

CHAPTER 1

INTRODUCTION, PROBLEM STATEMENT AND OBJECTIVES

1.1 INTRODUCTION

At the "3rd International Conference on geoparks" in Osnabrück, Germany, 22-26 June 2008, Dowling (2008:10) presented a new definition of geotourism as: "*Geotourism is sustainable tourism with a primary focus on experiencing the earth's geological features in such a way that fosters environmental and cultural understanding, appreciation and conservation, and is locally beneficial*". Alluding to the fact that it sustains and can certainly enhance the geographical character of the place being visited - its culture, environment, heritage and aesthetics and probably more significantly the well-being of all its residents. There are two viewpoints of geotourism:

1. The geological. It is mainly followed in Europe and China where geology is the point of departure, and
2. The geographical. It is followed in the United States of America (USA) where the emphasis is on the geographical sense of a place.

There is a certain overlap of geotourism with ecotourism even though only geological outcrops, geomorphology and caves are part of ecotourism. However, present and defunct mines and certain collections of geological specimens in museums are not part of the natural environment. The mining component of geotourism can also overlap into industrial tourism. A recent development is envisaged by Dowling (2008:69) that "*Geotourism is the new ecotourism*" (c.f. 3.5.2).

South Africa is well known for some of the world's most representative and well-studied, often quite spectacular examples, of geological phenomena. The geological formations span almost the entire range of Earth's history. Although geology (especially rock types, structures and tectonic processes) plays a fundamental role in shaping the landscape as it is seen today, geology receives comparatively little popular recognition.

[The country's] "*magnificent and varied scenery, the result of interplay between geological processes and climatic factors, draws millions of tourists annually from home and abroad, and can be appreciated by the tourist and scientist alike*" (Edwards, 1999:iii). The geological wonders of South Africa was not presented to the general public or the tourism industry because the previous marketing orientation of the country was, to a great extent, focussed on wild life's "*Big Five*". A notable exception from the South African side is Viljoen and Reimold's book: "*An introduction to South Africa's geological and mining heritage* (1999:1-193)." The authors describe some of the most typical places of geological interest (geosites) of South Africa's geological heritage (geoheritage). Their compilation comprises a guide to, and explanation of, some of the country's most outstanding and 'representative' geological features and geosites, as well as some of the country's mining history. The achievement of these authors is to draw the public's attention to geology in such a way that the non-specialist

can understand this often overlooked, but crucial, aspect of our natural heritage. The book also provides teachers of Earth Sciences and related fields such as geography, with a widely useable field guide and glossary. By linking, for the first time, the themes of environmental awareness, tourism, education and science, Viljoen and Reimold (1999:1-193) emphasise the need for protection and conservation of these treasures, for their aesthetic and historical values, as well as for scientific and educational reasons.

Internationally, however, the appreciation for geological and mining heritage is more developed, and has been so since the 19th century. World famous nature and national parks in the USA include Yellowstone, the Grand Canyon, Wind Cave and the Hawaii Volcanic Park, to name but a few, all of them being entirely nature-based tourists destinations. However, in Europe, these types of attractions are called geoparks and many old mines have been converted into visitor mines, with additional tourist attractions supplementing the geological tourism (geotourism) experience. A unique tourist experience is the Wieliczka Salt Mine in Poland, which has been transformed into a tourist destination where the visitor can wine and dine underground. The Hallstätter Salzbergwerk near Salzburg, Austria is another well-known salt mine that actively seeks visitors.

The academic foundations for research on geotourism were established originally in Europe and in China. Since the First International Symposium for the Protection of Natural Heritage took place in Digne-les-Bains, France, in 1991, numerous International conferences, seminars and workshops on geoconservation and geotourism have taken place in various countries throughout Europe. From these discussions, the idea of a geopark was developed. The European Geoparks Network was established in June 2000 in the context of the European LEADER IIC programme, by four Leader-II zones. ProGEO (The European Association for the Conservation of the Geological Heritage) coordinates the European Geoparks strategies. According to MacAdam (2008) by May 2008, there were 33 World Geoparks in Europe, 20 in China and 1 each in Brazil, Iran, Malaysia and Australia.

Another development was the idea of World Heritage. At the 1972 *Convention Concerning the Protection of World Cultural and Natural Heritage*, known in short as the World Heritage Convention, a single document linked together the concepts of nature conservation and the preservation of cultural properties. It sought to encourage the identification, protection and preservation of cultural and natural heritage around the world that are considered to be of outstanding value to humanity (<http://whc.unesco.org/pg.cfm?cid=160>). Properties that the World Heritage Committee has inscribed on the World Heritage List are cultural, natural and mixed properties.

