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UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Climate Change and Heritage Tourism:

Threats to Makgabeng in a regional context, Limpopo South Africa.

MSc Geography: Final submission

Fazlin Ahdielah Mcpherson



School of Geography, Archaeology and Environmental Studies

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ABSTRACT

The Makgabeng area is situated in the north-west corner of the Limpopo province in South Africa. The Makgabeng area is an emerging tourist destination with a variety of activities to offer. The area is rich in ancient rock art sites and, as a result, has great potential for the development of heritage tourism. Extensive research has been conducted on the rock art in this region. However, the impact of climate change on heritage tourism has not yet been explored. The local community of the Makgabeng area is developing a heritage tourism destination within the region and it is important to determine whether the initiative will be sustainable, especially in the context of climate change threats to the region. In a region such as Makgabeng where the primary attraction is natural heritage tourism rather than cultural, this then poses a severe threat to tourism within the region, especially since most of these attractions are outdoors. Hence, this research project is primarily aimed at determining climate change threats to heritage tourism in the Makgabeng region, South Africa. The research has employed a mixed-method approach consisting of interviews done with various stakeholders within the tourism industry and community members in the Makgabeng region. The other methods used are hard-copy and online questionnaires, TripAdvisor reviews, and the Tourism Climatic Index (TCI). What the research has found is that people do not know that Makgabeng exists, and for those who are aware of its existence they have never visited the region. this is because the area is not being marketed effectively. The TCI scores show that winter is the best time of the year for tourism. Consequently, stakeholders and community members should market the area with this in mind. However, tourists have said they enjoy the weather in the region all year round.

Keywords: Climate change, Heritage tourism, TCI, TripAdvisor, Makgabeng, Rock art

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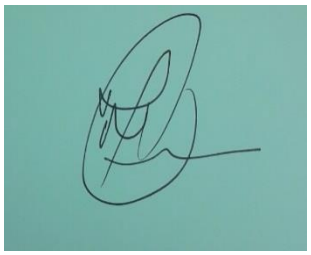
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DECLARATION

I declare that all the work in this project is my own except where it has been acknowledged otherwise. This project is submitted for the complete fulfilment of a Master of Science degree at the University of Witwatersrand, Johannesburg. This research has not been submitted before for any other degree at any other University.



02/11/ 2020

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Candidate Signature Date

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LIST OF ACRONYMS

GPS- Global positioning system

SA- South Africa

SAWS- South African Weather Service

SMME- Small, medium-sized, and micro enterprises

TCI- Tourism Climatic Index

UK- United Kingdom

UNESCO- United Nations Educational, Scientific and Cultural Organisation

UNWTO- United Nations World Tourism Organisation

SCIENTIFIC TERMS USED IN STUDY

CA- Average thermal comfort

CD- Daytime thermal comfort

R- Rainfall

S- Average sunshine hours

W- Windspeed

MEASUREMENTS USED IN STUDY

mm - Millimetres

(˚C) - Degrees Celsius

% - Percentage

km/h – Kilometres per hour

CHAPTER ONE
INTRODUCTION

1.1 RESEARCH BACKGROUND

Before the Covid-19 Pandemic, the South African tourism sector was growing rapidly, especially after the fall of apartheid. This is good as tourism contributes considerably to the local economy (Fitchett et al., 2016, 2017; Noome and Fitchett, 2019). In South Africa, many places like the Makgabeng with small, medium-sized, and micro enterprises (SMME) are dependent on tourism to improve the local economic development of the area. Tourism is very important for many destinations all over the world because it is one of the largest economic boosters (Gössling and Hall, 2006; Vistad et al., 2016; Hoogendoorn and Fitchett, 2018; Noome and Fitchett, 2019). It is extremely important to help communities maximise sustainable tourism opportunities. Caution needs to be taken to ensure that the costs, such as the loss of privacy and lifestyle as well as actual monetary costs, are mitigated by long term income (UNESCO, 2007). This means that one would have to anticipate and plan for future threats to tourism, while at the same time maximizing current conditions (Gössling and Hall, 2006). These threats can include, but are not limited to, crime, terrorism, and changing consumer patterns (Gössling and Hall, 2006). The most pressing threat to tourism is climate change (Gössling and Hall, 2006). There is a growing body of literature around climate change and heritage tourism in the Northern hemisphere (Scott et al., 2004, 2012, 2019; Amelung et al., 2007; UNESCO, 2007; Gössling et al., 2012; Chmutina et al., 2016; Fitchett and Roshan, 2020) but very little is known for the Southern Hemisphere. The majority of research for the African continent has focused on coastal locations in Southern Africa, such as some of the studies done in St Francis Bay in the Eastern Cape (Hoogendoorn et al., 2016). There have also been studies conducted on urban tourism (Pandy, 2017; Pandy and Rogerson, 2018, 2019;

Rogerson, 2002, 2016; Rogerson et al., 2006), snow-based tourism (Stockigt et al., 2018; Noome and Fitchett, 2019) and on known tourism destinations using TripAdvisor and TCI (Fitchett et al., 2017; Fitchett and Hoogendoorn, 2018a, 2018b; Noome and Fitchett, 2019). However, not much is known about Limpopo. The only work that has been done in Limpopo focuses on rock art sites (Eastwood et al., 2002; Smith and Van Schalkwyk, 2002; Smith and Ouzman, 2004; Eastwood and Smith, 2005; Namono and Eastwood, 2005; Namono, 2018). Another project that has been done specifically for the Makgabeng region looks at sustainability and community heritage tourism in the Makgabeng (Radebe, 2017).

1.1.1 Climate change threats to tourism

Climate change is increasingly recognised as a major threat to the sustainability of tourism, including heritage tourism (Becken, 2005; Gössling and Hall, 2006; Lu and Nepal, 2009; Rogerson, 2016; Fitchett and Roshan, 2020). Climate is a very important factor when considering tourism, as it determines how long tourists are willing to stay in a certain place. It also dictates the type of activities they would most likely take part in (Gössling and Hall, 2006; Gössling et al., 2012; Hoogendoorn et al., 2016; Fitchett et al., 2017). Climate plays a significant role in the selection of particular tourist destinations; therefore, climate change has the potential to change the popularity of tourism localities and regions on a global scale (Hoogendoorn and Fitchett, 2018). The enjoyment of tourist destinations depends on the comfort of the tourist visiting that location, which is controlled in part by weather conditions (Gössling and Hall, 2006; Fitchett et al., 2016; 2017, 2018; Noome and Fitchett, 2019). For example, if a location is too hot tourists would not be able to enjoy any outdoor activities for long periods. The same goes for cold and wet weather as this will hamper or ultimately prevent any outdoor activities for that period (Hoogendoorn and Fitchett, 2018). It is argued that the way tourists respond to the climatic conditions of holiday destinations depends directly on the

climatic conditions of their home countries (Gössling and Hall, 2006). For example, tourists who are travelling from countries with cold climatic conditions will most likely experience sensitivity to extreme heat conditions, whereas tourists who are accustomed to warmer temperatures may be uncomfortable with colder climate conditions (Fitchett and Hoogendoorn, 2018). Weather affects tourists' experiences of a destination, their ability to take part in activities, and their likelihood to return (Mieczkowski, 1985; Becken, 2005; Gössling and Hall, 2006; Fitchett et al., 2017, 2018). The mean climate of a destination influences the choice of location, timing of the trip, and the length of stay (Fitchett et al., 2017). Under climate change, the weather and climate of tourism destinations are projected to change, in many instances to much warmer conditions and markedly different rainfall regimes (Scott et al., 2012; Fitchett et al., 2017; Tyson and Preston-Whyte, 2000). Therefore, in planning for a new tourism destination, one needs to assess what tourists consider to be 'bad weather' and 'unsuitable climate' and determine how those factors are likely to change in future decades (Fitchett and Hoogendoorn, 2018; Gössling et al., 2018). This enables the development of a tourism destination that is and will remain climatically suitable for tourist visits and activities (Fitchett and Hoogendoorn, 2018).

1.1.2 Heritage Tourism

Heritage tourism is defined as "a subgroup of tourism in which the main motivation for visiting a site is based on the places heritage characteristics according to the tourist's perceptions of their own heritage" (Poria et al., 2001: 1048). Examples of heritage tourism can include elements such as "music, dance, language, religion, foodways and cuisine, artistic traditions, festivals, material vestiges of the built and cultural environment including monuments, historic public buildings and homes, farms, castles and cathedrals, museums and archaeological ruins and relics" (Timothy and Nyaupane, 2009: 3-4). Heritage tourism also includes archaeological

sites and features that are usually associated with historical sites, human artefacts and features and various locations that have historical importance (Hall et al., 2011). Heritage tourism has increasingly become one of the most popular forms of tourism in the Global South (Rogerson and Van der Merwe, 2016). Cultural and heritage tourism are now said to represent one of the major growth markets in global tourism (Tlabela and Munthree, 2012; Rogerson and Van der Merwe, 2016). Heritage tourism is quickly becoming part of a huge global sector of cultural tourism and it has been suggested that heritage tourism should be seen as one of the important contributors to the South African economy (Khumalo et al., 2014). Van der Merwe (2013) identifies heritage tourism as an important feature in many developing countries, particularly in Africa. Heritage tourism is also beginning to grow in popularity in South Africa (Van der Merwe, 2013). As many heritage sites are located in the cities, heritage tourism can be seen as a potential growth segment for urban tourism (Van der Merwe, 2013). However, there are gaps in the research. There has not been any work done that focuses on climate change and the effects it has on heritage tourism, specifically in Limpopo, South Africa.

This research focuses on climate change and how it affects heritage tourism specifically in Makgabeng. The Makgabeng area is situated in the north-west corner of the Limpopo province in South Africa. The Makgabeng plateau is extraordinarily picturesque, with a mixture of a bushveld-savanna biome and yellow-wood forests (Van Schalkwyk, 2009). The region experiences warm summers with heavy thunderstorms with an average rainfall of less than 500 mm per annum and the winters are dry with some frost in the more isolated areas of the mountain (Van Schalkwyk, 2009:15). The area has great potential for heritage tourism due to the rock art sites. Extensive work has been done on the ancient rock art in this region (Eastwood et al. 2002; Smith and Van Schalkwyk, 2002; Smith and Ouzman, 2004; Eastwood and Smith,

2005; Namono and Eastwood, 2005; Namono, 2018), but none has focused on how climate change affects heritage tourism in the area.

1.2 RESEARCH RATIONALE

The Makgabeng community are developing a heritage tourism destination whose main thrust is the rock art within the region. It is important to determine whether their efforts will be sustainable in the future, hence this the research is particularly concerned with the climate change threats to the region. Not a lot of work has been done regarding this topic in Makgabeng; work that has been done only focused on sustainable heritage tourism in the area (Radebe, 2017). Hoogendoorn and Fitchett (2018) argue that the Global South has been researched and investigated a lot less than the Global North, which has been studied by numerous authors, see (Scott et al., 2004, 2012, 2019; Becken, 2005; Perch-Nielsen et al., 2010; Roshan et al., 2016). The Global South is considered particularly vulnerable to climate change, as their comparatively lower adaptive capacity places them at greater risk (Hoogendoorn and Fitchett, 2018a). Despite this vulnerability, the Global South has a large number of countries with rapidly growing tourism sectors (Hoogendoorn and Fitchett, 2018a). There is a growing body of literature on tourism and climate change globally and in South Africa (Hoogendoorn and Fitchett, 2018a, 2018b), but very little work is focused on heritage tourism and climate change. In Southern Africa, a lot of our heritage tourism is outdoors, and in a region such as the Makgabeng, where the primary attraction is heritage tourism, climate change then poses a severe threat. This research seeks to explore how tourists experience heritage tourism destinations in areas like Makgabeng.

1.3 RESEARCH AIMS AND OBJECTIVES.

The project is primarily aimed at determining climate change threats to heritage tourism in the Makgabeng region, South Africa. The research will do so by trying to understand the tourists' satisfaction with the weather during their stay and the key climate variables that they respond to.

This will be achieved through the following objectives

1) To understand the target market of these attractions by determining tourists':
    a. Country of origin
    b. Reason for selecting this attraction to visit
    c. Primary interest in the attraction
2) To understand the tourists' sensitivities to the climate during their visit
    a. Are they satisfied with the weather they experience?
    b. Were they well prepared for the weather?
    c. Were they able to take part in all of the activities they wanted to?
3) To determine the tourist's perceptions regarding climate change threats to the region
4) To determine the tourism operators' concerns regarding climate change and their adaptation plans.

1.4 STRUCTURE OF THE DISSERTATION

Chapter two will provide a synthesis of the relevant literature that demonstrates that the researcher is familiar with the key authors, texts and with the central concepts relevant to the study. It will also try to show how the study will contribute to what we already know and fill the niche/gap identified in the introduction.

Chapter three will give a brief introduction to the study approach and design (e.g. qualitative or quantitative). It will then define the population, sample, sampling method, and recruitment activities. It will be as specific as possible by giving the actual sample size and motivation for the sampling method that was chosen. It will then follow by describing the methods of data collection such as the tools that were used for recording. The section will also describe how the research will analyse the data. For qualitative studies, it briefly explains how the research will enhance the trustworthiness and rigour of the study.

Chapter four is the study site section, in which a brief outline of the region along with some demographic data of the specific site will be discussed at length. The section will also focus on the rock art sites in the region as well as the climate of the area.

Chapter five will discuss results and analysis, the research will present quantitative results in the form of tables and graphs and then analyse and interpret them. The qualitative results will be interpreted and discussed at length as well as the TripAdvisor reviews and the TCI scores and will conclude with a synthesis of all the data that was captured.

Chapter six will be discussing the results and comparing the data to some of the literature that was provided in the literature review section. It will do this by comparing and contrasting

relevant information and this is also where we will see if the research has filled the gaps in previous research.

Chapter seven will be the last section of the research; here the research will look at some of the most important aspects that were discussed and sum up everything. It will also look at whether or not it has met the objectives/aims of the study and also mention the research limitations.

CHAPTER TWO
LITERATURE REVIEW

2.1 HERITAGE TOURISM IN SOUTH AFRICA

Climate change has increasingly become one of the major threats to tourism sustainability and this includes heritage tourism (Hall, 2016). There is a growing body of literature on climate change and heritage but very little that specifically focuses on the relationship between heritage tourism and climate change (Hall, 2016). From the Galapagos Islands to Australia and its coral reefs, most of the worlds famous heritage sites are vulnerable to climate change. Before we solely focus on South African heritage tourism one will look at some international work on heritage tourism. According to UNESCO and UNEP (2016:5) "there are more than 1000 world heritage sites in 163 countries" many of which are very important tourist destinations. However, "the exact proportion of global tourism that can be attributed to heritage tourism is unknown" (Hall, 2016: 4). Tourism at these heritage sites can be beneficial for national and local economies as tourism development brings in economic opportunities, public awareness and infrastructure development (UNESCO and UNEP, 2016). There are a number of heritage sites around the world that are feeling pressure resulting from the increase in visitors to the area as well as the vulnerability towards climate change, due to its dependence on the environment as a factor in the attractiveness of a particular destination (Gössling et al, 2012; Hall,2016), some of these places include but are not limited to the following: the Galapagos Islands in Ecuador, the city of Venice in Italy and the Forest of the Cedars of God in Lebanon (UNESCO and UNEP, 2016).

South Africa has several natural and cultural heritage sites spread across the entire country, these places are internationally recognised and tend to attract tourists from all over the world

on an annual basis (Rogerson and Van der Merwe, 2016). Heritage tourism is quickly becoming part of a huge global sector of cultural tourism and has been suggested that heritage tourism should be seen as one of the important contributors to the South African economy (Khumalo et al., 2014). The reason being is that the country has a lot to offer such as some of the most prominent rock art and archaeological sites in places like Mapungubwe, Mokopane, The Cradle of Humankind and Makgabeng to name a few. There has also been a lot of work done on other heritage sites within South Africa such as the Hector Pieterson Memorial and museum (Masilo and Van der Merwe, 2016). Some research also looks at urban heritage tourism, seeing as some heritage sites are located in cities, heritage tourism is a potential growth for urban tourism, the Constitution Hill, Mandela's house and the Apartheid museum are just a few examples (Van der Merwe, 2013). Another form or heritage tourism that one can look at within South Africa is industrial heritage tourism one such example is the at the Big Hole in Kimberly (Van der Merwe and Rogerson, 2013). In Terms of rock art heritage tourism there has been some work done on the geometric and handprinted rock art in the Limpopo basin (Eastwood and Smith, 2005), there is also work that has been done in Tandjesberg rock art painting site in the Free State exploring San culture (Smith, 2006). Finally there is also some rock art heritage tourism that has been done in Makgabeng focusing on San and Khoekheon art (Namono, 2018). Binns and Nel (2002: 236) suggest that South Africa's natural and cultural heritage is one of the most interesting and fast-growing tourist attractions in the world.

Tourism is evolving in the new democratic South Africa and is broadly defined as "the theory and practice of touring, or travelling for pleasure" (Leiper, 1979: 391 in Khumalo et al., 2014: 1). The concept of heritage tourism on the other hand has been defined in two different yet important ways. Southall and Robinson (2011: 177), define Heritage tourism as "encompassing both tangible and intangible aspects of both culture and heritage". On the other hand, Khumalo

et al. (2014:2) define heritage tourism as “the present-day use of the past”. Masilo and Van der Merwe (2016), state that heritage tourism contributes to demonstrating the diverse cultural offerings that the country has to offer.

Heritage tourism is considered as being important because of the economic and social benefits that it yields in various developed and developing countries around the world (Beeho and Prentice, 1997; Timothy and Nyaupane, 2009; Garrett, 2012; Hall, 2016; Masilo and Van der Merwe, 2016). South Africa in particular is naturally and historically recognised for a number of heritage sites such as the Fossil Hominid Sites of South Africa, also known as the 'Cradle of Humankind’ (Odeku, 2018). The site has one of the world's richest concentrations of hominid fossils which are evidence of human evolution over the last 3.5 million years (Durand Meeuvis and Fourie, 2010). The opening of Maropeng in 2008 alongside the Sterkfontein site in South Africa, is positioned as a premier tourist destination for hominid or early human fossil sites Naidu (2008).

Cultural heritage tourism is a means of maintaining the past while at the same time being able to improve a community’s quality of life through job creation and economic development, however the challenge is that these communities and heritage sites need to provide special and unique tourist experiences that will ultimately bring in jobs and economic development, the second part of this challenge is that there is a need to preserve the nature of the community as well as its cultural resources while at the same time “ensuring the sustainability and authenticity of the tourist product” (Rotich, 2012: 217). Another challenge is the fact that cultural heritage tourism is not effectively marketed or promoted (Rotich, 2012). It is argued by Powell et al. (2016), that heritage is mostly used as a means to establish certain political legitimization and to asses certain contending claims that is used as a way of reconstructing and creating a tourism

economy, they further state that heritage is however seldomly used as a means of addressing current environmental problems such as climate change.

2.2 CLIMATE CHANGE AND TOURISM IN SOUTH AFRICA

Odeku (2018) suggests that there is a deep concern around heritage sites being vulnerable to various threats, such as the impact and effect of global climate changes, mining pollution, and other hazardous human activities (Gössling and Hall, 2006; Odeku, 2008). This may result in the degradation of these heritage sites and will consequently lower their tourism value and importance (Odeku, 2008). Climate change, as well as the activities that were mentioned above, could destroy certain archaeological artefacts as well as archaeological remains, specifically with the rise in temperature in indoor tourism facilities (Fitchett and Roshan, 2020). It could also destroy the natural environment of a certain place (Odeku, 2008). Therefore, it will ultimately lower the value and importance of these heritage sites because they will no longer hold the same status as they previously would (Odeku, 2018).

