Extreme weather events such as storms, high seas and strong winds are likely to inhibit the regular ferry trips which transport tourists to and from Robben Island. Furthermore, an increase in the frequency of such events may deter tourists as making the 9 km trip may be perceived to be dangerous. Robben Island is vulnerable to projected sea-level rise associated with climate change. While it is unlikely the Island may become partially inundated as a direct result of sea level rise, storm surges may cause greater damage, with increased tidal levels.



Figure 8: Robben Island ([www.robbenisland.org.za](http://www.robbenisland.org.za), undated)





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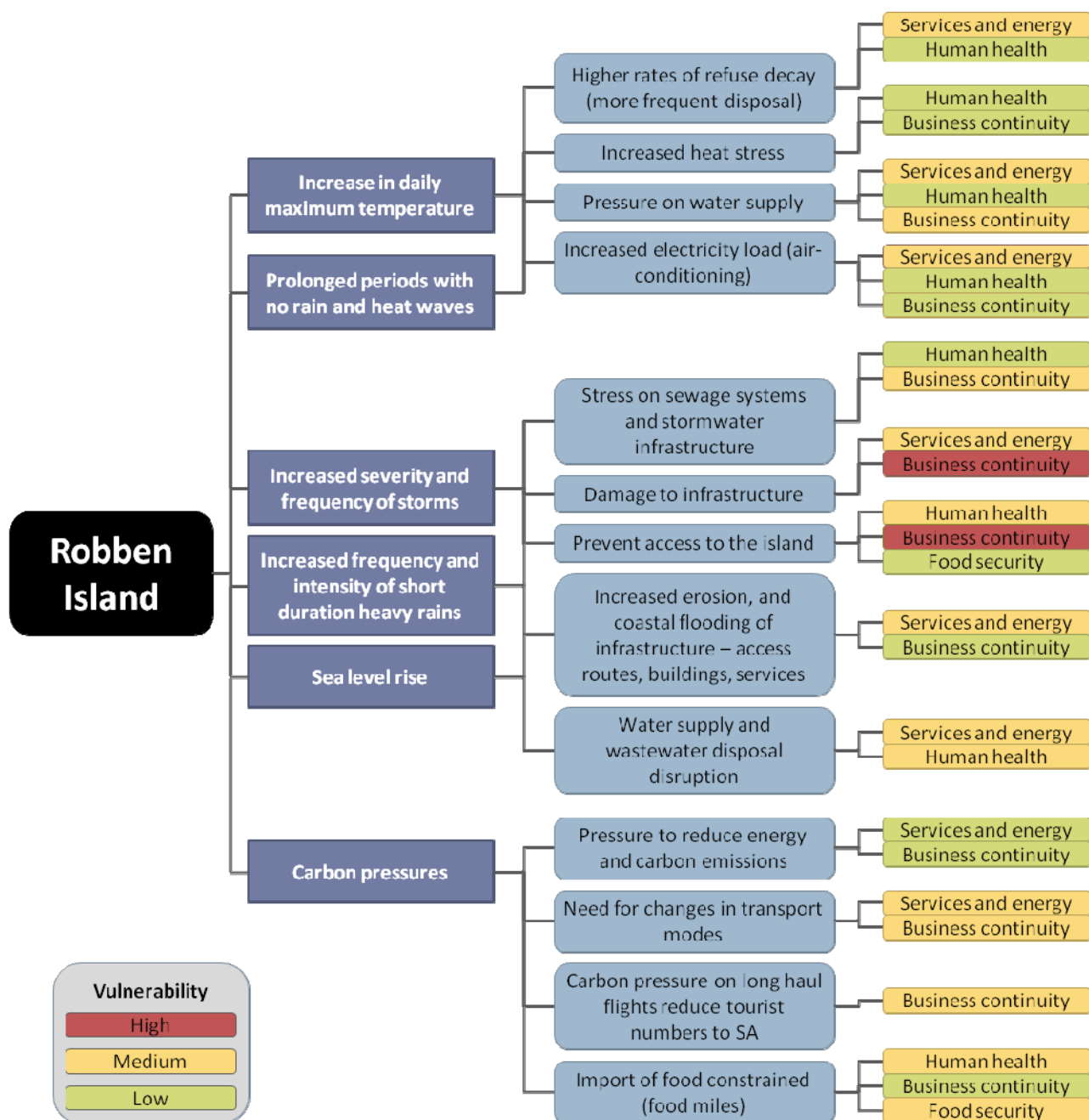


Figure 9: Broad climate change vulnerability assessment for Robben Island



### 4.4.2 Table Mountain

Table Mountain, recently declared one of the new seven Wonders of Nature ([www.votefortablemountain.com](http://www.votefortablemountain.com), undated), is a flat-topped mountain overlooking the city of Cape Town. The natural beauty, rich flora and fauna and unique vantage point make Table Mountain one of South Africa's most popular tourist attractions, with many tourists hiking or taking the cableway. Table Mountain forms part of the Table Mountain National Park (TMNP), which stretches from Signal Hill to Cape Point, and includes the seas and coastline of the Peninsula. The TMNP is recognised internationally as a biodiversity hotspot ([www.sanparks.org.za](http://www.sanparks.org.za), undated).

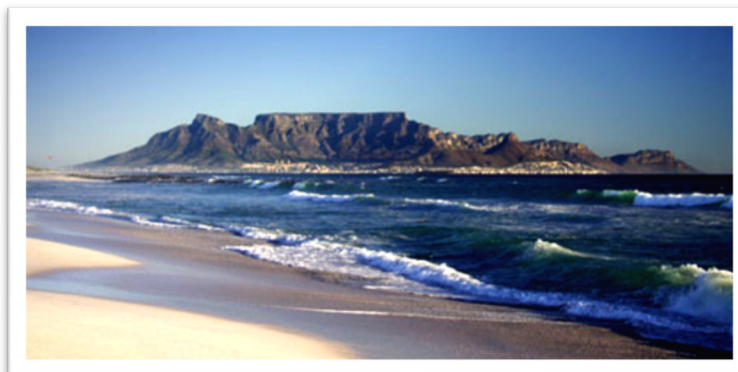


Figure 10: Table Mountain ([www.sa-venues.com](http://www.sa-venues.com), undated)

Figure 11 presents a high level climate change vulnerability assessment for Table Mountain. The key vulnerabilities identified were largely related to the reliance of the attraction on biodiversity, scenic views and the operation of the cableway. These factors are expected to be most affected by the increase in the frequency and intensity of wildfires, deterioration of air quality and reduction of biodiversity associated with prolonged dry spells. While these factors are further discussed independently in the sections that follow, they are interrelated, with wildfires affecting both biodiversity and visibility.

#### Wildfires

The Western Cape's warm, dry summers are conducive to fires, which commonly occur between November and March each year, particularly during prolonged dry spells. The fire season coincides with the festive season, which is one of the busiest times of the year in terms of tourism. According to the Cape Argus newspaper, the cableway achieved a record number of 112,000 visitors over the course of the 2011/2012 festive season (Barnes, 2012). The expected increased fire risk in the Cape Town area and surrounds under climate change are likely to affect Table Mountain through:

- Diminishing biodiversity;
- Stimulating the spread of fire-adapted alien invasive plants, which would enhance fuel loads and make wildfires more intense;
- Posing a health hazard to hikers in the area and deterring those who perceive the area to be dangerous; and
- Affecting the visibility of the mountain and from the mountain.

#### Biodiversity

According to the City of Cape Town (2006), the warmer and drier conditions projected for the region are expected to result in the contraction of the endemic fynbos biome, which is extremely rich in terms of numbers of species and is a world renowned tourist attraction.

#### Visibility

Prolonged dry periods, together with the projected increase in temperature inversions, are likely to increase the frequency of 'brown haze' days, diminishing visibility of the mountain and from the mountain.



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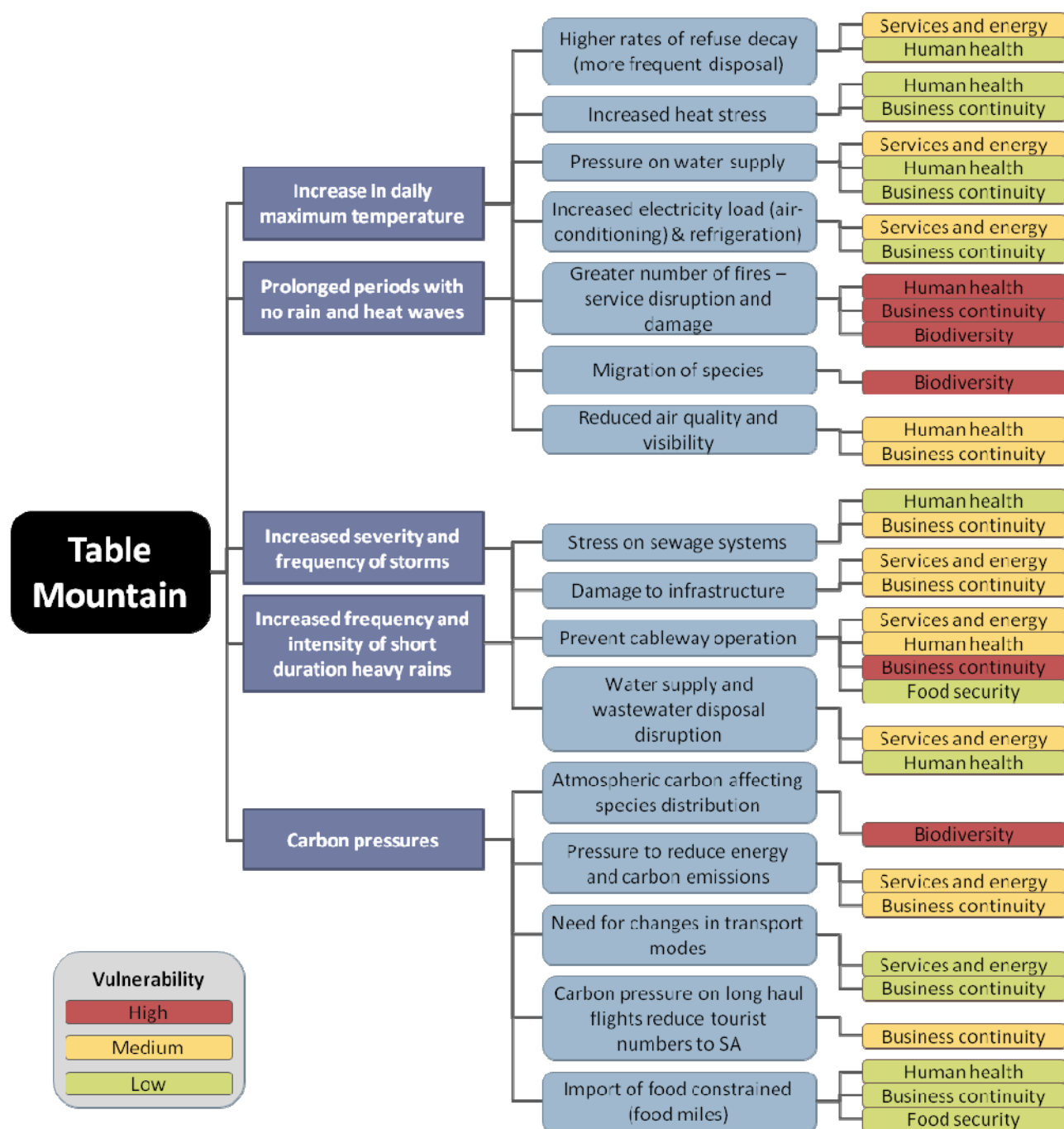


Figure 11: Broad climate change vulnerability assessment for Table Mountain



### 4.4.3 Kruger National Park

The Kruger National Park was established in 1898 to protect the wildlife of the South African Lowveld. Today, at nearly 2 million hectares, the Park is the one of the largest game reserves in Africa and a world leader in the development and implementation of advanced environmental management techniques and policies ([www.sanparks.org.za](http://www.sanparks.org.za), undated, [www.krugerpark.co.za](http://www.krugerpark.co.za), undated).

The Park is internationally renowned for its biodiversity, hosting a large number of flora and fauna species, and cultural attractions including bushman rock paintings and archaeological sites. It is for this reason the UNESCO has designated the Park: the “Kruger to Canyons International Man and Biosphere Reserve” ([www.krugerpark.co.za](http://www.krugerpark.co.za), undated).



Figure 12: Leopard in the Kruger National Park ([www.krugerpark.co.za](http://www.krugerpark.co.za), undated)

Figure 13 presents a high level climate change vulnerability assessment for the Kruger National Park. Due to the nature of the attraction and location of the park, key vulnerabilities were identified to be human health, biodiversity and, consequently, business continuity in terms of tourism.

According to the Kruger National Park Meteorological Records 1961 – 1990 (undated), average daily maximum temperatures during the summer months already reach 34 °C with humidity in the Kruger Park, often resulting in afternoon thundershowers. Under the projected climate changes, temperatures are expected to increase by between 2.5 and 3°C. Such an increase is likely to have the following implications:

- An increase in discomfort levels and heat stress in humans and animals, posing a threat to the health of tourists and employees, potentially increasing the need for air-conditioning and other cooling and decreasing game viewing opportunities;
- An increase in vector and water-borne diseases (such as malaria, bilharzia, cholera, and tick bite fever) as well as pests (such as mosquitoes, flies and ticks) affecting human and animal health;
- An increase in thunderstorm activity and the associated potential for flash flooding and veldfires which pose a threat to human health, infrastructure and biodiversity;
- Changes in distribution ranges or migration patterns of plants and animals; and
- Together with increasing atmospheric carbon levels, an increase in woody vegetation encroachment into the grassland biomes.

In addition, growing water scarcity, increasing population and degradation of ecosystems in could lead to an increase in the number of environmental refugees who flee to regions that are better resourced, leading to land use conflicts and the prioritization of human needs over biodiversity conservation.

These factors could have severe consequences for biodiversity in the Park. According to the “Siyabona Africa” Kruger Park website ([www.krugerpark.co.za](http://www.krugerpark.co.za), undated), climate change has the potential to lead to the extinction of 24% to 59% of mammals, 28% to 40% of birds, 21% to 45% of reptiles, and 13% to 70% of butterflies. Other invertebrates could experience an 18% to 80% loss.



