AN ASSESSMENT OF THE USEFULNESS OF SPATIAL AGRICULTURAL LAND RESOURCE DIGITAL DATA FOR AGRITOURISM AND ECOTOURISM

PRECIOUS MUGADZA

Thesis presented in partial fulfillment of the requirements for the degree of Master of Science in Agriculture (MScAgric), University of Stellenbosch

Supervisor: Professor T. E. Kleynhans

December 2005
DECLARATION

I, the undersigned, hereby declare that the work contained in this thesis is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

Signature:……………………………..                           Date……………………………….
ABSTRACT

The study broadly assesses the usefulness of available digital spatial land resource data as a source for agritourism and ecotourism information by comparing the inventory of available spatial data sets for South Africa and the SADC region, with the needs for spatial data as derived from a literature study of travel motivations and demand determinants.

Spatial land resource data have been collected, processed and stored for agricultural planning purposes, like land suitability assessment, agricultural production and infrastructural planning. Given a) the growth in agritourism and ecotourism, b) the more detailed information required by tourists to aid them during decision making processes like destination selection and c) the progress in information technology rendering access of information via the internet easier; the question arose whether the available land resource digital data can be processed to provide relevant tourism information on internet websites. Four tasks had to be done, namely: a) identifying tourists’ needs by means of a literature study on travel motivations and demand determinants; b) identifying the land resource data sets that could be processed into information to meet these identified needs; c) determining the accessibility of spatial information on internet tourism websites to potential agritourists and ecotourists, and d) exploring opportunities for adding value by looking at what information existing websites are offering in comparison with what can be obtained from repackaging the land resource data.

Common ground was found between the spatial tourist information needs and the available spatial land resource data. This, coupled with the ability of combining meteorological and other human-made environmental data in GIS modelling, suggests that repackaging land resource data seems to have the potential to offer useful tourism information in correspondence with confirmed tourist information needs.
OPSOMMING

Die ondersoek evalueer die nut van beskikbare digitale ruimtelike landbouhulpbrondata vir die generering van inligting vir agri- en ekotoerisme. Die evaluasi e berus op 'n vergelyking van beskikbare ruimtelike landbouhulpbrondatabasisse vir Suid-Afrika en die SADC streek met die benodigde ruimtelike data afgelei van toeriste se reismotiverings en vraagdeterminante. Die reismotiverings en vraagdeterminante is geïdentifiseer deur 'n literatuurstudie.

Ruimtelike landbouhulpbrondata is ingesamel, verwerk en gestoor vir landboubeplanning, soos grondgeskiktheid bepaling, landbouproduksie en infrastruktuur beplanning. Gegewe a) die groei in agri- en ekotoerisme; b) meer detail inligting verlang deur toeriste en c) die vordering wat gemaak is met inligtingstegnologie om makliker toegang tot inligting deur die internet te bewerkstellig, het die vraag laat ontstaan of hierdie landbouhulpbrondata benut kan word om relevante inligting vir toeriste op webtuistes te voorsien. Vier take moet uitgevoer word: a) toeriste se inligtingsbehoeftes moet geïdentifiseer word deur middel van 'n literatuurstudie oor hul reismotiverings en toerisme vraag determinante; b) die hulpbron datastelle moet geïdentifiseer word waaruit inligting gegenereer moet word om in die geïdentifiseerde inligtingsbehoeftes te voorsien; c) die toeganklikheid van ruimtelike inligting op internet toerisme webtuistes vir potensiële agri- en ekotoerisme moet bepaal word en d) geleenthede vir waardetoevoeging deur inligting van bestaande webtuistes te vergelyk met dit wat verkry kan word uit die beskikbare ruimtelike landbouhulpbrondatabasisse moet ondersoek word.

Die studie het ooreenkomste tussen ruimtelike toerisme inligtingsbehoeftes en beskikbare ruimtelike landbouhulpbrondata gevind. Indien hierdie landbouhulpbrondata, moontlik in kombinasie met weerkundige en kulturele ruimtelike datastelle, herverpak word deur Geografiese Inligtingstelsel (GIS) modellering van bevestigde toerisme inligtingsbehoeftes, kan dit nuttige toerisme inligting bied.
ACKNOWLEDGEMENTS

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ABBREVIATIONS

AGIS - Agricultural Geo-referenced Information System

ARC – Agriculture Research Council

**Country Codes** - AO=Angola, BW=Botswana, LS=Lesotho, MW=Malawi, MZ=Mozambique, NA=Namibia, SZ=Swaziland, TZ=Tanzania, ZA=South Africa, ZR=Democratic Republic of Congo, ZM=Zambia, ZW=Zimbabwe

CSIR - Council for Scientific and Industrial Research

DCW - Digital Chart of the World

DWAF – Department of Water Affairs and Forestry

ENPAT - Environmental Potential Atlas

FAO – Food and Agriculture Organization

FEWS - Famine Early Warning System

GIS – Geographical Information Systems

GIEWS - Global Early Warning System

GRID – Global Resource Information Database

ISCW - Institute of Soil, Climate and Water

KZN – KwaZulu Natal
SADC - Southern African Development Community

TOURPAT – Tourism Potential Atlas

UK – United Kingdom

UNEP – United Nations Environment Programme

UNICEF - United Nations Children's Fund

US – United States of America

USAID - United States Agency for International Development

WHO - World Health Organization

WRI - World Resources Institute

WTO - World Tourism Organisation
CHAPTER ONE: INTRODUCTION

1.1 Background

The important role of agriculture in the economies of developing countries is generally acknowledged (Development Report, 2005:94). One important point that has been noted is the predominance of agriculture in nearly all underdeveloped countries, resulting in the agricultural sector being perceived as having a key role to play in economic development, especially in the initial stages. However, Raul Prebisch and Hans Singer in the 1950’s, downplayed agriculture’s potential role in achieving maximum economic growth, by stating that developing countries were hurt by the downward trend and the instability of primary product prices (Staaz & Eicher, 1998:10). Together with other influential development theorists, they contended that global trade, especially for primary product commodities, was too erratic to form the principal ‘engine of growth’ for third world economies and hence promoted more inward-oriented development strategies, for example, import substitution industrialization (Brohman, 1996:49). Today, evidence from developing countries that rely on primary products for most of their exports has indicated that these countries appear to have indeed experienced a slow deterioration in their terms of trade over time. Two major forces that have been identified for causing the decline in the prices of primaries¹ relative to manufactures include the adverse effects of Engel’s Law² and the development of man-made substitutes using new technologies³.

However, since the late 60’s, support for inward-oriented strategies was gradually replaced by renewed emphasis on outward-oriented growth strategies supported by neoclassical theorists. They argued that inward-oriented approaches interfere with the natural processes of development based on ‘comparative advantage’ and proposed that Third World countries, at least during their

¹ By 1986, the relative primary product prices were about half of what they were in 1900, signifying a downward trend in primary-product prices.

² As per capita incomes rise in the long run, demand shifts towards luxuries, which are goods with an income elasticity of demand that is greater than one. At the same time, the world’s demand shifts away from staples, which are goods with an income elasticity of demand that is less than one. Ernst Engel discovered that ‘the income elasticity of demand for food is less than one (i.e., food is a staple) and this is known as Engel’s Law. Expansion of the supply of both products at the same rate results in the relative price of food declining because Engel’s law states that demand would keep shifting relatively away from food toward luxuries (Lindert & Pugel, 2000).

³ Examples include coffee and tea that have been partially displaced by soft drinks (Baffes et al, 2005:307), cotton by synthetic fibres (Baffes, 2005:259) and sugar by high fructose corn syrup (Mitchell, 2005:142).
initial stages of development, should uniformly specialize in primary exports rather than attempt to
develop more sophisticated industrial sectors through state interventions that would not
conform to comparative advantages based on factor proportions. This, together with increasing
interventionism by the International Monetary Fund and World Bank into Third World
policymaking via structural adjustment lending, which was conditional on the adoption of policy
reforms designed to reduce state economic intervention and generate market orientated growth,
pressured many countries to shift their development strategies away from an inward orientation
toward an outward orientation. This resulted in the expansion of ignored sectors such as
international tourism, which has been grouped in literature with other new 'growth sectors' that
have the potential for stimulating rapid growth based on the 'comparative advantages' of the
Third World countries (Brohman, 1996:49).

Africa is still lagging behind in agriculture (despite the fact that most of the economies are
dependent on agriculture) as is evident from the fact that trade amongst industrial countries still
dominates world agricultural trade flows, with much of the trade taking place within trade blocs.
However, as countries develop economically, the relative importance of agriculture declines as
the proportion of income spent on food declines (Kuhnen, 1987). So instead of investing more
time and resources on only trying to improve production and efficiency levels in agriculture so as
to compete with industrialized nations as the main strategy of promoting economic development
in the SADC region, another avenue that can be pursued further and given more focus is through
the use of its abundant natural resource base for the promotion of tourism, especially agritourism
and ecotourism, which are both based on natural resources. The SADC region can offer more
from the use of its agricultural resources for their intrinsic value, like landscapes and nature, to
be enjoyed by tourists. Given the abundant natural resource base, investment into both
agricultural production and tourism can enhance economic development from both angles.

1.2 Travel and Tourism

Travel and tourism has potential for promoting economic development as it is one of the world’s
fastest growing economic activities. A report by the World Tourism Organisation (WTO)
estimates that by the year 2020, there will be about 1.6 billion international tourist arrivals
worldwide, spending over US$2 trillion (Hawkins & Lamoureux, 2001:63). This means that
globally, arrivals will continue to grow at an average of 4.3% and spending at 6.7% per year.
This estimate surpasses the maximum probable expansion in the world’s wealth estimated at a

---

4 Examples of other ‘new growth’ sectors include export-oriented industries and non-traditional agricultural exports.
3% increase per year. This shows that tourism has the potential to promote development in Africa as it is projected to increase at a rate of 5% by 2020 (Hawkins & Lamoureux, 2001:63). With respect to South Africa, tourism is the only sector for the period 1998-2002 that showed both positive growth in employment and contribution to GDP (Rogerson, unknown). Whereas for several other priority sectors, the trend had been for employment to decrease whilst contribution to GDP continues to grow, tourism recorded substantial improvements both in terms of employment and GDP contribution (Rogerson, unknown). Tourism has shown the strongest growth in terms of formal sector employment amongst all sectors, and is the sector that is the largest employer of people (direct employment) (South African Tourism, 2005).

Tourism’s potential contribution to development has become especially important because of the general declining economic performance of most African nations. These countries initially tried to develop economically by expanding and increasing the range of primary exports from agriculture and mining. When this did not provide satisfactory results, Africa turned to industrialization as a road to quick and sustainable economic growth. Contemporary Africa’s endemic economic stagnation and poverty suggest that these strategies have not worked for the continent. It is in this context that attention is now focusing on tourism’s contribution to development (Sidinga, 1999:1).

Tourists nowadays are searching for more personal, more meaningful and more intense experiences rather than simply going on sightseeing tours or relaxing on the beach. Tourists are becoming more experienced, sophisticated and independent minded and in seeking new experiences and destinations, demand specific, accurate, and useful information. The quality of the information provided is a key element in customer satisfaction; particularly as the intangible tourism products or services revolve around image formation and representation (Elliot-White & Finn, 1998:67). Hence, while ‘traditional’ tourism still exists and continues to grow, new types of tourism or alternative tourism have emerged (Keyser, 2002:245). Not only does the market for these new types of tourism exist, but trends indicate that the market for ‘new’ or ‘alternative’ tourism is growing very fast (Hawkins & Lamoureux, 2001:63). Ecotourism and agritourism fall under the ‘new’ types of tourism. Agritourism is the same as farm tourism (Speirs, 2003:1), and farm tourism is a classic example of ‘new’ tourism (Busby & Rendle, 2000:640). The then WTO Secretary General Francesco Frangialli, stated that trends show a higher than average increase in newtypes of tourism, including ecotourism and all other nature-related forms of tourism, which today account for approximately 20% of total international travel (Hawkins & Lamoureux, 2001:65).
1.3 Definitions

Agritourism or farm tourism has no definitive definition because it comprises a range of activities. The working definition for agritourism is as follows: *agritourism* is about people who visit farms that are away from the place where they normally live and work, with the farm enterprise consisting of both a working farm environment and a commercial tourism component. Table 1.1 below shows the different definitions of farm tourism found in literature.