According to Tompkins and Adger (2004: 28), climate change is defined as "a change in the statistical distribution of weather patterns when that change lasts for an extended period of time". The concept of climate change is explained by stating that these bizarre weather events like severe flooding, drought and extreme heatwaves are caused by factors such as biotic processes, variations in solar radiation received by the earth, and volcanic eruptions (Tompkins and Adger, 2004). Climate is a key factor that is implicitly considered while planning ones' travel; it is also considered when looking at locational planning as well as destination marketing and infrastructure development (United Nations World Tourism Organisation, 2008). Remarkably, human activities tend to play a significant role regarding the causes or trigger of climate change, often referred to as global warming (Tompkins and Adger, 2004).

Climate change has an impact on every aspect of living and non-living things in the environment and the earth. Climate change is arguably one of the most important problems that the world is facing today (Hall, 2010; Scott et al., 2012). The climate influences a wide range of environmental resources that are crucial to tourism, such as wildlife production, snow conditions, biodiversity as well as water levels. It also plays a role in various tourism operations such as heating and cooling costs of certain tourist operations (United Nations World Tourism Organisation, 2008). The tourism industry is presently considered one of the key global economic divisions that are the least prepared for climate change (Scott et al., 2012). According to Tompkins and Adger (2004), heritage sites can be both cultural and natural sites which in turn form part of the environment, and, as a result, they too are vulnerable to climate change. Fitchett et al. (2017) argue that the role of climate change in determining the flow of tourism tends to be heightened in regions that provide a large proportion of outdoor attractions.

The suitability for a particular climate tends to vary for different types of tourism and so does the satisfaction of an individual tourist. Climate can be seen as one of the most important factors that tourists consider when planning their travel as it is said to have "universal importance in defining a destination's attractiveness" (Scott et al., 2012b: 56). It has also been stated by Hall (2008) that climate change has various indirect and direct influences on how tourists decide on a particular destination as well as the destination's attractiveness. Just as climate affects the tourist's destination choice, so too does it affect the timing of one's travel (Scott et al., 2012a). Some types of tourism need specific types of climate, for example, beach tourism, winter sports tourism, and various outdoor tourism (UNWTO, 2008). South Africa is one of these countries as it offers a large and varied amount of outdoor tourist attractions. An increasing number of tourists are flocking to coastal regions and beaches, the Kruger National Park in Mpumalanga and smaller national parks as well as waterfalls, rivers, and mountainous hiking trails (Fitchett

et al., 2017). Scott et al. (2012) argue that the weather conditions at a particular destination for many travellers are central to their overall satisfaction of the trip. Extreme climate-associated environmental occurrences tend to have several major impacts on tourism operators, especially for places like coastal regions (Scott et al., 2012). Due to the predominance of outdoor attractions in South Africa and the relatively low adaptive measures of the region to climate stressors, the South African tourism sector is becoming increasingly susceptible to the effects of climate change. This susceptibility will possibly negatively affect the most vulnerable in the tourism industry (Fitchett et al., 2016a, b; Rogerson, 2016).

Scott et al. (2012: 14) concur with this idea, arguing that climate change now "constitutes one of the most critical sustainability challenges for global tourism". The physical impacts of climate change present many challenges for tourism with regards to the effects it has on tourism destinations, various resources, infrastructure, tourist behaviours and flows, and destination competitiveness (Hall et al., 2016). Amusan and Olutola (2017:5) suggest that "the relationship between climate and tourism is not only complex but also multifaceted". While favourable weather conditions can promote tourism, unfavourable conditions can discourage tourists from going to certain destinations (at local and international levels). Certain tourism destinations as well as the tourism industry are very sensitive to climate variability (UNWTO, 2008). This ultimately means that the climate defines the length and quality of a tourism season, and it also plays a crucial role in the choice of a tourist destination as well as how long the tourists decide to stay at a certain tourist destination (UNWTO, 2008). As a result of this all, tourism destinations, as well as businesses, need to adapt to climate change so that they can lessen the associated risks and try to think of new opportunities in an environmentally, economically, and socially sustainable way (UNWTO, 2008).

2.3 CLIMATE CHANGE THREATS TO HERITAGE SITES

Climate change not only affects heritage sites and the environment, but it also affects the people who live in these areas (UNESCO, 2007; Fernandes, 2016; Hall, 2016; Hall et at., 2016). Heritage sites often provide the people in the surrounding areas with employment opportunities as well as a stable source of income (UNESCO, 2007). Odeku (2018) agrees with the above statement, noting that tourists' sites are sources of employment, jobs and livelihood to the majority of the people who live and work around these heritage sites. Zamani- Farahani and Musa (2008) state that in Iran heritage tourism represents the primary tourist attraction and it can be considered important for the country's economic growth. Odeku (2018) and Gössling and Hall (2006) state that if these heritage sites are destroyed by various bizarre weather events as a result of the impact of climate change, this will, in turn, have several negative effects on the people who ultimately rely on these heritage sites for their livelihood. However, according to Odeku (2018), climate change is not the only problem that seems to be affecting these heritage sites, another threat in South Africa is the impact of mine pollution on most of these significant and rich archaeological and palaeontological resources. One such example would be the Cradle of Humankind adjoining one of the richest gold-bearing geological sequence in the world (Durand et al., 2010).

The United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2007: 23) states that "archaeological evidence is preserved in the ground because it has reached a balance with the hydrological, chemical and biological processes of the soil. Short and long cycles of change to these parameters may result in a poorer level of survival of some sensitive classes of material". If climate change, as well as other sources of pollution such as acid mine drainage, continue to persist we will no longer be able to excavate archaeological material (through which we can explain our heritage) as it will be destroyed, and this will be the downfall of

heritage tourism as we know it (UNESCO, 2007). It is our duty as a country and as global citizens to put certain measures into place that will prevent or at least slow down the damaging effects of climate change.

One could also look at climate change threats to heritage tourism on a more global scale. It is said that there are a number of physical effects that climate change may have on heritage tourism, such as the rise in sea levels, increases in extreme weather events, and also various changes in humidity (Hall et al., 2015). In Iran, it is said that the increase in climate change poses a significant threat to climate suitability, specifically for heritage tourism (Fitchett and Roshan, 2020). The potential climate change impacts on the Great Barrier Reef (Australia) include sea-level rise, sea temperature increase, storm frequency and intensity, precipitation, drought, land run-off, changing oceanic circulation, and ocean acidity (UNESCO, 2007; Hall, 2008). One of the major threats to this world heritage site is the rise in sea temperature which ultimately results in coral bleaching. This could also lead to the melting of the ice caps which in turn leads to massive flooding in certain areas such as mountainous ecosystems and Polar Regions. The other climate change threat to heritage tourism is drought specifically in places like the Cape floral region in South Africa. Another threat would be the rise in sea levels targeting coastal regions, with heritage tourist sites such as Robben Island or places like the Doñana National Park in Spain (the park is home to 365 recorded species of resident and migratory birds). If the sea level surrounding this wetland continues to rise it may threaten the remaining "wetland areas through saltwater inundation which threatens the survival of this important migratory bird habitat" (UNESCO, 2007: 21). The Cultural heritage attractions along Britain's coastal region is at tremendous risk due to the rise in sea levels (Scott et al., 2012).

The natural environment can be seen as a very important aspect in determining the demand for tourism, specifically that of nature-based tourism (UNWTO, 2008). Becken and Hay (2007) argue that tourism above any other industry relies profoundly on the natural environment and this reliance poses a threat, especially when climate change affects the attractiveness of a destination. However, cultural heritage can also be seen as an asset for the foundation of tourism, like being able to visit certain places for their indigenous, archaeological, historic, and architectural value (United Nations World Tourism Organisation, 2008). It has been suggested by Becken and Hay (2007: 86) that "tourism is heavily influenced by factors that are beyond the individual firm". Tourism is prone to certain external threats that may not necessarily apply to other sectors, for example, the fact that for certain tourist destinations' communities play a vital role in climate change adaptation and this then determines the viability of these tourist destinations.

Three main factors play a role in the choice of a destination: personal safety, the climate, and finally the natural environment (Gössling and Hall, 2006; UNWTO, 2008; Becken, 2010; Amusan and Olutola, 2017; Li et al., 2018). Climate is the principal driver and is argued to be the most problematic feature of the tourism industry. It is further argued that weather and climate are very important in defining the attractiveness of a destination and are essential factors when selecting a holiday destination as well as the timing of ones' travel (UNWTO 2008; Scott et al., 2012; Fitchett et al., 2017; Fitchett and Hoogendoorn, 2018; Noome and Fitchett, 2019; Scott et al., 2019). According to the UNWTO (2008), just as the direct condition of climate change, indirect environmental effects are expected to have a very important effect on a tourists' demand for a certain tourist destination but will not affect the overall demand for tourism. Additionally, societal changes that are the result of climate change, such as economic and political instability in certain regions as well as various changes in consumer lifestyles, and

patterns, are more likely to affect the overall demand for tourism in a particular tourist destination (UNWTO, 2008).

Cultural heritage is becoming a very popular attraction for tourists and these cultural activities as well as these indigenous traditions are amongst the most fragile aspects of society (UNWTO, 2008). The reason for this is that most of these practices and processes have started falling away and disappearing due to factors such as globalisation, urbanisation, and emigration among others. In addition to these factors, the physical impacts that climate change has on landscapes (Scott et al., 2012; Fitchett and Hoogendoorn, 2018) and buildings can also be seen as the cause of the abandonment and breakup of certain communities, which in turn leads to the loss of cultural memory and various rituals (UNWTO, 2008; Seyfi et al., 2019). It is argued by the United Nations Tourism Organisation (2008: 79) that "attractions such as local arts and crafts, dances and traditional agricultural land use are important draws for tourists in destinations such as Australia, Africa and Asia".

It is undeniable that all tourism operators and destinations will have to start thinking of ways in which they could adapt to climate change that will help them minimize the risk and that will also be beneficial for them in an economically, socially, and environmentally sustainable way (Becken, 2005; UNWTO, 2008; Gössling et al., 2012; Scott et al., 2012; Amusan and Olutola, 2017; Fitchett and Hoogendoorn, 2018; Noome and Fitchett 2019; Scott et al., 2019; Seyfi et al., 2019). As world heritage sites are seen as the most vulnerable to the threats of climate change, places such as Timbuktu in Mali have had to put certain measures into place to help preserve its heritage as this area has suffered from both flooding and desertification as a result of climate change over the past few years (UNWTO, 2008). There have been various adaptation processes that have been put into place at this cultural heritage site to help combat the effects

of climate change, some of them include improving the drainage systems, the removal of sand from the most visited places in this area (such as places of worship like mosques), and also the restoration of certain mosques and historic houses and buildings (UNWTO, 2008).

CHAPTER THREE
METHODOLOGY

3.1 METHODOLOGICAL APPROACH

A mixed-method approach has been adopted. There has been a lot of work done in climate change and tourism in South Africa that has been based on both in-depth interviews and questionnaires (Fitchett et al., 2016a, b). The research has adapted the methodology from climate change and tourism literature. The research has been using questionnaires to get rapid responses from tourists as it will use a minimal amount of the tourists' time (Van der Merwe, 2013). The research will also use TripAdvisor reviews to investigate tourists' experiences of the particular region from their previous visits (Fitchett and Hoogendoorn, 2018a, b; Stockigt et al., 2018). Finally, the Tourism Climatic Index (TCI) scores of the Limpopo region will be calculated to determine whether the climate is suitable for tourism (Fitchett et al., 2017; Noome and Fitchett, 2019). These methods have been selected from published literature on heritage tourism and climate change tourism (Van der Merwe, 2013; Van der Merwe and Rogerson, 2013; Masilo and Van der Merwe, 2016; Fitchett et al., 2016a, b; Fitchett et al., 2017; Noome and Fitchett, 2019; Fitchett and Roshan, 2020). One such study was conducted in Iran that focused on climate change threats to cultural and heritage tourism with specific use of the TCI (Fitchett and Roshan, 2020). These methods (interviews and questionnaires) have specifically been chosen to get in-depth responses from stakeholders, community members, and tourists. TripAdvisor was used as a tool to get in-depth responses from tourists who have already visited the region. This is a good tool as tourists can give their honest opinion about specific places that they have been to, so one would most likely find both good and bad reviews on this site. The TCI was used extensively as it is a good method to use to check the climatic suitability of a specific destination (Fitchett et al, 2017). The research has also used in-depth interviews for

the various tourism operators (Gössling and Hall, 2006; Becken, 2010; Pandy and Rogerson, 2018; Smith and Fitchett, 2020) as well as the community members. With the data that has been collected, content analysis will be applied to see what the key climatic variables are that have been mentioned and how these differ in terms of international and local tourists. In particular, the research is looking to determine the extent to which there is an agreement or disagreement between the different parties, particularly in terms of the environmental threats. The research questionnaire (Becken, 2005; Van der Merwe, 2013a; Khumalo et al., 2014) has included factors such as the demographics of the tourists, what type of weather conditions tourists tend to look out for before they decide to go to these places, and what activities they want to take part in. So, the research is a mixture of understanding what they want as a heritage destination (because it is up and coming) and also what the role of climate is.

This study explores how temperature, or the amount of precipitation affects tourists' choices regarding the activities they would like to do (Mieczkowski, 1985; Gössling and Hall, 2006; Li et al., 2018; Pandy and Rogerson, 2018; Smith and Fitchett, 2020). Furthermore, it has also looked at some of the key stakeholders to get a sense of their understanding of climate change and their perceptions of the threats, like what they are doing to plan and what they think their tourists are experiencing in terms of the weather (Becken, 2005; Gössling et al., 2012; Scott et al., 2012a; Fitchett and Hoogendoorn, 2018; Noome and Fitchett, 2019; Scott et al., 2019; Smith and Fitchett, 2020).

3.2 ETHICS

For this research to be conducted successfully some ethical considerations had to be deliberated. Ethical clearance was granted by the University of Witwatersrand Human Non-Medical Committee, ethics clearance number (H190414). Consent was obtained from each of

the participants before any of the interviews or questionnaires were administrated. Consent for audio recording and photography was also obtained. Participants were not pressurised into doing anything they do not want to do, and no harm would likely arise during the process of the research. The intent to respect the research participants' right to freedom, dignity, privacy (including the right to remain anonymous), and bodily and psychological integrity. All information gathered has been used for academic purposes only, and their details have been kept anonymous at their request. Participation was voluntary and they could withdraw at any time. It is important to note that respondents have not benefitted financially from being a part of this study. However, their participation is greatly appreciated in furthering the knowledge and studies of the researcher.

3.3 POSITIONALITY

According to Sanchez (2010: 2257), positionality is "the notion that personal values, views and location in time and space influence how one understands the world" where these positions "act on the knowledge a person has about things, both material and abstract. Consequently, knowledge is the product of a specific position that reflects particular places and spaces" (Sanchez, 2010: 2257). This was the case when we went into the community. Before we were able to conduct the interviews with the respective community members, researchers were asked to wear scarfs to cover their heads. They also needed to wear sarongs over their pants so that it would hide the outline and shape of their bodies. This was also seen as a sign of respect and creating a good rapport with the community members. On the other hand, the fact that the researchers came into the area and drove up to the participants in a big car may have made the participants feel a bit intimidated. This in turn could have possibly affected the way that the community members were responding to us as well as the type of answers that they had given. There was, however, one very interesting case where the positionality of the researcher did not

mean anything to one of the participants, as he outright stated that there is no longer any rain in the area because their rainmaker died. On the other hand, the fact that the researcher was a young higher degree student, the informants from the community did not hesitate to give detailed explanations as they must have seen this as an opportunity to further enhance the researcher's knowledge, like socially culturalising the researcher about their lifestyles.

3.4 RESEARCH METHODS

3.4.1 INTERVIEWS

a. Sampling technique

With regards to the research population, the researcher has been working with key stakeholders such as the people who run various tourism operations including museums, guest houses, and people working within the tourism sector in the Makgabeng area. Participant selection for both community members and stakeholders has been based on purposive (Masilo and Van der Merwe, 2014; Amusan and Olutola, 2017) and snowball sampling (Giddy et al., 2017). Thereafter, interviews have been conducted with at least nine stakeholders who were people from the regional Department of Tourism, the Limpopo Tourism Agency, the Polokwane visitor information centre, the museum guides, and the Makgabeng guides. As for the community members, the researcher has conducted interviews with 13 people from the Villages of Thabantlana and Niewe Jerusalem on the Makgabeng plateau who are involved in heritage tourism activities in the area.

b. Data collection, in-depth interviews

This method was chosen because qualitative research is more detailed in that one can ask open-ended questions and seek peoples' perceptions and interpretations of certain things (Masilo and Van der Merwe, 2014). This method allows for more detailed information. Both stakeholders and community members were asked approximately 30 open-ended questions. A recording

device was used but only when the participants agreed to be recorded. All interviews were then transcribed and analysed thematically, exploring the participants' perceptions around climate change and how climate change affects heritage tourism in South Africa, specifically their tourist operations. Participants were firstly asked a series of demographic questions just to get some background on each of them. Demographic questions consisted of questions such as: how old they are and how long have they been working or living in the area. These were then followed by questions that seek to understand the interviewees' perceptions around climate change and how it affects their surroundings and tourist operations. The researcher asked questions which focused on some of the greatest challenges that the participants face in attracting tourists, what they would describe as the best or worst weather for their tourism offerings, have they noticed any changes in the weather patterns over the past few years, and if there were any changes how this ultimately affects them as well as their tourist offerings.

c. Data analysis, qualitative analysis of questionnaires and interviews

All interviews with stakeholder and community members were transcribed and analysed using thematic analysis, which is a method "for identifying, analysing, organising, describing and reporting themes found within a data set" (Norwell et al., 2017: 2). All the data that had been gathered from the interviews have been decoded using this method of analysis.

3.4.2 QUESTIONNAIRES

a. Sampling technique for tourists

Approximately 34 tourists who have been part of a convenience sampling from the museums in Polokwane, the Polokwane airport, and various guest houses in Makgabeng and the greater Blouberg municipality have been asked to fill in a short questionnaire about the specific field sites. The researcher was hoping to find a mixture of local and international tourists, but most of the sample turned out to be local (South African). With the questionnaires that have been

handed out, the project was able to get a good sense of which of these groups tend to frequent the greater Limpopo region more often and when they prefer to visit these areas.

b. Data collection

Quantitative research (questionnaires in this case) is used to explain certain phenomena by collecting and analysing numerical data. With quantitative research, we classify and count data so that they can be statistically constructed as a means of explaining and analysing what has been observed. With quantitative research, one could use surveys and questionnaires that include yes and no type questions or one sentence type questions. This method was chosen to get a rapid response from tourists without taking up too much of their time. Questionnaires were made up of a mixture of open and close-ended questions. Close-ended questions restricted participants to choosing options from a list of answers that was provided to them. This allows the data to be easily and directly compared to each other, whereas open-ended questions allowed participants some room for further explanations to be made where necessary. Questions ranged from demographic data to questions centred around when participants think is the best time of year to visit South Africa and their reasoning behind their choices. Questions also looked at how often they travel outside of their country and what some of the most common places are that they most likely visit. Questionnaires were made up of a set of 22 questions for the hard copy and 44 questions for the online questions.

c. Data analysis, quantitative analysis of questionnaires

Counts and frequencies were used to analyse data from both hard copy and online questionnaires (Fitchett and Hoogendoorn, 2018a). The primary aim was to see how tourists experience this region by analysing the frequency at which tourists made any mention of rock art and the weather from all questionnaires.

3.4.3 TRIPADVISOR

a. Data collection

This component applies a recently developed methodology in assessing tourists' perceptions of climate threats to tourism (Fitchett and Hoogendoorn, 2018a, b; Stockigt et al., 2018). 19 TripAdvisor reviews were consulted specifically for the Makgabeng Farm Lodge and 13 random TripAdvisor reviews were consulted for the greater Bochum region on www.tripadvisor.com. All of the TripAdvisor reviews that have been consulted have been sorted using a chronological order working back in time from September 2019 to November 2010 (Fitchett and Hoogendoorn, 2018b). The data that was captured from these reviews consisted of the country of origin of the person who had written the review, the date the review was made as well as the travel month date (this was only stated if the date was different from that of the review date).

b. Data analysis

Data analysis of the TripAdvisor reviews consisted of a textual analysis of the comments that tourists can leave online about a specific tourist destination or tourist operation.