## BASELINE ASSESSMENT

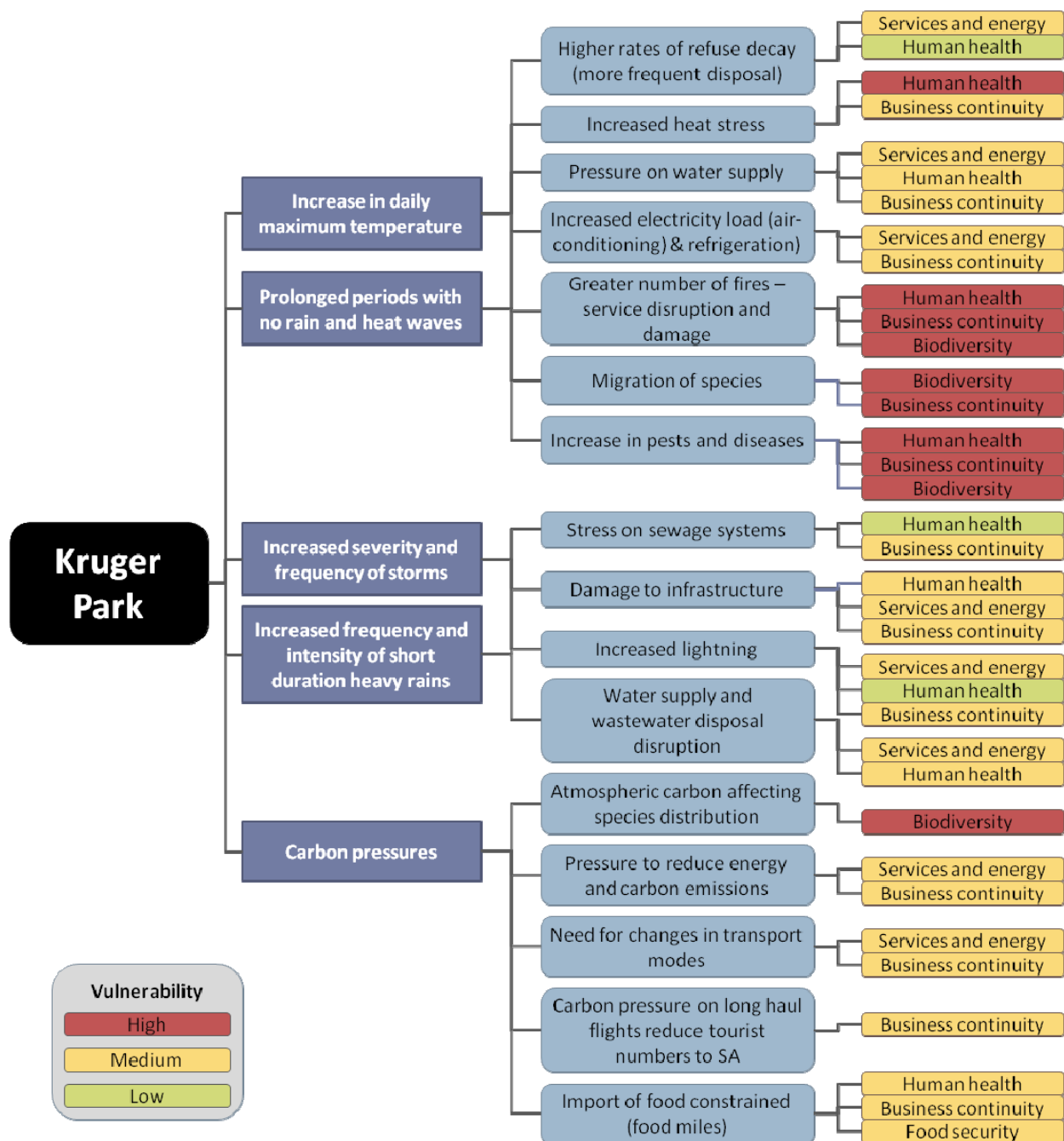


Figure 13: Broad climate change vulnerability assessment for the Kruger National Park





### 4.4.4 UKhahlamba Drakensberg Park

The uKhahlamba Drakensberg Park, declared a World Heritage Site by UNESCO in 2000, encompasses the Drakensberg mountain range and foothills. Rising to 3,482 m, the Drakensberg is the highest mountain range in Southern Africa. The Park boasts exceptional natural beauty in the form of high altitude grasslands, river valleys and rocky gorges. The Park's habitat diversity means that it is able to support and protect a variety of endemic and globally threatened species. In addition, the Park hosts the largest and most concentrated group of San rock paintings in Southern Africa, some of which dating back 4,000 years. A variety of activities are offered in the uKhahlamba Drakensberg Park, including hiking, horse trails, canopy tours, white water rafting and abseiling ([whc.unesco.org](http://whc.unesco.org), Drakensberg Tourism Association, [www.kzn.org](http://www.kzn.org), undated).



Figure 14: The Amphitheatre within the uKhahlamba Drakensberg Park ([www.sa-venues.com](http://www.sa-venues.com), undated)

A high level climate change vulnerability assessment performed on the Drakensberg is illustrated in Figure 15. Key vulnerable sectors identified in the Drakensberg assessment included biodiversity and human health, access and safety. This is as a result of the reliance of the destination on scenic beauty and biodiversity as the primary attractions. Climate change has the potential to alter this through:

- Changing temperature and rainfall patterns may alter the distribution or altitudinal ranges of certain species;
- Increased frequency and intensity of thunderstorms, potentially resulting in flash flooding and/or veldfires, posing a threat to human health, infrastructure and biodiversity;
- The rapid deterioration of cultural heritage attractions, including rock art and archaeological evidence through:
  - Mechanical weathering (wind abrasion, flooding, and increased humidity); and
  - Chemical changes in soil chemistry and organic content;
- Snow storms during the winter months may trap hikers and delay rescue attempts; and
- Increasing atmospheric carbon levels resulting in an increase in woody vegetation encroachment into the grassland biome.



## BASELINE ASSESSMENT

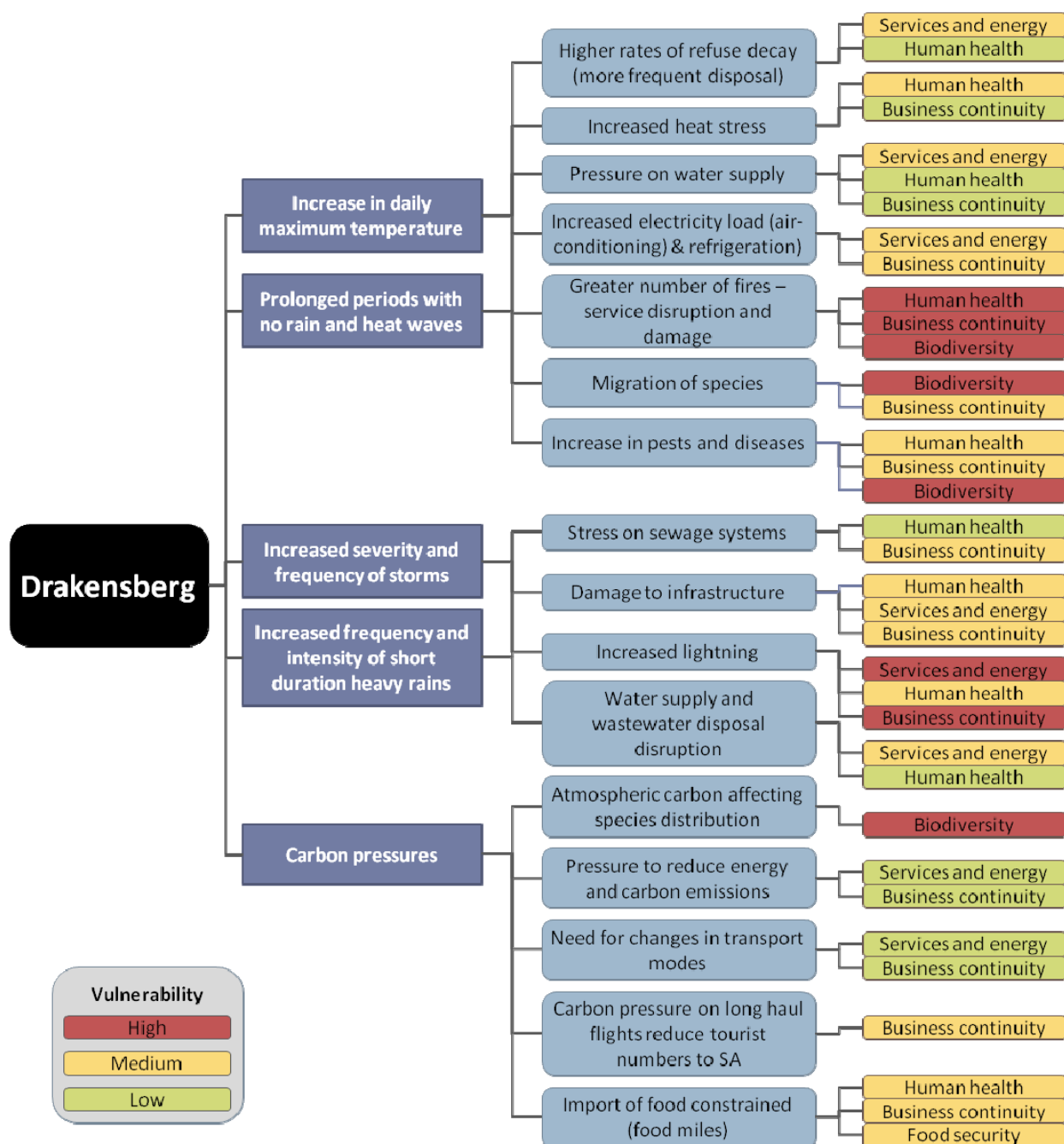


Figure 15: Broad climate change vulnerability assessment for the uKhahlamba Drakensberg Park



### 5.0 THE TOURISM INDUSTRY'S RESPONSE TO CLIMATE CHANGE

The response of the tourism community to the challenge of climate change has increased significantly in recent years. Figure 16 presents a summary of some of the key milestones which have shaped the global tourism industry's response.



Figure 16: Milestones in the development of the tourism industry's response to climate change

The Cape Town Conference on Responsible Tourism in Destinations, held in 2002, was organised by the Responsible Tourism Partnership and Western Cape Tourism authority as a side event preceding the World Summit on Sustainable Development held in Johannesburg in the same year. The conference resulted in the development of the Responsible Tourism Declaration<sup>6</sup>. The key characteristics of responsible tourism listed in the declaration include:

- Minimisation of negative economic, environmental, and social impacts;
- Generation of greater economic benefits for local people and enhances the well-being of host communities, improves working conditions and access to the industry;
- Involvement of local people in decisions that affect their lives and life chances;
- Making positive contributions to the conservation of natural and cultural heritage, to the maintenance of the world's diversity;
- Provision of more enjoyable experiences for tourists through more meaningful connections with local people, and a greater understanding of local cultural, social and environmental issues;
- Provision of access for physically challenged people; and
- Cultural sensitivity, respect between tourists and hosts, and building of local pride and confidence.

The Conference on Responsible Tourism in Destinations was followed by the First International Conference on Climate Change and Tourism in Djerba, Tunisia in 2003. The event was hosted by the World Tourism Organization (UNWTO), together with the World Meteorological Organization (WMO), the United Nations Environment Programme (UNEP), the United Nations Convention to Combat Desertification (UNCCD), the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Government of Tunisia.

The Djerba conference aimed to develop awareness among government administrations, the tourism industry and other tourism stakeholders, highlighting both current, and anticipated climate change impacts affecting tourism destinations and the need to carefully consider the consequences of climate change mitigation policies on tourism as well as the responsibility of the tourism sector to be a part of the solution by reducing its greenhouse gas emissions (Simpson *et al.*, 2008).

Subsequent workshops supported by the European Science Foundation (ESF) (Milan, 2003), the North Atlantic Treaty Organization (NATO) (Warsaw, 2003), the European Forum on Integrated Environmental

<sup>6</sup> <http://www.responsibletourismpartnership.org> Accessed 07/11/2011





Assessment (EFIEA) (Genoa, 2004), and the Experts on Climate Change and Tourism group (eCLAT) (Netherlands, 2006, Paris, 2007), as well as the Helsingborg Meeting on Sustainable Tourism (Helsingborg 2007) and the Marrakech Task Force on Sustainable Tourism Development further contributed to the development of collaborative research and practical case studies by a network of international tourism stakeholders and scientists.

In March 2007, UNWTO, UNEP and WMO commissioned a review report on tourism and climate change, including impacts and adaptation, changes in tourism demand patterns, emissions from tourism, and mitigation policies and measures. The Executive Summary of this report (UNWTO-UNEP-WMO 2008) was presented during the Second International Conference on Climate Change and Tourism, which took place in Davos, Switzerland, 1-3 October 2007.

The conference resulted in the Davos Declaration, a document asking the tourism sector to “rapidly respond to climate change, within the evolving UN framework and progressively reduce its Greenhouse Gas (GHG) emissions” (WTO and UNEP, 2008). The Davos Declaration demands the simultaneous implementation of actions to mitigate the impact of tourism on climate change, adapt to current and future climate changes, to develop new or apply existing technology to enhance energy efficiency and to secure financial resources to ensure poorer regions or countries are also able to meet the recommendations.

More generally in terms of climate change, South Africa became a signatory to the United Nations Framework Convention on Climate Change (UNFCCC) adopted by the United Nations in 1992 and which came into force in 1994. South Africa acceded to the Kyoto Protocol in 2002 and was categorized as a Non-Annex 1 (or developing) country under the terms of the Protocol. As such, South Africa does not have a commitment to reduce carbon emissions or a cap (or upper limit) on its carbon emissions, as well as participation in the Clean Development Mechanism. South Africa has also recognised the Vienna Convention for the protection of the Ozone Layer (1985) and Montreal Protocol on Substances that Deplete the Ozone Layer (1989).

## 5.1 Current programmes and initiatives

This section outlines a selection of responsible/sustainable tourism programmes and initiatives currently underway locally and internationally which have been wholly or partly developed in response to the potential threats of climate change.

### 5.1.1 Local programmes and initiatives

As mentioned above, South Africa released a Green Paper (2010) which addressed tourism as a sector vulnerable to climate change (Section 4.1). The Climate Change Response White Paper (2011) did not specifically address the tourism sector. While the paper covered the impacts identified in points 1 and 2 under *Chapter 5, Adaptation* and point 3 under *Chapter 6, Mitigation*, a clear link between these impacts and the tourism sector was not established.

The Green Paper recommended responses specific to the challenges facing the South African tourism industry. These responses included:

- Mainstreaming climate change in tourism planning, policy and development;
- Building climate resilience and adaptive capacity of tourist attractions/destinations and encourage green tourism infrastructure investment;
- Promoting domestic tourism in order to counteract a decline/shift in international travel that may follow the implementation of transport mitigation policies in other countries;
- Encouraging both domestic and international visitors to participate in the protection and conservation of South Africa’s natural environment and to enjoy a responsible travel experience;
- Promoting research, capacity building and awareness in the tourism sector;



- Supporting the establishment of energy efficiency programmes and the introduction of renewable energy into the tourism sector; and
- Establishing programmes that will allow tourists to offset the emissions generated through their travel to and in South Africa.

Further national climate change responses and strategies (including some mention of tourism) include:

- Some exploration of the effects of climate change on tourism in the country's Initial National Communication under the United Nations Framework Convention on Climate Change (Dynacon (Pty) Limited and Wiechers Environmental Consultancy cc (Eds), 2000);
- A significant section on tourism within the South Africa's Second National Communication under the United Nations Framework Convention on Climate Change (Midgley G, van Wilgen B and Mantlana B (Eds), 2010);
- A feature in the Department of Environmental Affairs and Tourism's 2004 National Climate Change Response Strategy for South Africa; and
- Brief mention of climate change in the South African National Tourism Strategy (2011a).

Specifically within the tourism industry, the National Department of Tourism, in addition to the current project, are in the process of compiling a **National Tourism and Climate Change Action Plan** (draft – 2011), which is currently undergoing stakeholder engagement and review.

Several major cities and municipalities within the country have also undertaken their own climate change vulnerability assessments and response programmes, including (amongst others):

- The City of Cape Town;
- The City of Johannesburg;
- eThekweni Municipality;
- uMhlathuze Municipality (Richards Bay and Empangeni); and
- uMgungundlovu District Municipality.

These include various sectors and municipal response, including various factors which affect tourism such as access, infrastructure and biodiversity.

Additional examples of sustainable tourism initiatives within South Africa are listed below.

- **South African Fruit and Wine Climate Change Program** - Climate change is expected to directly affect the South African fruit and wine industry (and consequently agri-tourism) by influencing pest and disease distributions, flowering and fruiting seasons, and ground water resources. Climate change will also affect the industry through the growing awareness amongst consumers and the associated demand for carbon-efficient business processes. The SA Wine and Fruit Industry, with its funding partners, have launched the "South African Fruit and Wine Climate Change Program" in order to assist SA growers and service providers in determining their carbon footprint, identify carbon hotspots, and reducing emissions<sup>7</sup>.
- **Responsible Tourism Policy and Action Plan** - In 2009, the City of Cape Town adopted the Responsible Tourism Policy and Action Plan, in an attempt to encourage positive economic, social and environmental management. A Responsible Tourism Charter was signed by the City of Cape Town and leading trade associations including: the Federated Hospitality Association of South Africa (FEDHASA),

<sup>7</sup> <http://www.climatefruitandwine.co.za/?menu=1>



the Southern Africa Tourism Services Association (SATSA), the South African Association for the Conference Industry (SAACI) and Cape Town Tourism, which commits each signatory to work actively on the priority issues for Responsible Tourism and report on their progress<sup>8</sup>.