Table 1.1: Farm Tourism – A Chronology of Definitions

<table>
<thead>
<tr>
<th>Definition</th>
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<tbody>
<tr>
<td>DART (1974): any tourist or recreation enterprise on a working farm</td>
</tr>
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<td>Hoyland (1982): the provision of temporary accommodation and/or indirect recreational facilities on a working farm</td>
</tr>
<tr>
<td>Frater (1983): tourism enterprises that are present on working farms and yet are largely supplementary to existing farm activities</td>
</tr>
<tr>
<td>Murphy (1985): working farms that supplement their primary function with some form of tourism business</td>
</tr>
<tr>
<td>Wales Tourist Board (1986): working farms, irrespective of type or size, where the primary activity is agriculture and where tourism is a supplementary activity</td>
</tr>
<tr>
<td>Denman &amp; Denman (1990): active provision of facilities for tourists within a working farm</td>
</tr>
<tr>
<td>Davies &amp; Gilbert (1992): a form of rural tourism whereby paying guests can share in farming life either as staying guests or day visitors on working farms</td>
</tr>
<tr>
<td>Pearce (1990): farm tourism represents continuing ownership and active participation by the farmer in typically, small-scale tourism ventures</td>
</tr>
<tr>
<td>Roberts (1992): farm tourism is about people who are away from the place where they normally live and work, and about the things they do on a working farm, whether they visit for the day or for a longer holiday</td>
</tr>
<tr>
<td>Denman (1994a, b): a term which covers the provision of facilities for tourists on a working farm</td>
</tr>
<tr>
<td>Clarke (1996): tourism products in which the consumer is aware of the farming environment, at a minimum</td>
</tr>
<tr>
<td>Weaver &amp; Fennell (1997): rural enterprises which incorporate both a working farm environment and a commercial tourism component</td>
</tr>
<tr>
<td>Illbery <em>et al.</em> (1998): farm tourism is conceptualized as an alternative farm enterprise comprising one of seven possible ‘pathways of farm business development’.</td>
</tr>
</tbody>
</table>


Agritourism or farm tourism is a sub-category of rural tourism and examples of the tourism products include: harvest festivals and agricultural shows (e.g. cherry festivals), food and wine festivals, flower festivals and exhibitions, agricultural routes and speciality farms (e.g. wine, wool, and fruit routes, ostrich farms), hunting, farm holidays and bird watching.
Ecotourism, like agritourism, has many definitions, which are dependent on who is operationalising the concept and for what purpose. “Ecotourism is described as a sustainable form of natural resource-based tourism that focuses primarily on experiencing and learning about nature, and which is ethically managed to be low-impact, non-consumptive, and locally oriented (control, benefits and scale). It typically occurs in natural areas, and should contribute to the conservation or preservation of such areas” (Fennell, 2003:25). Fennell’s definition is more comprehensive than other definitions and Table 1.2 below highlights the different aspects that have been emphasized by different ecotourism definitions by other authors found in literature (Fennell, 2003:25).

### Table 1.2: Comparisons of selected ecotourism and nature tourism definitions

<table>
<thead>
<tr>
<th>Main Principles of Definition¹</th>
<th>Sources of definitions</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15</td>
</tr>
<tr>
<td>Interest in nature</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Contributes to conservation</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Reliance on parks and protected areas</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Benefits local people/long-term benefits</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Education and study</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Low impact/non-consumptive</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Ethics/responsibility</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Management</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Sustainable</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Enjoyment/appreciation</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Culture</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Adventure</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Small scale</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
</tbody>
</table>


¹ Variables ranked by frequency of response

² Nature tourism definitions


### 1.4 Spatial Information Needs

Agritourists are tourists who spend time at agritourism destinations and likewise, ecotourists are
tourists who spend time at ecotourism destinations, or according to Eagles & Cascagnette (1995:22), are adults who travel with the intent of observing, experiencing and learning about nature. Like general tourists, agritourists and ecotourists require information to aid them make informed decisions regarding their travel. Information functions to sensitize, persuade, heighten appreciation and legitimate choices (Van Raaij & Fracken, 1984:101). The ability of knowing and understanding the consumer decision making process in tourism facilitates the ability to be able to provide and meet the information needs of the tourists that they make use of when making choices among alternative destinations. Information availability and accessibility is important for tourists as it is crucial to the decision making process. Theories have been developed but no single unifying theory has emerged across disciplines to describe, explain or fully predict consumer decision making (Sirakaya & Woodside, 2004). The decision-making process is complex and has been recognized as often being an unconscious process, thus decision making is a process not fully developed theoretically as the researchers face the difficult task of measuring and understanding a process that is unobservable and for which consumers are only partially aware.

This study is a scanning process as part of a research program to review literature and identify the information needs that have been identified as being important for agritourists and ecotourists when they select their tour destinations and when they prepare to go there. At its core, the tourism industry ‘sells’ images of the geography of different parts of the world (Bertazzon, 1996:36). The physical natural environment (agricultural land included) is the focus of tourism activities. Agricultural land provides, in addition to food and fibre, public amenities in the form of wildlife habitats, protection of natural resources, open spaces, aesthetic scenery and cultural preservation (Fleischer & Tsur, 2000:385). Agritourism is directly related to agricultural activities and/or buildings with an agricultural function (Keyser, 2002:268), whilst ecotourism is a form of natural resource-based tourism (Fennell, 2003:25). Given that both agritourism and ecotourism are based on a natural resource base that is spatial in nature, attention will be given to identifying the spatial information needs of tourists regarding land resource parameters, which are spatial in nature.

The study also aims: a) to identify the spatial land resource data that have been collected in the past and stored for use for different purposes, such as for agricultural production and resource planning, but has the potential to be repackaged and presented in a manner that ensures that the identified

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5 Anything dealing with the concept of space. In the geographic context, primarily dealing with the distribution of things on the surface of the earth (DeMers, 1997:474).
information needs of tourists are fulfilled; and b) to describe how packaged spatial information is currently being communicated to tourists and to explore the possibilities of improving spatial information provision and dissemination. This can be achieved by having a clear understanding of the needs of the tourist, which will guide and facilitate the repackaging and presentation of the available data into information that the tourist can use during decision making.

It is important to point out the distinction between data and information. Table 1.3 below shows the different definitions of the two concepts found in literature.

Table 1.3: Data and Information Definitions

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Data definition</th>
<th>Information Definition(s)</th>
</tr>
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<tbody>
<tr>
<td>Stair &amp; Reynolds</td>
<td>Data consist of raw facts</td>
<td>A collection of facts, organised in such a way that they have additional value beyond the value of the facts themselves</td>
</tr>
<tr>
<td>(2001)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gordon &amp; Gordon</td>
<td>Raw facts whose uses and application are undefined</td>
<td>i) Processed data that influences choice, that is, data that have somehow been formatted, filtered and summarized</td>
</tr>
<tr>
<td>(1996)</td>
<td></td>
<td>ii) According to economic theory- the negative measure of uncertainty, that is, the less the information available, the more the uncertainty</td>
</tr>
<tr>
<td></td>
<td></td>
<td>iii) According to information theory- inputs and outputs of communication</td>
</tr>
<tr>
<td>Alter (1992)</td>
<td>Are facts, images, or sounds that may or may not be pertinent or useful for a particular task</td>
<td>Data whose form and content are appropriate for particular use</td>
</tr>
<tr>
<td>Duffy &amp; Assad (1989)</td>
<td>Text, images and numbers in their undigested form</td>
<td>Data which have been processed and presented in such a way as to be relevant in a decision-making situation</td>
</tr>
<tr>
<td>Lang (1989)</td>
<td>Are the raw materials from which information is derived</td>
<td>Is what results from the thoughtful analysis, manipulation, and presentation of data in a form that will enhance the decision-making process</td>
</tr>
<tr>
<td>Parker (1989)</td>
<td>A collection of unorganized facts</td>
<td>Data that have been processed into a meaningful form.</td>
</tr>
</tbody>
</table>

Turning data into information is a process - a set of logically related tasks performed to achieve a defined outcome. This is illustrated in Figure 1.1 below. The type of information created depends on the relationships defined among existing data. The process of defining relationships amongst data to create useful information requires knowledge (Stair & Reynolds, 2001:6). Knowledge is a combination of instincts, ideas, rules, and procedures that guide actions and decisions (Alter,
1992:81). The knowledge, in this study will be the information needs identified from reviewed literature, which will guide the transformation of the data into tourism information.

![Figure 1.1: The Process of Transforming Data into Information](source: Stair & Reynolds (2001:7).

### 1.5 Purpose of Study

This literature study broadly assesses the usefulness of available digital land resource data as a source for agritourism and ecotourism information by comparing the inventory of available spatial data sets for South Africa and the SADC region, with the needs for spatial data as derived from a literature study of travel motivations and demand determinants that involve describing and explaining tourist behaviour and profiles.

Available spatial digital data for South Africa and the SADC region, originally collected for other purposes like land resource analyses, but having the potential of being repackaged and becoming a useful source of spatial information for tourists, will be identified and described. In addition, attention will also be given to describing how packaged spatial information on features or resources is currently being communicated to tourists so as to identify information gaps which can be filled by repackaging available data and to avoid duplication of information already available to tourists.

A greater focus on the information needs of tourists will result in greater understanding of what kind of spatial information people would want to have access to, and this coupled with the available spatial land resource data, will be used to explore the possibility of repackaging the data to meet tourists' information needs. The tourism information is to be made available on internet websites (in a further study) hence the issue of accessibility of the spatial tourism information on internet websites to potential agritourists and ecotourists is explored.
The following questions have to be described and explained:

i) What are the needs and wants of tourists and to what spatial information needs do they translate to?

ii) What spatial land resource digital data are available (for South Africa and SADC region), originally collected and used for other purposes, e.g. agricultural production and planning, and who are the originators?

iii) How are the spatial data presented in terms of scale, storage of geographical features and the geospatial data presentation form?

iv) How is packaged spatial information on features and/or resources currently being presented and communicated to tourists?

v) Are there possibilities of repackaging the available land resource data to meet the derived spatial information needs of tourists?

1.6 Delimitations

The study will not focus much on parameters that do not have a spatial dimension even though tourists consider them during decision-making. Also, the study provides a background only, as the identification of particular market segments, from which specific spatial information needs will be derived with the consequent designing and development of websites will not be undertaken in this study’s scope, but in further studies.

1.7 Significance of Study

The study will identify and describe the documented needs, wants and desires of tourists as found in the literature, from which their information needs will be derived, with a particular focus on information on parameters with a spatial dimension.

Tourism information is currently supply driven. This limits the potential of the tourism industry and tourism ventures, as most tourist entities do not research the needs of tourists before delivering products (Speirs, 2003:1). Tourists are often given fixed options to choose from. This is under the assumption that suppliers fully understand the minds of tourists to know what information tourists
require. However, people are complex phenomena and determining what consumers need or will want is an effort that does not often meet with success (Ciccantelli & Magidson, 1993:341). Consumers’ needs and desires are elusive because consumers themselves generally have not consciously formulated what those needs and desires are or how to fulfil them. However, if tourists are given an opportunity to design or select search tools covering relevant search criteria, only then can we have a greater understanding of what information they want.

The findings from this study will form the basis of a follow up research project that will aim to identify the specific spatial information needs of selected tourist groups and hence facilitate the ability of tourists to specify their spatial information needs and design their own holidays in the future, that is, applying the concept of ‘consumer idealized’ design in tourism.

1.8 Methodology

An outline of the study’s structure is given Figure 1.2.

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6 Consumer idealized design involves actual or potential consumers in an unconstrained design of their ideal product or service. This process seeks to help consumers become more aware of what they need or want and to be able to reveal these wants and needs as accurately as possible.
1.8.1 Data Collection Strategies

Pertinent secondary data will be obtained from literature – including text books, journals, reports, news articles and unpublished theses containing relevant reports and research conducted on information needs, available spatial data and information located at the J S Gericke library of Stellenbosch University or sourced with the use of the inter-library loan facility. In addition, the World Wide Web will also be used to access electronic journals, reports, papers, tourism-related websites and digital spatial data available on the internet.
1.8.2 Treatment of the Data

Validity and Reliability - ‘Triangulation’ through the use of multiple sources or theories to check the validity of findings will be employed. Leedy (1997:169) notes that if similar themes are noted in data collected from a variety of sources, the credibility of the interpretation is enhanced in qualitative studies. Another method to ensure validity and reliability of the data is use of ‘Outlier Analysis’. It will involve examining cases that differ markedly from the majority of individuals or situations examined. These can be used to strengthen the findings by determining what is present or absent in them compared with the more common examples.

1.9 Structure of the Study

The first chapter defines the concepts of agritourism and ecotourism and elaborates on their importance in promoting economic development. The purpose and importance of the study are also explained. The derivation of information needs based on the analysis of travel motivations, is the focus of Chapter Two. The concept of travel motivations is explored further, with theories of motivation and tourist typologies found in literature being reviewed. Chapter Three focuses on tourism demand determinants (which include demographic factors, economic factors, price, mobility, media and communications technology and geographic factors), from which spatial information needs are derived and the issue of accessibility of information is explored. Chapter Four identifies the land resource digital data that are available, their location and format, and possibilities for repackaging the available data into tourism information are explored. A description is given on how packaged spatial information on features or resources is currently being communicated to tourists and the issue of accessibility of spatial tourism information on internet websites to potential agritourists and ecotourists is further explored. Conclusions and the summary are presented in Chapter Five.
CHAPTER TWO: INFORMATION NEEDS DERIVED FROM ANALYSIS OF TRAVEL MOTIVATIONS

2.1 Introduction

The identification of information needs can be achieved through the analysis of tourism demand in populations, which can be tackled from a socio-economic approach or a psychological approach. The socio-economic approach examines correlations between the participation at tourism events and socio-economic characteristics such as income, level of education, age, residence and family situation. The psychological approach seeks to discover the motives that stimulate people to travel (Lowyck et al, 1992:14). The former, also referred to as demand determinants, is linked to the characteristics of a society, as it encompasses the economic, social and political factors at work in society that curtail the volume of a population’s demand for travel, irrespective of individual motivations. The latter, also referred to as travel motivations, involves the personal, psychological characteristics of individuals within that society (Keyser, 2002:70).

Tourism exists because people are interested in attractions and tourism products at places away from where they live. Modern consumers know that traveling to destinations can satisfy their needs, like searching for relaxation, status or adventure. They are motivated to satisfy these needs and will set out to buy tourism products (Keyser, 2002:30).