3.4.4 TCI

a. Data collection

Climatic data including the maximum and minimum temperature, wind speed, sunshine hours, rainfall, and relative humidity was obtained from the South African Weather Service. Makgabeng does not have a weather station, so all climatic data for this research was retrieved using the Polokwane weather station, which is the only weather station close to the Makgabeng. The data that was collected included the minimum and maximum temperatures, wind speed, relative humidity, and the total rainfall for that region.

b. Data analysis

The TCI data was analysed using the total rainfall, relative humidity, wind speed, and total rainfall for the Polokwane region. For the results to be comparable with the outputs of the Global North, this research has used the (Perch-Nielsen et al., 2010) adapted TCI version that is originally based on the TCI formula by Mieczkowski (1985):

$$\mathbf{TCI = 2(4CD – CA + 2R + 2S + W)}$$

This formula has been used to calculate the TCI in many recent studies with successful outputs (Roshan et al., 2015; Fitchett et al., 2016c, 2017; Noome and Fitchett, 2019). The Formula includes five components that are crucial in determining the climate for a particular destination: there is the daytime thermal comfort (CD), which is the maximum daily temperature and the minimum relative humidity; average thermal comfort (CA), which is the mean temperature and mean relative humidity; total monthly rainfall (R); average sunshine hours (S), and the average monthly wind speed (W). Each of the above is calculated on the basis of standard climatic data (Fitchett et al., 2017; Table 3.1).

Table 3.1: *Weighting components of climatic variables for TCI model.*

Sub- Index	**Required climatic Variable (s)**	**Weighting**
Daytime thermal comfort	Mean monthly maximum temperature (˚C)	40%
Sunshine	Daily sunshine (hour)	20%
Rainfall	Total monthly rainfall (mm)	20%
Average thermal comfort	Mean monthly temperature (˚C)	10%
Wind	Average monthly wind speed (km/h)	10%

The daytime thermal comfort CD as well as the average thermal comfort CA were calculated using the curved thermal rating system (Figure 1; Mieczkowski, 1985; Perch-Nielsen et al., 2010). To calculate CD, the mean monthly temperature (˚C) for each month of the 25 years was placed on the x-axis and was aligned with the minimum relative humidity (%) on the y-axis. The average thermal comfort CA was calculated using the same method. (Figure 3.1).

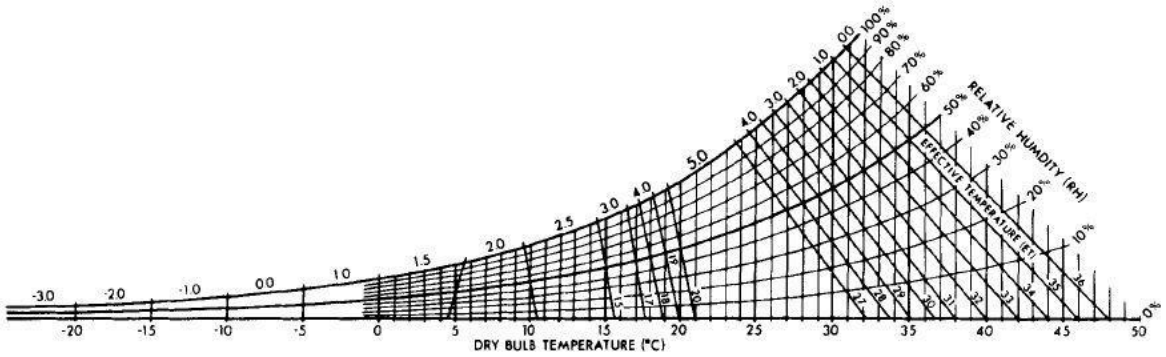


Figure 3.1: *The curved rating system used by (Meiczkowski 1985) for calculating the CA AND CD.*

The mean monthly precipitation (mm) along with the mean monthly sunshine hours (h/day) and the wind speed (km/h) had been calculated using a different set of rating components (Meiczkowski, 1985; Roshan et al., 2016; Table 3.2).

Table 3.2: *TCI rating components used by (Meiczkowski, 1985; Roshan et al., 2016).*

Rating	Mean monthly precipitation (mm)	Mean monthly sunshine hours (h/day)	Wind speed (km/h)
5.0	0.0-14.9	≥10	≥2.88-5.75
4.5	15.0-29.9	9	5.76-9.03
4.0	30.0-44.9	8	9.04-12.23
3.5	45.0-59.0	7	12.24-19.79
3.0	60.0-74.9	6	19.80-24.29
2.5	75.0-89.9	5	28.80-39.52
2.0	90.0-104.9	4	
1.5	105.0-119.9	3	
1.0	120.0-134.9	2	
0.5	135.0-149.9	1	
0	≥150	≤1	≥38.52

After TCI scores are calculated for the specific region, scores are then classified using the standard classification table by (Perch-Nielsen et al., 2010). Classifications are calculated out of a score of 100, which ranges from the climatic conditions being near impossible ≤10 for tourists to visit to an ideal 90-100 classification in terms of the climatic suitability for tourism. The table is colour coded so one can easily see the different classifications (Table 3.3). The TCI scores were calculated for each month of the year for the Polokwane region from the year 1993 to 2018.

Table 3.3: *The TCI score rating classifications adopted from (Perch-Nielsen et al., 2010).*

TCI SCORE	DESCRIPTIVE RATING
90-100	Ideal
80-89	Excellent
70-79	Very good
60-69	Good
50-59	Acceptable
40-49	Marginal
30-39	Unfavourable
20-29	Very unfavourable
10-19	Extremely unfavourable
≤ 10	Impossible

Thereafter TCI scores are then plotted on a graph using Scott and McBoyle's (2001) annual tourism climate resource classification. According to Scott and McBoyle (2001), every tourist destination's tourism climate resource can be put into one of six annual distribution classification. (**Figure 3.2.)**

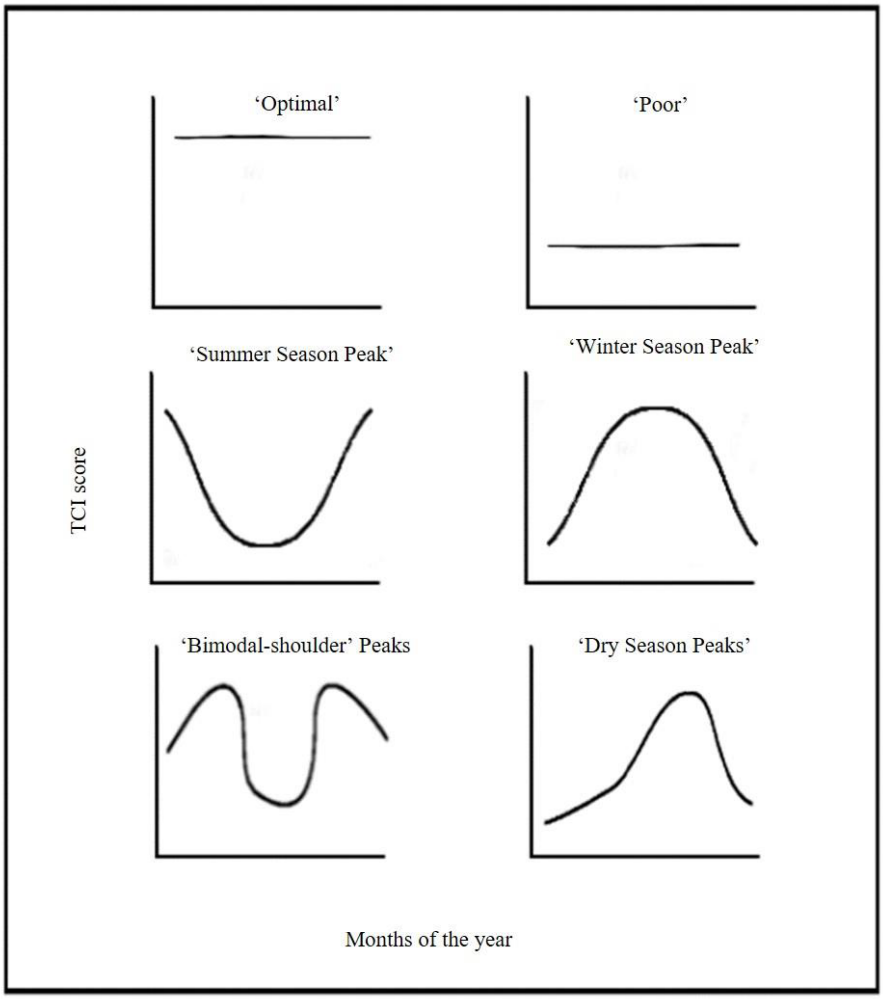


Figure 3.2. *Annual tourism climate resource classification (Scott and Mc Boyle, 2001: 109)***.**

Each of the above methods speaks to different components of the project and are crucial for achieving the aims and objectives of the study.

CHAPTER FOUR

STUDY SITE

Makgabeng is located in the Blouberg Municipality in the North-western region of Limpopo Province (Figure 4.1), specifically, it is located at these GPS coordinates: 23.3006 S, 28.9747 E (Stats SA, 2011). More broadly, it is within the subtropical region of South Africa (Figure 4.1). Here the research is specifically paying attention to the Limpopo province. The main focus within the Limpopo province would be Polokwane, the Blouberg Local Municipality, and, even more specifically, the Makgabeng region.

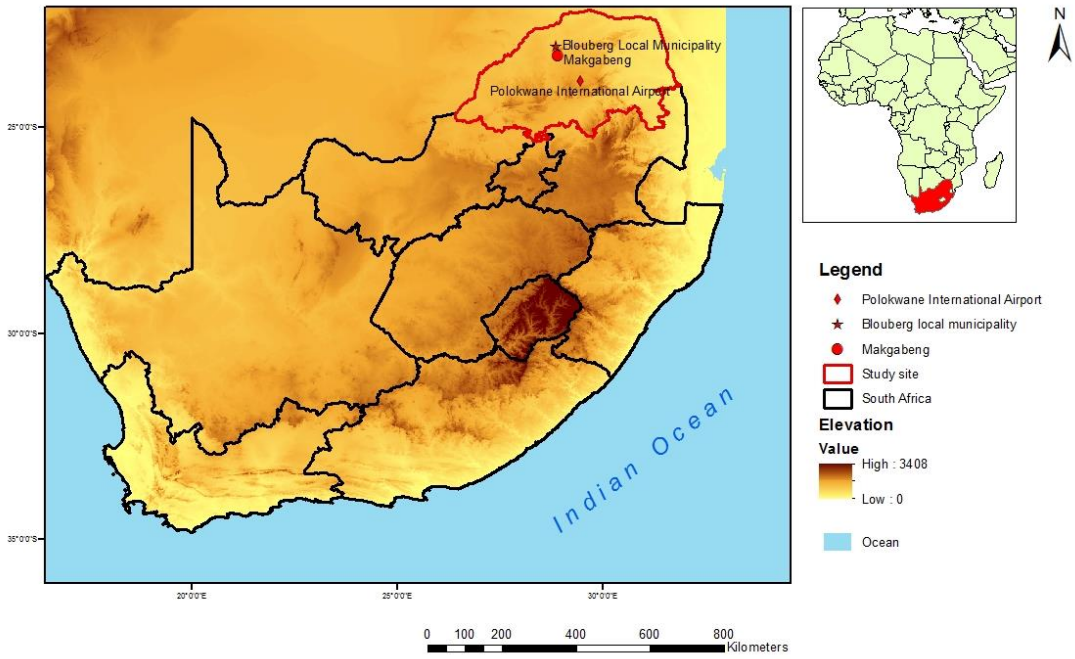


Figure 4.1: *Map showing cultural heritage tourism study sites in Limpopo, South Africa.*

4.1 BASIC GEOGRAPHY

Makgabeng is located in the Blouberg Local Municipality within the Limpopo Province. The Makgabeng region lies South of Blouberg and west of the Soutpansberg. It is near the town of My Darling, which is situated in the North-west corner of the Limpopo Province in South Africa (Martus, 2014). The Makgabeng stretches over a distance of 250 km^2 and most of the region is uninhabited (Martus, 2014). To reach Makgabeng one could take the N1 to Polokwane, once you have reached Polokwane you then need to take the R521 and Senwabarwana road to Makgabeng. An alternate route would be to take the M1 and then take the Ben Schoeman Freeway/Pretoria main road or the R521 to Senwabarwana road in Dendron. One can then continue on Sebwabarwana road until you reach the destination. When the research speaks of the "greater area" it is referring to the Blouberg Municipality and ultimately the Polokwane region. The population demographics of these regions will further be broken down below.

4.2 POPULATION GEOGRAPHY

Polokwane spans over 106.8 km^2 and is home to approximately 628,999 people (Stats SA, 2011). This region has 178,001 households with 44.8% being headed by females. 92.9% of the population is Black Africa and 5.2% are White. 52% of the entire population are female and 48% are male (Stats SA,2011). The top five spoken languages in Polokwane are Sepedi (78.7%), Afrikaans (5.3%), English (3.1%), Xitsonga (2.8%), and Tshivenda (2.1%; Stats SA, 2011). The highest level of education in the population of Polokwane is higher education (college or university) at 3.6%. There is, however, 1.9% of the population who does not have any schooling experience (Stats SA, 2011).

The Blouberg Local Municipality spans an area of 9, 248 km^2 and is home to approximately 2,976 people (Stats SA, 2011). Blouberg has 746 households, 61.7% of which are female-headed households (Stats SA, 2011). In the Blouberg Municipality 99.6% of the population are Black African, and in terms of gender 54.3% of the population are female and 45.7% are male (Stats SA, 2011). The most spoken languages within Blouberg is Sepedi (95.5%), Xitsonga (1.1%), isiZulu (0.7%) and there is an equal amount of people who speak English and isiNdebele (0.4%). The highest level of education in this area is university level at 5%; however, 30.9% of the population has no schooling experience (Stats SA,2011).

Makgabeng stretches over a distance of 250 km^2 and is home to about 538 people (Stats SA, 2011). There are only 130 households within the Makgabeng region, 60.8% of which are female headed. The population consists of 100% Black African people, 55.2% are female and 44.8% are male (Stats SA, 2011). The four most spoken languages in this region are Sepedi (95%), English (1.7%) and there is an equal amount of the population which speaks isiNdebele and isiZulu (1.1%). The highest level of education in the region is higher education (university or college) at 3.4%; however, 21.9% of the population does not have any form education (Stats SA, 2011).

4.3 FOCUS AREA OF STUDY

The primary focus of this study is both the people and the village of Makgabeng to understand the threats to tourism. However, to do that the research needs to take a more regional overview and will be doing analysis that includes the Polokwane area and the greater Blouberg municipality to understand the models of heritage tourism that are more or less susceptible to climate change. Makgabeng is situated in the Northwest corner of the Limpopo Province in South Africa (Martus, 2014). The Makgabeng and the Blouberg mountains are extraordinarily

picturesque, with a mixture of a bushveld-savanna bio and yellow-wood forests (Van Schalkwyk, 2009).

4.4 ROCK ART SITES IN THE REGION

There are approximately 600 rock art sites that have been documented within the Makgabeng region (Eastwood et al., 2002; Namono and Eastwood, 2005; Namono, 2018). Most of these rock art sites are located on the plateau (Namono, 2018). The plateau is home to many types of rock art including the San hunter-gatherers whose rock art can be depicted by the fine-line brush paintings showing images of humans and animals (Namono and Eastwood, 2005; Namono, 2018) (**Figure 4.3b)**. The other rock art can be ascribed to the Khoekhoen herders whose rock art is painted by using their fingers and hands (Eastwood, 2003; Smith and Ouzman, 2004; Namono, 2018). Northern Sotho rock art, which is also painted by using fingers, can also be found in the Makgabeng, these pictures depict human and animal figures along with patterns of material culture from the colonial times (Eastwood and Van Schalkwyk, 2002; Namono and Eastwood, 2005) (**Figure 4.3a)**.

One of the main rock art sites on the plateau is known as the "Great train site". It is also the most visited site in Makgabeng and is located at the foot of the Tabanatlana Mountain (Namono, 2018) (**Figure 4.2**). The rock art in this site was painted by the San Hunter-gatherers and the Northern Sotho Farmers. These pictures speak about the "1894 war between Kgosi Maleboho and his people against the South African government of the then-president Paul Kruger" (Namono, 2018: 275). The Northern Sotho art speaks about "liberation struggles in South Africa" (Namono, 2018: 275). Some of the other paintings at this site show images of boys' initiation as well as the influence of the colonial rule (Namono, 2018) (**Figure 4.3**).



Figure 4.2: *Image of the Tabanatlana Mountain (Photo Namono 2019)*



a.



b.

Figure 4.3: *Images taken at the Train site at the foot of Tabanatlana, the first paining* ***a.*** *is some finger painting that had been done by the Northern Sotho Farmers showing some of the liberation struggles that took place during the Presidency of Paul Kruger. The other image* ***b.*** *is some black fine line painting that was done by the San hunter-gatherers depicting animal figures. (Photos: Mcpherson 2019).*

4.5 HERITAGE TOURISM DEVELOPMENT IN THE AREA

The research site is an emerging tourist destination with much to offer. The development of a heritage management plan was drawn up to integrate the cultural resources that the region has to offer with various economic values in a sustainable way (Radebe, 2017). Some of the tourism strengths and opportunities that the Makgabeng region has to offer include the following:

- "The area is rich in cultural heritage and surrounding biodiversity;
- Growing development of tourism support amenities such as hotels, resorts, lodges and B&B'S;
- Interest and commitment from communities to develop a tourism market;
- The Makgabeng region lies en-route to existing major tourism destinations such as the Mapungubwe World Heritage site and the Soutpansberg" (Radebe, 2017: 14).

Some of the tourist offerings within the area include hiking, mountain climbing, and hunting. Some of the other activities include features such as access to some of the most important archaeological sites, "with stone tools, the earliest Bambata pottery, early farmer sites as well as more recent stone-walled sites with iron artefacts, two million years of human history are well represented by the archaeology of this area" (Van Schalkwyk, 2009: 3). The mountains in the Makgabeng region are home to the largest vulture colonies in the world, which is one of the biggest tourist attractions in this area (Van Schalkwyk, 2009). It is also one of the few places in South Africa where yellowwood forests survive (an indigenous tree species of South Africa). The Makgabeng is best known for the abundance of rock art, with just over 600 rock art sites. It is said that "Makgabeng is one of the only places in southern Africa where one can see dozens of fine examples of hunter-gatherer, herder and farmer rock art all in the same landscape" (Van Schalkwyk, 2009: 3).

The communities who are presently living in the area are a heterogeneous accumulation of people who had come to the area through a complex set of processes, namely the apartheid era (Van Schalkwyk, 2009). Some of the groups include the Hananwa, Birwa, Ndebele, Venda, and Koni (Van Schalkwyk, 2009). As a result of this, the area comes with a unique set of living heritage in this area, which includes things like traditional architecture, food, dances, digging sticks, mats, wooden spoons, traditional beer, clay pots, basketry, poetry, music, and traditional costumes (Van Schalkwyk, 2009).

The site is part of an ongoing tourism management plan to turn it into an emerging tourist destination (Namono, 2018). Extensive research has been conducted in Makgabeng (Eastwood et al., 2002; Smith and Ouzman, 2004; Eastwood and Smith, 2005; Chippindale, 2006; Namono and Eastwood, 2005; Namono, 2018) and tourism has been a consideration for a long time. However, no-one has done any analysis on the climate change threats to this area.