- **Greening COP 17<sup>9</sup>** - The Greening Programme has been established with the goal of hosting a low carbon event as well as minimising the events' ecological footprint. It is a collaborative effort involving practically every role-player in the event itself and activities leading up to the event. The process is a shared one with the eThekweni Municipality taking responsibility for local greening initiatives such as event venues and the accommodation sector, as well as determining and offsetting the local carbon footprint. Examples of two projects running under the banner of "Greenin COP 17" were:
  - **Intra-City Transport**  
Intra-City Transport emissions are estimated to be contributing to 15% of the event's local carbon footprint. In order to minimise this, the transport plan for COP17/CMP7 has focused on providing sufficient public transport options for delegates travelling to and from the conference venue, and on providing non-motorised transport options close to the conference venue.
  - **COP17/CMP 7 Responsible Accommodation Campaign**  
The hosting of COP17/CMP 7 in Durban from 28 November – 9 December 2011 was expected to attract between 20,000 and 30,000 delegates and visitors, presenting major opportunities for accommodation facilities to benefit from the conference. Recognising the more 'environmentally conscious' demand of the delegates and visitors, and inevitable increased resource use, the eThekweni Municipality developed a pilot campaign encouraging Durban's hospitality sector to adopt "responsible tourism". The campaign focused on building awareness of climate change and its implications for business through the provision of practical support, knowledge, ideas and tools.

### 5.1.2 Examples of international initiatives

Some examples of international initiatives are listed below.

- **The Global Sustainable Tourism Council<sup>10</sup>** – The Global Sustainable Tourism Council (GSTC) is an international, membership-based organisation established to promote the growth, awareness and recognition of sustainable tourism practices. The GSTC achieves this by endorsing the principles of the GSTC Criteria. These Criteria represent the principles which must be met in order for travel and tourism businesses to protect the world's natural and cultural resources while supporting conservation and poverty alleviation. The GSTC Process is a three stage mechanism aimed at recognizing and rewarding genuine sustainable tourism practitioners. The stages include the GSTC-Recognized, GSTC-Approved and GSTC-Accredited programs. The GSTC Process, however, is not applicable to individual facilities/businesses such as hotels or tour operators. Rather, businesses are required to work with certification programs that are GSTC-Approved or GSTC-Accredited with a standard that has been recognized by the GSTC. FTTSA is currently the only organization in South Africa with standards recognised by the GSTC.
- **International Union for Conservation of Nature Biodiversity in Hotels<sup>11</sup>** – The International Union for Conservation of Nature (IUCN), together with Accor (a European leader and a major global group in hotels) and the International Hotel & Restaurant Association (IH&RA) have developed a guideline designed to promote the sustainable use of biological resources in the day-to-day operations of hotels through the appropriate siting, design and construction practices, improving management of energy and water consumption, and disposal of wastewater and solid wastes. The guideline entitled: "Biodiversity: My hotel in action", is aimed at all hotel managers and owners of small and large hotels anywhere in the world.

<sup>8</sup> <http://www.sustainabletourism.net>

<sup>9</sup> <http://www.cop17-cmp7durban.com/en/about-cop17-cmp7/greening-cop17-cmp7.html>

<sup>10</sup> <http://new.gstcouncil.org/>

<sup>11</sup> Biodiversity: My hotel in action available at: [http://cmsdata.iucn.org/downloads/iucn\\_hotel\\_guide\\_final.pdf](http://cmsdata.iucn.org/downloads/iucn_hotel_guide_final.pdf)



- **Integrating Tourism into Adaptation to Climate Change in the Maldives** – The project, still presently underway, was established in 2005 by the UNWTO, United Nations Development Programme (UNDP), Global Environmental Facility (GEF), and Maldives Government in response to the significant threats posed by climate change. These threats include: shoreline and beach erosion, reduced water availability, interrupted supply chain and coral bleaching, among others. The aim of this project is to further develop and demonstrate adaptation initiatives that will reduce the vulnerability of the tourism sector, and its natural and human resource base, to the impacts of climate variability and change. It will further seek to enhance the sustainability of the natural resource base and the capacity of operators and tourism dependent communities to respond to these challenges<sup>12</sup>.

Other studies include, for example:

- Jackson I (2002) Workshop report and plan of action. Adaptation to Climate Change in the Caribbean Tourism Sector Workshop Grenada. Prepared for the Organization of American States (OAS);
  - Scott, D (2003) Climate Change and Tourism in the Mountain Regions of North America. 1st International Conference on Climate Change and Tourism, 9-11 April 2003, Tunisia;
  - Sookram S (2004) The Impact of Climate Change on the tourism sector in selected Caribbean Countries. ECLAC – Project Documents collection. Caribbean Development Report, Volume 2;
  - Payet, A (2007). A Final Report Submitted to Assessments of Impacts and Adaptations to Climate Change (AIACC), Project No. SIS90. Department of Environment, Victoria, Mahe, Seychelles; and
  - Thomas, C. (2007) Climate Futures Adaptation Planning: An Example of Adaptation Planning for Coastal Tourism Operators in North Queensland.
- **Leading the Challenge on Climate Change** – In February 2009, the Travel & Tourism industry leaders released the vision for, and commitment to, tackling greenhouse gas (GHG) emissions through the World Travel and Tourism Council (WTTTC) publication 'Leading the Challenge on Climate Change'. The report also underscores the important role of partnership in attaining the vision defined by WTTTC and calls for an alignment of goals and efforts among leaders of industry, employees, customers and policy-makers in both the commercial and public domain<sup>13</sup>.
- **Climate Change: A Joint Approach to Addressing the Challenge**<sup>14</sup> – On 11 November, 2010 the WTTTC has launched its climate change policy recommendations outlining clear principles for governments, guiding them towards fostering an enabling environment for the sustainable development of our industry while recognising its immense economic and developmental importance.
- **Hotel Energy Solutions Initiative**<sup>15</sup> – The Hotel Energy Solutions (HES) is a UNWTO-initiated project, funded and supported by the Intelligent Energy Europe, and implemented by UNEP, International Hotel and Restaurant Association (IH&RA), European Renewable Energy Council (EREC) and French Agency for Environment and Energy Management (ADEME). The objective of the initiative is to increase energy efficiency by 20% and the use of renewable energies by 10% in SMEs across the European Union (EU).

After three years of testing and research, the HES developed an innovative online application in 2011; the "Hotel Energy Solutions E-toolkit". The application provides hoteliers with a report assessing their current energy use and recommends appropriate renewable energy and energy efficiency technologies. Additional features of application include a carbon footprint and return on investment calculator. In addition, an educative section called "Energy School" deepens knowledge on sustainable practices and

<sup>12</sup> <http://sdt.unwto.org/en/content/projects-0> Accessed 07/11/2011

<sup>13</sup> <http://www.wttc.org/activities/environment/>. Accessed 07/11/2011

<sup>14</sup> <http://www.wttc.org/activities/environment/>. Accessed 07/11/2011

<sup>15</sup> <http://www.hotelenergysolutions.net/> Accessed 07/11/2011



technologies available, along with a variety of informative publications and communication materials to sensitize guests and staff.

*This is an initiative that could be effectively applied within South Africa. The E-toolkit could be accessed and lessons learnt from it for application to South African hotels.*

- **TUI Travel airline project**<sup>16</sup> - On 6 October 2011 the TUI Travel airline subsidiary, Thomson Airways, flew the Birmingham - Arrecife (Lanzarote) route with an aircraft powered partly by biofuel. By using biofuels, Thomson Airways hope to strengthen its position at the forefront of sustainable aviation. The airline already boasts one of the highest load factors in the UK aviation sector; with carbon emission values significantly lower than average emission rates in the industry. Thomson Airways subsidiary plans to expand its use of sustainable biofuels across its fleet over the next three years, with daily flights using the biofuel commencing in early 2012.

## 5.2 Potential limitations to climate change responses

### 5.2.1 Climate change uncertainty

It is important to note that, at present, the scale and uncertainty of climate change projections make it difficult to make important investment decisions and to institute costly measures to mitigate and adapt to climate change. It is therefore important that current climate trends and conditions are taken into account and that mitigation and adaptive measures are practical. Furthermore, the use of natural systems (such as the use of healthy wetlands as opposed to construction of walls) for flood attenuation should be encouraged.

### 5.2.2 Communication and co-operation

A limitation to effective climate change response is an apparent lack of communication and co-operation between governmental and private sector role-players in the industry.

### 5.2.3 Capacity building

There is a need to improve the capacity of small and medium enterprises to adapt to the effects of climate change and general responsible tourism, relative to governments and larger operators. However it is clear that there is a need for awareness raising and response capacity building in the field of environmental management which, in turn should build resilience to climate change.

## 6.0 RECOMMENDATIONS FOR FUTURE STUDIES AND INITIATIVES

As a result of the baseline assessment process, the following recommendations are made for future studies and programmes:

- A clear area of vulnerability is the apparent lack of communication and co-operation between government tourism bodies and the private sector. A structured communication system and forums in which the opinions of the private sector are sought and taken into account during decision making will assist with this alignment. The compilation of a **communication strategy** is recommended, as well as meetings within each of the provinces (and perhaps nationally) at least twice a year in which climate change vulnerability and response is discussed;
- There are major opportunities for **“green” and “low carbon” tourism**, in which international visitors in particular can be given the opportunity to offset their carbon footprint for the long haul flight and in-country travel through investing in tree planting projects and/or community upliftment projects. This could be an excellent opportunity for government and the private sector to co-operate, and provide marketing opportunities;
- It is recommended that an investigation is carried out into **alternative energy sources** which could potentially be facilitated for tourism operators at a small-scale, in which the set up of, for example, solar water heaters or biogas facilities could be incentivised or made easier. The team tasked with this effort

<sup>16</sup> [http://www.tui-group.com/en/company/topics/biofuel\\_aircraft](http://www.tui-group.com/en/company/topics/biofuel_aircraft) Accessed 07/11/2011



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could draw on successes from neighbouring countries, and the government could be involved in terms of feeding into the national grid and reducing reliance on coal-fired power;

- It is recommended that a short-term research programme be conducted into the **emerging tourism markets to South Africa**, in terms of investment and tourists. This could aid in marketing strategies and the shaping of tourist products according to demand;
- A further short-term research project is recommended in terms of the **status of the insurance industry in terms of climate change for the tourism industry in South Africa**. This should investigate the opinions of the insurers themselves and perceived mitigation and/or adaptation requirements (if any), particularly for small-scale operators. There should be a particular emphasis on the wording of various contract clauses (e.g. definition of the term “natural disaster” and whether this includes climate change impacts). This could potentially indicate the ways in which insurance premiums could be lowered for tourist facilities, should certain measures be put in place to ensure climate change resilience. Meetings could be held with the South African Insurance Association for this investigation, and the study could make recommendations in terms of a green climate fund or tourism tax or levy for climate change preparedness measures;
- It is clear that a **programme to create awareness** of climate change (but within a broader framework of environmental management) would be of considerable use within the tourism industry. This could either be in the form of an independent course, or be facilitated within existing hospitality courses, which is possibly the most appropriate method as this would mainstream the issues within traditional tourism-based training courses. This effort could assist with capacity building in terms of climate change adaptation, but also responsible tourism in general (environmentally friendly practices, recycling, water conservation, etc.). Lessons learnt from the European “E-Toolkit” as mentioned above could be applied to the South African industry (Hotel Energy Solutions Initiative); and

A further short-term project (perhaps through a university) could assess **tourist perceptions of climate change and carbon management** and to which measures tourists are likely to respond in terms of environmental management and responsible tourism.





### 7.0 CONCLUSION

An altered climate will change the tourism industry, both within South Africa and internationally. This is in part due to tourism's dependence on natural assets and the built environment, both of which are vulnerable to the physical impacts of climate change. However, the impacts of these costs will also percolate through the economy in the form of financial risks with rising insurance premiums, changes to business financing and the need for business to manage the potential risks of climate change. Consumer demand may also be affected by perceptions of climate change and carbon emissions, and the response by industry and the South African government.

The negative effects of climate change may have far reaching implications on the communities and economic sectors supported by tourism activities, employment opportunities in particular. Furthermore, tourism in other southern African countries may also be negatively affected by poorer tourism numbers to South Africa itself.

The tourism sector in South Africa may need to adopt different investment patterns and business models in order to remain commercially viable.

This report presents a baseline assessment of climate change vulnerabilities which may affect the tourism industry in South Africa. Further studies and recommendations for co-operation and awareness raising are provided, and it is anticipated that these endeavours may assist in building resilience in the tourism industry into the future. The report is linked to Phase 3 of the project, the Guideline Document, which has been developed in order to assist tourism facility operators or developers to preliminarily assess their vulnerability to the physical impacts of climate change.

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# **APPENDIX A**

## **Document limitations**



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# **APPENDIX B**

## **Modelling Climate Change**



### Modelling Climate Change<sup>17</sup>

The use of General Circulation Models (GCMs) is one of the most widely applied methods through which climate change scenarios can be derived. GCMs are able to simulate the most important features of the global climate at a large scale. However, owing to the low horizontal resolution and limited description of sub-grid processes, they often fail to characterise the potential changes at a more local scale (Bergant *et al.*, 2006). More information is required at the local scale in order to assess local vulnerabilities to potential climate change and explore local adaptation options. Therefore, climate change impact studies rely on outputs from GCMs that are *downscaled* to an appropriate finer scale spatial resolution by linking the GCMs with regional climate characteristics. Interactions between the many processes that govern the Earth's climate are complex and extensive, and quantitative predictions of the impacts of increasing concentrations of greenhouse gases on climate therefore cannot be made through simple intuitive reasoning. For this reason, computer models, i.e. GCMs, have been developed, which are mathematical representations of the Earth's system, and in which physical and biogeochemical processes are described numerically to simulate the climate system as realistically as possible (Jacob and van den Hurk, 2009).

GCMs are global models which demarcate the earth into large-scale grids. The size of these grids, or horizontal resolution, is dependent on which GCM is being used. GCMs are founded on assumptions of the evolution of drivers of climate change, for example, the distributions of aerosols and greenhouse gases, and their respective concentrations in the atmosphere (Jacob and van den Hurk, 2009). These depend directly upon natural and anthropogenic emissions, which are estimated through emission scenarios, developed using so-called "storylines" (Nakićenović *et al.*, 2000). These storylines describe possible developments in global population growth and other aspects of the socio-economic system (Jacob and van den Hurk, 2009, Cox and Stephenson, 2007, see Figure A1). The emission scenarios are used to drive atmospheric chemistry and carbon cycle models that simulate changes in the concentration of greenhouse gases and aerosols. The resulting concentration scenarios are then input into GCMs which generate climate change scenarios that in turn drive models of the impacts on human and natural systems (Jacob and van den Hurk, 2009, Cox and Stephenson, 2007).

The 'A2' storyline was used in the generation of the GCMs used in this project. The 'A2' scenario represents a more divided world, characterised by:

- Uneven and regionally oriented economic development;
- Slower and more fragmented technological changes and improvements to per capita income;
- Continuously increasing population; and
- Perceptions that the environment only has a use value for human needs.

The 'A2' storyline represents the worst case scenario in human development where emissions are at their highest. It must be noted that, South Africa has already exceeded the emissions levels projected in this worst case scenario suggesting that it is not an unrealistic scenario around which to base this work.

<sup>17</sup>Section contributed by Prof Schulze, School of Bioresource Engineering and Environmental Hydraulogy (BEEH) at University of KwaZulu-Natal. Referencer: Schulze, R.E., Knoesen, D.M., Kunz, R.P. and Lumsden, T.G. 2011. General Circulation Models and Downscaling for South African Climate Change Impacts Studies: A 2011 Perspective. In: Schulze, R.E. 2011. *A 2011 Perspective on Climate Change and the South African Water Sector*. Water Research Commission, Pretoria, RSA, WRC Report 1843/2/11, Chapter 2.1, 21 - 30.