Chapter Two focuses on the concept of travel motivations and further explores tourism theories that have been developed that aid in understanding why people undertake certain types of travel. Tourist typologies are also reviewed so as to enhance the understanding of the choice process of different consumer segments. The motivation factors mentioned in various literature sources are identified, from which the spatial information needs are derived. The focus will not be based on agritourism and ecotourism studies only but also on general studies as well because motivation is multidimensional (Pyo et al, 1989:278). Motivations of ecotourists overlap with those of other types of tourists (Wight 1996a:2), therefore general tourism studies can also encompass elements of agritourism and ecotourism, given that tourists take vacations in order to satisfy various needs and wants. The search for motivation factors identified in the literature will not only be geographically focused on studies from South Africa and the SADC region but also to the rest of the world, as various literature studies
note that most of the ecotourist market originates from the developed countries (see Section 3.3.3) therefore motivation studies from these countries is relevant.

2.2 Travel Motivations

2.2.1 Travel as a Need or Want Satisfier

The key to understanding tourist motivation is by viewing vacation travel as a satisfier of needs and wants. The need of an individual is an internal condition that arises from the lack of something, which if present, would tend to further the well-being of that individual (Mathieson & Wall, 1982:29). Tourists take vacations in the hope and belief that these vacations will satisfy, either wholly or partially, various needs and wants. Needs may be emotional, spiritual or physical. The difference between a need and a want is one of awareness. Needs are forces that arouse motivated behavior and motivation occurs when a person wants to satisfy a need. Motivation theories indicate that a person constantly strives to achieve a state of stability - a homeostasis - and this state is disrupted when a person is made aware of a need deficiency. This awareness creates wants and for a person to be motivated to satisfy a need, an objective must be present (Mill & Morrison, 1985:5). The person should also be aware of tourism products or services and must also perceive the purchase of those products or services as having a positive effect on satisfying the need for which the person is now aware. Then and only then will the person be motivated to buy. It is the task of people in marketing to transform needs into wants by making individuals aware of their need deficiencies and also to present them with an objective, the purchase or attainment of which will help satisfy that need. This process is outlined in Figure 2.1 (Mill & Morrison, 1985:5). The study of tourist motivation helps to identify types of tourists and aids market segmentation. In addition, tourism marketers use further insights into tourist motivation for the purposes of product development, service quality evaluation, image development and promotional activities, such as positioning (Fodness, 1994:556). In this study, spatial information needs will be derived from motivation factors identified from the reviewed literature.
Figure 2.1: Needs, Wants and Motives

Tourist motivations are diverse and can be categorized as shown in Table 2.1 below.

Table 2.1: Motivations of the Tourist

<table>
<thead>
<tr>
<th>Motivational Category</th>
<th>Motivations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical motivations</td>
<td>Refreshment of body and mind;</td>
</tr>
<tr>
<td></td>
<td>For health purposes (i.e., either medically prescribed or undertaken</td>
</tr>
<tr>
<td></td>
<td>voluntarily);</td>
</tr>
<tr>
<td></td>
<td>For participation in sports;</td>
</tr>
<tr>
<td></td>
<td>Pleasure – fun, excitement, romance and entertainment, to shop</td>
</tr>
<tr>
<td>Cultural motivations</td>
<td>Curiosity about foreign countries, people and places;</td>
</tr>
<tr>
<td></td>
<td>Interest in art, music, architecture, folklore;</td>
</tr>
<tr>
<td></td>
<td>Interest in historical places (remains, monuments, churches);</td>
</tr>
<tr>
<td></td>
<td>Experiencing specific international and national events, e.g. Olympic</td>
</tr>
<tr>
<td></td>
<td>games, Oktoberfest</td>
</tr>
<tr>
<td>Personal motivations</td>
<td>Visiting relatives and friends;</td>
</tr>
<tr>
<td></td>
<td>Meeting new people and seeking new friendship;</td>
</tr>
<tr>
<td></td>
<td>Seeking new and different experiences in different environments;</td>
</tr>
<tr>
<td></td>
<td>Escaping from one’s own permanent social environment (i.e. desire for a</td>
</tr>
<tr>
<td></td>
<td>change);</td>
</tr>
</tbody>
</table>
Personal excitement of traveling;
Visiting places and people for spiritual reasons (i.e. pilgrimages);
Traveling for travel’s sake

| Prestige and status motivations | Pursuit of hobbies;
|                                | Continuation of education or learning;
|                                | Seeking of business contacts and professional goals;
|                                | Conferences and meetings;
|                                | Ego enhancement and sensual indulgence;
|                                | Fashion, i.e. ‘keeping up with the Jones’s’.


### 2.3 Theories of Travel Motivation

The study of travel motivation helps to explain why people undertake certain types of travel. Central to most content theories of motivation is the concept of *need*. The best known of all motivation theories is Maslow’s 1943 need hierarchy theory. One of the main reasons for its popularity is its simplicity (Witt & Wright, 1992:34). Five main classes of needs were identified: physiological, safety, love (social), esteem and self-actualization (Maslow, 1943:372-383). These needs form a hierarchy and people tend to move upward through the hierarchy. Higher level motives include lower level motives and lower level motives have to be satisfied before higher levels can be attained. When a lower level need is satisfied, it ceases being a current motivator and the person then tries to satisfy the next most important need. In a later version of the theory, Maslow added two other sets of needs – aesthetic needs and the needs to know and understand – but it is not entirely clear how these needs fit into the original hierarchy (Witt & Wright, 1992:34). Maslow’s need hierarchy ties in with travel motivations and travel literature as shown in Table 2.2 below. The motivation factors identified by Maslow’s theory and the consequent tourism literature references are also identified in the literature reviewed in Section 2.5 hence Maslow’s theory is essential for understanding tourist motivation.
Table 2.2: Maslow’s Needs and Motivations Listed in Travel Literature

<table>
<thead>
<tr>
<th>Need</th>
<th>Motive</th>
<th>Tourism Literature References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiological</td>
<td>Relaxation</td>
<td>Escape, Relaxation, Relief of tension, Sunlust, Physical, Mental relaxation of tension</td>
</tr>
<tr>
<td>Safety</td>
<td>Security</td>
<td>Health, Recreation, Keep oneself active and healthy for the future</td>
</tr>
<tr>
<td>Belonging</td>
<td>Love</td>
<td>Family togetherness, Enhancement of kinship relationships, Companionship, Facilitation of social interaction, Maintenance of personal ties, Interpersonal relations, Roots, Ethnic, Show one’s affection for family members, Maintain social contacts</td>
</tr>
<tr>
<td>Esteem</td>
<td>Achievement</td>
<td>Convince oneself of one’s achievements, Show one’s importance to others, Prestige, Social recognition, Ego-enhancement, Professional/business, Personal development, Status and prestige</td>
</tr>
<tr>
<td></td>
<td>Status</td>
<td></td>
</tr>
<tr>
<td>Self actualization</td>
<td>Be true to one’s own nature</td>
<td>Exploration and evaluation of self, Self-discovery, Satisfaction of inner desires</td>
</tr>
<tr>
<td>To know and understand</td>
<td>Knowledge</td>
<td>Cultural, Education, Wanderlust, Interest in foreign areas</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>Appreciation of beauty</td>
<td>Environmental, Scenery</td>
</tr>
</tbody>
</table>


There are three main theories of motivation: one by Maslow, already explained, ‘Pearce and Moscado’, and ‘McIntosh and Goeldner’ (Keyser, 2002:92). An overview of the main theories is given in Figure 2.2 below. It is also essential to note that the motivation factors identified by ‘Pearce and Moscado’, and ‘McIntosh and Goeldner’ are also identified from the literature reviewed in Section 2.5, therefore are also essential for understanding tourist motivation.
Amongst other theories of tourist motivation, anomie and ego-enhancement have been identified as basic tourism motivators (Dann, 1977:184). Both these motivational influences on an individual are viewed as push factors. Anomie means the desire to transcend the feeling of isolation in everyday life, where the tourist wishes to get away from it all. People live in an anomic society and this fosters a need in people for social interaction, which is missing from the home environment. Ego-enhancement derives from the level of personality needs and derives from the need for recognition, which is obtained through the status conferred by travel. Just as there is a need for social interaction, so too do people need to be recognized. There are push and pull factors in a travel decision (Dann, 1977:186). Push factors are internal to individuals and install a desire for people to want to travel. Pull factors are external to individuals and influence where, when and how people travel, given the initial desire to travel (Jang & Cai, 2002:114). Pull factors are those that emerge as a result of the attractiveness of a
destination as it is perceived by those with the propensity to travel. People travel because they are pushed by their internal forces and pulled by external forces such as destination attributes. Traditionally, push motives have been useful for explaining the desire to go on vacation, while pull motives have usefully explained the choice of destination (Goosens, 2000:302). It is usually accepted that push factors are present before pull factors can be effective, so the pull factors are therefore consequent on a prior need to travel (Witt & Wright, 1992:38).

On the basis of Dann’s study, nine motives were further identified when conceptualizing the motives of pleasure vacation travelers – with seven classified as socio-psychological or push motives and two classified as cultural or pull motives. Escape from a perceived mundane environment, exploration and evaluation of self, relaxation, prestige, regression, enhancement of kinship relationships and facilitation of social interaction fall under the push motives, whilst novelty and education fall under the pull motives (Crompton, 1979:408). These push and pull motives are identified in various reviewed literature studies on motivation (Section 2.5).


Two major dimensions of leisure and travel motivational forces, namely approach (seeking) and avoidance (escape) were first proposed in 1982 by Iso-Ahola. Tourism behavior encompasses both and tourism, because of its unique characteristics, represents more of an escape-oriented than approach-oriented activity (Jang & Cai, 2002:115). Later, two motivational forces that simultaneously influence the individual’s travel behavior, that is two main types of push and pull factors like Dann’s anomie and ego-enhancement motives, were identified: personal and interpersonal (Mannell & Iso-Ahola, 1987:323). First, travel activities are sought because they provide change or novelty to daily routine, as these activities allow one to leave behind the everyday environment of personal problems, troubles, difficulties and failures or to escape the interpersonal world (e.g. roommates, friends, family members) or to escape from both. The second motivational force is the individual’s tendency to seek psychological personal/interpersonal (intrinsic) rewards from participation in the leisure activities concerned. The personal rewards consist mainly of self-determination (one’s ability to exercise freedom in choosing a leisure activity), sense of competence or mastery, challenge, learning,
exploration and relaxation. The seeking of interpersonal rewards means that in one form or the other, social interaction is the main intrinsic reward to be attained.

Eight theories of travel motivation are identified by Krippendorf (Witt & Wright, 1992:42). Travel is: recuperation and regeneration; compensation and social integration; escape; communication; freedom and self-determination; self-realization; happiness and a means of broadening the mind. With respect to all these theories, firstly, travel is motivated by ‘going away from’ rather than ‘going towards’ something and secondly, travelers’ motives and behavior are markedly self-oriented: ‘Now I decide what is good for me’.

2.4 Tourist Typologies

The interaction of personality attributes such as attitudes, perception and motivation allows different types of tourist typologies or roles to be identified. Tourists can be characterized into different typologies or roles which exercise motivation as an energizing force linked to personal needs. Typologies contribute to decisions over product development, price, distribution and most importantly, promotion, particularly in the design of the messages (information) that tourism organizations attach to their products for different groups of potential customers (Swarbrooke & Horner, 1999:93). Understanding of tourist roles enhances the deeper understanding of the choice process of different consumer segments. Figure 2.3 gives the main academic typologies found in the literature.

2.4.1 Plog’s Typology

Allocentric type – These tourists prefer exotic destinations and view traveling as a possibility for discovering foreign cultures. They are out-going, self-confident, adventurous and have a strong need for change. These tourists seek strength and freedom (anonymity, flying and preference for self-arranged tours) and try to make friends with local inhabitants.
Near-allocentric type – This tourist is sporty, seeks challenges and views the journey as a chance to test a new life-style. Business, conference, meeting, convention and theme tourists fall under this category.

Mid-centric type - The tourist is escaping from routine and looks for relaxation and pleasure in a well-known environment with friends and relatives. The tourists are fond of healthy and beautiful surroundings (sun, spas, forests, lakes, etc.) and comfortable types of accommodations.
Near-psychocentric and psychocentric types – Both travel because they think they are indebted to travel for their status. Traveling is a cultural norm imposed by the legal system of paid holidays. Famous tourist attraction sites are commonly visited by this group (Lowyck et al, 1992:18; Keyser, 2002:93; Pearce, 1993:122 and Swarbrooke & Horner, 1999:87)

The tourist types explained above were developed in 1972. However, in 1987, Plog produced a typology for all typologies as he noted that researchers come up with similar dimensions but label them differently. Plog redefined and combined the dimensions and came up with eight broad categories, which are as follows: ‘venturesomeness’, ‘pleasure-seeking’, ‘impassivity’, ‘self-confidence’, ‘playfulness’, ‘masculinity’, ‘intellectualism’ and ‘people-orientation’ (Swarbrooke & Horner, 1999:92).

2.4.2 Cohen’s Typology I

This typology was developed in 1972. The experience of tourism combines a degree of novelty with a degree of familiarity, which is the security of old habits with the excitement of change. There is a continuum of possible combinations of novelty and familiarity, and possible combinations of these two elements produce a fourfold classification. The extent to which familiarity and novelty are experienced on any particular tour depends upon the individual tastes and preferences of the tourist as well as upon the institutional setting of the trip.