4.6 CLIMATE OF THE AREA

The Limpopo province is said to be "characterised by four climatic regions, the subtropical plateau which is a flat elevated interior area that is hot and dry with winter rain, the moderate eastern plateau with warm to hot and rainy summers and cold dry winters, the escarpment region with colder weather because of the altitude and rain all year around; and the subtropical Lowveld region, of hot-rainy summers and warm-dry winters, also known as the South African Bushveld" (Tshiala et al., 2011: 142 in the Department of Economic Development, Environment and Tourism, 2016: 16). Temperatures during the summer season in the Makgabeng region can reach up to a maximum of 40ºC, whereas the winter season is mostly mild and dry; temperatures can average around 13ºC (Radebe, 2017).

The summers in this region are warm with heavy thunderstorms and “an average rainfall of less than 500 mm per annum”, and the winters are dry with some frost in the more isolated areas of the mountain (Van Schalkwyk, 2009:15). The climate change projections for this region indicate an annual mean temperature increase of at least 3-3.5 ºC between the years 2036-2065 relative to 1976-2005 (SAWS, 2017). Total annual rainfall is projected to decrease by 100-130mm per year between the years 2036-2065 relative to 1976-2005 (SAWS, 2017). The province is located in the savanna biome, which is an area mixed with trees and a mixture of grassland called the bushveld. It is also said that the northern and eastern parts of the region are subtropical, which have mostly frost-free mild winters and very hot and humid summers (Department of Ecomonic Development, Environment and Tourism, 2016).

CHAPTER FIVE
RESULTS

5.1 INTERVIEWS

a. Stakeholders

Interviews were conducted with nine stakeholders from different tourism organisations in the greater Polokwane region. From the nine interviews that were conducted with stakeholders, three interviews were conducted with personnel from three different museums, these include the curator, the museum guide, and the general manager of the museum. Another interview was conducted with the general manager of one of the hotels in Polokwane. Interviews were also conducted with airport personnel and people working at the Polokwane visitor information centre. One interview was conducted with someone working at the Blouberg municipality office. Finally, two interviews were conducted with personnel from the provincial department of tourism, one was the assistant director for tourism growth and development and the other focused on provincial, economic, and tourism destination development.

Each interviewee was asked a series of questions and the researchers were given really good feedback. The interviews started with some background questions such as what their names are and how old they are. The interviewees were then asked how long they lived in this area (Polokwane, Blouberg); answers range from as little as 18 months to as long as 15 years. The next question looked at how long the participants have been working at these places; answers range once again from as little as 18 months to as long as 11 years. The participants were then asked to give a brief description of what their job entails. One stated that what it entails is to map out cultural heritage products to facilitate the integration between local municipalities and the tourism sector. One of the participants said that he is a passenger handling agent, so

basically what he does is ticket reservations and boarding of the aircraft with the flight as well (ground staff duties). The third participant said that he is the assistant director for tourism growth and development; he basically facilitates tourism signage and he also facilitates the program called responsible tourism. The fourth participant mentioned that he assists the curator of the art museum; he does the lighting, cleaning, and he guides anyone who needs to be taken for a tour. He also manages the storeroom and the art collection. The fifth participant said that she is the curator of the museum, so she researches the place as well as the conservation and preservation of the site. She also oversees all the educational programs as well as staff management. One of the other participants stated that he manages the sales and marketing of the hotel; he makes sure that the objectives of the business are carried through and manages numerous departments: the food and beverage department, the HR and engineering of the hotel, and health and safety.

Each stakeholder was then asked how many tourists they have visiting their tourist operations on a monthly or yearly basis. In the Blouberg area, figures range from as low as six people per month. Then, some average figures range from certain places receiving around 100 to more than 5000 tourists on a monthly basis, with school trips playing a big role in these numbers. Finally, there are places within the Polokwane region that have from 8000 to over 25000 people visiting their tourist operations on a monthly basis. This sum includes both school groups, local and international tourists as well as government officials. This then leads to the question of when the peak season is for each of these tourist operations. All the participants stated that their tourist operations are usually very busy during the Easter holidays and the school term, as they have a lot of school visits. They also have a lot of tourists, including a large number of international ones, flocking to this region during the wintertime due to the hunting season.

The participants were asked if they noticed a change in the number of tourists visiting this region. Most of them stated that there has been an increase over recent years, and they noticed that there has been an influx of local tourists as opposed to international tourists. By local tourists the research specifically means people from South Africa. However, some do mention that there has been a decrease in the number of tourists visiting their tourist operations. One participant specifically said that the decrease is due to the fact that they no longer open their museum on weekends. This in turn leads to the decline in the number of people visiting them, as they most likely would only visit this place when they have free time (namely on the weekend). The participants were questioned about some of the greatest challenges they face in attracting tourists to this region. All participants in one way or another mentioned that marketing is a very big problem. The stakeholders stated that they face certain limitations in terms of being able to market their places, especially those places that are run by the municipality. There is no adequate signage for these places, and they are unable to promote them using social media platforms as everything needs to be approved by the municipality. Interviewees were then asked what some of the challenges are that they face in ensuring that the tourists enjoy their visit while they are there. They stated that "the biggest challenge is trying to keep things fresh" (participant eight), as they constantly have to come up with new ways of keeping tourists interested and active when they visit these places.

Climate and environmental change

After asking them what challenges they face in keeping tourists happy, a few questions were then asked to see what the stakeholders' perceptions were around the best and worst weather for their tourist offerings. The majority of stakeholders suggested that sunny weather with a bit of cloud cover would be the best weather for their tourist offerings. The reason for this would be that it will be warm enough to enjoy some outdoor and indoor activities but also not so hot

that it makes one feel uncomfortable. Stakeholders stated that very hot weather would be the worst weather for their tourist offerings, as it sometimes gets so hot that all people want to do is stay indoors and avoid the scorching heat. Stakeholders were asked if they noticed any changes in weather patterns since they have been living or working within the region; they stated that it seems to rain a lot less now as opposed to before.

Interviewees were asked if there had been any severe flooding or heavy rainfall since they have been living or working in the region. The majority of the stakeholders said that they have witnessed some sort of flooding and heavy rainfall. Many of them stated that they usually experience heavy rainfall along with thunderstorms in January. Only two participants said that they had not experienced anything like this. When asked how this personally affected them as well as their tourist operations, they stated that the heavy rainfall sometimes forces them to close off their tourist operations as it may damage their collections. Others stated that heavy rainfall causes them to lose business as bad road conditions make it difficult for people to access some of these places.

The follow-up question looked at whether or not they have experienced any severe drought or any extreme heatwaves over the past few years, and it looked at what impact these extreme conditions may have had on them as well as their tourist operations. All stakeholders stated that they have experienced heatwaves and drought while they have either been living or working in the region. They mentioned that these conditions had some really bad impacts on them and their tourism offerings. Some stakeholders say that the lack of water had a very bad impact on their livestock as well as the natural environment, as it was no longer ecstatically pleasing and this, in turn, hinders them from attracting tourists to these places as they are expecting to see beautiful green scenery. Other stakeholders state that tourists complain a lot

about the heat and tend to avoid coming to the museums and other places as the air-conditioning systems are not effective enough to help reduce the heat. One stakeholder said that it becomes so hot at times that they are not even able to do any outdoor activities with the tourists. One of the stakeholders of the museum said that they sometimes have to close the place for the day as "it is even too hot for us to be inside even with the air-condition" (participant seven).

Various stakeholders were asked if their tourist operation in any way promotes Makgabeng as a cultural heritage site. Only two out of nine stated that they do promote Makgabeng. One of the stakeholders from the Limpopo Tourism agency specifically said, "we have prioritised Makgabeng in our five-year plan to assist in promoting and developing this area" (participant two). The other seven stakeholders stated that they do not promote Makgabeng in any way. These stakeholders were then asked what some of the top tourist destinations are that they do indeed promote. Participants mentioned places like the Kruger National Park, Mapungubwe, Mokopane, The open-air museum, The Waterberg biosphere, The Polokwane game reserve, Tzaneen, and the Venda route among others.

With all that was said, one can see that the weather plays a tremendous role in how people choose a tourist destination, and it also plays a vital role in the activities these tourists decide to take part in while they are there. If we want to promote Makgabeng and develop it so that is sustainable, then we need to take all of these factors into consideration. Should they build a visitor information centre, they need to consider how effective the cooling systems will need to be. When they take tourists for tours to the various rock art sites they need to think about strategies that will allow them to accommodate any sort of weather conditions. There is a lot to think about.

b. Community members

Interviews were conducted with 13 community members. All interviews took place in Makgabeng: two in an area known as Niewe Jerusalem, eight in an area known as Thabanantlana, and three at one of the rock art sites known as the "train site" (Figure 5.1).



Figure 5.1 *Interviews at the train site*

One of the interviews at Thabanantlana was in the format of a focus group consisting of six community members. The interview at the rock art site was similarly a focus group comprising of three community members. The researcher sought the help of a local translator to ensure that the interviews were conducted successfully. The researcher obtained informed verbal consent from these community members to conduct the interviews as not all were literate. Below is a demographic breakdown of the participating community members who had agreed to be interviewed (Table 5.1).

Table 5.1: *Demographic information of community members who had been interviewed.*

Participant number	Age	Time lived in Makgabeng	Area of Makgabeng
1	74	74	New Jerusalem
2	30	30	New Jerusalem
3	85	Not sure	Thabanantlana
4	49	49	Thabanantlana
5	51	51	Train site
6	51	27	Train site
7	37	37	Train site
8	50	25	Thabanantlana
9	51	25	Thabanantlana
10	33	10	Thabanantlana
11	34	12	Thabanantlana
12	36	7	Thabanantlana
13	57	57	Thabanantlana

The researcher started off the interviews by asking questions that would allow the participants to give the researcher a brief description of their demographic background. Nine out of the 13 community members that were interviewed were female and four were male. Their age ranged from 30 to 85 years. Six of the interviewees were born in Makgabeng, whereas the other seven had only been living in Makgabeng from as little as seven to 27 years. This makes them good respondents as they have a good understanding of the area and the issues that they face. The community members were asked the same questions that the stakeholders had been asked; however, their answers are somewhat different from those of the stakeholders.

When community members were asked when their peak tourism season is, all participants stated that they experienced an influx of tourists during holidays, particularly the Easter weekend and school holidays, the festive season, and the school holidays in June and September. The community members' understanding of peak season is different from how everyone else would describe it, where there are thousands of people flocking to a particular place. When the community members spoke of their peak period they would mention that there would be groups of about five to ten people coming to visit the area. This for them is a "peak" in the number of tourists coming to the area.

Reflecting on some of the greatest challenges that the community faces in terms of attracting tourists to Makgabeng as well as ensuring that tourists enjoy their visit, community members indicate that the main problem that they face is marketing. The fact they do not have internet access also makes marketing the area very difficult. The other challenges that they face include not having adequate road signage and cell phone network coverage. Participant six stated the following:

> "We do not have access to the internet facilities and that is one way I could think of that would help us market the area. Another challenge that we face is the fact that there is very weak network signal within the area hence we sometimes end up missing calls of tourists".

Some of the other challenges that they face in ensuring tourists enjoy their stay include keeping things fresh and catering for every group that they come across. Community members were then asked if they have experienced a change in the number of tourists over the past few years. They stated that they do not have a lot of people coming to this area, and when people do come to the area they come in large groups, so it is difficult to keep track of the numbers. Following

the visit of one group, there is often a delay of a few months before another group comes to visit the area.

Climate and environmental change

Interviewees were asked if they noticed any changes in weather patterns. They said that they have been experiencing low rainfall for the past few years. It does not rain as much as it used to before; participant four specifically stated that:

> "The reason behind the fact that we do not have that much rain anymore is because we no longer have any good rainmakers in the area".

Participant four then said that they used to have very prominent rainmakers in the community:

> "We used to have very good rainmakers in the area, one of them is actually buried on top of the Thabanantlana mountain. When we were boys he used to take us up to the train site and tell us that he is going to perform a rain-making ceremony and it must be done when the sky is clear. After he finishes the ritual he tells us to go home and to do so quickly. As soon as we get to a village called Devilliersdale, you start seeing the clouds forming in the sky and big rain will fall. If the rainmaker wants it to come with hail he will put some stones into the boiling water along with some herb with which he performs the ritual. We never ever experienced any drought".

The researcher then wanted to know if the participant agrees climate change is responsible for the prolonged dry seasons in the area; the participant (four) gave the following response:

> "There are certain dos and don'ts in this area, a woman whose husband has died were not allowed to roam the area without having to perform some rituals, but these days people have got the freedom to do as they wish, and these are the consequences (prolonged dry seasons)".

The researcher found this response particularly interesting as this particular participant does not see climate change as the cause of the changes in weather patterns. Instead, the participant believes that this is all due to the community no longer having any good rainmakers in the area.

Community members were asked whether or not they have noticed any changes in the natural vegetation of the region over the years. All the participants stated that there was a significant change in the natural vegetation due to the lack of rain. They mentioned that there are some herbs and wild fruit that used to grow, but due to the shortage of rain these plants never grow as often anymore. Some stated that they are also now unable to make thatch roofs as the grasses have stopped growing in abundance. The community members were then asked if there had been any changes in animal behaviour over the past few years. The interviewees said that there have been some changes as they would find animals who have not been here before, some of the participants also mentioned that there has been an increase in the number of baboons and leopards within the area.

The community members of Makgabeng were asked if they experienced any severe flooding while living in the area and, if so, what were some of the impacts that it had on them, the tourists, and their tourist offerings. None of the participants hesitated in responding to that question; they all mentioned that they had experienced severe flooding in the year 2000 and they spoke of it in detail as though it had happened fairly recently. All the participants mentioned that the flood had caused many houses to collapse within the area, and some

residents' vegetables had been washed away. Others mentioned that the more severe floods even eroded the roads, which stopped tourists from coming as they were not able to access these places. However, one participant stated that the floods were not all bad as there was a positive aspect to it as well: the plants were able to get water, the grasses grew in abundance, and the livestock were able to drink water from almost anywhere. In terms of tourists, the flooding definitely has an impact on whether they would like to come or not. For example, the roads in and around this area are just pure sand; flooding would make mud and the cars would find it very difficult to drive through here. As it is they have to come with a 4x4 even when there is drought as the sand is really deep in most of these places. Six participants stated that the floods did not really have any impact on them due to the soil absorbing most of the water, so they were not that badly affected. However, the community has changed its way of building because a few houses collapsed due to the floods (as mentioned before). Now they add sticks to the mortar to make their homes sturdier and stronger.

The Makgabeng community members were then asked whether or not they have had any severe drought or prolonged dry period while living in the area and, if so, to explain some of the impacts that it had on them as well as the tourists who visit the area. All the participants stated that they experienced (and still are experiencing) drought within the area. They mentioned that they are sometimes unable to grow any food due to the lack of rainfall, and they have to walk long distances in search of water because almost all the water pools have been dried up within the area. Community members argue that when there is a drought the community is less likely to be able to plough effectively. In terms of the cattle (livestock), the drought tends to affect them very badly. As a result of this, the community members and their families are affected as they ultimately live off the land. One participant mentioned that it always used to rain in early September, but the climate has changed so much in this region that now their only hope for

rain is in October. If it doesn't rain in October then they won't have any food to eat and this also applies to the wild fruits that they would usually eat.

The researcher also asked the community members if they have experienced any extreme heatwaves in the area and, if so, how it impacted them as well as the tourists? All participants said that they have recently been experiencing a lot of extreme heatwaves. Participant four stated the following:

> "Yes, we have been experiencing extreme heat waves, so much so that I even thought that the sun might have actually moved a lot closer to the earth than it was before. Even in February this year (2019), I thought that we were reaching the end of our existence, it was extremely hot!! This was something that we have never experienced before".

The community members said that the heat does not affect them as much as they are used to it; however, at times one is unable to sleep due to the heat. The community states that the heat does not impact the tourists as much.

Participant four once again states that as a guide he can have a look at the weather and determine the type of activities that they would like to do with the tourists when going to look at the rock art sites. If it is too hot to walk they would drive a certain distance and have the tourists walk a small distance to these sites, but if the weather allows it and it is not that hot they would sometimes have the tourists walk from one site to the next. However, he also mentions that they also take into consideration the age group of these tourists and plan their activities accordingly. Other participants simply stated that the community has never had a formal complaint from the tourists about the heat. They reason that, as they can easily get access to the weather conditions of the area, tourists learn about the area before they come and find out when the best time of the year is to visit. However, community members stated that

they have seen an influx of tourists during summertime (despite the heat) because this is the time when there are a lot of birds and the trees are greener; ‘everything looks alive” (participant two).

Through all of these interviews, one can see that the weather and change of climate have, thus far, affected the community members a lot more than it has affected the people living in the city. The reason is that the community of Makgabeng, like any other rural community, tends to rely on the land for their survival and anything that affects the land (in this case the research focuses on the climate) ultimately affects the people who are living off it for their daily needs. As stated above, tourism is somewhat affected by these regular occurrences in that floods tend to damage the roads which, in turn, makes it challenging for tourists to go to these places. For Makgabeng to be sustainably and effectively promoted as a tourist destination, climate change is a major aspect that needs to be planned for.

5.2 QUESTIONNAIRES

A total of 34 tourists had completed questionnaires, 29 of which were completed online. The tourists’ age ranged between 18-60. Most of the participants were from within Southern Africa; only three participants were from other parts of the world like London England and Sydney Australia. Tourists were asked certain questions to gain their understanding of climate change as well as how they have experienced South African weather, specifically their perceptions around the weather in the Limpopo region of the Country. The results are as follows.

Tourists were provided with a list of places and were asked to indicate which of these places they would most commonly visit during their vacations (Figure 5.2). Coastal regions are at the top of the list as the most commonly visited places, with (18 out of 34 responses). The next was Urban centres with (15 out of 34 responses). An equal proportion of people visiting places

like mountains and nature reserves which was at (10 out of 34 responses). This is then followed by historically significant place at (eight out of 34 responses), and with only one respondent deserts (one out of 34 responses).

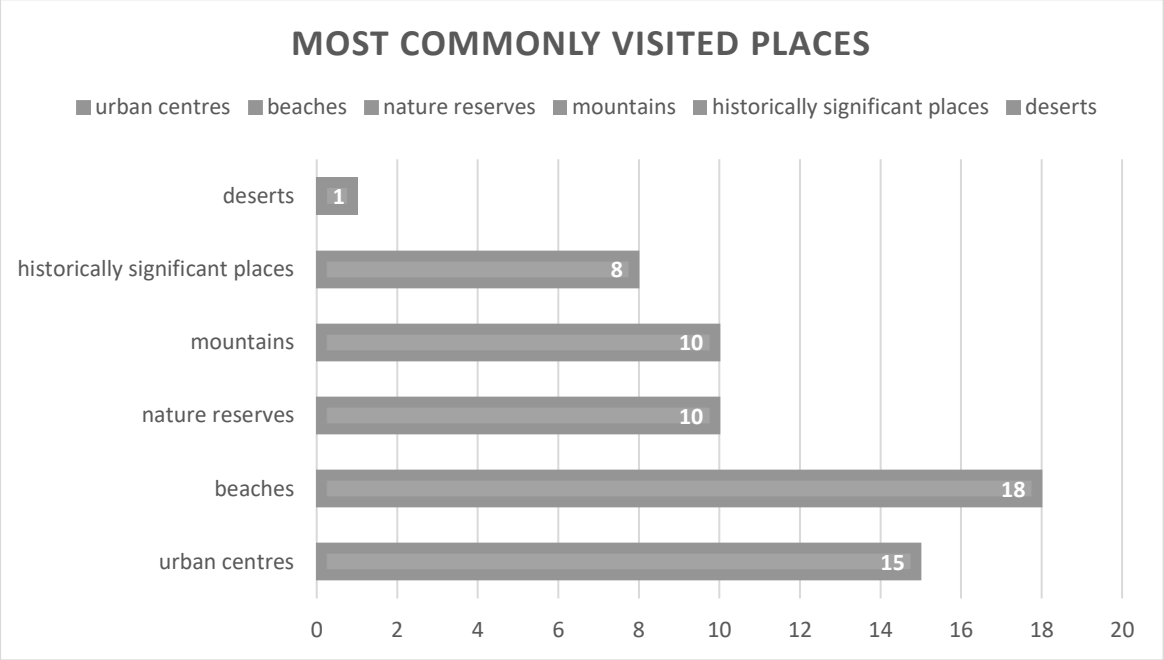


Figure 5.2 *Places that tourists most commonly visit at tourist destinations.*

In Table 5.2, one can see that based on age, most of the tourists that most commonly visit places like beaches, mountains, historically significant places, deserts, urban centres, and nature reserves tend to be people between the ages of 18-29. In terms of gender, these places tend to be often visited by females (Table 5.2). The reason for this could be that in general females love aesthetically pleasing things, and most people enjoy going to these places so that they can find new content for their next Instagram post. Where better to find it than at these tourist sites?