## BASELINE ASSESSMENT

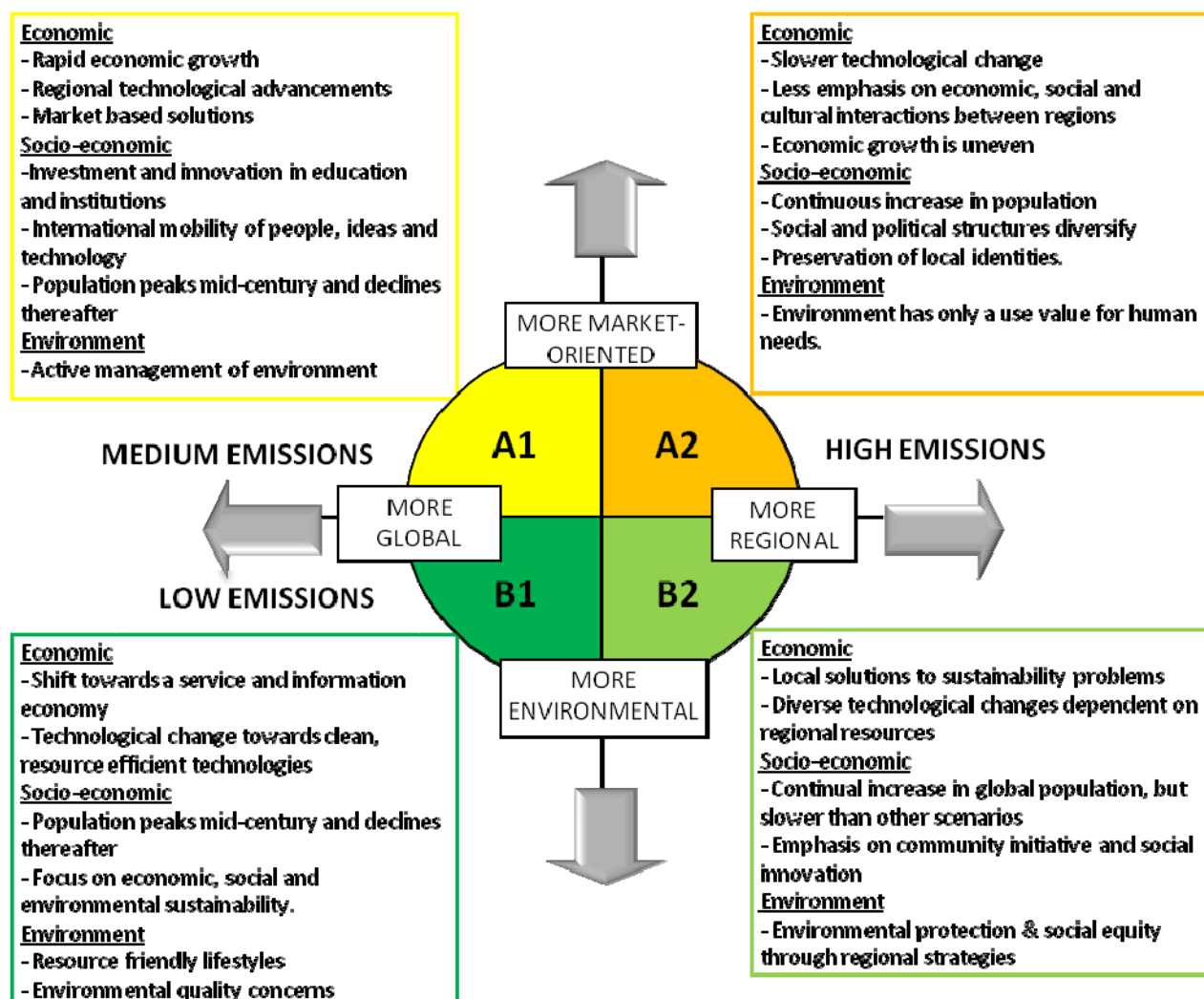


Figure B1: SRES scenarios (Nakićenović et al., 2000)

### Approaches to regional climate downscaling

The results from global models have limitations due to the extent of the grid sizes, implying that GCMs can be poor representations of climate changes occurring at a *regional level*. GCM results therefore need to be translated from the global to more local scales through the process of *regional climate downscaling* (Hewitson et al., 2008, Giorgi et al., 2008). The term “downscaling” refers to techniques that enable the results of GCMs to be made relevant to local decision-makers and impact assessments (UKCIP, 2003). Figure A2 illustrates the downscaling process, in which hydrology, vegetation and topographical data are represented at a local scale. Two approaches are commonly used to bridge the gap between large-scale and local-scale climate change scenarios, viz. *dynamic* downscaling and *statistical or empirical* downscaling (Hewitson et al., 2008, Giorgi et al., 2008).



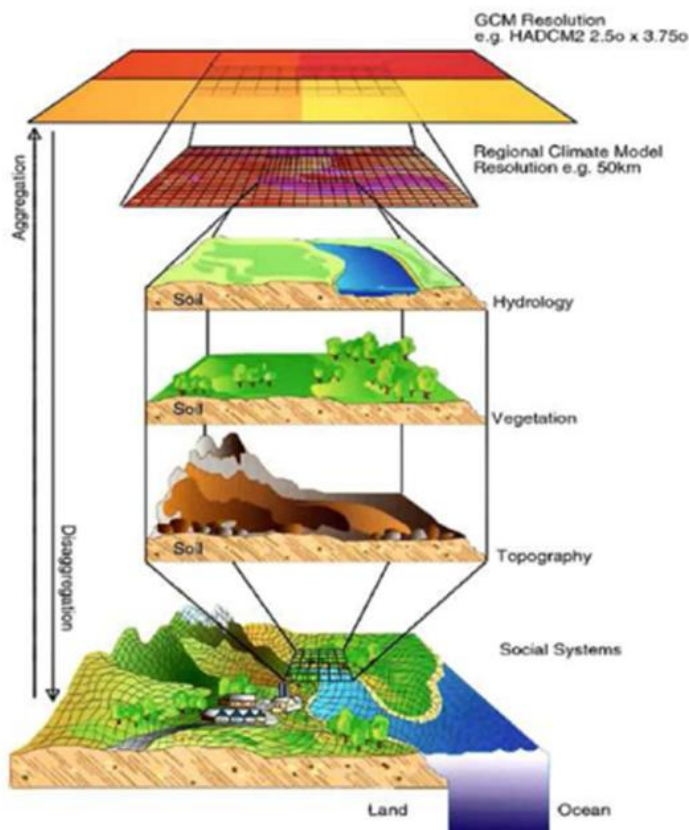


Figure B2: A Schematic Diagram of Downscaling GCMs

The climate change scenarios used for this project have been downscaled using empirical/statistical downscaling techniques developed for South Africa by the Climate Systems Analysis Group (CSAG) at the University of Cape Town. These were originally derived from global scenarios produced by five GCMs, all of which are derived from the Intergovernmental Panel on Climate Change's (2007) Fourth Assessment Report.

Statistical or empirical downscaling represents an empirical equivalent of the Regional Circulation Model (RCM), as seen in Figure A2. RCMs use the GCM fields to provide input to numerical representation of the climate system dynamics. Empirical downscaling seeks to do the same using empirical formulations derived from observational data (Hewitson *et al.*, 2005). Empirical downscaling involves developing a quantitative relationship between local-scale variables and large-scale atmospheric variables, which is subsequently applied to the GCM output to obtain local and regional climate change signals (Jacob and Van den Hurk, 2009). An advantage of this technique is that the GCM output can be downscaled to a point which is useful for obtaining projections, for example, for the modelling of rainfall at a particular site, which can then be input into a hydrological model. Furthermore, this technique is computationally far less demanding than the RCM approach (UKCIP, 2003). A major disadvantage of this approach is the implicit assumption that these statistical relationships will remain stationary under a future climate (Hewitson *et al.*, 2005, Giorgi *et al.*, 2008).

### Uncertainties inherent in global climate models

Uncertainties inherent in GCMs have been well documented (Jacob and Van den Hurk, 2009, Cox and Stephenson, 2007, Hewitson *et al.*, 2005, Giorgi *et al.*, 2008). In addition to the limitations resulting from uncertainties, GCMs are less capable of simulating second order atmospheric processes, such as precipitation, compared to those related to first order atmospheric processes, such as surface heat and vapour fluxes (Hardy, 2003).

Some examples of GCM uncertainties include:





- Failure to simulate individual convective rainfall events, owing to the coarse spatial resolutions of GCMs, and the smaller spatial and temporal nature of convective rainfall, which poses problems in many parts of the world, including most of southern Africa, where convective rainfall is a dominant form of precipitation;
- Difficulty in simulating the intensity, frequency and distribution of extreme rainfall (IPCC, 2007);
- Tendency to simulate too many light rainfall events (< 2 mm per day) and too few heavy rainfall events (> 10 mm per day), whilst maintaining a fairly realistic mean precipitation (IPCC, 2007);
- Poor representation of major drivers of climate variability, such as the El Niño Southern Oscillation (ENSO) phenomenon (Hulme *et al.*, 2001), which is associated with a broad band of variability throughout southern Africa;
- Poor projection of climatological variables which represent other atmospheric conditions that lead to high magnitude precipitation and flood-producing events; and
- Many GCMs are available which vary in terms of their outputs as a result of the variables and calculations used in their generation.

In addition, global mean temperatures can be difficult to model at a local scale (Jacob and van den Hurk, 2009) therefore affecting subsequent estimations of potential evaporation. Uncertainty therefore surrounds the utility of direct GCM output in detailed hydrological studies where local precipitation, temperature and potential evaporation variables are primary inputs into hydrological models.

Significant discontinuity exists between the output from GCMs (spatial scales of 10,000 – 100,000 km<sup>2</sup>) and the catchment scale (10 - 100 km<sup>2</sup>), at which local decisions are sought and local adaptation options need to be considered. It is due to this discontinuity that downscaled GCM outputs need to be translated from the coarse regional scale to a catchment level (Hewitson *et al.*, 2005, Giorgi *et al.*, 2008). For this project, this was achieved at the School of Bioresource Engineering and Environmental Hydrology (BEEH) at the University of KwaZulu-Natal with the use of the ACRU modelling system. Downscaled data was used as input to the ACRU model to derive hydrological parameters.

### The ACRU modelling system

The downscaled rainfall and temperature station data produced by CSAG from the original GCMs was then input to the ACRU agrohydrological model in order to generate rainfall and temperature data at a quinary catchment level (fifth order catchment). ACRU (Schulze, 2011) has been used extensively in Integrated Water Resource Management (IWRM) and climate change studies in southern Africa. It is considered to be the preferred simulation tool for this purpose, as it complies with many of the premises and principles required for modelling hydrological processes. ACRU comprises the following attributes (Figure A3 and A4):

- It is a daily time step, conceptual-physical model:
  - With variables (rather than optimised parameter values) estimated from physically-based characteristics of the catchment; and
  - With the model revolving around daily *multi-layer soil water budgeting*.
- As such, the model has been developed essentially into a versatile total evaporation model, structured to be highly sensitive to climate drivers and to land cover, land use and management changes on the soil water and runoff regimes, and with its water budget being responsive to supplementary watering by irrigation, to changes in tillage practices, enhanced atmospheric CO<sub>2</sub> concentrations associated with climate change, or to the onset and degree of plant stress, which may change with global warming.



## BASELINE ASSESSMENT

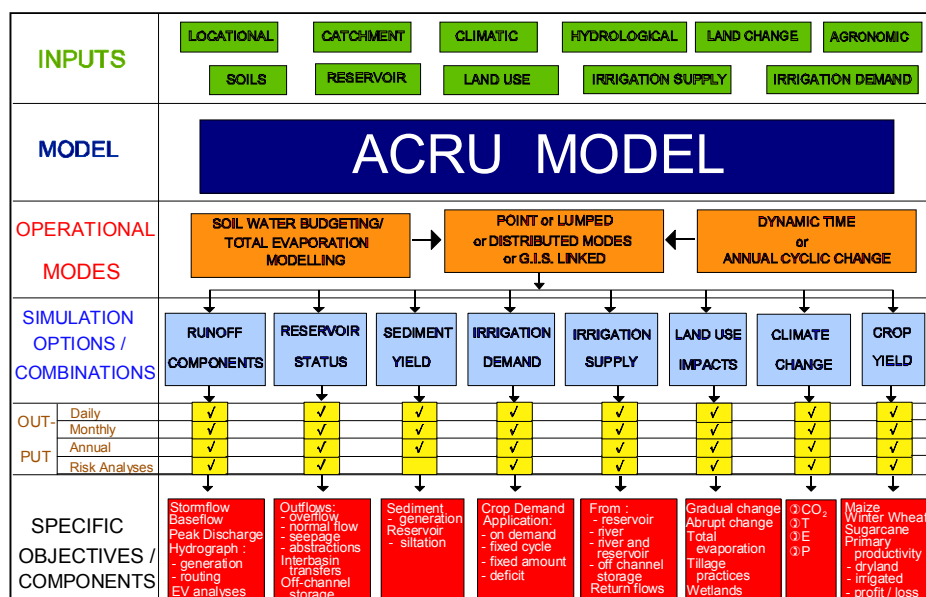


Figure B3: General Structure and multi-purpose function of the ACRU Model (After Schulze, 1995)

- ACRU is a multi-purpose model which integrates the various water budgeting and runoff production components of the terrestrial hydrological system (Figure A4). It can be applied as a versatile model for design hydrology (including flow routing through channels and dams), crop yield estimation, reservoir yield simulation, ecological requirements, wetlands hydrological responses, riparian zone processes, irrigation water demand and supply, water resources assessment, planning optimum water resource utilisation / allocation, conflict management in water resources and land use impacts - in each case with associated risk analyses - and all of which can respond differently with climate change;
- ACRU can operate at multiple scales as a *point* model or as a *lumped* small catchments model, on large catchments or at national scale as a *distributed* cell-type model with flows taking place from “exterior” through “interior” cells according to a predetermined scheme, with the facility to generate individually requested outputs at each sub-catchment’s exit;
- The model includes a *dynamic input option* to facilitate modelling of hydrological responses to climate or land use or management changes in a time series, be they long term/gradual changes (e.g. urbanisation or climate trends), or abrupt changes (e.g. construction of a dam), or changes of an intra-annual nature (e.g. crops with non-annual cycles); and
- The ACRU model has been linked to the Southern African National Quaternary and Quinary Catchments Databases for applications at a range of scales in South Africa, Lesotho and Swaziland for climate change impacts and other studies.

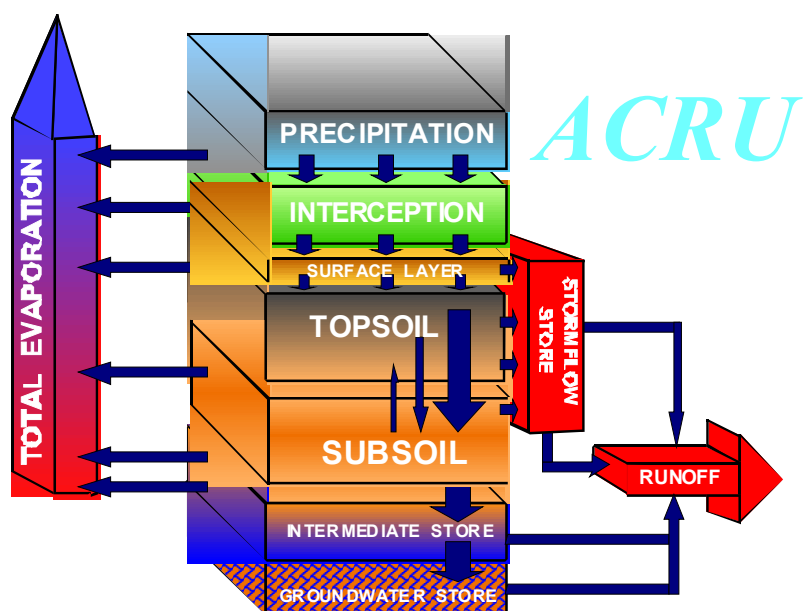


Figure B4: Schematic of major processes represented in the ACRU Model (Schulze, 1995)



# **APPENDIX C**

**Rainfall and Temperature projection maps for January and July**



## BASELINE ASSESSMENT

### Mean daily rainfall for January

The month of January is considered to be the month of maximum rainfall for the summer rainfall region (east of the country) and the month of minimum rainfall for the winter rainfall region (west of the country).