The organized mass tourist – Is the least adventurous and remains largely confined to his ‘environmental bubble’. These tourists rarely stray from their protection, buy ‘all-inclusive holidays’ like package tours, and the itinerary and reservations are well prepared. Familiarity dominates and the experience of novelty is virtually non-existent.

The individual mass tourist – These tourists are similar to the previous one, but are more autonomous and free from the group. The tour is not entirely preplanned; the tourist has a certain amount of control over his time and itinerary and is not bound to a group. Familiarity is still dominant, but less, and the experience of novelty is greater than in the preceding type.

The explorer – The tourist arranges the trip alone, explores new areas and tries to get off ‘the beaten track’ as much as possible, but nevertheless looking for comfortable accommodations and reliable
transportation. Tending to leave the ‘environmental bubble’ more than the preceding types, the tourist is still careful to be able to step back into it when the going gets rough. Though novelty dominates, the tourist does not immerse himself completely in his host society, but retains some of the basic routines and comforts of his native way of life.

*The drifter* – This tourist avoids any kind of ‘tourist establishments’ and ventures furthest away from the beaten track and from the accustomed ways of life of his home country. Drifters seek direct contact with the host culture, try to live the way locals live and often take odd jobs to keep themselves going. Drifters have no fixed itinerary and no well-defined goals of travel. Novelty is at its highest and familiarity almost disappears completely.

The first two tourist types are institutionalized tourist roles, as they are dealt with in a routine way by tourist establishments – the complex of travel agencies, travel companies, hotel chains etc, which cater for the tourist trade. The last two types are non-institutionalized tourist roles, at best only very loosely attached to the tourist establishment (Cohen, 1972:164-182).

### 2.4.3 Cohen’s Typology II

Later in 1979, another typology of tourist types was produced by Cohen.

*Recreational tourist* – The trip as a recreational experience is a form of entertainment and the tourists get pleasure from the trip as it restores the physical and mental powers and endows the tourists with a general sense of well-being. Tourists get pleasure from entertainment, for which authenticity is largely irrelevant. Recreational tourism is largely caused by the ‘push’ of the tourist’s own society, not by the particular ‘pull’ of any place beyond its boundaries. The recreational tourist is primarily ‘getting away’. Hence the tourist is often equanimous as to the choice of possible destinations for his holiday, thus providing the advertisement industry with plentiful opportunities to tilt the tourist’s decision in a variety of competing directions.

*Diversionary tourist* - The trip is a mere escape from the boredom and meaninglessness of routine, everyday existence, into the forgetfulness of a vacation, which may heal the body and soothe the spirit, but does not ‘recreate’. Diversionary tourism is sometimes referred to as the ‘therapy school’ of sociology of leisure.
Experiential tourist - The tourist quests for meaning outside his/her own society by searching for experiences. These people have lost their own centre and are unable to lead an authentic life at home and are searching for a new meaning. The experience-orientated tourists observe the authentic life of others, remain aware of their otherness, which persists even after the visit, but are not converted to their life, nor do they accept the authentic lifeways.

Experimental tourist - Whilst the experiential tourist derives enjoyment and reassurance from the fact that others live authentically, but remains ‘disinherited’ and content merely to observe the authentic life of others, the experimental tourist on the other hand engages in that authentic life, but refuses fully to commit him/herself to it. Rather, the tourist samples and compares the different alternatives, hoping eventually to discover one which will suit his/her particular needs and desires. The experimental tourist is in ‘search of oneself’, insofar as the trial and error process, he seeks to discover that form of life which elicits a resonance in himself and is usually not aware of what he seeks, his real needs and desires.

Existential tourist – The centre of the existential tourist is not the center of the culture of origin, but is an ‘elective’ centre, one the tourist chooses and converts to. The elective centre may be completely extraneous to his culture of origin or it may be a centre that he or his people had been attached to in the past, but became alienated from (Cohen, 1979:179-201).

2.4.4 Perreault, Dorden and Dorden’s Typology

Budget Travelers – The people in this group are interested in travel and seek travel information, but their major vacation interests are economy-oriented as they have a medium income. They have a high interest in camping and educational historic travel.

Adventurers – The people in this group exhibit a relatively low desire for relaxing travel and a relatively high disposition toward venturesomeness. Adventurers are relatively money-oriented in their travel and are next to highest in terms of their income. They are well educated, glamour seekers, seek wide horizons and are not home bodies.
Homebodies – People in this group enjoy relaxing travel, but have no interest in vacation travel, do not seek travel information, are not venturesome and have a low disposition to travel. They do not enjoy camping, educational, economic, historical or tour travel and do not share vacation talk with others. They are older, have good incomes, but are lower than others in terms of financial optimism.

Vacationers - These people are the antithesis of the homebodies. They are most interested in vacation travel, plan ahead more but are more undecided about their vacations as they change their minds frequently as new and exciting alternatives develop. They are functionally gregarious and like family oriented vacations. However, they are employed in lower paid jobs and have less education.

Moderates – People in this group have a high predisposition to travel and are highly gregarious about their vacations. They are not interested in tenting, weekend travel or sports. They are middle-aged, have moderate levels of income and education. They resemble the vacationers, with the difference that they have no active lifestyle (Perreault et al, 1979:208 – 224).

2.4.5 Westvlaams Ekonomisch Studiebureau’s Typology

Active sea lovers – The presence of a sea and beach are of utmost importance and activities also considered important include ‘going out’ and ‘sports’.

Contact-minded holiday makers – Great importance is attached to a hospitable reception, making contact with new people and ‘making time for each other’.

Nature viewers – Preference is given to visiting beautiful landscapes, but meeting with a kind reception is also indispensable.

Rest-seekers – Seeking rest, regaining strength and walking are the most important motives for travel.

Discoverers – People in this group like to make contact with people, like cultural holidays and like adventure.
Family-oriented sun and sea lovers – People in this group appreciate visiting beautiful scenery, making time for each other, a kind reception, good food and child-friendly activities.

Traditionalists – Safety and security are important to this group, as they try to avoid surprises and prefer familiar surroundings (Lowyck et al, 1992:21 and Swarbrooke & Horner, 1999:88).

2.4.6 Smith’s Typology

Explorers – They seek new discovery and knowledge and their numbers are very limited. They are not tourists by definition, and traditionally are almost akin to anthropologists living as active participant observers and are fully adapted to local norms.

Elite tourists – Individuals who have been ‘almost anywhere’. There are very few tourists of this nature. They differ from explorers in that they are touring. They adapt fully to local norms and have the attitude that ‘if the natives can live that way all their lives, we can, for a week’.

Off-beat tourists – They seek to either go away from tourist crowds or heighten the excitement of their vacation by doing something beyond the norm. They generally adapt well to local norms and put up with the simple accommodations and services provided for the occasional tourist.

Unusual tourist – Goes on organized tours and adapts somewhat to local norms. The tourist is interested in the primitive culture but is happier with his ‘safe’ lunch box and bottled beverage rather than the native feast.

Incipient mass tourism – The flow of people is steady and they usually travel as individuals or in small groups. The tourists seek western amenities. The tourism industry comprises one sector of the total economy and hotels usually accommodate a mix of guests including domestic travelers as well as tour groups.

Mass tourism – There is a continuous influx of visitors and they expect western amenities. There is a diversity of tastes and budgets. Tourists fill up hotels of every category, pensions and hostels and they expect trained, multi-lingual hotels and staff to be alert and solicitous to their wants and needs.
*Charter tourists* – There is a massive arrival of tourists, who demand western amenities. Charter tourists wear name tags, are assigned to numbered buses and counted aboard. It is a high volume business, so to avoid complaints, tour operators and hotels standardize the services to Western (or Japanese) tastes (Smith, 1989:14).

2.4.7 Dalen’s Typology

*Modern materialists* – The people are characterized by high scores in risk taking, technology, materialism, hedonism, status and egotism. High priority is given to individuals’ personal needs with less consideration to others and individuals seek status and acceptance from others by showing off their property. They demand sun to make impressions when they get home and love night clubs and wild parties, where they can meet new people. Superficial entertainment, sex, action and excitement are important ingredients of a holiday and mass tourism is preferred as it provides an opportunity for meeting new people. All price levels are in demand.

*Modern idealists* – The people are characterized by high scores on individuality, polysensualism, self-realization, creativity and community. They are very well educated, have high incomes and seek experience, enrichment, excitement, education and insight. Excitement and entertainment are also a requirement, but more of the intellectual kind. Art, culture, new destinations and experiences are demanded and mass tourism or fixed programs are not wanted. They are willing to pay medium to high prices.

*Traditional idealists* – These people are characterized by puritanism, religion, health and security. They rely on traditions and institutions of the old society, such as church, family, close neighborhood, roots, classic arts and artists and untouched nature. It is paramount to save instead of consume, repair things instead of buying new ones. Quality, nature, culture, history, famous places, peace, quiet and safety are what traditional idealists demand. Family and roots is paramount, hence visiting family and relatives is popular. They probably choose package tours based on cultural subjects.

*Traditional materialists* - Are characterized by conformity, localism, rationality, aimlessness, authority and distrust. The average age is high, the education and income levels low hence low prices and special offers are popular. They want traditional mass tourism and package tours. They dislike, fear the new
world and are unable to keep pace with development in most fields hence they are afraid of being left alone, and have a strong need for personal security (Dalen, 1989:183).

2.4.8 American Express’ Typology

Adventurers - These travelers are independent, confident, like to try new activities, meet new people and experience different cultures. Compared to members of the other groups, they are generally better educated and more affluent. Adventurers are predominantly male, tend to be younger than other travelers and travel plays a central role in their lives.

Worriers – These travelers experience considerable anxiety from the perceived stress of travel, have little confidence in their ability to make travel decisions and are generally afraid to fly. By and large, worriers tend to be less educated and less affluent than other travelers in their country. Worriers travel the least amongst all groups, are likely to travel domestically, are predominantly female and are rather older than other travelers.

Dreamers – Dreamers are intrigued with the ideas of travel and attach great importance to the meaning it can bring to their lives. Despite reading and talking a lot about new destinations, they have travel experiences that are usually less remarkable than their ideas, and are more often oriented towards relaxation than adventure. This group is predominantly women aged fifty and above, with modest income and education. Maps and guide books are popular when dreamers travel to new places.

Economizers – Travel is an outlet for relaxation and is not perceived as an experience that adds meaning to lives of economizers. They seek value in travel and do not pay for extra special amenities and services even if they can afford them. More men than women are likely to be economizers. This group has an average income level and is slightly below average in education.

Indulgers – This group is willing to pay for additional comfort and better services during travel as they are generally wealthier than the other groups. This group is second only to adventurers in the amount they travel and are equally divided between men and women (Lowyck et al, 1992:24 and Swarbrooke & Horner, 1999:89).
2.4.9 Wickens’ Typology

*Cultural Heritage Tourists* – Tourists are interested in natural beauty, history and culture. They long to experience the ‘traditional village life’ portrayed in holiday brochures and use seaside resorts as a basis to tour attractions in the region.

*Ravers* – Tourists are attracted by nightlife, the cheapness and availability of alcohol. They like the sun and beach and tend to swim and sunbathe in the day and go ‘clubbing’ at night.

*Shirley Valentines* – Women on holiday with other women, hoping for romance and sexual encounters. The holiday represents an opportunity to get away from everyday lives of domesticity.

*Heliolatrous tourists* – They are sun worshippers whose main aim is to get a tan, hence spend most of their holiday in the open air.

*Lord Byrons* – Tourists who return year after year to the same destination and even hotel or accommodation unit. They want to be treated as guests, not tourists. They are after nostalgia and lament the impact of mass tourism on their favorite destination (Swarbrooke & Horner, 1999:90).

2.5 Motivation Factors Identified in the Literature

Travelers have wide-ranging reasons and motivations for travel. Table 2.3 shows motivation factors identified from the reviewed literature. As stated in the introduction, general studies are also included with the focus not being only on agritourism and ecotourism studies because the general tourism studies can also encompass elements of agritourism and ecotourism activities.

With respect to all studies, cultural tourism is the most popular type of tourism as the motivation factor ‘culture/history/heritage’ was identified in the highest number of studies. Other popular motivation factors include: ‘friends/family/social gatherings’, ‘rest/relaxation/leisure’, ‘knowledge seeking’, ‘escape’, ‘nature/natural surroundings’, ‘fauna/wildlife/national parks/hunting’,
‘fun/excitement/entertainment/pleasure seeking’, and for the ‘creation/maintenance of interpersonal/personal ties’.