In South Africa World Heritage Sites with natural properties that were declared are:

1. The Greater St. Lucia Wetland Park (iSimangaliso) (1999).
2. Cape Floral Protected Region Areas (2004) (a serial site).
3. The Vredefort Dome (2005).

World Heritage Sites with natural and cultural properties are the uKhahlamba-Drakensberg Park (2000), while The Cradle of Humankind (1999) is described as a cultural site (<http://whc.unesco.org/pg.cfm?cid=31&l=en>).

The focus of this study will centre on the management process of planning, development, management and marketing, together with the implementation thereof as far as geotourism is concerned. In this chapter, an overview of the proposed study and the research question will be given and the goals and objectives will be established, with the specific aim of establishing guidelines for the sustainable development of geotourism in South Africa. New concepts such as geodiversity, geoheritage, geotypes, geosites, World Heritage Sites, geoconservation, geoparks, International Network of Geoparks, World Geoparks Network and geo-education will also be discussed and clarified.

1.2 PROBLEM STATEMENT

Mendelsohn and Potgieter (1968:3) state that gold was discovered in conglomerate reefs on the Witwatersrand in 1868. To commemorate the event, the Geological Society of South Africa (GSSA) published a 124-page guide in Afrikaans and English by Mendelsohn and Potgieter (1968:1-124). In the guide, the geology of the Central Rand around Johannesburg and the mining history of Crown Mines Limited (the first mining giant) are well described. In the section regarding geology and the sixty-two places of geological interest (geosites), very informative geological sketches with explanations and photos are provided.

Geosites in South Africa were described by Toens (1985:1-72) and this was the first attempt to compile a geosites database. Only recently did a joint attempt by the “*Geoconservation and Geotourism Committee*” of GSSA start a geosites database. The Kruger National Park was mapped geologically from 1970-1980 ago by Schutte in various reports for the geological survey, and the results of the surveys were published in Koedoe (Schutte, 1986:13-37).

Geoconservation is essentially to maintain the best of the countries’ geoscience heritage. Its role is to keep available the essential geotourism site resource needed for future research, education and training. A management and marketing strategy will strengthen and enhance it, according to De Bruyn en Klopper (2005:135-163) and Thompson and Strickland (1995:1-539). In 1995, the International Union of Geological Sciences (IUGS), with the support of UNESCO, decided to promote a new project to compile a global inventory and related database. For the geological community, such a database would have many other uses besides conservation. GEOSITES was started by the IUGS in 1996 and a new Global Geosites Working Group to undertake the work, was set up for geosites and terrains (Wimbledon, 1999). Whitfield and Barnardo (2005) note that a geosites database in South Africa was only started in 2004.

Geosites are located in National and Provincial parks where they are largely protected. The remainder, unfortunately, are not protected at all. Many geosites already have been vandalised (Reimold, 2004:4, 2005:1). Protection, therefore, is crucial, but the critical question asked by both the public and visitors is fully justified: “*What do you do with the geosites after preservation and conservation?*”.

Poster presentations to link tourism and geology were displayed at Geocongress 2000 in Stellenbosch (July 2000). Brochures of 11 geosites of the Western Cape were also available for geological excursions. Another poster exhibition was held at the Geocongress in Windhoek, Namibia (July 2002). The “*4 billion years of Earth and Life symposium*” was held at the University of the Witwatersrand on the 4th August 2001, to involve the public in geology. This was followed by a similar theme: “*4 billion years of environmental change in Southern Africa: Earth science and sustainability – 2002*” during the World Summit on Sustainable Development. There was considerable interest from the public. More people attended the lectures in 2001 than in 2000.

Geotourism was identified as a way to help preserve mining heritage sites in South Africa. However, so far, little attention has been paid to mining geology and its tourism potential. By 2008, only a visit to Gold Reef City or to the diamond mines in Cullinan and Kimberley were open to visitors. Since 2002, the Diamond Coast - Forever Namaqualand (DCFN) at Kleinsee has also started to offer visits to see on-going diamond mine activities (www.coastofdiamonds.co.za). All other active or dormant (or mined-out) mines in the country are open to geoscientists only. The town of Pilgrim’s Rest at least portrays the gold mining history of the previous century, but this is the exception to the rule of neglect.