Table 5.2: *A demographic breakdown in terms of age, gender, and race demonstrating the most commonly visited places within various tourist destinations.*

	Beaches	Mountains	Historically	Deserts	Urban	Nature
AGE						
18-29	16	9	5	1	8	7
30-39	1	1	2	1	5	1
40-49	0	0	0	0	1	0
50-59	1	0	1	0	1	1
60-69	0	0	0	0	0	0
70-79	0	0	0	0	0	0
GENDER						
Male	6	1	1	0	2	2
Female	12	9	7	2	12	8
RACE						
Black	10	4	1	0	4	3
White	4	2	5	2	8	4
Coloured	3	2	1	0	2	1
Other	1	2	1	0	1	2

Tourists were asked to state what they think is the best time of the year to visit South Africa. From a total of 34 tourists that completed the questionnaire, 64% stated that summer was the best time of the year to visit South Africa (Figure 5.3). Their reasons went from stating that the weather is more suitable during that time of year, to saying that "South Africa is more vibrant in summer" (respondent seven), while others simply stated that they can do a lot more outdoor adventure activities in summer (respondents 11,13,17 & 22), seeing as the days are longer with warmer temperatures. On the other hand, 30% of the tourists stated that spring is the best time of year to visit South Africa (Figure 5.3). They said that they chose spring because it is not too

hot, and the country starts becoming green and pretty with all the flowers that are blooming. One participant stated that they prefer spring as the grass is not that long and they can go game viewing without any of the long shrubs obstructing their view (Figure 5.3). Only 6% of tourists stated that winter would be the best time of year to visit South Africa (Figure 5.3). Their reasoning was that it is a pleasant temperature, the grass is not too high in game reserves, and they don't miss the warmer weather in the UK that time of year.

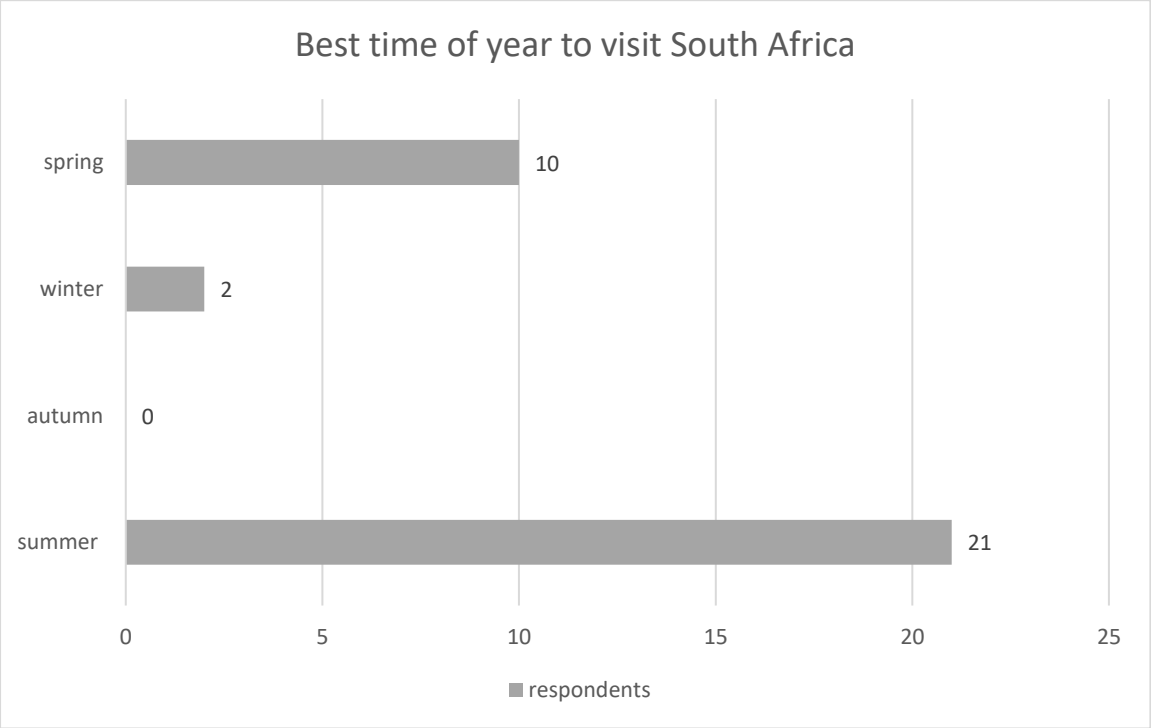


Figure 5.3: *Tourists' perceptions on when is the best time of the year to visit South Africa.*

In **Table 5.3** one can see that it is mostly females between the ages of 18-29 who prefer to visit South Africa during the summer season. However, there is also a large number of females within the same age range who would prefer to visit South Africa during springtime. None of the 34 participants stated that autumn would be the best time to visit South Africa and only two

participants stated that winter would be the best time to visit South Africa, one of which fell under the 18-29 group and the other fell under the 50-59 age group.

Table 5.3: *A demographic breakdown of when tourists say is the best time of the year to visit South Africa.*

	Summer	Winter	Autumn	Spring
AGE				
18-29	16	1	0	6
30-39	6	0	0	1
40-49	0	0	0	1
50-59	0	1	0	2
60-69	0	0	0	0
70-79	0	0	0	0
GENDER				
Male	4	1	0	2
Female	18	1	0	8
RACE				
Black	14	1	0	2
White	5	1	0	6
Coloured	2	0	0	1
Other	1	0	0	1

When the tourists were asked if they had travelled to the Limpopo Province in the last two years, 20 out of the 29 said yes while nine had said no. I then gave them a list of tourist attractions within the region and asked them to state which of these they would most likely take part in and that they could choose as many as they liked. According to the diagram below (Figure 5.4), hiking seems to be the activity that most tourists would take part in as 22 tourists

stated that they would do that. The second highest on the list with 21 responses is visiting archaeological sites. In this case it was rock art sites.

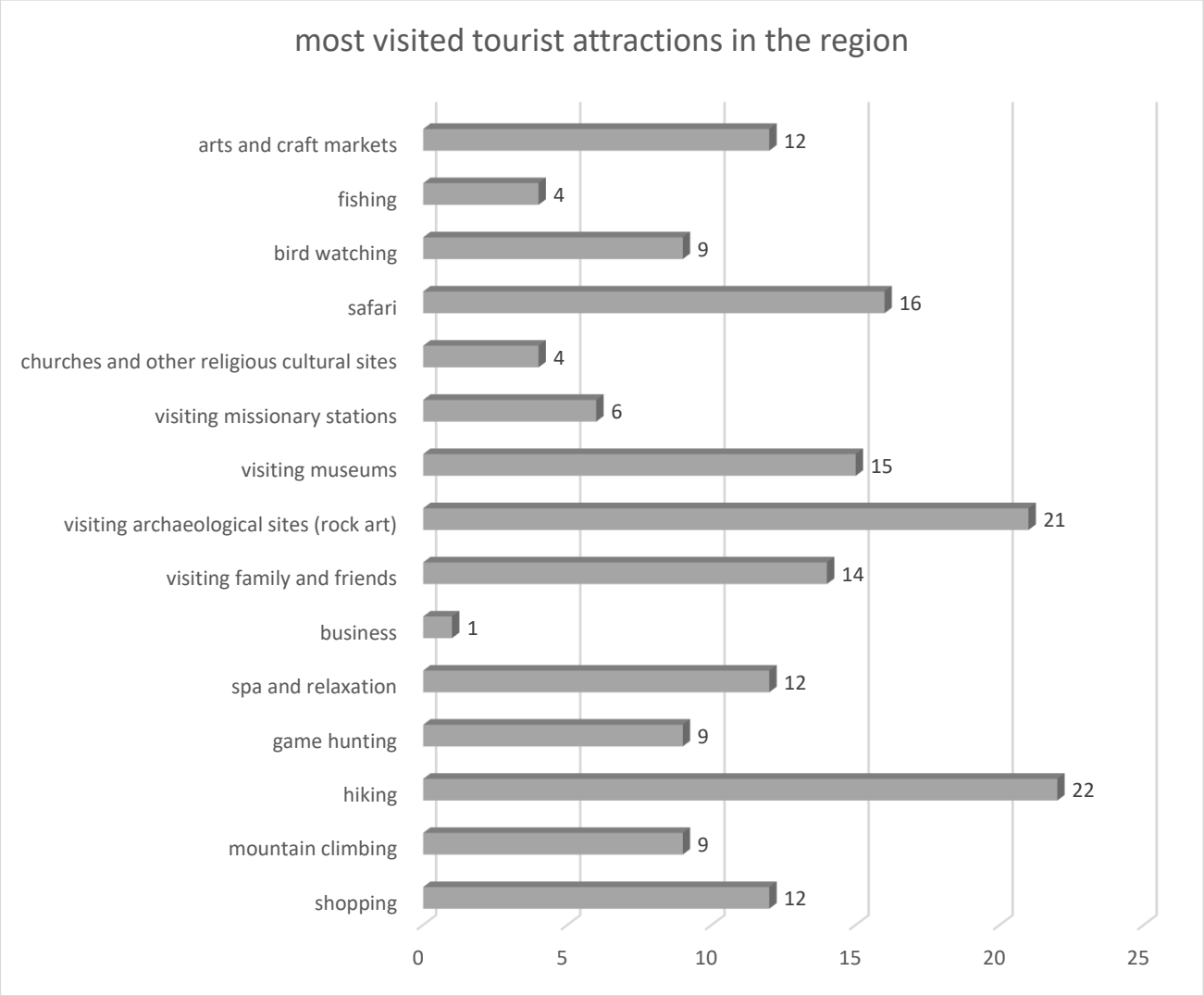


Figure 5.4: *Most visited tourist attractions within the Limpopo region*.

Table 5.4 shows that most of the tourist attractions within the Limpopo region are most likely visited by tourists between the ages of 18-29. In terms of gender, the tables show that there is a high number of females who tend to visit these places as opposed to males. When looking at race, it tends to be white people who frequent these tourist attraction sites as opposed to any

other race; however, there are a few activities where this is not the case. When it comes to game hunting, spa and relaxation as well as mountain climbing and shopping activities there is a high number of black people who take part in these activities when compared to any other races (see **Table 5.4**). These tables also show that it is mostly local (South African) tourists who tend to go to these tourist sites more often than international tourists do**.**

Table 5.4: *A breakdown of the most visited tourist attractions within the Limpopo region, in terms of tourist demographics.*

	Art and	Fishing	Bird	Safari	Churches	Missionary	Rock art	museums	business	Spar and	Game	Hiking	Mountain	shopping
Age														
18-29	10	4	5	12	1	2	13	9	1	8	8	15	9	7
30-39	3	0	1	4	2	2	4	4	0	3	1	4	2	1
40-49	0	1	1	0	0	0	1	0	0	0	0	1	0	0
50-59	2	0	1	1	2	2	3	2	0	0	1	3	0	1
60-69	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gender														
Male	1	0	1	2	0	0	4	2	0	1	3	2	1	1
Female	14	5	7	15	5	6	17	13	1	10	7	21	10	8
Race														
Black	3	2	2	5	1	2	7	4	1	5	5	8	7	3
White	9	2	5	8	3	3	8	8	0	2	3	8	2	2
Coloured	1	1	0	2	1	1	3	1	0	3	2	3	2	2
Other	2	0	1	2	0	0	2	2	0	1	0	2	0	2
Country of origin														
SA	12	5	6	14	5	6	18	12	1	11	10	18	11	8
Australia	1	0	1	1	0	0	1	1	0	0	0	1	0	1
UK	2	0	1	2	0	0	2	2	0	0	0	2	0	0

Seeing as visiting rock art sites was the second-highest attraction that tourists would most likely want to visit, I then asked the participants if they have ever heard of Makgabeng in Limpopo. 26 out of 34 participants said no, two said maybe, and six said yes. When asked if they knew that there are rock art sites in Limpopo, 68% stated that they were aware of these rock art sites, whereas 32% had no idea about these rock art sites. However, when the participants were asked if they had ever visited these rock art sites only five out of the 23 participants who knew about the rock art sites had gone to visit these places, whereas the rest of them had not.

The follow-up question that was asked was if they would consider visiting some of the rock art sites within this region, and 28 out of the 34 participants stated that they would go to visit these rock art sites, whereas four participants simply said that they would not go. The other two participants stated that they were unsure if they would like to visit these sites.

Table 5.5: shows that when a tourist was asked if they were aware of any rock art sites within the Limpopo region, 68% of the participants stated that they were aware, whereas 32% stated that they were not aware. 10 of those participants who were aware of the rock art sites fell into the 18-29 age group and they happen to also be white female South Africans. For those who were not aware, most of the participants also fell within the 18-29 age bracket and were black female South Africans. When participants were asked if they have visited these rock art sites, the majority (24) of the participants said no. Only five participants had visited these places. Here too the research shows that those who have not visited these sites are black female South Africans between 18-29 and those that have visited the rock art sites are white female South Africans in the 18-29 age group. Finally, when tourists were asked if they would at all consider going to visit the rock art, 90% of participants stated that they would and 10% stated that they had no interest in visiting these sites. Of the 90% (26) of tourists who would like to visit the

sites, 17 of them fell under the 18-29 age group, five of them were under the 30-39 group, three participants were from the 50-59 group and only one had been from the 40-49 age group. In terms of gender, 21 participants who wanted to visit these sites were female and only five were male (see **Table 5.5**).

Table 5.5: *Tourists' awareness of the various rock art sites within the Limpopo region, whether they visited these sites or not as well as their willingness to eventually go and visit them.*

	Do you know any rock art sites in the Limpopo region?		Have you visited any of these sites?		Will you consider visiting these sites?	
	Yes	No	Yes	No	Yes	No
Age						
18-29	10	9	2	17	17	2
30-39	6	0	2	4	5	1
40-49	1	0	1	0	1	0
50-59	1	2	0	3	3	0
60-69	0	0	0	0	0	0
70-79	0	0	0	0	0	0
Gender						
Male	4	2	1	5	5	1
Female	14	9	4	19	21	2
Race						
Black	7	7	1	12	11	2
White	10	1	4	8	11	1
Coloured	0	3	0	3	3	0
Other	1	1	0	2	2	0
Country of origin						
SA	16	10	5	21	23	3
UK	2	0	0	2	2	0
Australia	0	1	0	1	1	0

5.3 TRIPADVISOR

The research has gone through 19 TripAdvisor reviews specifically focused on the Makgabeng Farm lodge. The research has also gone through 13 random existing reviews that make mention of the Makgabeng region. Some of the most common themes that were apparent in most of the reviews will be discussed in detail below.

a. The Makgabeng Farm Lodge

MOUNTAINS, ROCK ART, THE VIEW, AND ESCAPE FROM THE CITY.

Most of the reviews spoke about the amazing view from the Makgabeng Farm Lodge, reviews specifically spoke about the beauty of the Blouberg mountains and its proximity to the lodge, and almost every time these mountains were spoken about, the reviews would make mention to some of the most prominent rock art sites within the region. Some reviews simply state that the Makgabeng lodge would be an ideal place for those who love the peace and quiet of the countryside. Review three stated the following: "If you want to get away from the city and enjoy the peace of nature stay at Makgabeng". Apart from comments about escaping the busy city life, many reviews spoke highly about the scenic beauty of the place and were also very intrigued by the ancient rock art found in this region. Some of the comments are as follows:

> Makgabeng Lodge is situated next to Blouberg mountain with their elegantly decorated rooms. For those who love nature can enjoy mountain views with flowing rivers. There are beautiful ancient painted rocks and bushmen shelters with all ancient paintings that brings history back (Review one)

> "The area's main draw is still the rock art at the Makgabeng plateau, the Blouberg mountain, the fact that it is authentic and quite undiscovered" (Review four)

> "The rock art is an absolute must see!" (Review 12)

> "Just a short drive takes you into the Makgabeng, renowned for its ancient rock art paintings that date back to the earliest African ancestors, a fascinating history that is best experienced for yourself" (Review 17)

Apart from marvelling over the scenic mountain views and the ancient rock art, the reviews also spoke extensively about the food, the staff, and the general upkeep of the Makgabeng Farm Lodge.

THE FOOD, FRIENDLY STAFF AND CLEANLINESS

All the reviews spoke very highly about the Makgabeng Lodge, people are extremely pleased by the service that they received during their stay there. Review two specifically mentioned the following: "The lodge really exceeded our expectations. The rooms are spacious and beds extra comfy. The hosts gave us such a warm welcoming and attended to our needs. The breakfast was yummy". Many of the reviews speak of similar experiences. All of the reviews speak about the quality of the food that they had while staying at the lodge, while some spoke of breakfast others spoke about how good dinner was and recommended it to people who will be going to stay at the lodge in future. Apart from food, reviews also touched a lot on the fact that the owners of the lodge, as well as the staff, were very welcoming and friendly and the space itself is very comfortable and clean. Some of these comments are mentioned below:

> "Being back at Makgabeng for a few days last week, I can confirm that the charm, peacefulness of the place, its friendliness, continue to work their magic. The welcome is friendly, the bungalows comfortable, the dinners very good...." (Review four).

> "The rooms were clean, the staff was friendly, the food was well prepared and meeting and interacting with the owner was the cherry on top and made us certain that we would return to the lodge as guests again in the future" (Review five).

> "Our family of three was warmly received and made to feel very comfortable. The service was outstanding and the quality of accommodation and food excellent. Fortune, Agnes, Rosina and colleagues went out of their way to make our stay memorable and enjoyable. We'll definitely be back to continue exploring Makgabeng and Blouberg!" (Review six).

b. Random reviews about Makgabeng

After going through TripAdvisor reviews that were specifically focused on the Makgabeng Farm Lodge, the research was then broadened by looking at 13 existing randomised reviews that may have mentioned Makgabeng or the broader area of Bochum. All these reviews had people speaking about trying to find places that they could likely visit when coming on vacation to South Africa. Others already had a few places in mind that they would like to visit but wanted to know what people who may know the place or may have already visited these places before thought of these destinations. Some of the places that these reviews mentioned were places like the Drakensberg and Cape Town. For those reviews that mentioned the Limpopo-Polokwane area, many spoke about the Kruger National Park, Tzaneen, and Louis Trichardt. Makgabeng, specifically the Makgabeng Farm Lodge, was only mentioned by one of the reviews who had already been there. Makgabeng had not been mentioned that much as most tourists do not know about this area unless they have been told about it by someone who had already visited these places. Review one particularly liked that fact that places like Makgabeng are not necessarily part of the most common places that tourists go to. He had this to say about the place: "The Makgabeng Farm Lodge in Bochum Limpopo, is still the kind of place that is off the beaten track, peaceful, friendly, local and comfortable and a must visit place for rock art. Both lodges (Madi A Thavha and Makgabeng Farm Lodge) are not on a regular tourist route and that is what I love about them".

What the research found particularly interesting in both the reviews about the Makgabeng Lodge, as well as the randomised reviews about these areas, is the fact that not one of the reviews ever mentioned the weather in this region. The fact that none of the reviews mentioned climate is optimistic, it could be that the rock art in Makgabeng region is so impressive that they do not need to. Another interesting aspect that the research found is that there are surprisingly very few people visiting this region. This ultimately indicates how little people know about this area.