With specific reference to agritourism and ecotourism activities, both are nature based and this is supported by the motivational responses obtained from the reviewed literature. Agritourists and ecotourists are greatly motivated by ‘fauna/wildlife/national parks/hunting’, ‘nature/natural surroundings’, ‘culture/history/heritage’, ‘knowledge seeking’, ‘outdoor/physical activities’, ‘rural environments/villages’ and the presence of ‘lakes’.
Studies Reviewed


*Agritourism or ecotourism study

Motivation Factors

(1) weather/climate; (2) culture/history/heritage; (3) nature/natural surrounding; (4) scenery; (5) wilderness; (6) landscapes; (7) mountains; (8) waterfalls; (9) fauna/wildlife/national parks/hunting; (10) lakes; (11) rivers/streams; (12) beaches/ocean-side; (13) flora/forests/trees/wildflowers; (14) birds; (15) mammals; (16) eco tours; (17) rural environments/villages; (18) farming activities; (19) adventure; (20) outdoor or physical activities; (21) sports; (22) hiking/mountain climbing; (23) walking; (24) camping; (25) water activities; (26) rafting; (27) canoeing; (28) sailing; (29) cruise boat; (30) fishing; (31) swimming; (32) cycling; (33) skiing; (34) horse/trail riding; (35) wind surfing; (36) scuba diving; (37) snorkeling; (38) picnicking; (39) city/gambling/high tech environments; (40) ease of accessibility/travel; (41) safety; (42) facilities; (43) budget efficiency/economical expenditure; (44) time efficiency; (45) photography; (46) health; (47) prestige; (48) novel/new experience; (49) knowledge seeking; (50) rest/relaxation/leisure; (51) visit familiar surrounding; (52) fun/excitement/entertainment/pleasure; (53) family/friends/social gatherings; (54) creation/maintenance of interpersonal/personal ties; (55) escape; (56) cosmopolitan environment; (57) self discovery/actualization; (58) golf; (59) tennis; (60) information; (61) shopping; (62) kayaking; and (63) geothermal
2.6 Information Needs and Derived Spatial Information Needs

Once people are motivated to travel, they look for information about places that can satisfy their needs. Different motivation factors consequently imply that different kinds of information will be sought. Given that this study is focusing on spatial information needs, Table 2.4 shows the consequent spatial information needs derived from the identified motivation factors that have a spatial dimension.
<table>
<thead>
<tr>
<th>Motivation Factor Identified in Table 2.3</th>
<th>Information Needs</th>
<th>Derived Spatial Information Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Climate/Weather</td>
<td>Information on climatic conditions and also weather conditions at a particular place, at a particular time/period. (Climate, along with geology, are prime controllers of the physical environment, affecting soils, vegetation, animals and the operation of geomorphological processes like ice and wind hence most, if not all, tourists will require weather/climatic information).</td>
<td>Actual values, standard deviations and averages of: i) minimum and maximum temperatures, ii) rainfall, iii) humidity, iv) wind speed, iv) cloud cover and v) sunshine.</td>
</tr>
<tr>
<td><strong>Cultural-based Motivation Factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Culture/history/heritage</td>
<td>Information will be needed regarding the location, description and significance of museums; monuments; historical sites; structures like mills, factories and other visual remains of periods in the past. Also information will be desired on traditional, social and religious practices; handicrafts and cultural performances like festivals and ceremonies.</td>
<td>Location of cultural, historical and heritage sites; the social, traditional and religious characteristics of people living in that location.</td>
</tr>
<tr>
<td><strong>Nature/Resource-based Motivation Factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Nature/natural surrounding</td>
<td>Travel activities and experiences are entirely based on nature/natural resources like land, minerals, vegetation and water hence information regarding these elements will be needed. The natural resources are used in a wild or undeveloped form- including species, habitat, landscape, scenery, and salt and fresh-water features.</td>
<td>Geographic location of site; geology; topography; land cover(^7); land use(^8); fauna; flora; hydrology and soil types.</td>
</tr>
<tr>
<td>(4) Scenery</td>
<td>Information needed is on features (man-made and natural) that can be found at a destination.</td>
<td>Geographic location and description of man-made and natural features; land cover; geology; hydrology; soil types and topography.</td>
</tr>
<tr>
<td>(5) Wilderness</td>
<td>The tourist interested in the wilderness (landscape from which human artifacts and influences are absent, that is, undisturbed</td>
<td>Geographical location of wilderness; topography; land cover; hydrology; soil</td>
</tr>
</tbody>
</table>

\(^7\) Land cover is defined as the observed bio-physical cover on the Earth's surface. Land cover may be described as the physical, chemical, ecological or biological categorization of the terrestrial surface (e.g. grassland, forest, or concrete).

\(^8\) Land use is characterized by the arrangements, activities and inputs people undertake in a certain land cover type to produce, change or maintain it. In other words, land use refers to the human purposes that are associated with land cover.
natural environment) will require information regarding the location of the wilderness and what can be found there.

<p>| (6) Landscapes | Information concerning geographical areas with unique surface structures will be required and also how the landscapes are structured. This can be done, for example, by the use of images. Realistic images of the landscape can be created by placing a digital elevation raster on top of a created hillshade, then making the elevation raster transparent. | Geographic location of landscapes; hillshade; elevation; geology and land cover. |
| (7) Mountains | Information needed is on the geographical location and the form or structure of mountains [e.g. i) identification and visualization of flat or steep areas, location of ridges or valleys – can be derived from contours; ii) slope direction – derived from aspect; iii) illumination of mountain at various times of day – derived from hillshade; and iv) viewing realistic images of landscape – can be derived from elevation and hillshade data sets]. | Geographic location of mountains; topography; geology; land cover; soil types; elevation; slope; contours; aspect and hillshade. |
| (8) Waterfalls | Information regarding the location of the waterfall, its extent and knowing what water levels flow during what times of the year will be needed by tourists. The form of the waterfall can be visualized, for example, by inputing an elevation data set, from which an output contour data set is derived. Converging polylines show the surface representation of the waterfall. | Geographical location of waterfall; topography; geology; soil types; elevation; contours; aspect; hillshade; averages of rainfall and temperature. |
| (9) Fauna/Wildlife/ national parks/hunting | Tourists will need to know what kinds of animals are found at what kind of locations (i.e. habitats like protected parks) and the regulations regarding the animals. [Locating the potential areas where a specie is likely to be found can also be achieved through modeling by defining the envelope occupied by the specie as a function of the linear combination of a set of environmental attributes]. | The type, geographic location and population of fauna; present regulations concerning animals; elevation; averages of temperature and precipitation; soil type; land cover; land use and topography. |
| (10) Lakes | Information is required regarding the location of lakes, the potential activities that can be undertaken, the state and amount of water in the lakes. | Geographic location of lakes; type and population of species found in the lakes; pollution levels; hydrology; average and standard deviation of rainfall and temperatures. |</p>
<table>
<thead>
<tr>
<th>(11) Rivers/streams</th>
<th>The location and type of activities that can be undertaken are important information needs. The state and amount of water in the rivers/streams is also important.</th>
<th>Geographic location of rivers/streams; contours; type and population of species found in the river; pollution levels; average values and standard deviation of rainfall and temperatures.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(12) Beaches/ocean-side</td>
<td>Coastal tourism is dependent on the sun, sand and sea natural resources. Hence climatic and weather information is of paramount importance here as it, in addition, also influences participation in different activities mostly conducted at beaches, like swimming, sunbathing and wind-surfing.</td>
<td>Geographical location and pollution levels of beaches/oceans; Actual values, standard deviations and averages of: minimum and maximum temperatures, rainfall, humidity, wind speed and cloud cover.</td>
</tr>
<tr>
<td>(13) Flora/forests/trees/wildflowers</td>
<td>Information is needed on the location and type of ‘flora/plants’. The spatial distribution of plants is influenced by climate, soil types and topography hence information concerning these factors may also be required.</td>
<td>Geographical location of flora; land cover; soil types; topography; Averages and actual values of minimum and maximum temperatures, rainfall, humidity and sunshine/cloud cover.</td>
</tr>
<tr>
<td>(14) Birds</td>
<td>Information regarding the location of birds, coupled with a description of their genre is essential. Some birds are transitory attractions. Migration, associated with some birds, is influenced by climate, which in turn affects, for example, the availability of food. Hence information is needed regarding the i) location of birds at various times of the year, and ii) climatic conditions which influence birds’ availability.</td>
<td>Geographical location of birds; genre of birds found at a location(s) during which times of the year; land cover; Averages of: minimum and maximum temperatures, rainfall, humidity, wind speed and cloud cover.</td>
</tr>
<tr>
<td>(15) Mammals</td>
<td>The kinds of mammals and at which locations they are found, constitutes important information needed by the tourist. Since mammals can be carnivores and/or herbivores, it follows that information regarding the availability and location of plants and animals on which the mammals feed on may be essential.</td>
<td>Geographical location of mammals, genre and population of mammals found at a location(s) during which times of the year, and land cover.</td>
</tr>
<tr>
<td>(16) Ecotours</td>
<td>Tourists will seek information about places offering ecotourism activities, that is, areas that are environmentally friendly; can facilitate their having a first-hand experience with nature; provides an educational experience; promotes conservation ethics; and maximizes local returns.</td>
<td>Geographical location of ecotourism destinations; land cover; land use; fauna; flora; demographics of locals (e.g. population) and type of conservation strategies implemented.</td>
</tr>
</tbody>
</table>
### Rural based Motivation Factors

| (17) Rural environments/villages | Tourists are attracted to rural areas because of the availability and closeness to nature and cultural features like picturesque villages; quietness and absence of crowds; non-mechanized environments; and experiencing the peace and relaxation offered by rural environments. Hence information concerning each of the factors above may be needed by the tourists. | Geographic location of rural areas, villages and historical/cultural sites; distances from surrounding towns/cities; road types and quality; demographic information of the area; products or services available at the destinations; main activities or events occurring during which times of the year; accommodation types and facilities available; land cover; land use; topography and hydrology. |
| (18) Farming activities | The tourists usually want to participate and experience farming life, hence will require information on the different production activities that take place, and also during which times of the year. | Geographical location of farms; distances from surrounding towns/cities; road types and quality; available accommodation facilities and costs/prices; farming activities undertaken during which times of the year; land use; land cover and soils. |

### Adventure and Sport Based Motivation Factors

<p>| (19) Adventure | Adventure is based on outdoor, natural environmental features, like mountains, rivers, and forests. More important than appreciating the scenic beauty offered by participating in adventure activities, is bringing the tourist into close contact with the environment coupled with an element of challenge. Adventure usually involves tourists participating in various activities (like snorkeling, kayaking, treks, rock climbing etc), hence tourists will seek information on the location of areas where specific types of activities can be undertaken or vice versa (i.e. what activities can be undertaken at a given geographical area). | Information on the different types of feasible adventure activities offered at a geographical area and during which periods of the year; land use; land cover; hydrology; geology; soils; topography; and actual, average and standard deviations of minimum and maximum temperatures, humidity, cloud cover and rainfall. |
| (20) Outdoor or Physical activities | Details will be needed regarding the diverse outdoor and physical activities that can be undertaken at an area and during which periods. Also, weather/climatic information may be essential as outdoor activities are directly influenced by it. | Land cover; land use; topography; geology; soils; and Actual values and standard deviations of minimum and maximum temperatures, rainfall, humidity and wind speed. |
| (21) Sports | Sport tourism focuses on attractions, events and experiences available to tourists, so tourists will seek information concerning what sport activity is taking place, where and what kind of facilities are in place for the event. Outdoor sports are generally susceptible and affected by weather conditions hence weather information is essential. | Information on the type of sporting activity taking place at which geographic location; facilities available; and Actual, average and standard deviation information on the various weather elements, whose relevance and impact differs according to the type of sporting activity. |
| (22) Hiking/mountain climbing | The tourists would want information on the various routes that can be taken to reach their targets, the form or structure of the mountain, and weather information. | Slope; aspect; hillshade; geology; distance between points; land cover; and the actual or standard deviation values of temperatures (minimum and maximum) and rainfall. |
| (23) Walking | People interested in walking will seek out the road/path map and also want to know the distances between points in anticipation of their activity. Information on the topography is also essential as walkers will want to know whether they will have to walk uphill, downhill or on level ground. | Geographical location of areas; distance between points; road types; land cover; soil type; topography; slope; elevation and contours. |
| (24) Camping | This is an outdoor activity, hence is influenced by weather conditions. Campers look for weather information so that they can be prepared for any likely adverse weather conditions. Also, campers look for information on the diversity of species that reside in proximity of their proposed camping areas, so that they can be alert and prepared in case they encounter any dangerous animals. | Actual values and standard deviation of rainfall, minimum and maximum temperatures; land cover; genre and population of fauna found at location(s) during which times of the day or year. |
| (25) Water activities | Tourists interested in participating in water based activities generally seek information on weather and climatic patterns as these activities are directly influenced by these patterns. | Actual, average and standard deviation of rainfall, temperature and wind speed; hydrology; and water quality (pollution levels). |
| (26) Rafting | Rafting is a water activity usually undertaken on uneven and rough water courses, with a mixture of flat and steep areas. Information sought by rafters will be on the weather and on the nature of the water course. | Average rainfall; actual values of wind speed and direction; elevation; topography; contours; water levels and river route. |
| (27) Canoeing | Information on weather is very important due to its influence on whether the activity will be undertaken smoothly or will be rough. | Average rainfall; actual values of wind speed and direction; water levels and river route. |</p>
<table>
<thead>
<tr>
<th>Activity</th>
<th>Weather Information</th>
<th>Location Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sailing</td>
<td>Weather information is very important as it influences whether the sailing will be smooth or rough.</td>
<td>Geographical location; rainfall; wind speed and direction.</td>
</tr>
<tr>
<td>Cruise boat</td>
<td>Just as sailing, weather information is vital.</td>
<td>Geographical location; rainfall; wind speed and direction.</td>
</tr>
<tr>
<td>Fishing</td>
<td>Fishing is a water based activity that is dependent on the availability of fish in water, which is determined by water quality and levels. Temperature also has an impact on fish availability so information pertaining to these factors will be sought. Also, knowing the diversity of fish species found in an area is also important, as it influences whether one will partake in fishing or not.</td>
<td>Rainfall; minimum and maximum temperatures; type and population and geographical location of fish species; and water quality (pollution levels).</td>
</tr>
<tr>
<td>Swimming</td>
<td>This activity is directly influenced by temperature as low/freezing temperatures discourage participation in this activity. In addition the quality of water is also important as people would not want to risk their health by swimming in contaminated or polluted waters.</td>
<td>Water level (dependent mostly on rainfall if swimming in lakes, rivers and streams); water quality (pollution levels); and minimum and maximum temperatures.</td>
</tr>
<tr>
<td>Cycling</td>
<td>The ability to cycle is influenced by the type of roads used, weather conditions and the nature or structure of the surface; hence information concerning these variables will be essential.</td>
<td>Elevation; slopes; contours; landcover; type and quality of roads; distance between points; and wind speed and direction.</td>
</tr>
<tr>
<td>Skiing</td>
<td>Information is needed on: i) weather - as this activity is directly dependent on weather conditions, ii) locating the best slopes for ski runs, and iii) the identification of dangerous areas – like southerly slopes in the mountains where snow is likely to melt first.</td>
<td>Slope; aspect; hillshade; contours; landcover; land use; geographic location of skiing areas; and actual, average and standard deviations of minimum and maximum temperatures, wind speed and direction.</td>
</tr>
<tr>
<td>Horse/trail riding</td>
<td>Information regarding the type of road/path to be used will be necessary, including the terrain description.</td>
<td>Elevation; trail/road type; distance between points and land cover.</td>
</tr>
<tr>
<td>Wind surfing</td>
<td>Wind surfing is a water based activity that is directly influenced by wind speed and direction; hence information regarding these factors will be vital for surfers.</td>
<td>Rainfall; wind speed and direction.</td>
</tr>
<tr>
<td>Scuba diving</td>
<td>Tourists will look for information about areas best suited for this activity. Water quality is important as it affects visibility and species diversity.</td>
<td>Geographical location, water quality and species diversity.</td>
</tr>
<tr>
<td>(37) Snorkeling</td>
<td>Snorkeling is a water based activity, just like scuba diving, hence the information needs are the same as above.</td>
<td>Type, population and geographical location of species; and water quality.</td>
</tr>
<tr>
<td>(38) Picnicking</td>
<td>People usually look for picnicking spots that have great scenic views and since it is an outdoor activity, weather conditions influence the ability to undertake this activity. Tourists therefore look for information concerning these issues.</td>
<td>Land cover; land use; elevation; hillshade; rainfall; cloud cover; minimum and maximum temperatures.</td>
</tr>
</tbody>
</table>