“*Agenda 21 for the Travel and Tourism Industry*” (<http://www.world-tourism.org/sustainable/doc/a21-contents.pdf>) was a joint World Tourism Organization (WTO), World Travel and Tourism Council (WTTC) and Earth Council publication in 1996, and was drawn up in 1992 at the “*Earth Summit*” in Rio de Janeiro. It outlines practical steps that governments and private companies can take to implement the goals of the Rio Earth Summit, and so make the tourism sector more sustainable. During the conference summit, sustainability was, for the first time, mentioned in regard of the management of all resources in such a way that economic, social and aesthetic needs can all be fulfilled. For the successful implementation of Agenda 21, all parties involved had to commit themselves to political, environmental, social and economic undertakings. The role of Government departments, National Tourism Authorities and of representative trade organisations was important for the overall aim of developing a sustainable tourism programme for the long term (www.world-tourism.org/sustainable/doc/a21.two.pdf, <http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21toc.htm>). Agenda 21 binds local authorities to implementing at local level the commitments made towards sustainable development by the international community. It has since become the main mechanism for community planning for sustainability. A Local Agenda 21 (LA 21) is an approach through which a local community defines a sustainable development strategy

together with an action program to implement it. Although a local authority initiates and provides leadership for the process; its success hinges on close cooperation between the population, Non Governmental Organisations (NGOs), and economic and social players. A recent study by Vourc'h and Denman (2003) looked at how tourism had been taken into account in LA 21 plans, as drawn up and implemented by local authorities. Therefore, that the case could be made that geosites in South Africa should be developed and managed according to sound business principles while implementing the concepts of Agenda 21.

Rust (2005) believes that *“Despite some encouraging signs by a few informed individuals, earth heritage tourism in South Africa remains far behind international standards. This is in spite of South Africa's key international position in the quality and for the extent of its global earth history. Whereas South Africa could have been a world leader in earth heritage recognition and promotion, it now lags far behind in geotourism. What a pity! South Africa needs to invest in its earth heritage development. Tourism, including geotourism, is one of the very profitable money-earners of the future. Money invested now will yield excellent dividends for a very long time to come”*. From this quote, it is apparent that South Africa is a world leader in geodiversity, but not in geotourism. Therefore, there is an urgent need to promote Earth heritage with geotourism, so that additional income, through geotourism, can be generated in the future. The first of the geotourists will be predominantly geoscience professionals and members of other professional societies, but other segments that should be attracted will be predominantly local and overseas visitors, students and scholars.

Geotourism is a relatively new form of tourism that can be utilised in the future for sustainable development, for geo-education and for job creation. This, however, can only take place with the help of proper planning that focuses on the long term, that is, a strategic plan (Saayman 2002:96-111). Because of the role of past and present mining activities in the development of the country, geotourism must also include South Africa's mining heritage. Currently, virtually no awareness campaign or promotion about the geological wonders of the country exists. At present, there is not a proper strategic development and management plan for geotourism. Yet, geotourism is a niche market and cannot function alone so the geotourism industry will supplement and enhance other existing tourism industries. Geotourism will draw more tourists who will spend their money here. Thus, previously untapped natural resources can be exploited in a positive manner.

Coulter (2005:2-5) defines strategic management as a process of analysing the current situation; developing appropriate strategies; putting those strategies into action, and evaluating, modifying, or changing those strategies as needed. Strategic management is important because everyone in an organisation or destination should play a role in managing strategically. If employees manage strategically, it will make a difference to how well the organisation performs. An organisation/destination has to cope with changing situations in internal and external environments. The organisation must then develop and implement appropriate strategies. There are various diverse divisions, functions, and work activities that need to be coordinated and focussed on achieving the organisation's goals (Saayman,

2002:96-111). Added to this, since there are so many role players in tourism (or in this case, geotourism) it is not possible to achieve sustainability in the absence of a proper integrated plan, hence a strategic plan.

Based on the above, the following question can be asked that will also guide this study - what management plan and guidelines for geotourism development should be followed in order to ensure sustainability?

1.3 GOAL AND OBJECTIVES OF THE STUDY

The overall goal of the study is to develop a strategic management plan for the sustainable development of geotourism in South Africa. From this goal, a number of subordinate objectives have been identified, which are presented below.

1.3.1 RESEARCH OBJECTIVE ONE

To critically evaluate the theoretical foundations of sustainability and their applicability to geotourism.

1.3.2 RESEARCH OBJECTIVE TWO

To critically evaluate internationally existing concepts and guidelines for geotourism and geoconservation.

1.3.3 RESEARCH OBJECTIVE THREE

To critically evaluate the development of geotourism, of site and visitor management and how the various approaches and tools for the management of geotourism can best be applied.

1.3.4 RESEARCH OBJECTIVE FOUR

To develop criteria for the implementation of a strategic management plan for geotourism in South Africa.

1.3.5 RESEARCH OBJECTIVE FIVE

To draw conclusions from the research project results and make recommendations.

1.4 METHOD OF RESEARCH

The method of research consists of literature study, of analyses of geotourism practices overseas, of field visits and discussions with various stakeholders in the case study areas, of evaluation of theoretical and field observations, and the implementation of the findings.

1.4.1 LITERATURE STUDY

The literature study will consist of an Internet search as well as text, master's dissertations and doctorate theses, articles and reports regarding geodiversity, geoheritage, geosites, geoparks, geo-education, geotourism; their management, marketing and sustainability.