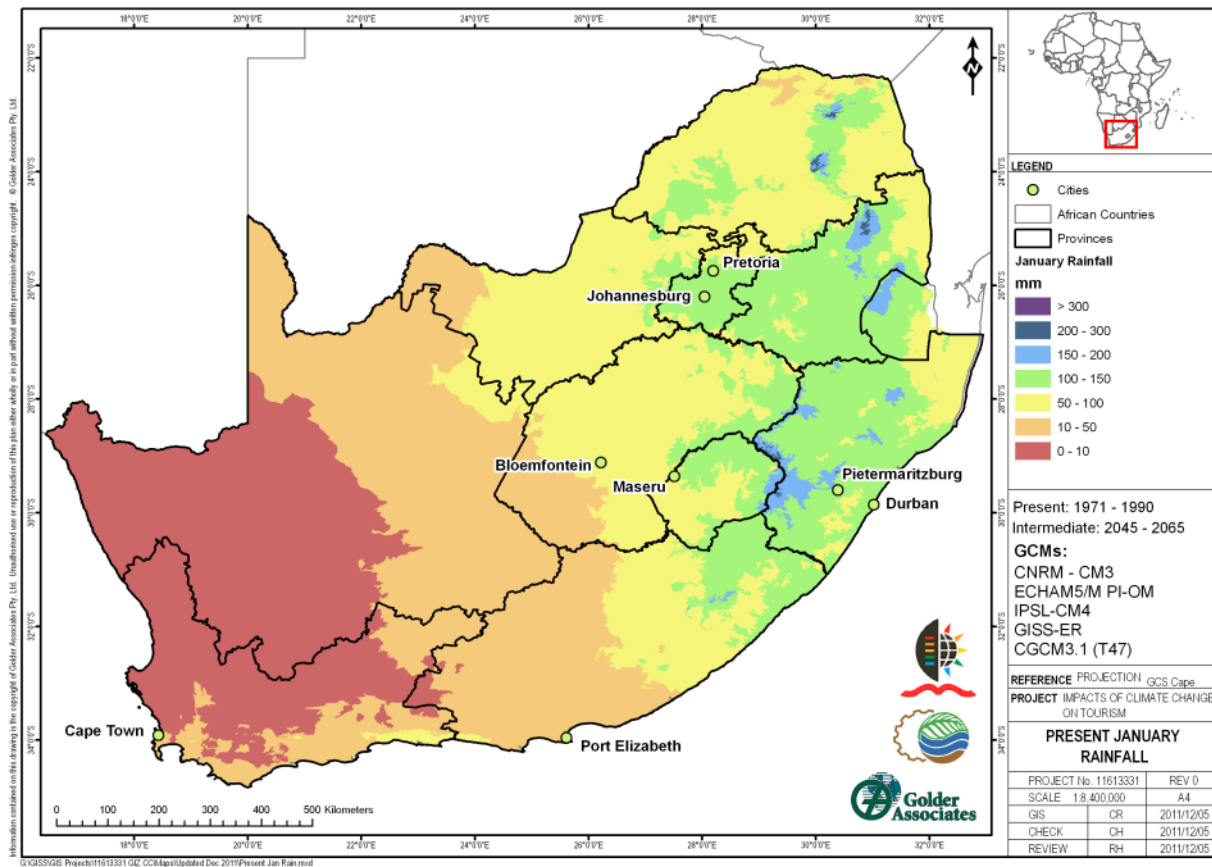


Figure C1: Modelled “present” average of mean daily maximum rainfall for the month of January (multiple GCMs)

It is evident from the modelled “present” scenario that the western portion of the country experiences little or no rainfall in the month of January. Areas in the east of the country experience higher average daily rainfall, which can be more than 100 mm per day. This rainfall is vital for crop growth within these areas and sustained agricultural supplies, as well as the health of ecosystems which feed biodiversity tourism. This rainfall is also important for the maintenance of water supply for domestic and other uses throughout the year.



## BASELINE ASSESSMENT

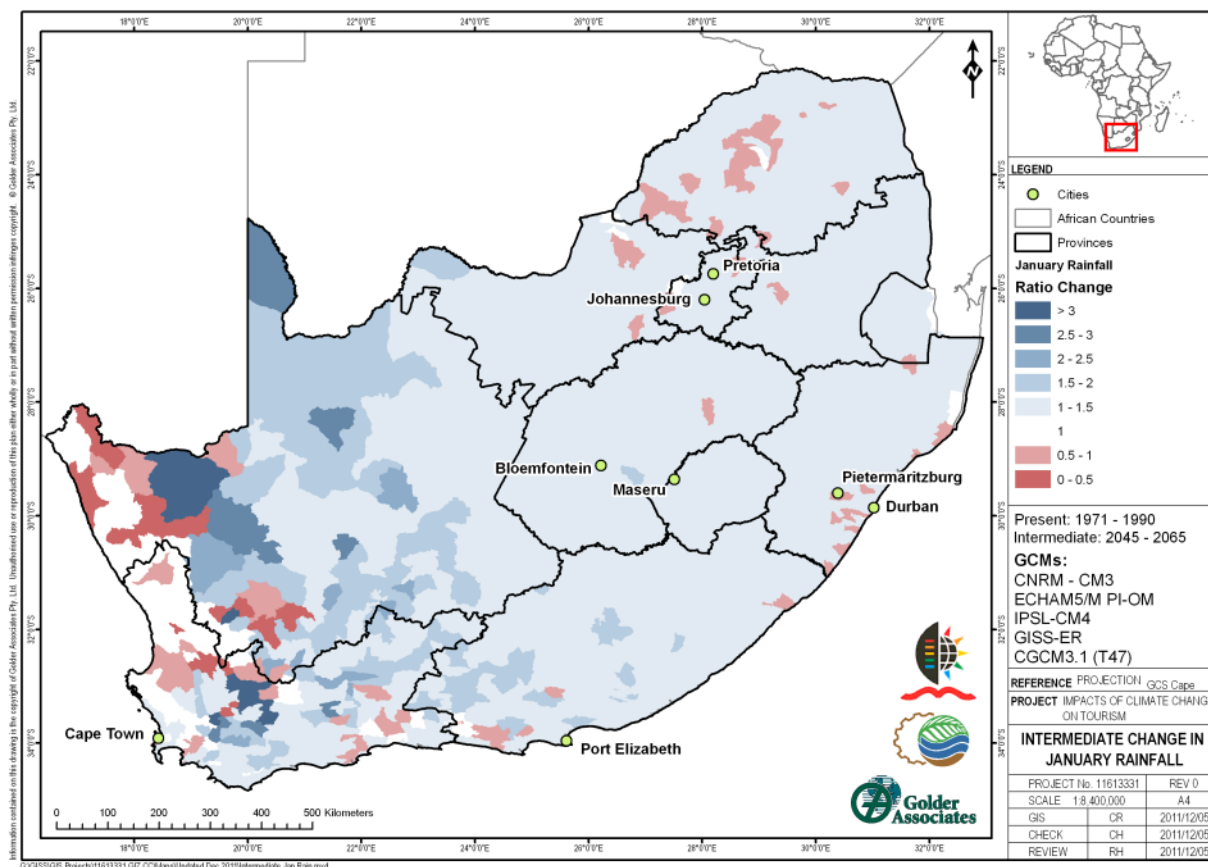


Figure C2: Projected mean of daily maximum rainfall for January into the intermediate future (2045 – 2065, multiple GCMs)

Mean daily rainfall for January is projected to increase slightly over most of the country by mid-century, with a decrease in this rainfall in the west of the country and in isolated catchments to the north east of the country and along the east coast.

### Mean daily rainfall for July

The month of July is assumed to be the month of minimum rainfall for the summer rainfall region (east of the country) and the month of maximum rainfall for the winter rainfall region (west of the country).



## BASELINE ASSESSMENT

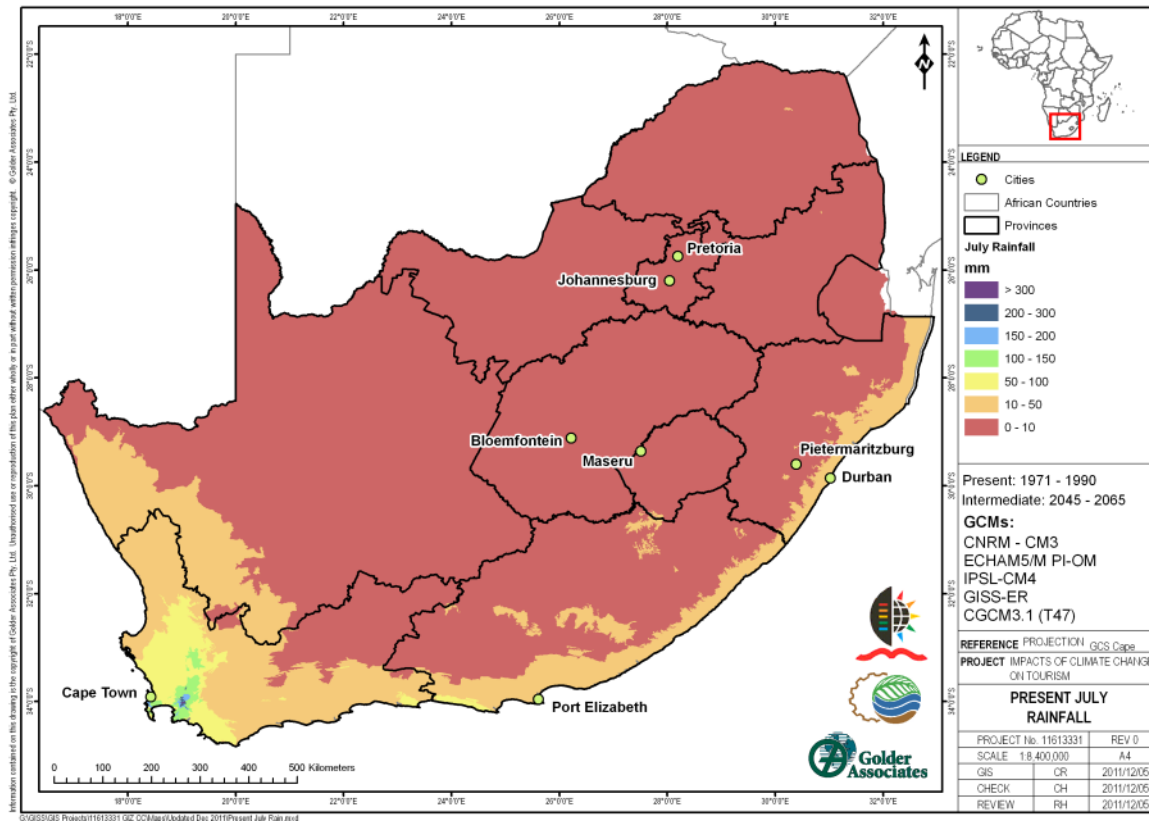


Figure C3: Modelled “present” average of mean daily minimum rainfall for the month of July (multiple GCMs)

Most of the country receives very little rainfall during the month of July, apart from in the southwest around the Cape Town area. This rainfall is vital for agricultural practices within the Western Cape, including wine farming, as well as important biodiversity hotspots such as the Cape Floristic Kingdom.





## BASELINE ASSESSMENT

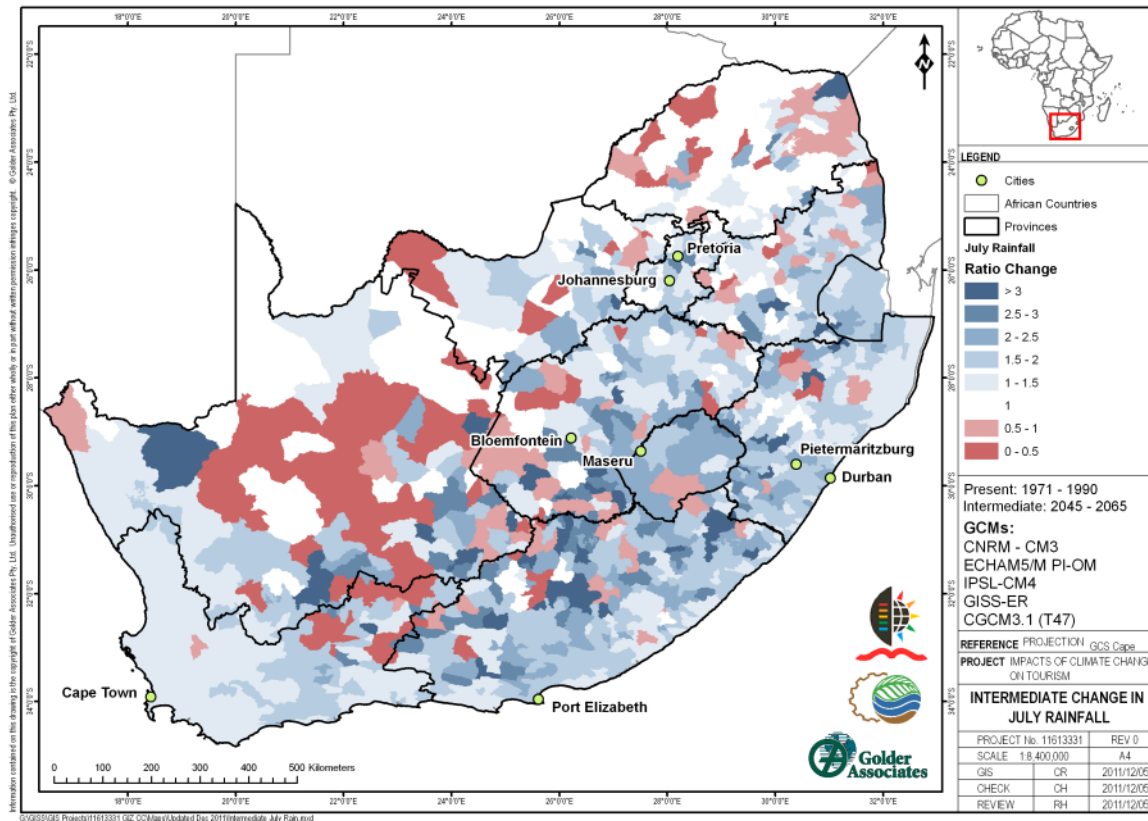


Figure C4: Projected mean of daily minimum rainfall for July into the intermediate future (2045 – 2065, multiple GCMs)

Into the intermediate future, daily rainfall for July is projected to remain the same or increase slightly across most of the country (particularly in coastal areas), with areas in the western and northern interior of the country experiencing somewhat lower rainfall.

### Mean daily maximum temperature for January

In this report, the month of January represents the month of warmest temperatures for the country. Mean daily temperatures for January for the northwest of the country reach up to 35 degrees Celsius, with most of the country experiencing mean daily temperatures between 25 and 35 degrees Celsius on an average day in January. These temperatures are highly favourable for outdoor tourism activities and travel.