**Urban-based motivation factors**

| (39) City/gambling/high tech environments | People are attracted to cities as they offer attractions like museums, parks, artists’ markets, historical buildings, shopping and entertainment. Information regarding the different types of attractions, products and services available is therefore needed by tourists. | Demographic statistics for an area; geographic location and type of destinations, attractions, products and services available; land use and available transport networks and infrastructure. |

**Other motivation factors**

| (40) Ease of accessibility/travel | Information sought may include: immigration requirements, transport networks and infrastructure available, directions on how to get to destinations, and the modes of transport that can be used to get to destinations. | Geographic location of places; population statistics; transport networks and infrastructure available; and immigration laws. |
| (41) Safety | Information regarding crime statistics of areas; the location of police stations and emergency services; the location and type of accommodation facilities available, may be needed. | The geographic location of police stations and emergency services; the type and extent of crime in relation to geographical location(s). |
| (42) Facilities | Information sought will be on the type of accommodation facilities and services offered. | Accommodation types, ratings and their geographical location; products and services offered. |
| (43) Budget efficiency/economical expenditure | Details on the products or services offered (e.g. accommodation, activities, transport etc) and at what price, will be required. | The geographical location of destinations and prices of products or services offered at the destinations. |
| (44) Time efficiency | Information regarding how time will be spent especially during organized tours will be considered necessary by the time conscious tourists. Time is influenced by distances between one attraction/site to the other; modes of transport used; transport networks; and the number and type of activities that tourists are to participate in. Information concerning these influential factors. | Geographic location of areas; distance between areas; and transport networks. |
will therefore be necessary.

<table>
<thead>
<tr>
<th>(45) Photography</th>
<th>Details regarding the location of areas of interest and knowing what unique or interesting features are found at the areas will be sought.</th>
<th>Geographic location and type of attractions found in an area.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(46) Health</td>
<td>Health tourism involves i) medical care (traveling to get specialist treatment e.g. heart transplant), ii) fitness and wellness (traveling to take part in preventative health measures e.g. spas) and iii) rehabilitation and recuperation (traveling to areas beneficial to one’s health, e.g. sanatoriums in mountains). Information regarding the location of health resorts and the type of services they offer will be sought by tourists interested in health tourism.</td>
<td>Geographical location of health facilities; products and services offered by the facilities; topography; land cover and land use.</td>
</tr>
</tbody>
</table>
2.7 Summary

Chapter Two focused on the derivation of information needs based on the analysis of travel motivations. Travel motivations were explored in terms of explaining the concept and the theories that have been developed, in a bid to enhance understanding of why people undertake certain types of travel. Nine main academic typologies or roles were discussed and understanding of these typologies is useful during designing the promotion content of destination products so as to suit the information needs of different potential customers.

General studies on travel motivation were also reviewed from the literature, with the focus not only on agritourism and ecotourism studies, and the following motivation factors were identified: prestige; novel/new experience; knowledge seeking; scenery; nature/natural surrounding; wilderness; weather/climate; rest/relaxation/leisure; visit familiar surrounding; fun/excitement/entertainment/pleasure; family/friends/social gatherings; creation/maintenance of interpersonal/personal ties; safety; escape; ease of accessibility/travel; facilities; culture/history/heritage; budget efficiency/economical expenditure; adventure; outdoor or physical activities; cosmopolitan environment; city/gambling/high tech environments; rural environments/villages; landscapes; mountains; fauna/wildlife/national parks/hunting; photography; lakes; rivers/streams; beaches/ocean-side; water activities; flora/forests/trees/wildflowers; birds; mammals; time efficiency; self discovery/actualization; sports; golf; tennis; health; information; shopping; waterfalls; farming activities; hiking/mountain climbing; camping; rafting; canoeing; kayaking; sailing; cruise boat; walking; fishing; swimming; cycling; skiing; horse/trail riding; eco tours; wind surfing; scuba diving; snorkeling; pinicking; and geothermal.

The spatial information needs were then consequently derived from the relevant identified motivation factors based on GIS knowledge, and are as follows: i) actual values, standard deviations and averages of minimum and maximum temperatures, rainfall, humidity, wind speed and cloud cover; ii) land cover; iii) land use; iv) type, population and location of fauna; v) type, population and location of flora; vi) geology and soil types; vii) hydrology; viii) elevation; ix) hillshade; x) contours; xi) aspect; xii) pollution levels; xiii) topography; xiv) demographics; xv) distance; xvi) road types and quality; xvii) accommodation types and facilities available; xviii) attractions, services and products available; xix) prices or costs of products/services; xx) adventure and sporting activities; xxi) farming activities;
xxii) infrastructure; xxiii) transport networks and types; xxiv) cultural expectations and expected behaviours; xxvi) how destinations are sustainable, environmentally friendly and socially responsible; and xxvii) the geographical location of features or areas (e.g. historical/cultural/heritage sites, wilderness, landscapes, mountains, fauna, flora, lakes, rivers, beaches/ocean, agritourism and ecotourism destinations, rural areas/villages, police and emergency services)

It is important to note that most of the motivation factors identified in literature were broad, hence resulting in some of the derived spatial information needs being broad as well. This is mainly because the reviewed literature studies were not designed with the same objective as this research of identifying specific spatial needs, from which spatial information needs would be consequentially derived. This is expected as this is a background study, hence there is a need for further research that will segment the market and identify a particular target group, for which the objective of finding out the group’s specific spatial information needs will be directly addressed. However, despite the shortcoming of the identified broad motivation factors, they provide guidelines for the assessment of available land resource data’s potential to be processed into information. Tourists, as shown in the reviewed literature on motivation factors, are interested in nature resource-based tourism products, showing that the demand for nature-based tourism products is there hence there is potential for use of the available land resource data in tourism once repackaged into information.

As stated in the beginning of the chapter, the identification of information needs can also be achieved by analyzing demand determinants, which furthermore build profiles of agritourists and ecotourists. Furthermore, understanding the profiles of agritourists and ecotourists is important as profiles influence accessibility of information, which is an important factor to consider for the consequent effective communication of information to tourists. Further elaboration on these issues is presented in Chapter Three.
3.1 Introduction

As stated in Chapter Two, the identification of information needs can be achieved by analyzing travel motivations and demand determinants. The first was already discussed in Chapter Two. However, even if individuals are motivated to travel, the ability to do so will depend on a number of factors related to both the individual and the supply environment. These factors represent the ‘parameters of possibility’ for the individual and are called ‘determinants of demand’ (Cooper et al., 1998:40). These can be divided into the following categories: demographic factors (age, gender, household size and composition, and education levels); economic factors (income, type of employment and level of economic development); comparative prices, expenditures and willingness to pay; socio-cultural factors; mobility; geographic factors (climate); and media and communications technology (Keyser, 2002:71). This Chapter will discuss demand determinants in relation to agritourism and ecotourism activities and, where possible, derive the concomitant spatial information needs. Furthermore, analyzing demand determinants provides profiles of agritourists and ecotourists that assist in tackling the issue of accessibility of information, which is an important factor to consider for the consequent effective communication of information to tourists.

3.2 Demographic Factors

3.2.1 Age

The level of demand for tourism and the type of tourism experience demanded is closely related to an individual’s age. Age determines how much time for travel is available and the kind of activities in which an individual will take part (Keyser, 2002:76). Various results were obtained from the reviewed literature regarding the age of agritourists. In one study, the majority of agritourists, 68.4% fall under the young (18-34 years) age group, with 15.8% falling under both the ‘35 to 49 years’, and ‘greater than 50 years’ age groups (Speirs, 2003:39). In Oppermann (1996:96)’s study, 34.7% were below 20 years, 38.3% between 30 and 49 years, 9.9% above sixty years and 4.5% in their
twenties. Another study on farm tourists found that the majority (62-75%) were between 30 and 49 years old and only a small number were above 60 (Foiera and Schoppner in Oppermann, 1996: 96).

People of all ages seem to be interested in ecotourism, with a tendency for general or occasional ecotourists being younger, and the more frequent or experienced ecotourists being older (Wight, 1996a:4). Experienced ecotourists in Wight’s study were generally older (56% were 35 to 54 years old) than the general consumers (49% were 25 to 44 years old). These findings resemble findings from Eagles and Cascagnette’s (1995:25) study where the ecotourist population spanned all ages from 15 to greater than 70 years. The ecotourist population however was under-represented in the 15 to 34 age category and over-represented above the age of 45 years, showing a tendency for ecotourism to capture a slightly older clientele. This is sustained by four other ecotourism studies, namely Revitt & Sanders (2002:193); Kellert (Fennell, 2003:35); Reingold (Fennell, 2003:35); and Fennell & Smale (Fennell, 2003:35), which state that the average age of ecotourists was 40; 42; 55 to 64 years; and 54 years (with the majority in the 60-69 age cohort) old respectively. However, different findings were obtained in a survey of UK ecotourists, where the majority of ecotourists in the survey tended to be younger, that is, 17-35 years old (Diamantis, 1998:516).

Given the tendency of ecotourists being older, coupled with the fact that ecotourists are professionals (see Section 3.3.2) and well educated (see Section 3.2.4), it is highly probable that they are computer literate. Hence problems encountered with respect to tourists’ ability to handle and process information on graphic websites will be lower compared to computer illiterate tourists.

Age varies with activity preference as shown by the study by Tourism Canada of nature and adventure operations. Clients aged 45 and over were interested in polar bear watching (83%, with 61% over 55 years), sailing (69%, with 42% over 55 years), sealpup watching (49%) and winter activities like heli-skiing (78%). Younger clients under 34 years were more interested in ice and rock climbing (67%), trail riding (57%), scuba diving (56%), canoeing (54%), cross-country skiing (53%) and rafting (50%). In another study, one-third of all ecotourist hikers were 19 years and under (Wight, 1996a:4). Both examples from above, coupled with results from other studies in the literature support the notion that older age groups tend to avoid participation in physical activities (Tyrrell et al, 2001:95; Wight, 2001:43; Blazey, 1992:780; Romsa & Blenman, 1989:185 and Lang & O’Leary, 1997:167).
3.2.2 Gender

One study from the reviewed literature discussed the issue of gender of agritourists. The survey conducted in South Africa noted that the majority (63.2%) of agritourists were female (Speirs, 2003:79). With respect to ecotourists, there has been a lot of variation reported in the literature concerning gender, ranging from the majority of ecotourists being male, or being female, or a split between men and women (Fennell, 2003:35; Wight, 2001:43; and Wight, 1996a:4, respectively). Both men and women in North America were equally interested, but in Australia, 55% of ecotourists were female. More female ecotourists, both frequent and occasional, were also found in the UK (Wight, 2001:43). The increase in female participation has been linked to women’s increasing independence, incomes, higher education levels and a desire for socializing with other like-minded women. Despite the different findings, it can be gathered that both men and women are interested in ecotourism (Wight, 1996a:4; Revitt & Sanders, 2002:193; Drumm & Moore, 2002:25; and Khan & Su, 2003:116).