1.4.2 LIST OF THE MOST IMPORTANT GEOSITES IN SOUTH AFRICA

The most important geosites were classified as:

1. Natural and geomorphological sites:

- Bushveld Complex area
- Barberton Mountain Land (numerous geosites)
- Kruger National Park (numerous geosites in the park)
- The Witwatersrand area (numerous geosites between Germiston and Randfontein)
- Pilanesberg Nature Reserve
- uKhahlamba-Drakensberg Park (World Heritage Site)
- Golden Gate National Park
- Table Mountain National Park
- Karoo Nature Reserve (near Graaf-Reinet)
- Blyderivierspoort Nature Reserve
- Richtersveld National Park
- Natural and geomorphological sites.

2. Caves

- Cango Caves
- Cradle of Humankind World Heritage Site.

3. Meteorite impact craters

- Vredefort Dome
- Tswaing
- Setlagole
- Kalkkop (near Graaf-Reinet).

4. Waterfalls

- Augrabies (in the Augrabies National Park).

5. Palaeontological geosites

- West Coast National Park.

6. Museums

- Transvaal Museum (mineralogical and geological collection)
- Karoo fossils (in South African Museum and other museums)
- Graaf-Reinet (geological museum).

7. Mining heritage towns

- Pilgrim's Rest (mining history)
- O'Okiep (mining heritage).

8. Theme parks

- Gold Reef City (theme park)

- Platinum City, Rustenburg (under construction).
9. **Defunct gold mines**
- Kromdraai Visitor Mine (in the Cradle of Humankind)
 - Blaauwbank Visitor Mine (near Magaliesburg).
10. **Defunct and working diamond mines** (Kimberley and Cullinan mines).



Figure 1.1: The Kruger Tablets are the well-known geosite along the Skukuza-Tshokwane road. It consist of granite boulders



Figure 1.2: Typical street scene in Pilgrim's Rest

1.4.3 FIELD WORK

Qualitative research during the case studies will be combined with fieldwork. It seeks in-depth, open ended responses from respondents. The aim will be to let the respondents speak freely about the specific subject, and so to obtain as wide a response as possible from them.

1.4.3.1 Data acquisition on field sites

In conducting the survey, the observational and the primary data will be obtained through actual fieldwork. Aspects that will be examined are the accessibility of the sites, their infrastructure and available facilities. The data will be recorded and mapped in detail, both by analogue and digital media, for subsequent analysis. Other tourist attractions in and around the specific geosites/areas will also be documented.



Figure 1.3: Entrance to Blaauwbank Visitor Mine, Magaliesburg



Figure 1.4: View to the east of the Big Hole, Kimberley from the cantilevered platform above the rim of the Big Hole

To gain an overview of geotourism in South Africa the following geosites/areas were selected:

- Kruger National Park, as an example of a National Park and also as this is South Africa's flagship National Park

- Pilgrim’s Rest, as an example of mining history and because the whole town is preserved today as a living museum
- Kromdraai Visitor Gold Mine in the Cradle of Humankind, as a small visitor mine because it difficult to obtain permission to visit one of the bigger working gold mines in the rest of the country
- Kimberley, as a well-established diamond tourism centre and because there is still small scale diamond mining. This site is also known internationally
- Cradle of Humankind World Heritage Site, as a palaeo-anthropological area and site of significance, and also because of two newly established tourism centres, Sterkfontein and Maropeng
- Geoscience Museum in the building of the Transvaal Museum, Pretoria, as an example of a museum collection.



Figure 1.5: Diamonds and Destiny Visitor Centre, Big Hole, Kimberley

1.4.3.2 Data acquisition from key role players and stakeholders

Qualitative research will be completed by means of structured questionnaires. These interviews will be undertaken with people like the administrative personnel and tourism-related persons/enterprises who are actively involved in managing a geosite/area. The people chosen to be interviewed will vary from site to site because of the business they conduct. The number of persons to be interviewed will further vary from place to place according to the type of geosite, for example:

1. Kruger National Park – the head of the park, media relations officer, marketing officer, head of scientific services, education officer
2. Pilgrim’s Rest (mining history) – head of information/tourism office, as well as other tourism-related persons/enterprises
3. Kromdraai Visitor Gold Mine (a small visitor mine) – the manager and head of information/tourism office
4. Kimberley (a working diamond mine) – the mine manager/deputy mine manager,

chief geologist and head of information/tourism office

5. Cradle of Humankind World Heritage Site (World Heritage Site) – the manager/deputy manager, head of information/tourism office, as well as other tourism-related persons/enterprises
6. Geoscience Museum, Pretoria – curator of museum, head of Information Services, Council for Geoscience, Silverton.