## BASELINE ASSESSMENT

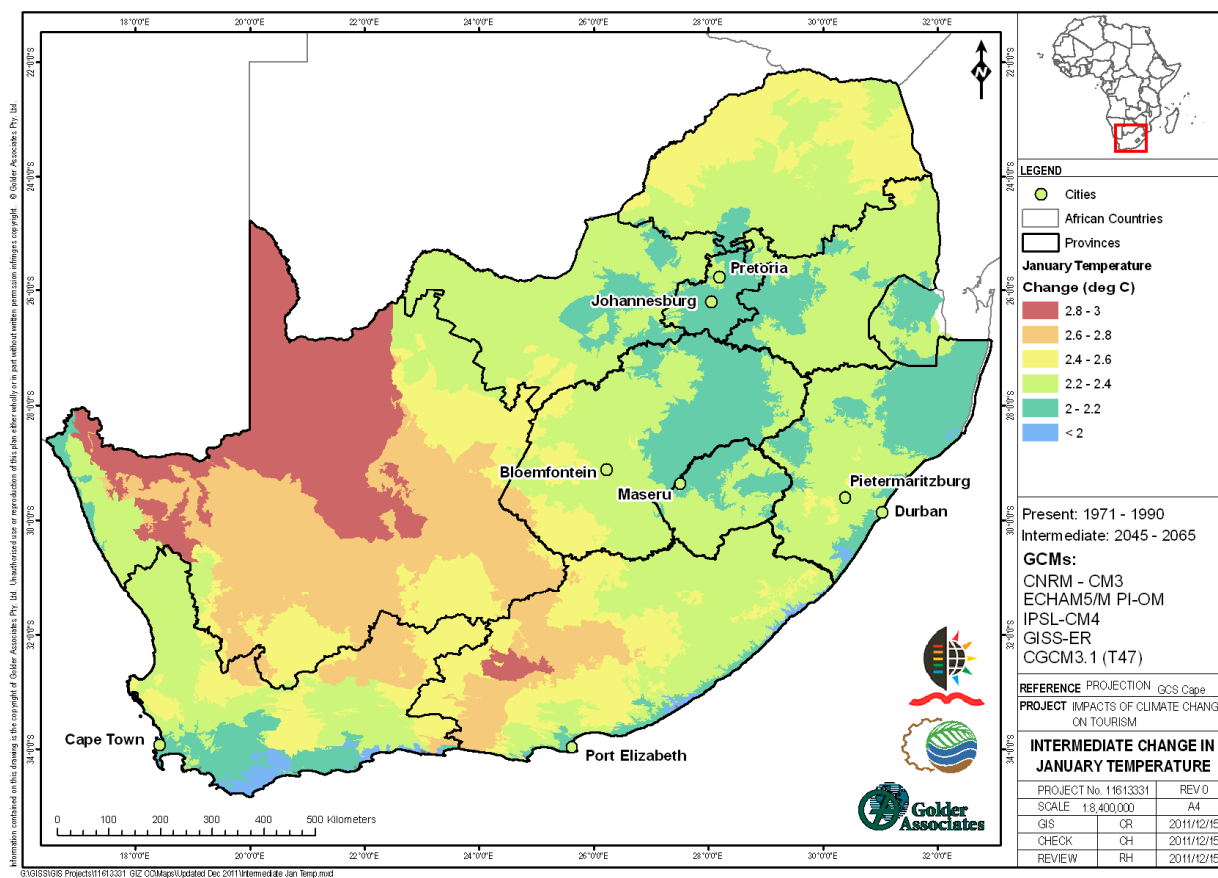


Figure C6: Projected mean of daily maximum temperature for January into the intermediate future (2045 – 2065, multiple GCMs)

Areas with high mean daily temperatures for January are projected to expand across the country (2 - 3°C), and although for certain parts of the country this could improve conditions for tourism, there could be areas in which discomfort indices become too high for pleasant tourism conditions, and where indirect effects on ecosystems and water supply could affect tourism potential.

### Mean daily maximum temperature for July

In this report, the month of July represents the month of coldest temperatures for the country. Mean daily minimum temperature for the country currently ranges from between as low as -15 degrees Celsius in the high alpine regions of the Drakensburg to up to 15 degrees Celsius in the northern parts of KwaZulu-Natal.



## BASELINE ASSESSMENT

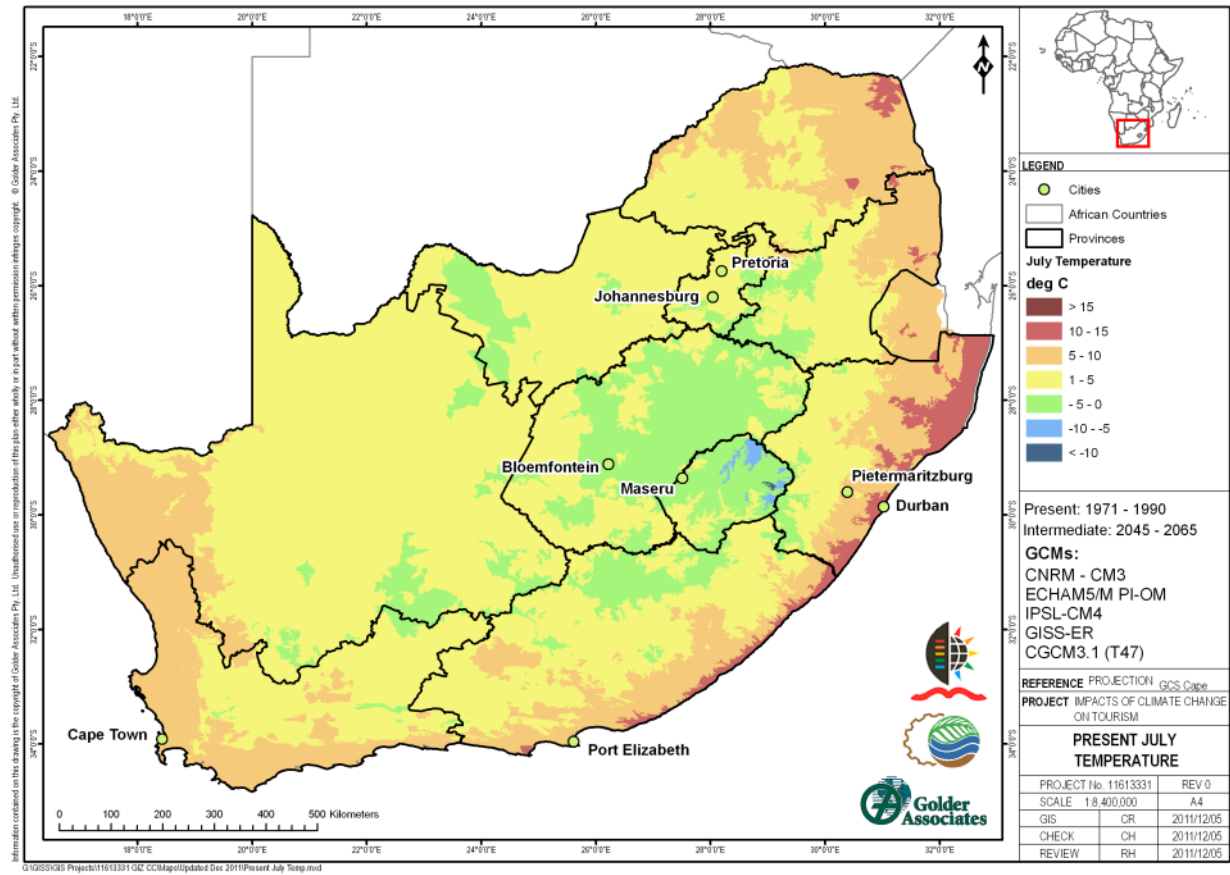
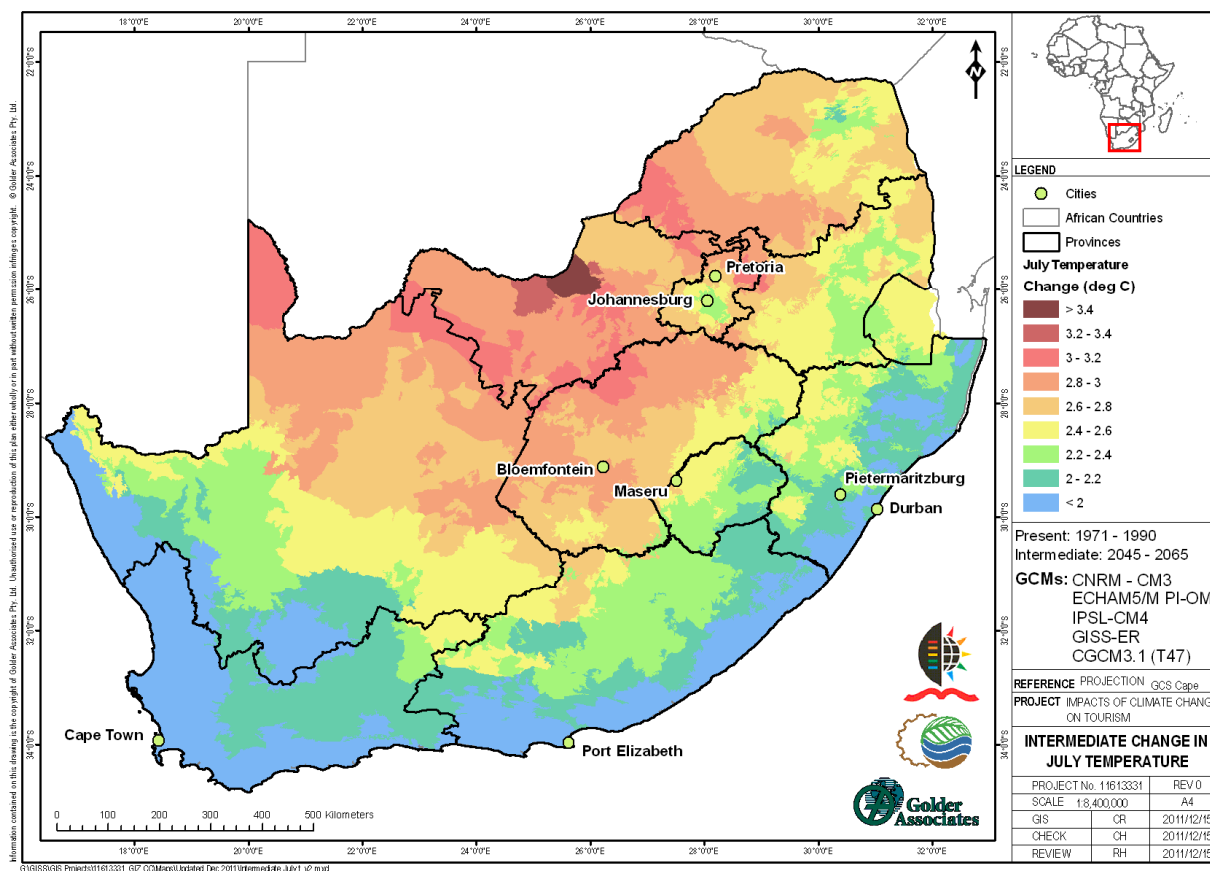


Figure C7: Modelled “present” average of mean daily minimum temperature for the month of July (multiple GCMs)



## BASELINE ASSESSMENT



**Figure C8: Projected mean of daily minimum temperature for July into the intermediate future (2045 – 2065, multiple GCMs)**

Into the intermediate future (2045-2065), an expansion of areas with warmer minimum temperatures across the country is projected of between 2 and 3.4°C. This could provide more pleasant temperatures in certain areas for tourism activities in winter. However, this could also affect certain crop productivity related to food supply, and could also affect certain ecosystem functions, particularly in high altitude regions.




# **APPENDIX D**

## **National Department of Tourism - Tourism and Climate Change Documentation**



## BASELINE ASSESSMENT

 <b>tourism</b> Department: Tourism REPUBLIC OF SOUTH AFRICA	<b>Reference:</b>	CCT 2
	<b>Drafted:</b>	Thursday, 7/7/2011
	<b>Circulation:</b>	Internal
	<b>Compiled by:</b>	DD: Tourism and Climate Change
	<b>Revision:</b>	0
<b>Document Type:</b>	Discussion Paper	
<b>Title:</b>	<b>A Discussion Document on the Relationship between Tourism and Climate Change</b>	
<b>Document Status:</b>	Draft for discussion purposes only	

### 1. Purpose

The purpose of the document is to explain the relationship between tourism and climate change. Embedded in this purpose is the attempt to answer the question: why should the National Department of Tourism (NDT) be involved in climate change work?

### 2. What is Climate Change?

According to the Intergovernmental Panel on Climate Change (IPCC, Fourth Assessment Report, 2007), climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity. The United Nations Framework Convention on Climate Change (UNFCCC), further defined climate change as a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods. The IPCC has indicated that the science of climate change is now unequivocal and that the main human influence on global climate is the emissions of the key greenhouse gases (ghg) - carbon dioxide (CO<sub>2</sub>), methane and nitrous oxide. Human activities such as burning of fossil fuel i.e. coal and deforestation produce greenhouse gases that trap heat in the earth's atmosphere.

The effects of climate change are felt differently across the world, but climate scientists (IPCC) agree that we are already experiencing and will continue to experience:

- higher temperatures on land and in the sea;
- changes in rain and snowfall (precipitation) patterns;
- decreases in sea ice and snow cover;
- increases in sea level; and
- more unusual and frequent extreme weather, including flooding, hurricanes, droughts and heat waves.

### 2. The Relationship between Climate Change and Tourism

The tourism sector is considered a 'vector' and 'victim' of climate change. Tourism activities such as the transportation and accommodation of tourists and events contribute to the emission of greenhouse gases which are causing the climate to change. On the other hand, the tourism industry and destinations are clearly sensitive to climate variability and change. Climate defines the length and quality of tourism seasons and plays a major role in destination choice and tourist spending. In many destinations tourism is closely linked with the natural environment. Climate affects a wide range of the environmental resources that are critical attractions for tourism, such as snow conditions, wildlife productivity and biodiversity, water levels and quality.





Climate also has an important influence on environmental conditions that can deter tourists, including infectious disease, wildfires, insect or water-borne pests (e.g., jellyfish, algae blooms), and extreme events such as tropical cyclones.

The integrated effects of climate change will have far-reaching consequences for tourism businesses and destinations. Importantly, climate change will generate both negative and positive impacts in the tourism sector and these impacts will vary substantially by market segment and geographic region. The implications of climate change for any tourism business or destination will also partially depend on the impacts on its competitors. A negative impact in one part of the tourism system may constitute an opportunity elsewhere. Consequently, there will be 'winners and losers' at the business, destination and nation level.

According to the UNWTO/UNEP/WMO (2007 Report), there are three broad categories of climate change impacts that will affect tourism destinations, their competitiveness and sustainability:

### **2.1 Direct climatic impacts**

Climate is a principal resource for tourism, as it co-determines the suitability of locations for a wide range of tourist activities, is a principal driver of global seasonality in tourism demand, and has an important influence on operating costs, such as heating-cooling, snow-making, irrigation, food and water supply, and insurance costs. Thus, changes in the length and quality of climate-dependent tourism seasons (i.e., sun-and-sea or winter sports holidays) could have considerable implications for competitive relationships between destinations and therefore the profitability of tourism enterprises.

Changes in a number of weather extremes are probable as a result of projected climate change, including: higher maximum temperature and more hot days over nearly all land areas, greater tropical storm intensity and peak winds, more intense precipitation events over many land areas, and longer and more severe droughts. Such changes will affect the tourism industry through increased infrastructure damage, additional emergency preparedness requirements, higher operating expenses (e.g., insurance, backup water and power systems, and evacuations), and business interruptions.

### **2.2 Indirect environmental change impacts**

Environmental conditions are such a critical resource for tourism and a wide range of climate induced environmental changes could have profound effects on tourism at the destination and regional level. Changes in water availability, biodiversity loss, reduced landscape aesthetic, altered agricultural production (e.g., wine tourism and agri-tourism), increased natural hazards, coastal erosion and inundation, damage to infrastructure and the increasing incidence of vector-borne diseases will all impact tourism to varying degrees.

In contrast to the varied impacts of a changed climate on tourism, the indirect effects of climate induced environmental change are likely to be largely negative. Mountain, island, and coastal destinations are considered particularly sensitive to climate-induced environmental change, as are nature-based tourism market segments.

### **2.3 Indirect Societal Impacts**

Climate change is thought to pose a risk to future economic growth and to the political stability of some nations. Any such reduction of global GDP due to climate change would reduce the discretionary wealth available to consumers for tourism and have negative implications for anticipated future growth in tourism.

Climate change is considered a national and international security risk that will steadily intensify, particularly under greater warming scenarios. Climate change associated security risks have been identified in a number of regions where tourism is highly important to local-national economies. International tourists are averse to political instability and social unrest, and negative tourism-demand repercussions for climate change security hotspots, many of which are believed to be in developing nations, are evident.