5.4 TCI

Table 5.6 shows the monthly TCI scores from the year 1993 to 2018, and the last column is showing the average per year. TCI scores are colour coded to demonstrate the TCI score rating classification adopted by Perch-Nielsen et al. (2010) (Table 5.6). The table clearly illustrates that winter (June to August) would be the best time to visit the region in terms of the climatic suitability for tourism. Whereas the end of spring and all of summer (October to March) is not a very ideal time to visit the region as scores mostly range from the late 30s which is classified as “unfavourable” to scores as low as 10 which is “extremely unfavourable”, according to the Perch-Nielsen et al. (2010) score rating system. The average per year was calculated for the entire 25-year period and was then plotted on a chart (Figure 5.5). The mean TCI was then calculated using the average per year for the period from 1993 to 2018 and came to the result of 48.

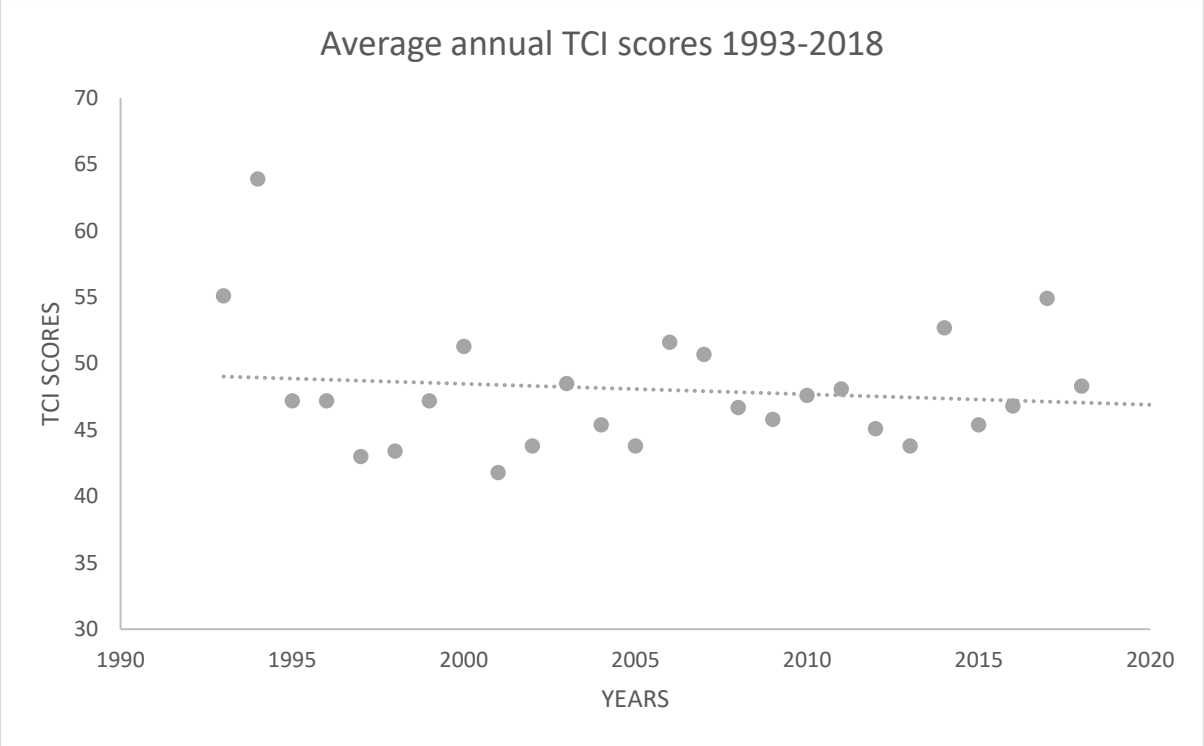


Figure 5.5: *Annual average TCI score for the year 1993 to 2018*

a. Seasonal variation

TCI scores are further broken down and plotted on charts on a month to month basis for the 25-year period to show where the peak is according to the Scott and McBoyle (2001) classifications. The distribution of the TCI scores indicates that there is a low seasonal variability during the summer months for the 25-year period with scores as low as 10, which is classified as extremely unfavourable. According to the charts, the distribution of the mean monthly TCI scores for the Polokwane region predominantly has a winter peak season for the climatic suitability for tourism (Figure 5.6). The winter peak season has been observed for May to August with scores ranging from 60 to 83, which is classified as good and excellent.

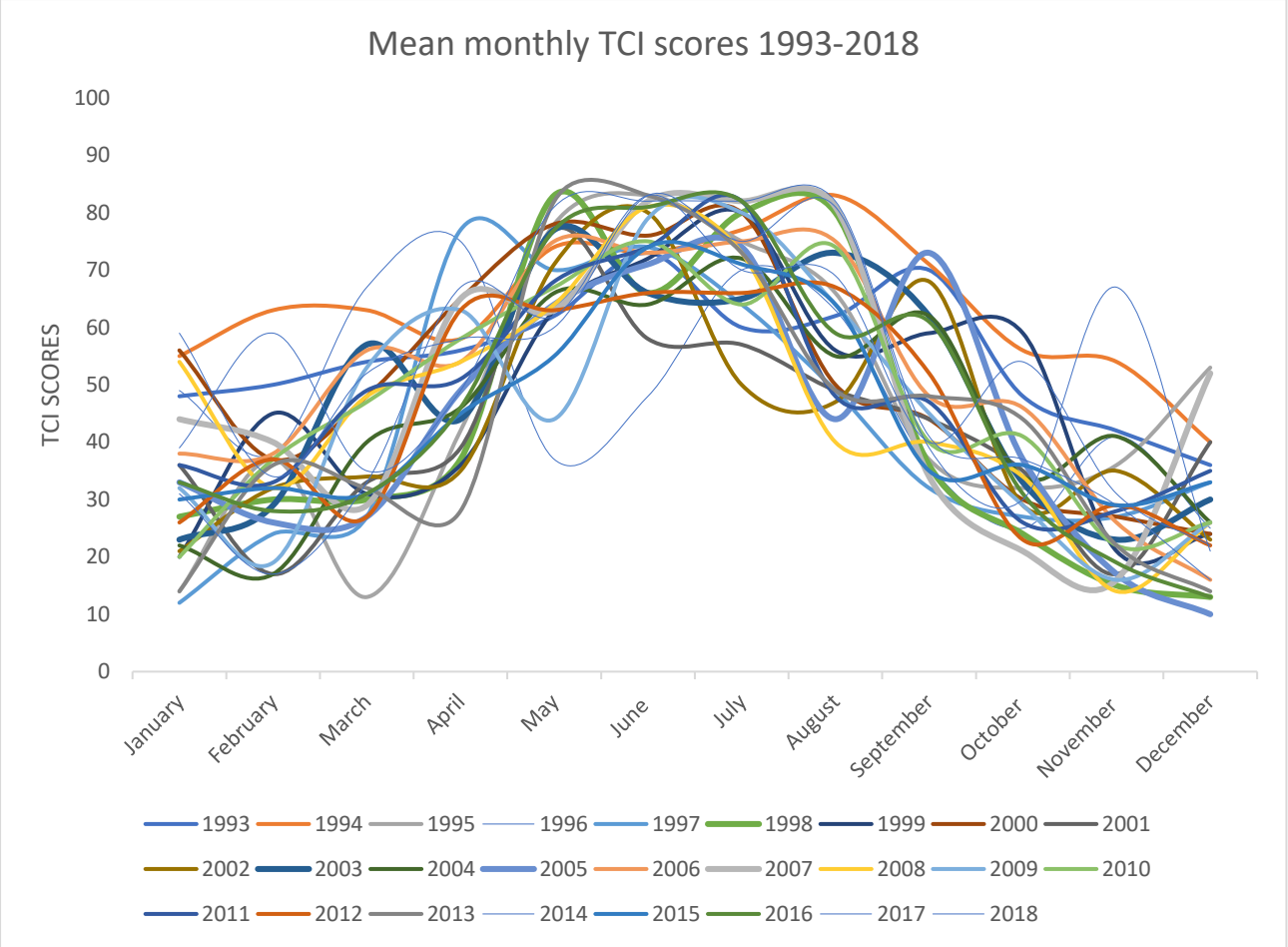


Figure 5.6*: Scott and Mc Boyle's (2001) classification of a winter peak seasonal variability for the 25-year period in Polokwane Limpopo, South Africa.*

b. Factors influencing the TCI

Various factors can lead to a decrease in the TCI scores for a particular region, in this case Polokwane. The climatic variables that influence the TCI are the amount of rainfall, the wind speed, sunshine hours, and the temperature (Noome and Fitchett, 2019). The TCI scores were considerably lowered especially for the summer months of the year due to the daytime thermal comfort CD scores, which consist of the maximum daily temperature and the lowest relative humidity for the region. The other climatic variable responsible for the considerably low TCI scores in a number of years throughout the summer months is due to rainfall. Several months

throughout the 25-year period had scores as low as 10. This low TCI score was, as mentioned before, due to rainfall (≥150 is a rating of 0) and the daytime thermal comfort scores (ratings of 0.0 -2.0).

Table 5.6: *Monthly TCI scores from the year 1993 to 2018, TCI scores and is colour coded to demonstrate the TCI score rating classification adopted by (Perch-Nielsen et al., 2010).*

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	APY
1993	48	50	54	56	62	73	60	62	70	48	42	36	55.1
1994	55	63	63	58	74	73	77	83	71	56	54	40	63.9
1995	14	37	13	42	78	83	75	66	37	32	36	53	47.2
1996	49	38	67	75	37	48	70	63	36	24	41	25	47.2
1997	12	24	27	77	70	74	64	49	32	27	27	33	43
1998	27	30	30	37	83	66	80	80	36	24	15	13	43.4
1999	20	45	31	36	63	72	80	56	59	59	21	24	47.2
2000	56	37	48	65	78	76	80	50	44	30	27	24	51.3
2001	36	17	33	39	77	58	57	49	44	35	17	40	41.8
2002	21	32	34	35	71	80	50	47	68	29	35	23	43.8
2003	23	29	57	44	77	66	65	73	62	33	23	30	48.5
2004	22	17	40	46	66	64	72	55	62	34	41	26	45.4
2005	33	26	27	49	64	71	74	44	73	37	17	10	43.8
2006	28	38	56	54	75	73	75	75	48	46	26	16	51.6
2007	44	40	29	65	63	82	82	81	34	21	16	52	50.7
2008	54	32	48	54	64	81	73	40	40	34	14	26	46.7
2009	32	19	53	63	44	79	80	64	45	29	16	26	45.8
2010	20	37	47	58	67	75	64	74	40	41	22	26	47.6
2011	36	33	49	51	68	74	82	48	47	26	28	35	48.1
2012	26	37	27	63	63	66	66	67	52	23	29	22	45.1
2013	14	36	32	28	82	83	73	49	48	44	22	14	43.8
2014	39	59	35	49	81	82	82	82	41	37	29	16	52.7
2015	30	32	31	45	55	74	81	64	35	36	29	33	45.4
2016	33	28	31	46	77	81	82	59	61	31	19	13	46.8
2017	59	34	52	58	60	83	75	81	39	30	67	21	54.9
2018	31	17	33	67	62	83	70	69	40	54	31	22	48.3

On the other hand, the reason for the increase in TCI scores during the winter months is due to the high score ratings of the following climatic variables: daytime thermal comfort CD, rainfall, sunshine hours, and wind speed. The only climatic variable that has decreased during these winter months (May to August) is the average thermal comfort CA with the lowest score rating of 2.5, consisting of the mean monthly temperature and the mean monthly relative humidity. It can thus be determined that the daytime thermal comfort CD is the biggest but not the only element of a higher TCI score rating.

5.5 SYNTHESIS OF RESULTS

Below is a brief breakdown of the data which specifically looks at some of the commonalities and differences between the various data sets that have been used in the research. As was mentioned in previous chapters, the research has taken a mixed-method approach which comprised of interviews being done with various stakeholders and community members within Makgabeng as well as the greater Blouberg and Polokwane region, questionnaires done by a number of tourists who had previously visited the Limpopo Province, TripAdvisor reviews and lastly the Tourism Climatic Index TCI.

The results reveal that there are some similarities between the stakeholders and community members' perceptions of climate change. Both agree that their peak season is during the Easter holidays, school holidays (specifically June and September), and the festive season. However, the way community members describe peak season is not the same as the way anyone else would describe it. Peak season for many people is having thousands of people flocking to one place. For the community members of Makgabeng, peak season is having groups of about five to ten people coming to the area. One of the differences is that the stakeholders were able to state how many tourists they have coming to visit their tourist offerings on a monthly basis,

whereas the community members were unable to do so because they just do not have a lot of people coming to the area. This fact can be substantiated with evidence from TripAdvisor as there were only 19 reviews that have been written specifically about Makgabeng.

This then leads us to the argument that both the community members and the various stakeholders had made, all these participants state that marketing is a big problem for them in terms of attracting tourists. The participants state that their tourist operations are not being marketed effectively with regards to having adequate road signage and other means of advertising, like access to the internet and efficient network signal. This can once again be linked to the TripAdvisor reviews, not one mention had been made about the weather of the region, as very few people are aware that the place exists. This was one of the challenges that the researcher faced when trying to calculate the tourism climatic index for the region. Makgabeng does not have its own weather station, as a result, the Polokwane weather station was used as it is a two-hour drive away from Makgabeng. This weather station also had all the variables that were required for the TCI calculation.

Based on the TCI scores, winter is the best time of the year to visit the Polokwane, Makgabeng region in terms of the climatic suitability for tourism, with scores ranging from 62 to 83, whereas mid-spring and summer are said to be unfavourable times for tourism, with scores ranging from 38 to as low as 10. Stakeholders agree with the TCI scores as they too state that the best weather for their tourist operation is when it is sunny with cloud cover, not too hot. On the other hand, when participants (stakeholders and community members) were asked if they had noticed any changes in weather patterns over the past few years, both stated that they had experienced a lack of rainfall. Participants stated that they have recently experienced an increase in the number of heatwaves and long dry periods. Both the community members and

the stakeholders said that these extreme weather conditions have affected their livestock and their crops. However, stakeholders also state that it is difficult to attract tourists to places that are not extremely pleasing to look at due to the dry and hot weather conditions. On the other hand, both stakeholders and community members state that when the region gets heavy rainfall, it makes it very difficult for tourists to access the area due to the bad road conditions.

CHAPTER SIX
DISCUSSION

6.1 INTRODUCTION

The project was primarily aimed at determining climate change threats to heritage tourism in the Makgabeng region, South Africa. The research has done so by firstly trying to understand the tourists' satisfaction with the weather during their stay and the key climate variables that they respond to. Secondly, it looked at some of the contemporary threats of climate to heritage sites in Limpopo and lastly then tried to understand how to best adapt to the system. This is the first project that has been done in the Makgabeng region that has specifically focused on climate change and how it affects heritage tourism in the area by using four different data sets to collect the information that was required to achieve the above aims. The research used qualitative data by conducting interviews with various stakeholders within the tourism sector of the Polokwane and Makgabeng region. Interviews were also conducted with community members of the Makgabeng region. Quantitative data was used in the form of having a number of tourists fill in hard copy or online questionnaires. TripAdvisor reviews of the Makgabeng Farm lodge and random reviews that have mentioned the Makgabeng have been consulted to see what tourists have said about the place and what they are particularly interested in. The project has also used the Tourism Climatic Index TCI to assess the climatic suitability for tourism in the Makgabeng region.

6.2 CLIMATE CHANGE THREATS TO TOURISM IN MAKGABENG

One of the climate change threats to tourism is Makgabeng is temperature, specifically the heat. This is similar to the case in Iran where heat stress is seen as the primary threat to tourism. It is said that for much of the developing world heritage tourism does not necessarily only include

outdoor tourism, but it is often one of the most integral parts of the entire experience (Fitchett and Roshan, 2020). The increasing temperature can be seen as a problem for both indoor and outdoor tourism in the Makgabeng region. For outdoor tourism, especially the rock art sites there will be a problem specifically during the summertime because this region tends to become very hot and dry during the summer months. Consequently, tourists do not often want to spend too much time in the sun as they become physically drained a lot faster. There is, however, also a problem with the heat in terms of indoor tourism as most of the tourist operations do not have efficient air conditioning systems. One of the stakeholders from the Art Museum had stated that it becomes so hot in these places that they would have to close up the museum for the day as it is unbearable for them to be in there, let alone for the tourists visiting the place. Rising temperatures are of actual concern for other forms of tourism as well, not just for heritage tourism. For example, rising temperatures among (other things) pose a big threat for snow-based tourism in places like Afriski in Lesotho (Stockigt et al., 2018), which fall under nature-based outdoor tourism. This is a big problem for future tourism in the country as South Africa is predicted to experience increases in temperature as high as 4°C by the year 2100 (Fitchett et al., 2016b). The rise in temperatures is affecting many nature- and heritage-based tourism destinations. One such example would be the bleaching of the coral reef in Queensland Australia, which is due to the warming of the oceans (UNWTO, 2008).

Another climate change threat to tourism in Makgabeng is flooding. When stakeholders, as well as community members, were interviewed, they mentioned that they tend to get severe thunderstorms accompanied by heavy rainfall in the region. As a result of these rains, the roads leading up to Makgabeng are often very bad to drive on and make it impossible for tourists to access the area. Flooding is not something new in the Limpopo region as the region's Lowveld previously experienced a severe flooding event in the year 2012 (Fitchett et al., 2016a). It is

said that the region is projected to experience more events like this in the near future (Fitchett et al., 2016a). Beach tourism on the other hand is also being threatened by flooding due to the rise in sea levels (Fitchett et al., 2016b). A study was conducted in the Eastern Cape (Fitchett et al., 2016b) found that there will be a high level of flooding along these regions due to the rise in sea levels by the year 2050. As a result of this, various tourist accommodation establishments are facing a threat of being flooded and the local infrastructure will also be damaged, which will make it difficult for tourists to access these places (Fitchett et al., 2016b).

6.3 NON-CLIMATIC RELATED THREATS TO TOURISM IN MAKGABENG

One of the biggest non-climatic related threats to tourism in Makgabeng is the fact that the area is not being marketed to the general public or international tourists. This is not only the case for Makgabeng but places like Iran as well. Even though Iran hosts 23 World Heritage sites, there is a lack of marketing in the country and this in turn makes a large part of the country obscure to the rest of the world (Fitchett and Roshan, 2020). Stakeholders as well as community members should use various means of advertising the region. When community members were interviewed one of the things that they mentioned the most was the fact that they do not have access to any internet in the region. As a result, they are unable to market the area effectively. The other problem that the community members mentioned is that they also do not have access to any cell-phone network. One of the stakeholders said that this was a big problem as tourists would often get lost on their way to some of the rock art sites and could not contact anyone for help as there will not be any network coverage. This in turn threatens their chances of receiving more tourists. People are in a sense not aware of the region's existence. The community members within the Makgabeng region are not the only ones who state that marketing is a huge problem. Various stakeholders from a number of museums in the Polokwane area who were interviewed also stated that marketing is a big issue for them. One participant specifically stated

that marketing is a problem because these places are owned by the government and the municipality. As a result, some of these curators are unable to market or share information via social media without the approval of the municipality. The participant further stated that marketing would be a lot easier if they were allowed to promote these places through various platforms on social media as that is where most of the interest lies. According to some scholars, it is not just the lack of marketing that is bad for tourism overselling of a tourist destination is also a problem (Othman et al., 2015). A "good tourism advertisement should be able to attract potential tourists without exaggerating on the destination's ability while highlighting its offers" (Othman et al., 2015: 220). It is said that tourists have complained regarding this as they do not get the experience that they were promised in the advertisements.

Another non-climatic problem is the fact that tourists are just unable to access these places due to the lack of signage in the region as well as the infrastructure of these roads. When going to the Makgabeng most of the roads are made up of deep, soft sand which makes it extremely difficult for tourists to drive on unless they have a 4x4 which they would never know about unless the area was properly advertised.