Figure 1.6: Fossil excavation site, Sterkfontein, Cradle of Humankind (COH)



Figure 1.7: Geological map that shows how Africa was part of Gondwanaland, Geoscience Museum, Pretoria

Questions will be asked about aspects relating to:

- **Place/product:**
 - Location
 - Background and history
 - Geodiversity and geological significance
 - Geoconservation
 - Other supplementary tourism products in the area.

- **Present status:**
 - Resource analyses
 - How is sustainable tourism being implemented?
 - The strengths, weaknesses, opportunities and threats.
- **Lessons learned:**
 - Main problem: Little/no knowledge of geotourism.
 - No policy/strategic geotourism development plan
 - Little planning, management and marketing
 - Constraints: little financial support from Government
 - Local municipalities, mining/financial companies
 - No geoconservation legislation.
- **Implementation of sustainability:**
 - Apply overseas research/experience in geotourism development
 - Enhancing/integrating economic, social and environmental principles
 - Better awareness and knowledge of geotourism
 - Sustainable geotourism strategy
 - Sustainable geotourism development
 - Stakeholder involvement
 - Networking
 - Management of egoists
 - Marketing.
- **What are benefits to the place:**
 - Conserving natural heritage
 - Create opportunities to work with other tourism sectors
 - Enhancing visitor experience
 - Geo-education
 - Interpretation
 - Successful tourism.
- **Future actions:**
 - Develop geosites and geoparks
 - Better interpretation facilities
 - Monitor progress and feedback
 - Awareness campaigns
 - Geo-excursions/seminars/lectures/TV programs
 - Attendance of overseas congresses.
- **Additional information:**
 - Any other data that might be considered to be necessary.

1.5 CLARIFICATION OF TERMS AND CONCEPTS

A number of new terms, concepts and definitions have evolved in the last few years. A short description of the most important ones will be given below.

1.5.1 GEOSITE

According to Verpaelst (2004) a geosite is a site of remarkable geological or scientific significance, and whose geological character meets several geosite selection criteria, that is, scientific value, geotourism appeal, educational value, historical significance, cultural, spiritual and social value, economic value, international significance, link with biodiversity, refuge for rare and threatened species, aesthetic quality, representativeness, stratigraphic landmark, palaeo-biodiversity, rare or unique character, precious character, vulnerability, quality or state of preservation, size and accessibility. Ten types of sites may become geosites or geoparks in Québec, Canada: caves and grottos, fossil sites, mineral sites, lithological sites, stratotypes or type sections, historical mine sites, geological or geomorphological landscapes, geosystems, geological environments that support an ecosystem and meteorite impacts.

1.5.2 GEOCONSERVATION

Preservation of a site has no real purpose while conservation implies the wise use of resources. Conservation is *“the preservation and protection of natural and historical resources for their intrinsic values, providing for their appreciation and recreational enjoyment by the public and safeguarding the options of future generation”* (<http://www.teara.govt.nz/TheBush/Conservation/ConservationAHistory/1/en>). This meaning has been formalised by an unambiguous definition in the New Zealand Conservation Act of 1987. Thus, the primary premise of conservation is the protection of heritage. Geological conservation (geoconservation) involves recognising, protecting and managing sites and landscapes identified as important for their fossils, minerals, rocks, processes or landforms in the United Kingdom (UK). (<http://www.geoconservation.com/index.htm>). Geoconservation or Earth heritage conservation is the broad term that refers to all aspects of conservation, the protection, management, interpretation and education relating to geological, geomorphological, landscape and soil sites (www.ukrigs.org.uk/). It is the endeavour of trying to conserve geodiversity and geoheritage (Sharples, 2002).

1.5.3 GEOTOURISM

A new form of tourism, known as geotourism, is being developed in Europe and North America since 1991. Geotourism includes geology, mineralogy, palaeontology, geosites, operating and defunct mines, caves, and collections of geological specimens in museums. It was established from Internet research that geotourism is built on the following pillars:

- Geological outcrops
- Geomorphology
- Caves
- Meteorite impact craters

- Current and old visitor mines
- Mining heritage towns
- Museums with geological exhibitions
- Theme parks with a geological connotation
- Geoscientific institutions for research.

Pfarr and Megerle (2006:119) regard geotourism as a new, growing market segment with a prosperous future, particularly so in the light of ever-increasing demand by tourists around the world for an ultimate nature experience. Dowling and Newsome (2006:6-8) state that the bulk of geotourism takes place in a natural environment. In geotourism, the attention is primarily on geologic phenomena, and the objective of the trip is to discover the Earth below our feet. Geotourism can thus be seen as an area of special interest tourism.