However, the popularity of various activities clearly varies by gender. For instance, women are underrepresented in camping and cycling, overrepresented in hiking but equal to men in rafting (Wight, 1996a:4).

When examining travel information intensity (looking continuously for travel information), women display higher probabilities to be information seekers than men; are to a greater extent prone to use information in order to reduce travel related risks; and to a far greater extent want more information for travel decision-making compared to men (Mäser & Weiermair, 1998:113-4). Given that both men and women are interested in ecotourism, it therefore follows that there is a need to promote the tendencies for men’s travel information intensity so as to enhance the use of the information that is to be provided on internet websites.
3.2.3 Household Size and Composition

Household size and composition is linked to the stage of economic development of a country (Keyser, 2002:82). There are four stages: i) the high stationary stage – these are underdeveloped countries with low population growth rates, and which mainly undertake subsistence economic activities. Travel is largely restricted to visiting friends and relatives; ii) the early expanding stage – there is rapid population growth, with large and young families accompanied by increasing poverty. For the majority of residents, tourism is a luxury; iii) the late expanding stage – these are developing countries with falling birth rates and whose stage of economic development is drive to maturity. There is increased participation in tourism; and iv) the low stationary stage – these include developed countries in the high mass consumption stage, with smaller households, fewer young children, high levels of disposable income and high levels of participation in tourism (Keyser, 2002:82).

There is no definitive information on ecotourism market origins, but the most prominent countries supplying ecotourists, in order of market size are United States, United Kingdom, Germany, Canada, France, Australia, New Zealand, Norway and Denmark. Also, increasing numbers of ecotourists are being generated from Japan, Southern Europe and the newly industrialized Asian countries (Wight, 2001:46). It is interesting to note that most of these generating countries are developed and are in the low stationary stage. No study from the reviewed literature identified countries that supply agritourists.

The time and money available for travel is affected by the size and composition of the family, and decisions concerning travel are affected by the life stages. The stages everyone moves through from birth to death – the family life cycle – are characterized by particular combinations of these three factors: preoccupations (mental absorptions), interests and activities. The life cycle stages include: childhood, young adulthood (bachelor stage); newly married young couples with no children; full nest I (children under six years); full nest II (children six years and older); full nest III (dependent children); empty nest (children have left home) and old age (Speirs, 2003:40 and Cooper et al, 1998:43).

The general assertion concerning rural and farm or agritourists is that they have an above average share of middle aged families with children (Dernoi, 1983:162; Garcia-Ramon et al, 1995:272 and
Oppermann, 1996:96), and a below average quota of young childless adults and elderly persons. In one study, only 7.8% of the respondents were single. Couples formed an important market segment and the typical family consisted of 3-6 persons, with children in the household (Oppermann, 1996:96). On the other hand, agritourists in Speirs’ (2003:80) study mainly consisted of people in the young adulthood stage of life (characterized by individuals with few financial burdens) and the married stage (newly married and full nest). Almost 60% of respondents did not have any children and of those that did, most had only one child. Most children were ‘nineteen years and older’, or aged ‘five and younger’. The married couples with children under the age of six were not in a better position to travel frequently due to their domestic responsibilities, which may mean that time and financial constraints may depress their travel propensity (Keyser, 2002:53).

Many participants (family members – husband, wife, children, relatives; and non family members – friends, reference groups or travel professionals) can be involved in the decision-making process concerning travel. Most agritourists travelled frequently (62.5%) to occasionally (25%) with their children, and hence it is supposed that the children have an influence on the decisions of the parents when choosing a holiday destination (Speirs, 2003:40). Also, families travelling as a group are much more prevalent among tourists staying on farms (74%) than in hotels (Oppermann, 1996:97). Families are attracted to farm or agritourism destinations as it provides them with a different experience and a chance of showing children life in the countryside (Wohlmann & Lohnmann in Oppermann, 1996:96). Most agritourists are interested in participating in farming activities, hence will need information on the different kinds of production activities taking place and also during which times of the year. The derived spatial information needs may include geographical location of farms, land use patterns, land cover data, facilities available (e.g. accommodation types) and costs associated with the travel.

No study from the reviewed literature specifically commented on ecotourists’ household size and composition but it has been noted that most nature-based tourists tend to travel almost exclusively with family members (Jamrozy et al, 1996:913).
3.2.4 Education Levels

The level of education attainment is an important determinant of travel propensity as horizons are broadened and the desire to travel is stimulated (Cooper et al, 1998:43 and Mathieson & Wall, 1982:17). Education is one of the most important factors determining tourism demand (Keyser, 2002:82). A review of published literature reveals that ecotourists tend to be much better educated than general tourists and studies show interest in ecotourism at all levels of education (Ayala, 1995:41; Diamantis, 1998:516; Wight, 2001:40 and Khan & Su, 2003:116). One study noted that 66.4% of ecotourists were degree holders compared to 20.7% of general travellers having degrees (Eagles & Cascagnette, 1995:25). In another study, 51% of ecotourists visiting Lancelin and Lacelin Islands had completed high school with the rest having post-secondary qualifications (Revitt and Sanders, 2002:193). In North America, 75% of general ecotourists and 96% of experienced ecotourists had degrees or at least some college education, whilst in the UK, 61% of frequent ecotourists were educated to degree or postgraduate level (Wight, 2001:40). Wight (1996a:5) in another study reported that most of the experienced ecotourists were college graduates (82%), 14% had some college education, 4% were high school graduates and only 1% did not complete high school education. Three ecotourism studies by Fennell & Smale; Reingold; and Kellert also support this notion as almost one-third and two-thirds combined had undergraduate and graduate degrees; 65% had university degrees; and nearly two thirds had college and/or graduate school education respectively (Fennell, 2003:35). With respect to agritourists, one study from the reviewed literature surveyed agritourists’ education levels, with an overwhelming proportion of the agritourists possessing tertiary education (Speirs, 2003:79). The reportedly high levels of education of both ecotourists and agritourists are in line with the results obtained from the literature reviewed on motivational studies in Section 2.5, which show that most of these tourists travel for ‘knowledge seeking’ reasons.

It can be gathered that generally, ecotourists and agritourists have high levels of education, with most having achieved tertiary levels. This suggests a high probability of computer literacy, access to a computer and the internet. Given the fact that the second phase of this study will involve designing and communicating spatial information on internet websites, agritourists and ecotourists’ levels of experiencing problems with graphic websites will therefore be generally lower as they are likely to have some form of computer knowledge. Also, since most of the targeted population are likely to
have access to a computer and the internet, the use of internet websites can therefore be an effective way of making spatial resource information accessible to tourists.

3.3 Economic Factors

3.3.1 Income

The most important economic factor influencing a person’s tourism demand is consumer expenditure, which is dependent on how much income is earned. Tourism is an expensive activity that demands a certain threshold of discretionary income (money left after deducting for taxes, housing and basic needs) before participation is possible (Cooper et al, 1998:40).

In general, household incomes are higher for ecotourists than for general travellers overall (Kellert in Fennell, 2003:35; Khan & Su, 2003:116; Wight, 2001:40; Wight, 1996a:7; and Eagles & Cascagnette, 1995:26). However, a different result was obtained from a survey of US ecotourists, which reported little divergence from ecotourists’ income compared to the income profiles of average travellers (Wight, 2001:40). Despite this different finding, it is safe to generalize that ecotourists are financially successful or are affluent as most studies support this notion (Ayala, 1995:41). In addition, income was found to be linked to education; the higher the educational status of frequent ecotourists, the higher their total income earnings (Diamantis in Wight, 2001:40).

Agritourists are reported in various literature sources as belonging to the middle or upper socioeconomic classes (Garcia-Ramon et al, 1995:273). However, agritourists in Speirs’ study were different as they earned relatively low salaries, taking into consideration that most were in the young adulthood stage, which can be characterized by having constrained finances (Keyser, 2002:53).

Income also influences participation in different activities. Most affluent US travellers (with household incomes of greater than US$50 000) participated more in snorkelling/scuba diving and sailing; those in the US$20 000 – US$30 000 income bracket hiked more; and the least affluent (less than US$20 000) camped more than the most affluent (95% vs 77%) (TIAA in Wight, 2001:40). Agritourists (who were less affluent according to Speirs’ study) generally rented equipment for taking part in outdoor adventure activities as it is expensive to buy. Camping is the only category
where almost all respondents, 94%, owned their own equipment (Speirs, 2003:84). Hence we can assume that camping is an affordable activity that can be undertaken by people in all income brackets. This is in line with the typology of budget travellers described in Section 2.4.4, where travellers with a high interest in camping are economy-oriented (Perreault et al, 1979:210).

Ecotourists, on the other hand, are adventure recreationists who own a large range of recreational equipment. This is supported by a survey that reported a greater proportion of various types of equipment being owned by ecotourists compared to general Canadian travellers (Eagles & Cascagnette, 1995:26). This is possible as most ecotourists are affluent and therefore can afford to purchase their own equipment.

It is therefore highly likely that most ecotourists and some agritourists are likely to be able to afford and probably own computers, as they are reported to be in the upper and middle socioeconomic classes. Hence their access to computers renders the use of internet websites as a possible effective way of making spatial resource information accessible to tourists.

### 3.3.2 Type of Employment

The type of employment influences travel propensity by determining income and holiday entitlements and also affects the type of holiday demanded through peer and reference group pressure (Cooper et al, 1998: 41). Most studies agree that ecotourists’ occupations are primarily business and professional (Ayala, 1995:41). For example, most Australian ecotourists are professionals and compared to others, have the highest propensity to participate in nature-based activities (Blamey & Hatch in Wight, 2001:42). It has also been noted that most nature-based tourists are employed in white collar occupations (Jamrozy et al, 1996:913). In the USA, 35% of ecotourists had professional or managerial positions, 14% blue collar, 12% retired and 10% clerical (TIAA in Wight, 2001:40). Given the fact that most ecotourists are professionals or have managerial positions, it is highly probable that they are computer literate. It is therefore safe to suggest that problems encountered with respect to tourists’ ability to handle and process information on graphic websites on the internet will be visibly lower for these computer literate tourists compared to computer illiterate tourists. Hence the use of internet websites possibly can be an effective way of
communicating spatial information to these tourists. No study from the reviewed literature discussed the issue regarding the type of employment for agritourists.

3.3.3 Level of Economic Development

The performance of a country’s economy and the volume of tourism demand are strongly linked. The level of economic development influences many factors determining tourism demand, including average income levels, average disposable time and types of employment (Keyser, 2002:75). The greater the real per capita income of a country, the more likely are its citizens able to afford to purchase tourism products (Uysal & Crompton, 1984:289). This is supported as the vast majority of international ecotourists are North American, European, Australian and Japanese, a fact that is primarily a function of the economy (Ayala, 1995:41). A slightly different list of the most prominent ecotourist generating countries is given in Section 3.2.3 (Wight, 2001:47). Although the list is slightly different from Ayala’s, it is important to note that all countries included are developed and are high per capita income countries. Economically developed countries have high levels of ownership and access to all forms of media, including magazines, videos, television, movies, radio, electronic information (e.g. computer and internet) and also have low levels of government censorship (Keyser, 2002:88). Hence they have access to a wide range of information sources regarding travel and this promotes tourism demand.

3.4 Comparative Prices, Expenditures and Willingness to Spend

Price is relative to the spending power of individuals and it reinforces economic factors such as discretionary income. For instance, a very high price to one customer might be acceptable to another with higher spending power. Exchange rate effects on price in international tourism give citizens in countries with dominant or strong currencies the ability to exchange money favourably in countries with weaker currencies, thereby stimulating demand for tourism to those countries (Keyser, 2002:85). Also, tourism is price and income elastic, the implication being that tourist decisions are significantly influenced by small changes in price and income. With respect to the different types of information sought by travellers in one survey, information on prices was identified as the third most important that travellers need and look for during travel planning (Mäser & Weiermair, 1998:114).
The belief that rural and farm or agritourism is inexpensive is supported as a survey of tourists on farms showed that the average expenditure was $24 per person/day, compared to $48 per person/day for an average primary holiday trip by Germans. In addition, tourists on farms spent on average less per person/day than other respondents in other accommodation forms (Oppermann, 1996:97). Farm tourism is offered at a much lower price than conventional/commercial tourism and hence benefits low income and/or large families as holidays are at reasonable prices (Dernoi, 1983:162). This can offer an explanation as to why the low-income earners in Speirs’ study were able to undertake their holidays, as agritourism is affordable compared to other types of tourism (Speirs, 2003:41). Also, agritourists had the highest percentage of respondents who were motivated to undertake the trip because it was affordable compared to other clusters or types of tourists in the study (Speirs, 2003:46).