6.4 ADAPTATION STRATEGIES

a. The climatic suitability for Makgabeng.

Based on the results that have come from this research, the Polokwane, Makgabeng regions are ideal for tourism specifically from May to Mid-August. According to Scott and McBoyle (2001), every tourist destination's tourism climate resource can be put into one of the six annual distribution classifications (Figure 3.2). For the Polokwane and Makgabeng region, there is a winter peak season with TCI scores ranging from 70-83, which fall under the classification of "very good" to "excellent". This means these regions are ideally suitable for tourism during the winter months, but not so much during the summer months. The reason is that during winter

these locations are a lot cooler and are less humid with low precipitation and minimal cloud cover, as opposed to the summer months that tend to be very hot and humid and also have large amounts of precipitation (Scott et al, 2012; Fitchett et al., 2017).

In this case, the winter season would be a good time for tourists to visit these regions as it is climatically suitable for outdoor tourist activities like hiking to various rock art sites, game viewing, and hunting. Some of the tourists that have answered the questionnaires, as well as some of the stakeholders within the tourism community in these regions, have also stated that the weather in winter makes it an ideal time to visit the area since it is not very hot and there is hardly any rainfall. One of the stakeholders specifically mentioned that this time of year is great for hunting and game viewing as the grasses in the area are low. Consequently, there is more visibility specifically for those international tourists who are there for game hunting. In the case of Makgabeng, this time of year (winter) would be a good time to visit the various rock art sites on the plateau. Seeing as one has to hike to get to the various rock art sites, the winter climatic conditions are rather ideal as it is not too hot (which makes the hike more pleasant) and there is better visibility because the vegetation is quite low in the area this time of year. If Makgabeng were to promote this region as a tourist destination, they would have to look at ways to promote tourist packages for the wintertime. They could have tourists visit during the summer times as well. However, according to the climatic suitability for tourism, this region would yield better results during the wintertime. The winter climatic conditions in Makgabeng are similar to the climatic conditions in some of the cities in the south of Iran where their winters consist of clear skies and cool climate conditions (Roshan et al., 2015). The reason why Makgabeng is being compared to Iran is that, according to the TCI scores, some of the cities within Iran also experience a winter peak. The only difference is that they happen at different times of the year. Makgabeng winter is from June to August and for Iran winter is from December to February.

Just like Makgabeng, Iran also has many tourist attractions but they both tend to attract fewer tourists than they should (Morakabati, 2011). The adaptation to future climate change is paramount for Makgabeng so that tourism establishments, as well as the local community members, can sustainably improve tourism for this region (Ahmadi, 2012).

Tourism is increasing rapidly on a local and international scale and climate is one of the most important factors that determine whether a destination is attractive to tourists. Climate ultimately dictates the valley and peak seasons of a destination (Roshan et al., 2015). According to (Amelung et al., 2007; Roshan et al., 2015: 33), both climate and weather determine tourism success and suitability as it is said that "the climate dictates the potential for various types of recreation activities whilst the weather and its associated season controls the periods of peak occupancy". What the authors are saying is that the TCI scores of a particular region can show when the best time of year is to travel to this region. The scores can also indicate what type of activities would be suitable to take part in. This is specifically the case for cultural tourism. According to (Mieczkowski, 1985), when tourist destinations have similar educational and cultural value, the one with the most suitable climate is often the one that is most likely selected. In the case of Makgabeng, the region is rich in ancient history just like Mapungubwe or the Kruger National Park, but Makgabeng is seldom the chosen destination. The reason is that most people just do not know that this place exists. This is evident from the amount of TripAdvisor reviews that they have received, and one can also see this from the questionnaires that tourists had to complete for this project. Most of the tourists did not know that there is a place called Makgabeng and if they did know about it, they have never personally been there due to the lack of exposure to the place.

To make Makgabeng a booming tourist hub, the tourism stakeholders and tourist operations need to consider the climate and the best way to do so is to look at the tourism climatic suitability for the region. Makgabeng mostly has outdoor tourist attractions such as the vast number of rock art sites and hiking trails. Tourism operators should promote these outdoor activities accordingly by taking the climate and weather of this region into consideration. When stakeholders were interviewed about this topic, most stated that they have put certain measures into place to accommodate tourists. One participant specifically said that, during heatwaves in the summer months, they would often drive up to the rock art sites so that the tourists only had to hike for a short distance. Doing so allowed the tourists to still enjoy the rock art sites. In order for the Makgabeng region to successfully maximise tourism potential through local climate, they need to put certain measures into place that can predict future climate changes and ultimately adapt to them. As a result, they can map out which region is best suited for certain recreational activities, and when the best time of year is to promote these activities (Roshan et al., 2015).

If the tourism operations can effectively market the Makgabeng region either using the internet or various travel brochures they should promote the region during the wintertime. It is said that when tourist destinations use the local climate to their advantage, these tourist establishments are most likely able to prosper (Perch-Nielsen et al., 2010). This is why calculating the TCI scores for the Makgabeng region would be extremely valuable as one can tell if a tourist destination's local climate is likely to improve or decline as time goes by (Mieczkowski, 1985; Amelung et al., 2007). This in turn will equip existing tourist establishments with the tools to attract tourists despite the poor climatic suitability (Perch-Nielsen et al., 2010), especially in the summer months for the Makgabeng region. Seeing as the climate is not very suitable for outdoor tourism during the summer months due to the heat and humidity, tourist operations

could promote various indoor activities such as visitations to the various museums within the region.

One of the other problems that Makgabeng has is that not many people know that the place exists. This is especially evident when looking at the TripAdvisor reviews specifically for the Makgabeng region, with only 19 reviews based on the Makgabeng Farm Lodge. Only three out of 13 broader reviews specifically mentioned Makgabeng; however, they were all from the same reviewer who had just visited the place at three different times. To turn Makgabeng into a booming tourist destination, stakeholders and community members alike need to come up with ways that will promote this region as a tourist destination and heritage site as it is extremely rich in ancient history through their displays of rock art.

There were only 19 TripAdvisor reviews that were made specifically for the Makgabeng region and only 13 reviews that have randomly mentioned Makgabeng. There is a big difference in numbers when compared to TripAdvisor reviews that have been previously been done for other parts of the country. For example, Fitchett and Hoogendoorn (2018b) consulted 604 TripAdvisor reviews for the city of Cape Town, 33 of these mentioned the climate. The results are similar for other cities that they looked at, there are many reviews and at least some of them mention the weather and climate of the area. However, for the Makgabeng region, this is the complete opposite as there are only 32 reviews of the Makgabeng region but only 13 of those are specifically about the area and none of the 32 reviews ever mentioned the climate of the region. This merely indicates that there are not many people who are aware of the Makgabeng.

6.5 CLIMATE FUTURE FOR THE REGION

The main climate change threat for the region is heat. For South Africa in particular it has been predicted that temperatures will increase as high as 4°C by the year 2100 (Fitchett et al., 2016b).

The future climate projections for the region in which the Limpopo province is located "could face a potential increase in temperatures by as much as 2°C by 2035, by 1-2°C between 2040 and 2060 (or even 2-5°C in the high-end scenarios), and by 3-6°C between 2080 and 2100 (or as much as 4-7°C in the high-end scenarios) (Department of Economic Development, Environment and Tourism, 2016: 18). It is said that the Limpopo province has already started experiencing certain changes to the climate, and they are predicted to expect hotter, drier summers and warmer, wetter winters and a number of extreme events such as heavy rainfall and intense heat waves (Department of Economic Development, Environment and Tourism, 2016).

Respondents who were interviewed were not aware of the climate change in the region, the only thing that they mentioned on several occasions is that they have recently started to receive less rain they previously had. The lack of awareness can be seen as problematic as the tourism industry will suffer. Seeing as the Limpopo province has a thriving tourism industry it is crucial that various adaptation measures are put into place for the tourism sector as well as other sectors within the region to avoid the offset effects of climate change (Department of Economic Development, Environment and Tourism, 2016).

6.6 MAKGABENG AND BUTLERS (1980) TOURISM LIFE CYCLE MODEL

Butler's tourism life cycle model hypothesized what may or may not happen to various tourism destinations if they continued to develop and eventually reach their capacity and stated that the tourist destination will most likely go through six stages of evolution namely, exploration involvement, development, consolidation, stagnation, decline or rejuvenation (Butler, 2004; Breakey, 2005; Cooper, 2011 and Mouhamadou Bamba, 2018: Figure 6.1). Butler hypothesizes what happens to the tourist destination in each of these stages. It is said that in the exploration

stage there are very few people visiting the area and that there is are minimal effects on the area in terms of it being changed in a social, cultural, or physical way (Mouhamadou Bamba, 2018). The involvement stage suggests that there is an increase in the number of tourists coming into the area but that it is still under local control, the development stage can be seen as the stage in which the number of tourists increases so rapidly that it is almost equal to the number of the local population (Mouhamadou Bamba, 2018). The consolidation part of the tourism life cycle speaks about how the growth rate begins to decline as the destination experiences a loss in the number of people visiting the area due to competition from other vacation spots. This then brings us to the stagnation phase where the tourist capacity of a destination is reached and they ultimately start facing environmental, economic, and social problems (Butler, 2004; Breakey, 2005; Cooper, 2011 and Mouhamadou Bamba, 2018). The sixth and final stage is either decline or rejuvenation. In the decline stage, the tourist market is lost and the number of people visiting the area declines and they end up depending on the locals for support. In the rejuvenation phase, these tourist destinations end up changing and upgrading their attractions through which a new tourist market is then found (Butler, 2004; Breakey, 2005; Cooper, 2011 and Mouhamadou Bamba, 2018).

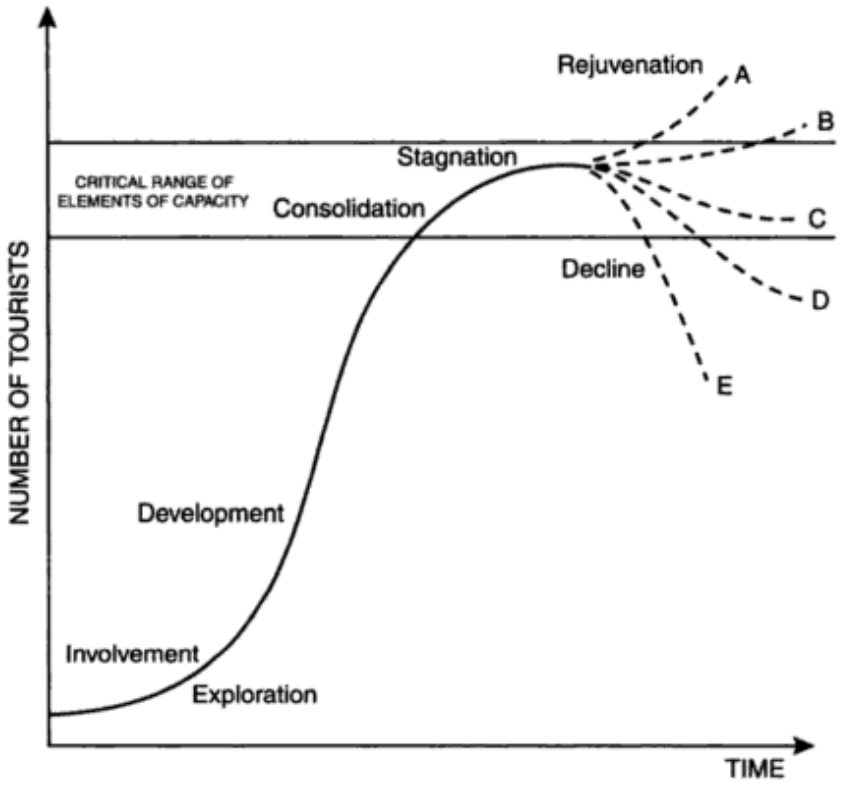


Figure 6.1 *The hypothetical life cycle of a tourist destination.*

If one links Makgabeng to Butler's Tourism life cycle, it is evident that Makgabeng as a tourist destination is still in the first stage of this life cycle (the exploration phase). This is because very few people visit or even know about the existence of this area and those who do know about it have learned about it through word-of-mouth promotion. The other reason why it is still in the exploration phase is that one can still have close interactions with the local people of the area and also there have been very minimal effects on the social, cultural, and physical environments of this destination. If the area is to be marketed in the correct way it is plausible to say that it might soon reach the second stage of the tourism life cycle but will most likely not go any further than that as the local people would like to keep the physical environment intact.

6.7 MAKGABENG AND DOXEYS (1975) IRRIDEX MODEL

In South Africa, like most developing countries around the world, tourism plays a crucial role in the socio-economic development and environmental sustainability of that country (Shobha, 2019). It is said that tourism development should not only focus on the positive impacts, but it should also focus on the negative impacts and how the host community responds towards its growth (Shobha, 2019). George Doxey created the irritation index based on residents' level of irritation that can be used to explain the attitudes of local people towards the number of tourists coming in and out of a certain place (Prentice, 1988; Shobha, 2019). According to Doxey's irridex (Prentice, 1988; Shobha, 2019), there are four levels of irritation through which behavioural modification takes place in the local population towards tourists due to the level of tourism growth within a given destination (Shobha, 2019). The first level is euphoria, here locals are enthusiastic about the arrival of tourists and there is no sense of irritation towards them (Shobha, 2019). The second level is apathy, tourists are seen as a means of financial gain, and interactions between tourists and locals become more formal (Prentice, 1988). The third level of irritation is annoyance, locals begin to feel the pressure from the inflow of tourists and are not able to handle these large numbers without having to expand their facilities (Prentice, 1988, Shobha, 2019). The fourth and final level is antagonism, here tourists are now seen by the local population as bad and the cause of all problems (Prentice, 1988, Shobha, 2019). If one has to relate this irridex to Makgabeng, it would be accurate to say that Makgabeng is at the first level of Doxey's irridex model. The community members of Makgabeng are in a state of euphoria as they are very enthusiastic about developing the area into a tourist destination. They are eager to welcome more tourists into the area and are thrilled about the possible developments. One cannot be sure what level they would reach but it does not always have to follow that direction. It is said that "the degree of reaction depends on the community's

involvement in the industry" (Shobha, 2019: 146). In other words, if the community can directly benefit from tourism, their attitudes towards tourists may be positive.

6.8 LIMITATIONS AND RECOMMENDATIONS

a. QUESTIONNAIRES

One of the biggest limitations that the researcher faced while working on this project was trying to get enough tourist respondents to get a representative picture of tourists' perspectives around climate change and how it affects them, as well as understanding their preferences in terms of what they tend to look for in a place when going on vacation. The researcher spent approximately a week in Polokwane going to every known tourist destination one could find as well as the visitor information centre looking for tourists to hand out questionnaires to and possibly interview. The researcher had even asked all the owners of these tourist operations if she could leave some questionnaires there and pick them up again before she went back home from Makgabeng. After all of this was done the researcher was only able to get six questionnaires filled out as there were just no tourists in site at the time. To make up for not being able to find tourists in the Polokwane, Blouberg, and Makgabeng regions, the researcher resorted to drawing up an online questionnaire and distributing the link on social media sites such as Facebook and WhatsApp, asking tourists who had previously visited the Limpopo region to fill in the questionnaires. Even then the researcher was not able to get many participants as people were not that eager to take part. Therefore, the results cannot be a true reflection of what tourists feel about these destinations. If further research is to be done in this region one should visit during the Easter break, school holidays (June and September), and during the festive season as stakeholders and community members have stated that these are their peak seasons in terms of the number of tourists coming to this region.

b. TRIPADVISOR

The research was further limited by an inadequate amount of data for the Makgabeng and Blouberg region on TripAdvisor. As was mentioned before, when searching specifically for the Makgabeng Farm Lodge on the TripAdvisor website, there were only 19 reviews made from September 2012 to September 2019. Since there were only 19 reviews specifically for the Makgabeng Farm Lodge, further expanding the search was decided upon to look at the Capricorn District, with the hope of achieving better results. Unfortunately, it was just as bad as the first search with only 13 reviews from November 2010 to November 2018. TripAdvisor reviews are argued to "provide a valuable source of information for the tourism sector to facilitate effective adaptation to climate change" (Fitchett and Hoogendoorn, 2018b:1). Makgabeng is lacking in this regard, there are not enough people who know about the place and therefore it is difficult to fully understand tourists' perceptions about the region with specific regards to the climate of the area. Moreover, considering all the reviews for the Makgabeng region and the Capricorn District, tourists only mentioned the beautiful scenery, the friendly and welcoming people, and the quality of the food. None of the TripAdvisor reviews mentioned anything about the weather. Additionally, surprisingly very few people visit the Makgabeng region and this ultimately indicates how little people know about it.

c. TCI

Since Makgabeng does not have a weather station, the climatic dataset used for the TCI was a limitation as the closest weather station to Makgabeng is in Polokwane, located approximately two hours (by car) away from the Makgabeng. Hence, for the TCI scores to be calculated for the region, climatic data had to be obtained from the SAWS. The Polokwane weather station was sufficient because these areas are not that far away from each other hence there could potentially not be a considerable difference in their TCI scores. However, Roshan et al (2015)

have argued that even though there is a lot less variability in the TCI scores of the country (South Africa) than those that have been observed in other countries like Iran (Roshan et al., 2015), no two locations have ever had the same TCI scores (Fitchett et al., 2017). This is why the TCI dataset is a limitation for the research, even though Makgabeng and Polokwane are near each other there is a possibility that the TCI scores from Makgabeng would be somewhat different from those of Polokwane, especially because Makgabeng is located on a plateau.

CHAPTER SEVEN
CONCLUSION

7.1 SYNOPSIS

This study is important because is the first to explore climate change threats to heritage tourism in Makgabeng. It is also the first to explicitly explore climate change threats to heritage tourism in Southern Africa and one of the few to do so globally. It contributes to a growing body of research on climate change and tourism in Southern Africa (Fitchett et al., 2016 a,b,c; Hoogendoorn et al., 2016; Rogerson 2016; Amusan et al., 2017; Fitchett et al., 2017; 2018 a,b; Hoogendoorn and Fitchett 2018 a,b,c; Odeku 2018; Stockigt et al., 2018; Noome and Fitchett 2019), and a small body of research on heritage tourism in South Africa (Van Schalkwyk 2009; Van der Merwe 2013 a,b; Rogerson and Van der Merwe 2016). Adopting a mixed-methods approach, this study incorporates some of the most recently developed and utilized methodologies in the tourism-climate research nexus in Southern Africa, including the standard interviews and questionnaires, online surveys, TripAdvisor reviews, and the TCI.

One of the most crucial key findings from the research is the fact that many people are unaware that there is a place called Makgabeng. This can be very problematic as the community of Makgabeng along with some of the stakeholders within the Limpopo tourism municipality would like this area to be recognised for its rock art sites that are rich in ancient history. For this area to be marketed effectively, they would have to look at various ways to improve tourism in the region by marketing the area on the internet and drawing up various brochures stating important facts about the place. For example, what one would most likely find in the

region, when the best time of the year is to visit the place, and what activities one can take part in while living in the area. Therefore, no matter what the climate is, be it good or bad, there are simply no tourists and no real established tourism sector yet in Makgabeng to be affected.

Another key finding is that the various stakeholders, as well as the community members, are aware of when the best time of year is for tourists to visit the area, they just do not have the means to market the place effectively. If the tourism community of the Blouberg/ Makgabeng region intends to sustainably grow the tourism sector in the region they need to pay very close attention to the climatic suitability of the region. The reason why the climate is so important is that it plays a major role in ensuring tourists enjoy their stay during their visit and, in turn, can promote the region by word of mouth, or other tourists are simply able to promote the region by using tools like TripAdvisor. However, this cannot happen if the region is not marketed effectively. This means that all the marketing that needs to be done in this region, must be done with the awareness of the climate to ensure the greatest suitability for tourists and long-term sustainability. The key to all success in this area is marketing and running a sustainable tourist attraction.

7.2 EXTENT TO WHICH AIMS AND OBJECTIVES WERE MET

The project was primarily aimed at determining climate change threats to heritage tourism in the Makgabeng region, South Africa.