Geotourism was a new term coined to describe geological tourism in the mid-1990s. Early definitions were:

1. Hose (1995:17) proposed the first definition of geotourism as *“The provision of interpretive and service facilities to enable tourists to acquire knowledge and understanding of the geology and geomorphology of a site (including its contribution to the development of Earth sciences) beyond the level of mere appreciation”*. It was later refined by Hose (2002:221-222) as *“The provision of interpretive facilities and services to promote value and societal benefit of geological and geomorphological sites and their materials, and to ensure their conservation, for the use of students, tourists and other recreationalists”*
2. Patzak (2000) believes that *“Geotourism might be best regarded as the provision of interpretive facilities and services to promote the value and societal benefit of geological and geomorphological sites and their materials, and to ensure their conservation, for the use of students, tourists and other casual recreationalists... geoconservation coupled with tourism provision are key elements of geotourism*
3. Dowling and Newsome (2006:3-7, 248) say that in their definition of geotourism *“The ‘geo’ part pertains to geology and geomorphology and the natural resources of landscape, landforms, fossil beds, rocks and minerals, with an emphasis on appreciating the processes that are creating and created such features”*.

Dowling (2008:10) gives a new definition of geotourism as: *“Geotourism is sustainable tourism with a primary focus on experiencing the earth’s geological features in such a way that fosters environmental and cultural understanding, appreciation and conservation, and is locally beneficial”*.

In all the above-mentioned definitions the emphasis is on geology.

Stueve, Cooke and Drew (2002:1) mention a study by National Geographic Traveller in 2002 that has a different definition, being from a geographical point of view: *“tourism that sustains*

or enhances the geographical character of the place being visited – its environment, culture, aesthetics, heritage, and also the wellbeing of its residents”.

1.5.4 GEOPARK

A geopark (geological park) is defined by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in its *UNESCO Geoparks International Network of Geoparks* program as follows: *”A territory encompassing one or more sites of scientific importance, not only for geological reasons but also by virtue of its archaeological, ecological or cultural value”* (<http://en.wikipedia.org/wiki/Geopark>). UNESCO (2004) believes that a geopark *“is a territory with well-defined limits that has a large enough surface area for it to serve local economic development. It comprises a certain number of geological heritage sites (on any scale) or a mosaic of geological entities of special scientific importance, rarity or beauty, representative of an area and its geological history, events or processes. It may not solely be of geological significance but also of ecological, archaeological, historical or cultural value”* ([www.igu-net.org/uk/news_and_events/IGU Newsletter 2005 1.pdf](http://www.igu-net.org/uk/news_and_events/IGU_Newsletter_2005_1.pdf)).

Eder (2002:43) states that *”According to UNESCO’s guidelines, geoparks shall be designed to become a tool for a better understanding of the global geological heritage and the wise use of the Earth’s surface, by sensitising the broad public to a balanced relationship between humankind and the Earth. One central principle of the Geoparks concept is that sites must be capable of acting as a focus for economic activity, particularly through geotourism”*. Geoparks represent a journey through the Earth’s history. They highlight the geological features of a landscape with volcanic craters or thermal springs, rock formations embedded with animal and plant fossils, caves with human remains, and all bearing witness to a tumultuous past. Trails and geopark rangers would guide visitors round the main attractions (<http://www.goethe.de/wis/fut/thm/geo/en1871799.htm>). Thus, a geopark can be seen as an area that contains elements that may be particularly rare, scenic or geologically significant. These elements should be representative of the regional history, and of the events that have shaped it (Verpaelst, 2004).

In the future geoparks will be territories where the geological heritage of the Earth is safeguarded and sustainably managed. The main objectives emphasising the basis for enhancing the promotion of geological heritage through the Geoparks initiative are:

- To preserve geoheritage for future generations through conservation
- For educating and teaching the broad public about issues in geological landscapes and environmental matters, and also to provide research facilities for geoscience
- To ensure sustainable development through tourism
- **A territory with a great geoheritage**

A more recent description of geoparks is on the website (www.petrifiedforest.gr/european_geoparks_the%20project.htm). A European

geopark is a territory that includes a particular geological heritage and a sustainable territorial development strategy, supported by a European program to promote development. It must have clearly defined boundaries and sufficient surface area for true territorial economic development. A geopark must comprise a certain number of geological sites of particular importance in terms of their scientific quality, rarity, aesthetic appeal or educational value. The majority of sites present on the territory of a geopark must be part of the geological heritage, but their interest may also be archaeological, ecological, historical or cultural

- **A protected territory with a clear management**

The sites in a European geopark must be linked in a network and benefit from protection and management measures. No destruction or sale of geological objects from a European Geopark may be tolerated. The geopark must be managed by a clearly defined structure able to enforce protection, enhancement and sustainable development policies within its territory.