National or international mitigation policies – that is policies that seek to reduce greenhouse gas emissions – may have an impact on tourist flows. They are likely to lead to an increase in transport costs and may foster environmental attitudes that lead tourists to change their travel patterns (e.g. shift transport mode or destination choices).



### 3. Tourism's Response to the Climate Change Challenge

Most people worldwide are now convinced that the climate is changing, mainly as a result of human activities. There is an urgent need to address these changes by taking actions to:

- slow down the build-up of heat trapping greenhouse gases and remove them from the atmosphere (mitigation); and
- strengthen the natural and physical environments to ensure they can stand up to the effects of climate change (adaptation).

#### 3.1 United Nations World Tourism Organization (UNWTO) and Climate Change

The UNWTO has been working to raise awareness on climate change issues in the tourism sector for many years and much has been done. In Tunisia in 2003, the first International Conference on Climate Change and Tourism was organised by UNWTO and several other United Nations agencies. The conference resulted in the Djerba Declaration on Climate Change and Tourism, which highlighted the obligation of the tourism industry to reduce their greenhouse gas emissions and recognized the two way relationship between tourism and climate change.

A second International Conference on Climate Change and Tourism was held in Davos, Switzerland in 2007. The Davos Declaration included firm recommendations and a clear commitment for action to respond to the climate change challenge including the urgent adoption of a range of sustainable tourism policies.

The World Meteorology Organization, in collaboration with UNWTO, established an Expert Team on Climate and Tourism. Their role was to improve the application of information in the tourism sector. In 2007, UNWTO launched a *Climate and Tourism Information Exchange Service* to enable tourism stakeholder's access to research and data.

The organization has developed and disseminated technical publications addressing climate change impacts and adaptation responses. The most important of these are "*Climate Change and Tourism - Responding to Global Challenges*" in support of the Davos Declaration, and "*Climate Change Adaptation and Mitigation in the Tourism Sector: Frameworks, Tools and Practices*" in coordination with the University of Oxford, the WMO, and UNEP released in 2008.

#### 3.2 South Africa and Climate Change

South Africa is a mega-diverse country of immense natural beauty that is blessed with an abundance of natural mineral, fossil and renewable resources. However, South Africa is also a water-stressed developing country - still dealing with the legacy of apartheid, the challenge of poverty, and unemployment as well as the gap between rich and poor, low levels of education and the endeavour to deliver basic services to its entire people.

South Africa is both a contributor to, and potential victim of, global climate change given that it has an energy-intensive, fossil-fuel powered economy and is also highly vulnerable to the impacts of climate variability and change. Against this national context, the Government accepts the conclusions of the IPCC in its 4th Assessment Report that warming of the climate system is unequivocal and that it is very likely that the increase in anthropogenic greenhouse gas concentrations is responsible for much of this warming trend since the mid twentieth century.

With this, Government regards climate change as one of the greatest threats to sustainable development. Government also believes that climate change, if un-mitigated, also has the potential to undo or undermine many of the positive advances made in meeting South Africa's own development goals and the Millennium Development Goals.

##### 3.2.1 The Green Paper on National Climate Change Response

Notwithstanding South Africa's international efforts on climate change, and given the cross-cutting nature of climate change impacts and responses, Government further believes that an effective response to climate change requires national policy in order to ensure a coordinated, coherent, efficient and effective response to the global challenge of climate change.



The policy outlined in the Green Paper serves as the embodiment of the South African Government's commitment to a fair contribution to the stabilisation of global greenhouse gas concentrations in the atmosphere and the protection of the country and its people from the impacts of unavoidable climate change. It presents the Government's vision for an effective climate change response and the long-term transition to a climate resilient and low-carbon economy and society – a vision premised on Government's commitment to sustainable development and a better life for all.

South Africa, taking into account equity and the common but differentiated responsibilities and respective capabilities of all nations as well as the inter-generational commitment of the Environmental Right contained in Section 24 the country's Constitution, has the climate change response objective of –

- making a fair contribution to the global effort to achieve the stabilisation of greenhouse gas concentrations in the atmosphere at a level that prevents dangerous anthropogenic interference with the climate system; and
- effectively adapt to and manage unavoidable and potential damaging climate change impacts through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity.

### 3.2.2 Tourism and Climate Change in South Africa

In 2008, the Branch Tourism within the then Department of Environmental Affairs and Tourism developed a position paper on Climate Change. In the Paper, the Branch acknowledged that climate change presented new challenges for the tourism industry and indicated its commitment to establish a Working Group to thoroughly look at the relationship between tourism and climate change. The development of the position paper was an acknowledgement that the achievement of the South Africa climate change response objective will be brought about through the implementation of various policy approaches and actions for key climate change impacted and/or affected sectors such as water, energy, tourism etc.

Tourism in South Africa is closely linked to the environment and climate itself with the country's biodiversity, fauna and flora, beaches and weather being major tourist attractions. Tourism is therefore considered to be a highly climate-sensitive economic sector similar to agriculture, insurance, energy, and transportation. Impacts in the tourism sector are likely to manifest through:

- Environmental resources and conditions such as wildlife, the beach, heritage sites, scenic beauty and properly functioning ecosystems are critical for tourism growth and development in South Africa;
- Climate-induced environmental changes will have profound effects on the tourism sector at the local and regional destination level;
- Changes in water availability, biodiversity loss, reduced landscape aesthetic, altered agricultural production (e.g., food and wine tourism), increased natural hazards, coastal erosion and inundation, damage to infrastructure and the increasing incidence of vector-borne diseases will all negatively impact tourism to varying degrees;
- National or international climate change mitigation policies may have impacts for biodiversity tourism in South Africa, because they may lead to changes in tourist mobility and flows. International measures, such as the EU Directive on Aviation, and efforts to promote low carbon tourism destinations pose a significant risk to South Africa's tourism industry. South Africa is a carbon intensive destination, and relies extensively on long haul flights from key international tourism markets; and
- The hospitality industry is a large consumer of energy and other resources. It has a large potential contribution to energy efficiency and other efficient resource usage initiatives.

In response to the above challenges, the Green Paper on National Climate Change Response commit South Africa and the tourism sector in particular to:-

- Mainstream climate change in tourism planning, policy and development;
- Build climate resilience and adaptive capacity of tourist attractions/destinations and encourage green tourism infrastructure investment;
- Promote domestic tourism in order to counteract a decline/shift in international travel that may follow the implementation of transport mitigation policies in other countries;



- Encourage both domestic and international visitors to participate in the protection and conservation of South Africa's natural environment and to enjoy a responsible travel experience;
- Promote research, capacity building and awareness in the tourism sector;
- Support the establishment of energy efficiency programmes and the introduction of renewable energy into the tourism sector; and
- Establish programmes that will allow tourists to offset the emissions generated through their travel to and in South Africa.

In light of the above, the National Department of Tourism (NDT) established a Tourism and Climate Change Task Team to develop the National Tourism and Climate Change Action Plan. The main purpose of the Action Plan is to ensure that the tourism sector responds effectively to the challenges presented by climate change. It is worth noting at this stage that other sector departments like energy, transport and agriculture are developing their own implementation plans to address the climate change impacts relevant to them.

The NDT is currently involved in the following mitigation and adaptation activities:

- (a) Climate Change mitigation efforts by the Tourism sector include:
- (b) Climate Change adaptation efforts by the tourism sector include the following:
  - The NDT in partnership with the Department of Environmental Affairs and the GIZ will conduct a study that will assess the baseline vulnerabilities and adaptive capacity of the tourism industry to climate change impacts. Expressions of Interests for the study have been received and short listing and contracting will follow soon. The main purpose of the study is to determine the tourism industry's vulnerability and adaptive capacity to the impacts of climate change. To this end, the study will recommend practical adaptation actions for the tourism industry.
- (c) In creating climate change awareness within the tourism industry, the NDT host the annual Responsible Tourism roadshows in partnership with DEA, Department of Water Affairs and Eskom. This year, the workshops will run from the 5<sup>th</sup> July 2011 to the end of October 2011. The purpose of the workshops is to ensure:
  - The efficient use of water, energy and the proper management of waste in the hospitality sector.
  - A Tourism and Climate Change brochure has also been developed for industry. The brochure outlines some possible actions that can be taken by tourism establishment to responds to the challenges presented by climate change.
- (d) In responding to the National Climate Change Response Policy, the NDT has embarked in a process to develop policy measures to address climate change within the tourism sector, including:
  - The National Minimum Standard for Responsible Tourism has been developed. The standard has a criterion that requires establishments to measure the greenhouse gas emissions and to put in place reduction measures.

### **3.3 THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC) CONFERENCE OF THE PARTIES (COP 17)**

The Convention on Climate Change sets an overall framework for intergovernmental efforts to tackle the challenge posed by climate change. It recognizes that the climate system is a shared resource whose stability can be affected by industrial and other emissions of carbon dioxide and other greenhouse gases. The Convention entered into force on 21 March 1994.

Under the Convention, governments:

- gather and share information on greenhouse gas emissions, national policies and best practices;
- launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and
- cooperate in preparing for adaptation to the impacts of climate change.

The intergovernmental negotiation process primarily encompasses the Conference of the Parties (COP), the Meeting of the Parties to the Kyoto Protocol (CMP), Subsidiary Bodies meetings and a series of workshops. The COP is the "supreme body" of the Convention. The CMP is the "supreme body" of the Kyoto Protocol. The 17th COP will take place from November 28 to December 9, 2011 in Durban, South Africa. It is



expected that ministers and officials from over 100 countries will attend including countries with observer status, industry groups and non-government organizations.

As tourism is so important to poverty reduction and economic development in developing nations, any policies aimed at mitigating and reducing greenhouse gas emissions should be formulated and implemented in a considered way in order not to disadvantage these countries. The transportation sector, so fundamental to tourism, will form a critical aspect of national and international mitigation policy negotiations. Any strong global emission policy for aviation would have considerable consequences for destinations depending on tourism and travel. UNWTO has called for preferential treatment for air services that support the development of tourism in the least developed countries.

In 2009, South Africa committed to mitigation interventions that significantly contribute to a peak, plateau and decline emission trajectory where greenhouse gas emissions peak in 2020 to 2025 at 34% and 42% respectively below a business as usual baseline, plateau to 2035 and begin declining in absolute terms from 2036 onwards, in particular, interventions within the energy, transport and industrial sectors. The tourism sector needs to understand the impact of this commitment on tourism growth and development and to prepare response mechanisms. It is also important that the sector should provide input into South Africa position paper for the COP 17.

#### **4. Conclusions**

The climate is changing and will continue to do so for the foreseeable future. This will result in social, economic and environmental impacts. The degree of these impacts will depend on to what extent nations, industry and individuals mitigate emissions and adapt to changes. The issue of climate change is now firmly entrenched in the global agenda and critical negotiations for a GHG emissions framework continue.

The tourism and travel sector must address the climate change issue and NDT has embraced the challenge of responding and establishing collaborative partnerships, raising awareness, developing guidance and providing support.

NDT is fully committed to promoting a reduction in the impact of greenhouse gas emissions from tourism activities. However, the role tourism plays developing countries needs to be taken into consideration in any domestic or global discussions on emission reductions. Tourism contributes to sustainable development, poverty reduction and the Millennium Development Goals. Any framework agreement should not disproportionately disadvantage those most dependent on tourism.

Many of the potential solutions to reducing greenhouse gas emissions and tackling climate change are complex. It is important that partnerships are developed, maintained and enhanced and research into innovative approaches is continued. The Davos Declaration's specific recommendations to governments, international organizations, tourism industry and destinations, consumers, research and communication networks, set the guidelines of a comprehensive plan of action.

From this discussion document, the following conclusions are made:

- Tourism is not just a potential victim of climate change, it also contributes to the causes of climate change;
- Tourism sector should put in place both adaptation and mitigation strategies;
- Vulnerability assessments will be important source of information for the tourism sector;
- Climate change has a potential to affect the tourism rankings of South Africa as a Tourist destination;
- Tourism will be negatively affected by the effects of national and global response measures due to its reliability on air transport and location of South Africa as a long-haul tourism destination;
- Climate change impacts on the tourism sector would include the effects of droughts, biodiversity loss, rangelands, water resources etc. As a result, cross-sectoral strategies and partnerships are of crucial importance for this sector;
- Involvement of stakeholders at early stages of planning for climate change response measure in tourism is of paramount importance;
- Climate Change is not just a challenge for government, involvement of other stakeholders (particularly tourism destinations) is critical;



## BASELINE ASSESSMENT

- Climatic changes especially the occurrence of frequent droughts and floods pose a big threat to the survival of most wildlife and this is aggravated by loss of habitat through human activities;
- Stakeholder Awareness, Education and Capacity building is an important intervention;
- Climate Change response strategies can be building into the current strategies e.g. Responsible Tourism etc;
- There is a need to enhance climate change and tourism research in the process of developing evidence based response policies;
- Responding to the challenge of climate change will ensure that the tourism sector remain competitive and sustainable. It will also contribute to the realization of the green economy as envisaged in the New Growth Path and contribute to the implementation of the national policy on climate change.





**tourism**

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Department:  
Tourism  
**REPUBLIC OF SOUTH AFRICA**

## **Draft National Tourism and Climate Change Response Programme and Action Plan**

**December 2011**

**Draft National Tourism and Climate Change Action Plan**

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### **Background**

According to the Intergovernmental Panel on Climate Change (IPCC), climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity. The Framework Convention on Climate Change (UNFCCC), further defined climate change as a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods.

The main human influence on global climate is emissions of the key greenhouse gases (GHG) - carbon dioxide (CO<sub>2</sub>), methane and nitrous oxide. Human activities, such as burning of fossil fuel and deforestation, produce greenhouse gases that trap heat in the earth's atmosphere. Most people worldwide are now convinced that the climate is changing, mainly as a result of human activities. There is an urgent need to address these changes by taking actions to:

- slow down the build-up of heat trapping greenhouse gases and remove them from the atmosphere (mitigation); and
- strengthen the natural and physical environments to ensure they can stand up to the effects of climate change (adaptation).

The National Climate Change Response Green Paper (2010), identified tourism as one of many sectors and areas vulnerable to climate change. The impact of climate change on infrastructure and the natural environment has the potential to affect the tourism industry. In some cases this could result in social and economic impacts in areas that highly depend on tourism as a source of income and employment.

Given the cross-cutting nature of climate change, the Green Paper on Climate Change Response necessitates the development of implementation plans by affected sectors. In December 2010, the National Department of Tourism (NDT) established the Tourism and Climate Change Task Team to develop the National Tourism and Climate Change Response Programme and Action Plan. The Task Team's Terms of Reference are attached (Attachment A).

Through the work of the Task Team it has become apparent that addressing the impacts of climate change on the tourism industry require long term policy responses as well as short to medium term actions to inform industry and implement some response measures. This Action Plan put more emphasis on the short to medium term actions. A summary table of Actions is attached (Attachment B).

### **Tourism and Climate Change**

Tourism and travel is a vital contributor to the global economy and especially important for many developing countries. Tourism is an effective way of achieving cultural preservation and nature conservation. As a result, the sector is also contributing to the UN Millennium Development Goals.

Climate change presents a serious threat to society, the economy and the environment and has been an issue of international concern for decades. As climate defines the length and quality of tourism seasons, affects tourism operations, and influences environmental conditions that both attract and deter visitors, the sector is considered to be highly climate sensitive. The effects of a changing climate will have considerable impacts on tourism and travel businesses. In some parts of the world, these impacts are increasingly becoming evident. The Caribbean, Small Island Developing States, Southeast Asia and Africa are the tourism regions thought to be most at risk. Climate change adaptation by the travel and tourism sector will ensure that individuals, communities and nations continue to receive the benefits of tourism.

Tourism and travel is also a vector of climate change, accounting for approximately five per cent of global carbon dioxide emissions. By 2035, under a "business as usual" scenario, carbon dioxide emissions from global tourism are projected to increase by 130 per cent (WMO, UNEP and UNWTO 2008). Most of the increase is attributed to air travel but the sector has pledged to substantially reduce its emissions.