The primary threat was found to be temperature, specifically the heat. Based on the in-depth interviews that were held with stakeholders from various tourism operations, many stated that the worst weather for their tourist offerings is hot weather conditions as several tourists have complained about the heat in the area and as a result avoid coming to these places (See section 5.1 page 45-47). According to the TCI, summer is not an ideal time of year to visit this region

as it is seen to be not climatically suitable for tourism during this time (See section 5.4 and table 5.6).

The research has done so by trying to understand the tourists' satisfaction with the weather during their stay and the key climate variables that they respond to.

Based on the results from the questionnaires and online surveys that were completed, most tourists stated that summer is the best time of the year for them to visit South Africa as they can enjoy a lot more outdoor activities. Some tourists also mentioned that spring and winter would be ideal as it is not that hot and there is better visibility for game viewing and hunting due to the low vegetation (See section 5.2). The TCI scores would agree with the tourists which stated that winter would be an ideal time to visit the region as the summers in the region tend to be very hot and dry, which makes it a bit difficult to stay outdoors for long periods (See section 5.4). Surprisingly enough, none of the TripAdvisor reviews for this specific region mentioned the weather or what the tourists' experiences were regarding this (See section 5.3).

These have been achieved through the following objectives

1) *Understanding the target market of these attractions through determining:*
    a. *Country of origin*
    b. *Reason for selecting this attraction to visit*
    c. *Primary interest in the attraction*

The target market for these attractions are tourists who enjoy the outdoors. Based on the results from the questionnaires and online surveys, these places usually attract a large number of

people between the ages of 18 to 29, and also the majority of the tourists who visit these areas are local tourists from within Southern Africa (See section 5.2).

2) *Understanding the tourists' sensitivities to the climate during their visit*

    a. *Are they satisfied with the weather they experience?*

    b. *Were they well prepared for the weather?*

    c. *Were they able to take part in all of the activities they wanted to?*

It would seem that tourists are well aware of the weather conditions of the region as they all stated when the best time of year is for them to visit South Africa. Many tourists have specifically stated that the best time of year for them would be during summer as they can take part in a lot more outdoor activities (See section 5.2).

3) *To determine the tourist's perceptions regarding climate change threats to the region*

It is difficult to determine tourists' perceptions around the climate change threats to this region, specifically the Makgabeng region, as there are just not enough people who are aware of its existence to fully understand what tourists' perceptions are with specific regards to climate change in the region (See section 6.2).

4) *To determine the tourism operators' concerns regarding climate change and their adaptation plans.*

Stakeholders as well as community members, on the other hand, are well aware of the impacts of climate change and they are planning to put certain measures into place to accommodate these changes. Community members have stated that when tourists come to the region to see the rock art sites there are often times where they would need to hike to get to a certain site.

Community members have mentioned that if the weather is extremely hot they are willing to drive the tourists up to a certain point (where the cars are not able to go any further) and have the tourists hike the rest of the distance. Stakeholders have not mentioned if they have put any measures in place but they would have to do so eventually as there had been a lot of tourist operator specifically complaining about the heat within the region, so much so that they are unable to function effectively as they do not have adequate air conditioning systems in place (See section 5.1a and b).

The first set of aims and objectives have been achieved by handing out various questionnaires to tourists, where they had to give a bit of demographic information like where they came from. Based on the data analysis, most of the tourists that have visited the region were local tourists from South Africa, there were however five international tourists who had come from places like the United Kingdom and Australia. Most of the tourists have chosen to visit this region (Limpopo) for business or they were simply visiting family. Many of the tourists who have visited the Limpopo region were unaware of the Makgabeng rock art sites and those who were aware of the rock art sites in the area had not been there.

Tourists were asked to tell the researcher about their experiences with the climate of the region. Most of the tourists already knew what the weather was like in the region, so they were well prepared for their visit. All stated that they were able to take part in the activities that they had planned. When the weather was not that good they were able to find other activities that they could take part in.

On the other hand, tourist operations are well aware of the impact that climate change will most likely have on the region and they are working on ways to adapt to these changes more

effectively. Some of the stakeholders that were interviewed have put certain actions into place regarding climate change. For example some of the community members in the Makgabeng region act as tour guides, so if the weather is too hot to hike to the various rock art sites they have decided that they would drive most of the way and only hike up a short distance to help accommodate the heat. Others, on the other hand, have not put any adaptations into place.

For Makgabeng to successfully become one of the most well know tourist destinations based on its rich heritage, the stakeholders need to step in and effectively manage and promote this region but to do so efficiently they need to take climate change into consideration as this will ultimately determine the number of tourists coming to the area. The climate of a destination determines its attractiveness.

7.3 RECOMMENDED FUTURE WORK

Seeing as research around climate change and tourism is still fairly new within South Africa (specifically that of climate change and heritage tourism), continued research must be done for us to fully understand the relationship between heritage tourism and climate change not just in South Africa but globally as well.

a. Future work on tourism in the Makgabeng region.

The tourism destination should investigate finding ways to advertise and market the rock art sites as well as the rest of the area more effectively. The more people are made aware of the place either by way of the internet (or merely by word of mouth) the more exposure the region will receive and as a result the region will become recognised as one of the national heritage sites as it is so rich in ancient history. However, tourism operations should look into and be aware of the climate and future climate change projections. The reason why this is important is that, if this region is to be marketed economically and sustainably, one should consider that

these tourist offerings are based on outdoor tourism and climate will play a big role in how successful and sustainable these tourist offerings will be. Hence climate and climate change projections are an important aspect to investigate when moving forward. One of the other projects one could look at is if the tourism industry in the Makgabeng region is to establish a visitor information centre or various indoor tourism activities, what are some of the climate change mitigations they should put in place to run these tourist operations sustainably. One example would be the introduction of effective air conditioning systems to cope with the increase in heat stress in the region.

b. Future work for the field of academia

More work needs to be done on heritage tourism and climate change for places like the Cradle of Humankind, Maropeng, and Robben Island. More work will need to be done specifically on sites in the Limpopo Province, for example, places like Mapungubwe and the Mokopanes caves. There will also need to be more work done on tourism and climate change in Limpopo especially since it is mostly outdoor tourism and climate will play a crucial role in the attractiveness of these destinations.

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APPENDIX ONE- INFORMATION LETTER INTERVIEWS



INFORMATION LETTER FOR INTERVIEWS

Dear Sir/Madam

My name is Fazlin Mcpherson. I am a Masters student in Geography at the University of Witwatersrand. As part of my studies, I have to undertake a research project, and I am investigating **climate change and heritage tourism: Threats to Makgabeng in a regional context in Limpopo South Africa**. The project is aimed at finding ways of making tourism in this area sustainable by trying to identify what is the target market for this community. The second aim of this study is to determine the climate change threats to heritage tourism in South Africa.

As part of this project I would like to invite you to take part in an interview .I would therefore need **approximately 25 minutes to 30 minutes** of your time for an interview. With your permission, I would also like to record the interview using a digital device. There are no foreseeable risks to the study. All information gathered will be used for a Masters dissertation and possibly presenting at a conference or seminar. The interview will be completely confidential and anonymous as I will not be asking for your name or any identifying information, and the information you give to me will be held securely and not disclosed to anyone else. I will be using a pseudonym (false name) to represent your participation in my final research report. Your **participation is voluntary** and you can withdraw at any time without any negative consequences and all data that was collected from you will be destroyed if you decide to withdraw from the study. It is important to note that you **will not** be gaining anything financially from being a part of this study however your participation is greatly appreciated in furthering my knowledge and studies.

This study will be written up as a research report which will be available online through the university library website. If you wish to receive a summary of this report, If you have any concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), telephone +27(0) 11 717 1408, email Shaun.Schoeman@wits.ac.za If you have any concerns you are welcome to contact myself **Fazlin Mcpherson on 072 517 2974 or my supervisors Dr Jennifer Fitchett on (011) 717 6514 or my Co-supervisor Dr Catherine Namono on (011) 717 6055**

APPENDIX TWO- INFORMATION LETTER QUESTIONNAIRES

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

INFORMATION LETTER FOR QUESTIONNAIRES

Dear Sir/Madam

My name is Fazlin Mcpherson. I am a Masters student in Geography at the University of Witwatersrand. As part of my studies, I have to undertake a research project, and I am investigating **climate change and heritage tourism: Threats to Makgabeng in a regional context in Limpopo South Africa**. The project is aimed at finding ways of making tourism in this area sustainable by trying to identify what is the target market for this community. The second aim of this study is to determine the climate change threats to heritage tourism in South Africa.

As part of this project I would like to invite you to take part in answering a questionnaire. I would therefore need **approximately 10 minutes to 15 minutes** of your time to complete the questionnaire. There are no foreseeable risks to the study. All information gathered will be used for a Masters dissertation and possibly presenting at a conference or seminar.

The questionnaire will be completely confidential and anonymous as I will not be asking for your name or any identifying information, and the information you give to me will be held securely and not disclosed to anyone else. I will be using a pseudonym (false name) to represent your participation in my final research report. Your **participation is voluntary** and you can withdraw at any time without any negative consequences and all data that was collected from you will be destroyed if you decide to withdraw from the study. It is important to note that you **will not** be gaining anything financially from being a part of this study however your participation is greatly appreciated in furthering my knowledge and studies.

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If you have any concerns you are welcome to contact myself **Fazlin Mcpherson on 072 517 2974 or my supervisors Dr Jennifer Fitchett on (011) 717 6514 or my Co-supervisor Dr Catherine Namono on (011) 717 6055**

APPENDIX THREE- CONSENT FORM



FACULTY OF SCIENCE

SCHOOL OF ARCHAEOLOGY, GEOGRAPHY & ENVIRONMENTAL SCIENCES

Climate Change and Heritage Tourism:

Threats to Makgabeng in a regional context, Limpopo South Africa.

CONSENT FORM

NAME OF RESEARCHER: Fazlin Ahdielah Mcpherson

I …….. agree to participate in this research project. The research has been explained to me and I understand what my participation will involve.

(Please mark with an X)

I agree that my participation will remain anonymous ☐ YES ☐ NO

I agree that the researcher may use anonymous quotes in her research report ☐ YES ☐ NO

I agree that the interview may be audio recorded ☐ YES ☐ NO

I agree that the information I provide may be used ☐ YES ☐ NO

anonymously by other researchers following this study

…… (Signature)

…… (Name of participant)

…… (Date)

If you have any concerns you are welcome to contact myself **Fazlin Mcpherson on 072 517 2974 or my supervisors Dr Jennifer Fitchett on (011) 717 6514 or my Co-supervisor Dr Catherine Namono on (011) 717 6055**

APPENDIX FOUR- INTERVIEW GUIDE

Interview questions key stake holders and local community members.

1. How long have you lived in the area?
2. How long have you run this tourism operation?
3. How many visitors usually visit your operation?
4. When is your peak period?
5. Why is this?
6. What are your greatest challenges in attracting tourists?
7. What are your greatest challenges in ensuring tourists enjoy their visit?
8. Have you experienced any change in the number of visitors in recent years?
9. Why is this?

10. What is the best weather for your tourism offering?
11. What is the worst weather for your tourism offering?
12. What impact does the weather have on your tourism operation?
13. Have the weather patterns changed in the time you have been here? If so, in what way?
14. Are you worried that the weather will change over time?
15. Have you seen changes in the natural vegetation?
16. Have you seen any changes in animal behaviour (eg. when birds migrate, when insects appear?)

17. Have you experienced severe flooding while living in this area?
18. What impact did it have on you?
19. What impact did it have on your tourism operation?
20. Have you experienced a drought while living in this area?
21. What impact did it have on you?
22. What impact did it have on your tourism operation?
23. Have you experienced a heat wave while living in this area?
24. What impact did it have on you?
25. What impact did it have on your tourism operation?

APPENDIX FIVE- HARD COPY QUESTIONNAIRE

Age: ☐ 18-28 ☐ 29-39 ☐ 40-50 ☐ 51-61 ☐ 62 and above

Gender: ☐ Male ☐ Female ☐ Other ☐ prefer not to disclose

Race: _____

Country and City of origin: _____

Occupation: _____

1. How much do you spend on a trip on an average?

- Up to R5,000 ☐
- R5,000 – R15,000 ☐
- R15,000 – R25,000 ☐
- above R25,000 ☐

2. How often do you travel outside of your country?

- Once in a year ☐
- Once in 6 months ☐
- Once in 3 months ☐
- Every month ☐

3. How do you plan your trip?

- By yourself ☐
- Through a travel agent ☐

4. What is the most common type, purpose of your travel?

- Leisure ☐
- Business ☐

- Other ☐

5. Which of these places do you most commonly visit?

- Beaches ☐
- Deserts ☐
- Historically Significant Places ☐
- Urban Centres ☐
- Nature Reserves ☐
- Mountains ☐

6. Where do you prefer to stay?

- Five Star Hotels ☐
- 3-4 Star Hotels ☐
- 1-2 Star Hotels ☐
- Motels ☐
- Guesthouses ☐
- BnBs ☐
- Backpackers ☐
- Camping ☐
- Caravanning ☐

7. What is generally the length of your trip?

- 1-2 days ☐
- 3-5 days ☐
- A fortnight ☐
- A month ☐

8. When do you think the best time in the year is visit South Africa?

- Winter ☐

- Summer ☐
- Autumn ☐
- Spring ☐

Why?

_____

_____

___

9. Depending on when you go, what type of activities do you take part in and why?

_____

___

_____

___

_____

___

10. On a scale of 1 to 5, how would you rate the weather of this region?

11. Very unsatisfied	**12. Unsatisfied**	**13. Neutral**	**14. Satisfied**	**15. Very satisfied**

11. What would you describe as perfect weather for your trip and why?

_____
___

_____
___

_____
___

12. What would you describe as undesirable weather for your trip and why?

_____
___

_____
___

_____
___

13. What would you do if you were to experience bad weather during your trip, what are some of the activities you would most likely take part in?

_____
___

_____
___

_____
___

14. What brings you to Limpopo?

_____

__

_____

___

15. Do know anything about the Makgabeng Blouberg area?

☐ Yes ☐ No

If yes state what

_____

_____

16. Would you consider visiting some of the most prominent rock art sites in this area?

☐ Yes ☐ No

17. In the list of tourist attractions that this region offers which of these are you most likely to take part in? (tick as many as apply)

- Visiting archaeological sites (rock art) ☐
- Visiting missionary stations, churches or other religious Cultural sites ☐
- Visiting Arts and Craft markets ☐
- Visiting museums ☐

- Shopping ☐
- Mountain climbing ☐
- Hiking ☐
- Bird watching ☐
- Fishing ☐
- Game hunting ☐
- Safari ☐
- Spas and relaxation ☐
- Business ☐
- Visiting family and friends ☐

APPENDIX SIX- ONLINE QUESTIONNAIRE

Tourist questionnaire

DearSir/Madam

My name is Fazlin Mcpherson. I am a Masters student in Geography at the University of Witwatersrand. As part of my studies, I have to undertake a research project, and I am investigating climate change and heritage tourism: Threats to Makgabeng in a regional context in Limpopo South Africa. The project is aimed at finding ways of making tourism in this area sustainable by trying to identify what is the target market for this community. The second aim of this study is to determine the climate change threats to heritage tourism inSouthAfrica.

As part of this project I would like to invite you to take part in answering a questionnaire. I would therefore need approximately 10 minutes to 15 minutes of your time to complete the questionnaire. There are no foreseeable risks to the study. All information gathered will be used for a Masters dissertation and possibly presenting at a conference or seminar. The questionnaire will be completely confidential and anonymous as I will not be asking for your name or any identifying information, and the information you give to me will be held securely and not disclosed to anyone else. I will be using a pseudonym (false name) to represent your participation in my final research report. Your participation is voluntary and you can withdraw at any time without any negative consequences and all data that was collected from you will be destroyed if you decide to withdraw from the study. It is important to note that you will not be gaining anything financially from being a part of this study however your participation is greatly appreciated in furthering my knowledge and studies.

This study will be written up as a research report which will be available online through the university library website. If you wish to receive a summary of this report, If you have any concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), telephone +27(0) 117171408,email:Shaun.Schoeman@wits.ac.za

If you have any concerns you are welcome to contact myself Fazlin Mcpherson on 072 517 2974 or my supervisors Dr Jennifer Fitchett on (011) 717 6514 or my Co-supervisor Dr Catherine Namono on (011) 717 6055

* Required

Age *

18-29

30-39

40-49

50-59

60-69

70-79

Gender *

Male

Female

Other

Prefer not to disclose

Race *

Your answer

Country and city of origin *

Your answer

Occupation *

Your answer

1. How much do you spend on a trip on average? *

Up to R 5,000.00

R 5,000.00 - R 15,000.00

R 15,000.00 - R 25,000.00

Above R 25,000.00

2. How often do you travel outside of your country ? *

Once in a year or less

Once in 6 months

Once in 3 months

Every month

3. How do you plan your trip? *

By yourself

Through a travel agent

4. What is the most common type, purpose of your travel? *

Leisure

Business

Other

5. Which of these places do you most commonly visit? *

Beaches

Deserts

Historically significant places

Urban centres

Nature reserves

Mountains

6. Where do you prefer to stay? *

Five star hotels

3-4 star hotels

1-2 star hotels

Motels

Guesthouses

BnBs

Backpackers

Camping

Caravanning

7. What is generally the length of your trip?

1-2 days

3-5 days

A fortnight

A month

8. When do you think the best time in the year is to visit South Africa? *

Winter

Summer

Autumn

Spring

why? *

Your answer

9. Depending on when you go, what type of activities do you take part in and why? *

Your answer

10. On a scale of 1 to 5, how would you rate the weather of this region? *

Very Unsatisfied

1

2

3

4

5

Very satisfied

11. What would you describe as perfect weather for your trip and why? *

Your answer



12. What would you describe as undesirable weather for your trip and why? *

Your answer



13. What would you do if you were to experience bad weather during your trip, what are some of the activities you would most likely take part in? *

Your answer



14. Do you know anything about the Makgabeng Blouberg area in Limpopo South Africa? *

Yes

No

Maybe

If yes state what

Your answer



15. Would you consider visiting some of the most prominent rock art sites in this area? *

Yes

No

Maybe

16. In the list of tourist attractions that this region offers which of these are you most likely to take part in? (tick as many as apply) *

Visiting archaeological sites (rock art)

Visiting missionary stations, churches or other religious Cultural sites

Visiting Arts and Craft markets

Visiting museums

Shopping

Mountain climbing

Hiking

Bird watching

Fishing

Game hunting

Safari

Spas and relaxation

Business

Visiting family and friends

17. Have you travelled to Limpopo Province in the last two years? *

Yes

No

18. When was your most recent trip to Limpopo? *

Your answer

19. Where did you visit on that trip? *

Your answer



20. What was the purpose of your visit? *

Your answer

21. How long was the trip? *

Your answer

22. What activities did you take part in? *

Your answer

23. Please describe the weather during your last trip. *

Your answer

24. Do you plan to return to Limpopo for a vacation in future? *

Yes

No

Maybe

25. Where will you go? *

Your answer

26. What time of the year? *

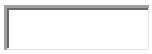
Your answer

27. What activities will you take part in? *

Your answer



28. What would you consider the ideal weather for that trip to be? *



Your answer

29. How do you travel to Limpopo? *

Airplane

Car

Train

Bus

30. Are you interested in cultural or heritage attractions? *

Yes

No

31. Have you visited any cultural or heritage attractions in Limpopo? *

Yes

No

32. Do you know that there are rock art sites in Limpopo? *

Yes

No

33. Have you visited these? *

Yes

No

34. Would you like to visit these? *

Yes

No

Maybe

35. Have you visited any museums in Limpopo? *

Yes

No

36. Which museums? *

Your answer



37. Would you like to visit more museums? *

Yes

No

Maybe

38. Have you been on any cultural visits or taken part in cultural practices in Limpopo? *

Yes

No

Please describe.

Your answer