Eder and Patzak (2004:5) further stress the importance of the size and function of a geopark:

- In principle, a geopark will represent a terrain (a landscape), which is of sufficient size to generate economic activity – notably through tourism. Small outcrops, although scientifically important, will not normally display this potential
- A geopark would normally be of sufficient size to encompass a number of small sites (geosites) which, taken together, illustrate important geological features. Such a network in the context of a geopark would serve to stimulate economic development
- A geopark would comprise a number of geological-paleontological heritage sites of special scientific importance, rarity or beauty and so may not be solely of geological-paleontological significance. Archaeological, ecological, historical or cultural features could also represent, and should be regarded as important components of a geopark
- Terrains which are of geological-paleontological (and archaeological and biological) interest but which have no permanent population, or that are too remote to generate economic activity would also not normally be suitable as geoparks. The geopark concept is designed to relate people to their geological-paleontological and geomorphological environment
- A geopark has also to support education on the environment, training and development of scientific research in the various disciplines of the Earth Sciences, on the enhancement of the natural environment and on sustainable developmental policies.

Geoparks were created in Europe after the Digne Declaration of 1991. A critical difference between geosites and geoparks in Europe is in the intention of the latter to include socio-economic factors, and to encourage and recognise opportunities for rural regeneration within Europe.

1.5.5 SUSTAINABILITY

Sustainability is an economic, social, and ecological concept. It is intended to be a means of configuring civilisation and human activity so that society and its members are able to meet their needs and express their greatest potential in the present, while preserving biodiversity and ecosystems, and planning and acting for the ability to maintain these ideals indefinitely. Sustainability affects every level of organization, from the local neighbourhood to the entire globe (<http://encyclopedia.thefreedictionary.com/Sustainability>).

Dowling (2008:19) is of the opinion that that:

- Sustainability underpins ALL tourism development today including geotourism
- Sustainability means being economically viable, community beneficial, and environmentally responsible
- Sustainability is only achieved through appropriate planning and management.

South Africa's statutory definition of sustainability is contained in the National Management Environmental Act (No. 107 of 1998). It reflects the global consensus on equity now and in the future: "*Sustainability means the social, economical and environmental factors into planning, implementation and decision-making so as to ensures that development serves present and future generations*"

([http://www.environment.gov.nssd_2005/draft_intergrated_strat/NSSD Draft for Review 2 1Apr06.pdf](http://www.environment.gov.nssd_2005/draft_intergrated_strat/NSSD_Draft_for_Review_2_1Apr06.pdf)). It was quoted from "*South Africa's National Strategy for Sustainable Development*": p. 6.

Geotourism tends to implement sustainability principles by building the geographical character to create tourism with an emphasis on the distinctiveness of a locale. This can and should benefit the resident and the visitor to the locale. Geotourism could be used as a brand of 'green' tourism as opposed to a tourism that inflicts damage on fragile environments.

1.5.6 SUSTAINABLE DEVELOPMENT

Sustainable development was first mentioned in the Brundland Report, also known as "*Our Common Future*" (World Commission on Environment and Development, 1987). It was defined as a "*development that meets the needs of the present without compromising the ability of future generations to meet its own needs*".

The principles of sustainable tourism were defined by the World Tourism Organisation (WTO) as early as 1988. Sustainable tourism was "*envisaged as leading to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems*" Sustainability principles should apply to all types of tourism activities, operations, establishments and projects, including conventional and alternative forms.

Sustainability can only be attained through sustainable financing (<http://www.world-tourism.org/sustainable/IYE/WTO-UNEP-Concept-Paper.htm>).

The push for sustainable development, heralded at the Rio Earth Summit in 1992 advanced the agenda for government and industries to look seriously at sustainable practices. The Rio Declaration articulated the main principles for sustainable development in the 21st century. The first step to achieving a balance between sustainable development and economic growth for travel and tourism was taken in 1996. The World Travel & Tourism Council (WTTC), the World Tourism Organisation (WTO/OMT) and the Earth Council, together launched *Agenda 21 for the Travel & Tourism Industry: Towards Environmentally Sustainable Development* – a sectoral action plan for sustainable development based on the outcome of the Rio Earth Summit in 1992.

1.5.7 SUSTAINABLE TOURISM AND GEOTOURISM

After the World Conference on 'Sustainable Tourism', convened in Lanzarote, Spain, during 1995, the "*Charter for Sustainable Tourism*" was prepared. It stated "*Tourism development shall be based on criteria of sustainability, which means that it must be ecologically bearable in the long-term, economically viable, as well as ethically and socially equitable for the local communities*". Sustainability in Travel and Tourism means ensuring markets in which the industry can thrive economically and so generate jobs, creating frameworks for education, training and social development, while protecting and enhancing the cultural and natural environment. A balance must be sought between these three pillars of sustainable development. This balance can be achieved with strong legal support, investment and regulatory frameworks

(http://www.wttc.org/promote/pdf/Sustainability_of_EU_Tourism.pdf).