Addressing GHG emissions from the transportation sector is a critical aspect of national and international mitigation policy negotiations. Consequently, it is anticipated that climate change mitigation policy will have both short and long term implications for the costs of transportation that are fundamental to tourism



(automobile, air travel, and cruise ships in particular). International aviation is critical to tourism with 52 per cent of travellers reaching their destination by air. As indicated, it is also the dominant contributor to GHG emissions from travel and tourism (40 per cent of the total industry's carbon dioxide emissions).

### UNWTO and Climate Change

UNWTO has been working to raise awareness on climate change issues in the tourism sector for many years and much has been done. In Tunisia in 2003, the first International Conference on Climate Change and Tourism was organised by UNWTO and several other United Nations agencies. The conference resulted in the Djerba Declaration on Climate Change and Tourism, which highlighted the obligation of the tourism industry to reduce their greenhouse gas emissions and recognized the two way relationship between tourism and climate change.

A second International Conference on Climate Change and Tourism was held in Davos, Switzerland in 2007. The Davos Declaration (the full text of the declaration can be accessed at <http://www.unwto.org/pdf/pr071046.pdf>) included firm recommendations and a clear commitment for action to respond to the climate change challenge including the urgent adoption of a range of sustainable tourism policies.

The World Meteorology Organization (WMO), in collaboration with UNWTO, established an Expert Team on Climate and Tourism. Their role was to improve the application of information in the tourism sector. In 2007, UNWTO launched a Climate and Tourism Information Exchange Service to enable tourism stakeholder's access to research and data. The organization has developed and disseminated technical publications addressing climate change impacts and adaptation responses. The most important of these are "Climate Change and Tourism Responding to Global Challenges" in support of the Davos Declaration, and "Climate Change Adaptation and Mitigation in the Tourism Sector: Frameworks, Tools and Practices" in coordination with the University of Oxford, the WMO, and UNEP released in 2008.

### Need for Tourism and Climate Change Action

Climate change matters to South Africa's tourism. Our geographic location away from most of our key markets, the heavy reliance we place on South's Africa environment in our positioning, and therefore in our visitors' expectations and experience, as well as the high proportion of fuel and energy costs in our product mix all mean that climate change is an issue of relevance for the sector.

From a global perspective, the United Nations World Tourism Organisation identifies four major categories of climate change impacts that will affect tourism destinations, their competitiveness and sustainability.

- Direct climate impacts which are very likely to drive changes in suitability of destinations for activities, seasonality and operating costs.
- Indirect environmental climate change impacts which includes changes in water availability, biodiversity loss, reduced landscape appeal, increased vector borne diseases and a range of other indirect impacts. The loss of biodiversity in natural attractions like the Kruger National Park may reduce its attractiveness to nature loving tourists. The spread of diseases such as malaria as a result of climate change may make some areas less attractive to tourists.
- Impacts of mitigation policies, both at national and international level, which seek to reduce greenhouse gas (GHG) emissions, and are likely to impact tourism flows through increases in transport and other costs. They may also foster environmental attitudes that lead tourists to change their travel patterns.
- Indirect social impacts. Climate change is thought to pose a risk to economic growth on a global scale, reducing discretionary wealth, a key driver of tourism growth.

These impacts will not be felt uniformly by, or even within, destination countries. There also remains significant uncertainty over timing and extent of impacts as consumer, government and industry responses as well as scientific knowledge are constantly developing and this is likely to continue to do so over the short, medium and long term.



This means that destination countries must identify the key climate change issues most relevant to them. Tourism needs to focus on:

- Potential changes in consumer preference away from long haul travel;
- Emerging policy and regulatory settings in South Africa's key markets that may affect demand for travel to South Africa;
- Emerging policy settings in South Africa that may alter the current trading environment;
- Emerging international agreements that may apply to international aviation and maritime emissions (collectively referred to as international bunker fuels) and climate change mitigation; and
- The need to better understand potential physical climate change impacts on tourism and identify adaptation measures.

South Africa is perceived by international visitors as being an environmentally friendly destination and the natural environment acts as the primary attraction for international visitors.

Climate change issues have raised the awareness of environmental sustainability for travel consumers in many markets. South African tourism must appropriately position itself for a world where environmental concerns are becoming more prominent. Climate change generates new challenges which include concerns about emissions generated getting here and home again.

Action by governments in our key markets also matters. Governments are looking at ways to reduce GHG emissions including emissions from travel. The resulting policies are likely to increase the price of travel and may also foster environmental attitudes that lead tourists to change their travel patterns.

Consistent messaging to consumers and policy makers based on solid facts and grounded in an understanding of consumer priorities from all players active in our offshore markets is an important element to reduce these risks.

This Response Programme aims to assist the tourism industry to build its resilience and capacity to adapt to climate change impacts and reduce its greenhouse gas emissions. The best approach that government and industry can take to address the challenge of climate change is to provide clear and consistent advice and information that tourism businesses can act upon.

### **A Tourism Response Programme for Climate Change**

The impacts of climate change will be felt over decades, and even centuries. The Action Plan takes into consideration that tourism contributes to and is affected by climate change and advocates a balanced set of actions on mitigation and adaptation. However, the Action Plan contained in the response programme identifies actions to be delivered in the short to medium term. A phase approach to implementation will be taken. The actions have been clustered into three phases that are in line with the government's financial years i.e. 2012/13, 2013/14 and 2014/15 in order to ensure that the actions are reflected in the departmental annual performance plans.

### **Our 2015 Vision**

The National Tourism and Climate Change Response Programme and Action Plan takes into account that tourism's response to climate change takes place in a context of many other initiatives being taken by government, business and civil society. It is aligned to other government measures aimed at addressing the challenge of climate change i.e. the New Growth Path. Our vision for 2015 is a 'Low Carbon and Climate Resilient Tourism Sector'.

The Response Programme and Action Plan are designed to deliver on the following 5 outcomes:

- A. Improved understanding of the vulnerabilities of tourism to the physical impacts of climate change in order to build resilience and adaptive capacity of the industry;
- B. Reduced Tourism related greenhouse gas emissions;
- C. A fully informed tourism industry through consistent and effective industry outreach and communications;
- D. A nationally consistent, inclusive and cooperative approach to implementation; and



- E. Maintain effective messaging and positioning in our key markets.

The Action Plan recognises that climate change is a long term challenge, that implementation will occur in a dynamic climate change policy environment and that ongoing work and review will be required. The proposed actions are listed below as per the outcome they seek to influence:

### **1. Understanding vulnerability and building adaptive capacity**

*What has already been done?*

The NDT in partnership with the DEA and GIZ has initiated a research project that will assess the baseline impacts of climate change on major tourism attractions and popular tourists' activities. Draft report on the research project has been prepared.

#### **Recommended action(s)**

- 1.1 Assessment guideline developed for other vulnerable tourism attractions and activities as part of the baseline study.

**Resources:** NDT, DEA and GIZ

**Timing:** 01/04/2012 - 31/05/2012 (Phase 1)

- 1.2 Facilitate the implementation of the Assessment Guidelines by major tourist attractions.

**Resources:** NDT and DEA

**Timing:** 01/04/2012 - 31/03/2013 (Phase 1)

### **2. Reducing greenhouse gases from tourism activities**

*What has already been done?*

The NDT in partnership with Eskom conducted nine (9) provincial roadshows that aimed at raising industry awareness on saving energy and other natural resources.

The NDT has conducted a Desktop study that looks at the practicability of developing and implementing an offset programme for the tourism industry.

#### **Recommended action(s)**

- 2.1 Develop a Voluntary Accord for the tourism sector to reduce its carbon footprint.

**Resources:** NDT

**Timing:** 01/04/2012 – 31/03/2013 (Phase 1)

- 2.2 Prepare report on potential GHG emissions management tools for the tourism sector.

**Resources:** NDT

**Timing:** 01/04/2012 – 31/03/2013 (Phase 1)

### **3. Communication and industry outreach**

*What has already been done?*

The NDT held nine (9) Responsible Tourism provincial workshops in 2010. Climate change industry awareness was part of the workshops.

#### **Recommended action(s)**

- 3.1 Coordinate an outreach program of workshops for tourism business across the country to accelerate the communication of climate change issues to industry.



## BASELINE ASSESSMENT

**Resources:** NDT, DEA, DWA, Provincial Departments and Authorities

**Timing:** 01/04/2013 – 31/03/2014 (Phase 2)

- 3.2 Design a Visitor/Tourist Climate Change Awareness Flyer.

**Resources:** NDT

**Timing:** 01/04/2013 – 31/03/2014 (Phase 2)

- 3.4 Provide capacity building to key stakeholders.

**Resources:** NDT

**Timing:** 01/04/2013 – 31/03/2014 (Phase 2)

### 4. Designing a government implementation protocol

*What has already been done?*

The NDT BBEE Focal Point Forum has accepted Responsible Tourism as a standing item on its agenda. The initial meeting of the Task Team on Tourism and Climate Change was held in December 2010. A process to develop an Industry Protocol on Climate Change has been initiated.

#### Recommended action(s)

- 4.1 Establish Guidelines for the Development of Provincial or Local Tourism and Climate Action Plans.

**Resources:** NDT

**Timing:** 01/04/2014 – 31/03/2015 (Phase 3)

- 4.2 Review and report on the implementation of Tourism and Climate Change initiatives over the period of this Action Plan.

**Resources:** NDT

**Timing:** 01/09/2014 – 31/03/2015 (Phase 3)

- 4.3 Encourage provincial stakeholders to report on Climate Change initiatives at the BBEE Focal Points Forum.

**Resources:** NDT

**Timing:** 01/04/2014 – 31/03/2015 (Phase 3)

### 5. Maintain Effective Messaging and Positioning in our Key Markets

*What has already been done?*

The South African Tourism (SAT) as an agency of government has the responsibility to market Destination South Africa in our key markets. The NDT is in the process of establishing an International Branch in order to facilitate the generation of knowledge about our key markets.

- 5.1 Establish and maintain tourism and climate change key message resources for tailoring and use in market by tourism businesses and government agencies.

**Resources:** NDT

**Timing:** 01/04/2013 – 31/07/2013 (Phase 2)

- 5.2 Monitor consumer perceptions and behaviour change related to environmental sustainability and climate change in our key markets.

**Resources:** NDT



## **BASELINE ASSESSMENT**

**Timing:** 01/04/2013 – 31/03/2014 (Phase 2)

5.3 Monitor the international policy environment particularly with regard to efforts by governments to reduce travel demand and/or mitigate travel carbon emissions

**Resources:** NDT

**Timing:** 01/04/2013 – 31/03/2014 (Phase 2)



### Attachment A: Tourism and Climate Change Task Team Terms of Reference

#### 1. BACKGROUND

- 1.1 Climate change is one of the challenges facing the global tourism community.
- 1.2 From a global perspective, the United Nations World Tourism Organisation identifies four major categories of climate change impacts that will affect tourism destinations, their competitiveness and sustainability:
  - Direct climate impacts which are very likely to drive changes in suitability of destinations for activities, seasonality and operating costs.
  - Indirect environmental climate change impacts which includes changes in water availability, biodiversity loss, reduced landscape appeal, increased vector borne diseases and a range of other indirect impacts.
  - Impacts of mitigation policies, both national and international, which seek to reduce greenhouse gas (GHG) emissions, and are likely to impact tourism flows through increases in transport and other costs. They may also foster environmental attitudes that lead tourists to change their travel patterns.
  - Indirect social impacts. Climate change is thought to pose a risk to economic growth on a global scale, reducing discretionary wealth, a key driver of tourism growth.
- 1.3 The South African government has prioritized climate change action, the following major initiatives and actions have been taken:
  - Cabinet approved the Long Term Mitigation Scenarios in 2008;
  - A Climate Change Policy Summit was held in March 2009; and
  - A Draft Green Paper on National Climate Change Response has been developed and the aim is to have a White Paper by the end of the year.
- 1.4 Tourism has been identified as a response sector on the draft green paper because it contribute to the emission of greenhouse gases and is vulnerable to the impacts of climate change.
- 1.5 The tourism sector should define and develop least cost mitigation of greenhouse gases emitted by tourists' transportation, accommodation and activities. In addition, the sector needs to plan its adaptation to climate change impacts such as frequent extreme weather events and sea level rise.
- 1.6 The Tourism Branch within the then Department of Environmental Affairs and Tourism drafted a position paper on climate change.
- 1.7 The Acting Director-General of the newly established National Department of Tourism approved the establishment of a Task Team to develop a National Action Plan on Climate Change and Tourism.
- 1.8 Currently the NDT does not have a comprehensive plan to address the challenges associated with climate change;
- 1.9 The objective is to ultimately have a plan of action that identifies and prioritizes the critical areas of work on tourism and climate change.





### 2. MEMBERSHIP

2.1 Membership of the Task Team will comprise of the following:

- NDT: Responsible Tourism and Research Unit;
- Department of Environmental Affairs;
- Provincial Departments of Tourism and/or Marketing Authorities;
- SALGA and Local Government Tourism Officials;
- South African Tourism;
- TBCSA;
- Academic and Research Institutions (advisory capacity).

### 3. PROCESS

3.1 The Task Team will undertake the following steps to develop the Tourism Action Plan on Climate Change:

- Review currently available national and international research, identify additional research needs and available funding resources for that research;
- Seek an industry perspective on the direct and indirect impacts of climate change on tourism;
- Undertake a review of current programs and initiatives on climate change and tourism;
- Recommend practical actions that industry and government can take forward to increase the industry's resilience to climate change.

### 4. SCOPE

4.1 The Task Team's priority areas (indicative) for action include;

- Conducting research to assess consumer attitudes towards climate change issues, and any changes to traveler behavior;
- Quantifying the tourism industry's carbon footprint and the economic impact of climate change including mitigation measures;
- Examination of localized climate change impacts on popular tourism regions/attractions;
- Identification of strategies to increase the industry's resilience and ability to adapt to physical climate change impacts;
- Assess the effectiveness, credibility and applicability of carbon offset schemes as measures to reduce tourism's carbon footprint;
- Develop a communication strategy that target industry and the consumers;

### 5. OUTCOME

5.1 The outcome of the Tourism and Climate Change Task Team work will be the National Action Plan on Tourism and Climate Change.

### 6. AUTHORITY



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## **BASELINE ASSESSMENT**

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- 6.1 The Tourism and Climate Change Task Team will report to the B-BBEE Focal Points Forum.
- 6.2 Tourism Development Working Group.
- 6.3 MIPTECH



## BASELINE ASSESSMENT

### Attachment B: Summary of Actions

Proposed Tourism and Climate Change Actions 2012/13 – 2014/15		
Action	Resources	Phase (P)
1. Assessment guideline developed for other vulnerable tourism attractions and activities as part of the baseline study	NDT	P1
2. Facilitate the implementation of the Assessment Guidelines by major tourist attractions.	NDT	P1
3. Develop a Voluntary Accord for the tourism sector to reduce its carbon footprint.	NDT and industry stakeholders	P1
4. Prepare report on potential GHG emissions management tools for the tourism sector.	NDT	P1
5. Coordinate an outreach program of workshops for tourism business across the country to accelerate the communication of climate change issues to industry.	NDT, DEA, DWA, Provincial Departments, and Authorities	P2
6. Design a Visitor/Tourist Climate Change Awareness Flyer	NDT	P2
7. Provide capacity building to key stakeholders.	NDT, Responsible Agencies	P2
8. Establish and maintain tourism and climate change key message resources for tailoring and use in market by tourism businesses and government agencies.	NDT	P2
9. Monitor consumer perceptions and behaviour change related to environmental sustainability and climate change in our key markets.	NDT	P2
10. Monitor the international policy environment particularly with regard to efforts by governments to reduce travel demand and/or mitigate travel carbon emissions.	NDT	P2
11. Establish Guidelines for the Development of Provincial or Local Tourism and Climate Action Plans.	NDT	P3
12. Review and report on the implementation of Tourism and Climate Change initiatives over the period of this Action Plan.	NDT	P3
13. Encourage provincial stakeholders to report on Tourism and Climate Change initiatives at the BBEE Focal Points Forum.	NDT	P3

\*Final Draft\*

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