Pfarr and Megerle (2006: 118, 120-121) are of the opinion that geotourism embraces the identification of geo-objects, landscape marketing and interpretation of the geoheritage of a region in a sustainable manner. Collaboration, co-ordination, effective communication and transfer of know-how are important mechanisms to achieve sustainability outcomes. Therefore geotourism should be consistent with the principles of sustainable development, balancing economic, ecological and social aspects as an integrated whole. Lastly, geotourism should be viewed as part of a holistic management approach to the broad field of geological and landscape history, including its interconnectedness with fauna and flora, the cultivated landscape, and present use. Pfarr *et al.* (2006: 121) reckon that "*Sustainability and environmental education are seen as integral parts*".

1.5.8 STRATEGIC PLAN

Bryson (2004:ix) and Bryson and Alston (2005:3) state "*Strategic planning is a set of concepts, procedures, and tools designed to assist leaders and managers with these tasks. Indeed, strategic planning may be defined as a disciplined effort to produce fundamental*

decisions and actions that shape and guide what an organization (or other entity) is, what it does, and why it does it". Further, these authors believe that:

- Strategic planning is a way of thinking, acting and learning
- It usually takes a comprehensive view by focusing on the 'big picture', but also leads to specific, targeted actions
- It is often visionary and usually proactive rather than reactive
- It is flexible and practical
- It is a guide for decision making and resource allocation.

1.6 OUTLINE OF CHAPTERS

In **Chapter One**, an overview of the proposed study and the research question was given and the goals and objectives were established. New definitions and concepts were also introduced.

Chapter Two will explain sustainability, as tourism like other industries has three interconnected aspects: environmental, socio-cultural, and economic. Discussions will focus on the permanence of sustainability and sustainable development. The optimum use of resources, including biological diversity, minimisation of ecological, cultural and social impacts, and maximisation of benefits to conservation and local communities will be examined. The concept of sustainability and sustainable development will be discussed in detail. The aims, areas and benefits of Local Agenda 21 (LA21), as adopted at the United Nations Conference on Environment and Development in 1992 (the Rio Earth Summit), will be demonstrated. The relevance of LA21 with regard to sustainability and how it could be applied will be discussed. Sustainable geotourism, and how this concept has been expanded will be discussed. A detailed description of 10 "*Steps to sustainable tourism*", a concept developed by Department of the Environment and Heritage of Australia 2004, will be examined. Guiding principles and approaches of sustainable tourism, and how to actually achieve this, are very important aspects to be examined. A last point will be the discussion of UNEP guidelines for the implementation of sustainable tourism.

Chapter Three will further explain and describe the components of geotourism. Concepts such as geosites, geodiversity, geoheritage, geotopes, geosites, World Heritage Sites, and geoparks will be developed. A short overview of some of South Africa's places of geological interest (geosites) will be given and a comparison of overseas geosites will follow.

Chapter Four will describe the development of geotourism, site and visitor management and will interrogate how the various approaches and tools for the management of geotourism can be applied. All the management practices that can be used in geotourism will be examined. The development of a competitive and successful geotourism destination will then be described. In developing the principle of conservation of geoheritage for a sustainable and integrated environment, case studies from Finland, the US and Canada will be discussed.

Examples will be given of how geotourism products are utilised in mining museums, historical mining towns and theme parks overseas and in South Africa. The role of interpretation directed at visitors, geoscience education activities, geo-exhibitions and geo-events will be discussed.

In **Chapter Five**, the sustainable tourism management plan of Gebhard, Meyer and Roth (2007(b):1-66) as a methodology guide for biosphere reserves (BR) in Eastern Europe will be used as a basis to develop a geotourism management plan. The conceptual framework for a strategic management plan of Schutte (2007(b)), which was amended in 2008 by the author, will be used for the development of a strategic management plan for geotourism in South Africa. The seven inter-related steps are: 1) Strategic planning, 2) The tourism management planning process, 3) Vision and mission, 4) Situation and resource analysis, 5) Strategy formulation, 6) Implementation, and 7) Evaluation and monitoring. The Heritage Legislation Acts (No's 11, 25 and 49 of 1999) will also be evaluated with regard to geoconservation.

In **Chapter Six**, the results of the survey will be given in form of six case studies.

The aim of **Chapter Seven** is to formulate and establish guidelines for the sustainable development of geotourism in South Africa. Certain conclusions will be drawn and recommendations will be made with the intention of achieving sustainable geotourism.

An appendix of various tourism and geotourism declarations, together with related documents, will be given at the end.