Expenditure is influenced by the following variables: length of trip, mode of travel, origin of the traveller, economic ability to pay, the tourism destination, accommodation type, vacation activities and opportunities for expenditure. The presence of many of these variables makes prediction of expenditure complex. Ecotourists are generally referred to as higher-spending markets, given their higher than average income (Wight, 1996a:7). For instance, Canadian ecotourists spend significantly more per day compared to general Canadian travellers (Eagles & Cascagnette, 1995:26). Australian nature based visitors spend considerably more than other visitors, with average expenditures 13% higher than that of other visitors (Wight, 2001:45). More specialized ecotourists have a higher willingness to spend, as shown by the North American ecotourists, who were willing to spend more than the general travellers (HLA/ARA in Drumm & Moore, 2002:25). In addition to ecotourists’ willingness to spend substantially more, they expect value for their expenditures. They are willing to pay more for quality experiences (Wight, 2001:46), facilities that are eco-friendly and prefer service that is courteous, informative and trustworthy (Khan in Khan & Su, 2003:116). Travellers therefore require information regarding the location of ecotourism destinations, the types of accommodation available, opportunities for expenditure, prices, whether facilities are eco-friendly and how, and the type of activities that can be undertaken at destinations. Hence the derived spatial information needs are as follows: geographical location of ecotourism destination and type of ecotourism activities offered; accommodation types and facilities available; land-use; land cover; topography; climatic and weather information.
3.5 Socio-cultural Factors

Included in socio-cultural factors are broad trends in any society’s attitudes, which consequently influence a person’s individual motivations. Beliefs, norms and notions of a society are involved and changes in what is regarded as socially acceptable, or social norms, often contribute to the growth of particular types of tourism and tourism in general. The effect of social norms and perceptions on tourism demand can be seen, for example, on the issue of paid holiday entitlements in Britain, which was fought for by labour unions who perceived holidays as being essential to the physical and mental well-being of workers and as such were regarded as necessities rather than luxuries. Legislation was enacted that entrenched the right to paid holidays (Keyser, 2002:87). Paid holiday entitlements tend to be more generous in developed than developing economies (Cooper et al., 1998:41), thereby contributing to increased participation in tourism by people in developed countries. Plog in Section 2.4.1, identifies tourists of this type as the near-psychocentric and psychocentric type, where travelling is a cultural norm imposed by the legal system of paid holidays. Paid holiday entitlements are affected by factors like job status, income and mobility. Most ecotourists are professionals and have high incomes, therefore are likely to have high levels of paid holiday entitlements thereby enhancing their propensity to travel or their demand for tourism products.

Another example is the gradual transformation of western society away from a focus on conventional economic growth and material affluence (the quantity of life) towards a set of values that puts more emphasis on the quality of life as well (Martin & Mason, 1993:37). The concern about the impact of modern industry (tourism development included) on the physical and social environment, from which a very gloomy and frightening outlook for the future of the planet has been painted by the media and scientific press (Zube, 1991:321) has promoted the growth of the ‘green movement’ (Martin & Mason, 1993:36), with tourism and leisure now being viewed as objects of ‘ethical’ concern (Hjalager, 1999:4). ‘New’ tourism has emerged that is sustainable, environmentally and socially responsible (concepts of ecotourism) and in addition, a new type of tourist, who is better educated, experienced, independent, conservation-minded and respectful of cultures (features of ecotourists), is driving it (Myles, 2002:28). Ecotourism markets are fast growing because of the general public’s awareness of the importance of environmental preservation and sustainability. This therefore translates to the ‘new’ tourists requiring information regarding if and how destinations are sustainable, environmentally friendly and socially responsible.
With respect to information uses, extant tourism research shows that there are differences in tourism information usage patterns across cultural settings. Culture directs individuals’ thinking, hence is a critical factor influencing tourists’ choice behaviour. For instance, it determines what forms of communication are acceptable and the nature and degree of information search behaviour that individuals consider appropriate (Chen & Gursoy, 2000:193-4). Hence it will be important in the next study after segmenting a particular market to take time to understand the segment’s culture so as to make sure that use of internet websites for communicating spatial information will be an effective method of communication as it will be accessible to the target market.

3.6 Mobility

Mobility influences travel propensity as it encompasses the ability to move around without restraint. Demand for international tourism requires the availability of transport services and accessibility to destinations (Keyser, 2002:7). Ease of accessibility is influenced by transport facilities, which constitutes an important part of the tourism product that has a considerable impact on tourists’ satisfaction levels (Heraty, 1989:292). Mobility has improved over time, as sophisticated developments in transportation, especially automobile and aeroplane have made travelling easier, faster and more comfortable and have made distant tourist destinations accessible to many people (Mathieson & Wall, 1982:17). Not only does accessibility refer to physical infrastructure but also to customs and immigration formalities. For example, accessibility and ease of applying for a visa were ranked as very important pull attributes for mainland Chinese visitors selecting Hong Kong as their travel destination (Qu & Li, 1997:40).

Accessibility is one of the major components that have been identified as contributing to the overall attractiveness of national parks in Australia (Deng et al, 2002:428). Also, farm enterprises that have been identified as being more likely to succeed in rural areas are those that are easily accessible to large urban populations (Walford, 2001:332). Agritourists in South Africa were motivated to visit farms due to the fact that they had fast and easy access to the area. The high mobility pattern was possible because of the use of private cars as a means of transportation as 94% travelled to the area using their own cars (Oppermann, 1996:97). Agritourists in another study also travelled using their own vehicles. They all owned vehicles, which is very substantial given that they earned low incomes, with 52.6% owning one vehicle, 36.8% owning two and 10.5% owning three vehicles.
(Speirs, 2003:43). In addition, the agritourists were willing to drive and travel longer distances than the other tourists but were only hindered by fuel costs as they had budget constraints that were due to the relatively low salaries they earned. Spatial information needs that are therefore essential for the tourists will include: geographic location of destination(s), immigration requirements, distance between points, road networks (type and quality of roads) and the modes of transport that can be used to access the agritourism and ecotourism destinations.

3.7 Climate

Climate is the long term average of weather conditions and it is the weather that has immediate impacts upon the intentions and motivations of humans (Giles & Perry, 1998:75). Climate and weather play an important role in the way people live their lives, as they influence what people eat and drink, the way of dress, mode of travel, recreation habits, etc (Giles & Perry, 1998:76). Outdoor recreation, participatory sports and past-times are also very weather sensitive (Perry, 1972:199).

Climate, especially in high latitudes, is one of the causes of tourism seasonality\(^9\). Snow, blizzards, freezing temperatures, which are usually considered as adverse weather conditions, push people, especially Europeans, towards places with contrasting (sunny) conditions like South Africa. An example is of German-speaking people who spend three to four months getting pleasure from the sunshine in the Western Cape, South Africa when it is winter time in Europe (Keyser, 202:83).

Most ecotourists and general travellers prefer to travel in the summer months, but more ecotourists compared to general consumers are willing to travel, particularly during the shoulder seasons (Wight, 1996a:8).

Agriculture, like tourism, is an industry used to seasonal fluctuation in activity (Cooper \textit{et al}, 1998:205), therefore it follows that agritourism, a confluence of two highly seasonal industries, is likely to also be subject to seasonality. Given that most agritourists want hands-on experience on doing various farm activities, like wool preparation, weaving and milking (Hjalager, 1996:109), and

\(^9\) The five causes of tourism seasonality are a) natural - climate, b) institutionalized - schools or public holidays, c) social pressure or fashion – privileged elite’s seasonal participation in recreation activities and mass following class, such as bird or deer hunting, d) sporting season – winter skiing and summer surfing, e) inertia or tradition – continuing taking vacations during school periods even when children have left school (Mitchell & Hall, 2003:156).
since these activities take place at certain times of the year, it follows then that the agritourists will travel to the destinations mostly during the periods when those activities are taking place on the farm. An example is winery visitation in New Zealand, which is highly seasonal in terms of estimated visitation and supply of the wine tourism product (Mitchell & Hall, 2003:169). Tourists interested in taking part in a farming activity, like picking grapes, have to go at certain times when the particular activity is carried out on the farm. Seasonality presents a major problem of capacity for tourism growth, especially in South Africa. The deep seasonal pattern for arrivals into South Africa has been identified as creating significant challenges for investing in capacity to serve increased demand (South African Tourism, 2005).

Climate is one of the variables causing tourists to travel and a great number of tourists are ‘entirely’ motivated by climatic considerations (Mieczkowski, 1985:220). Also, climate is one of the key factors influencing tourist development\(^\text{10}\) (Giles & Perry, 1998:77; Mathieson & Wall, 1982:95). Climate has also been referred to as a ‘resource’, and one important factor to note is that the other resources like lakes, mountains and forests are themselves climate-dependent, with weather being a major determinant of recreation behaviour. In the international tourist market, developing countries (SADC included) have strength in their climatic attractions hence should capitalize on this based on the comparative advantage concept (Mieczkowski, 1985:221).

With respect to the different types of information sought by travellers, information on climate or weather conditions is the second most important that travellers need and search for (Mäser & Weiermair, 1998:114). However, many weather variables, classified in relation to agriculture or vegetation and conventionally expressed as monthly variables, such as mean rainfall and minimum and maximum temperatures, are sometimes of limited value to individuals attempting to decide when and where to go for a holiday (Maunder, 1962:3; Yapp & McDonald, 1978:249 and Maunder, 1962:4). Different recreational activities require different climatic information. Therefore weather information must be presented in a manner that is useful and relevant to the needs of particular groups of recreationists. The visitor or participant must also in turn be aware of how to interpret this information before embarking on a particular activity (Perry, 1972:199).

\(^{10}\) Other factors influencing tourist development include geological, floral and faunal factors (Mathieson & Wall, 1982:95).
Various models have been developed in which different weather or climatic elements have been processed so as to provide information for specified recreational activities. One such model that was developed relates potential participation in outdoor recreation to commonly recorded weather data. This was achieved through consideration of both the thermal balance of the body and the perceived suitability of the weather, thereby providing an index of the potential of climate, from which the best time and/or place could be chosen. The meteorological variables used included wet and dry bulb temperatures, wind speed and cloud cover (Yapp & McDonald, 1978:235).

Another example is of a model that was developed that provided a series of rating systems that provided a systematic basis for assessing the climatic elements that most affect the quality of the tourism experience (tourism climatic index – TCI). Relative merits or demerits of an area compared to other areas of the world using indexes could be done for each month throughout the year. Hence tourists could choose a time of the year when climatic conditions are at their optimum at a certain area or alternatively, if vacations are at a fixed time, tourists could select an area that offers the most suitable climatic conditions. Elements included in the model were: temperature, humidity, precipitation, sunshine and thermal comfort (which includes air temperature – dry bulb; relative humidity; mean radiant temperature; wind velocity and thermal resistance of clothing) (Mieczkowski, 1985:220).

Another model, a human classification of climate, was also developed and the five elements included were rainfall; sunshine; temperature; humidity and wind (Maunder, 1962:3). For all these models mentioned above, the meteorological variables used are available in databases for South Africa and the SADC region, so there is potential for processing the available meteorological data into useful information needed by agritourists and ecotourists.

Tourist agencies commonly report information on isolated elements, like temperature and sunshine, and disregard other factors, thereby distorting the real climatic situation (Mieczkowski, 1985:221). Climatic information available to most tourists, for example, in glossy holiday brochures, is often misleading or evasive as emphasis is mostly on mentioning the perceived ‘ideal’ conditions preferred by tourists (Perry, 1972:200). It is also important to note that perfect weather for one individual is not necessarily so for others. When presenting individuals with weather or climate data or information, it is probably better to supply all the weather or climate affecting variables and to also include the risks of significant deviations from the postulated estimates. The models described
above have shown that available climatic or weather data have the potential to be repackaged and presented in a way that is relevant and useful to the particular needs of recreationists (the needs of which have to be identified first).

From the reviewed agritourism and ecotourism literature (section 2.5), weather/climate are important motivation factors because whilst they may not be the primary reason for choosing a destination, they are secondary factors that enhance the destination (Giles & Perry, 1998:77). Even for tourists whose motives for travel are certainly non-climatic, for example in educational or cultural tourism, the tourists are also concerned with choosing destinations or times of the year when their climatic well-being is likely to be at its best (Mieczkowski, 1985:220).

3.8 Media and Communication Technology

Tourists may be motivated to travel, but unless they are informed of the different opportunities available, they may be unaware of the means of meeting their needs (Mathieson & Wall, 1982:31). Information is a very important factor that influences and determines consumer behaviour (Assael in Mäser & Weiermair, 1998:107) as consumer awareness, selection and choice of tourism and hospitality products depends on the information available to and used by the tourist (Fodness & Murray, 1997:503). Countries with high levels of ownership and access to all forms of media and low levels of government censorship of information are likely to have relatively high levels of tourism demand or travel propensity as they are more aware of available tourism products (Keyser, 2002:88).

Information search usually takes place when an individual has high involvement in a product and its surrounding purchase, but realizes that one has inadequate knowledge for making a good decision (Manfredo in Mäser & Weiermair, 1998:110). Information search is an expressed need to consult various sources prior to making a purchasing decision (Moutinho in Mäser & Weiermair, 1998:110); or the motivated activation of knowledge stored in memory (internal search) or acquisition of information from the environment (external search) (Engel et al, in Chen & Gursoy, 2000:192). Information is usually acquired as a strategy of certain risk reduction efforts in the event of identified decision uncertainty, and consequently improves decision-making (Vogt & Fesenmaier,
The first phase of the information search process, recognition of a need or problem, drives individuals’ search behaviour and almost always initially takes place internally, on the basis of knowledge accumulated through past experience (prior memories) and knowledge accumulated through ongoing search (Kerstetter & Cho, 2004:962; Gursoy & McCleary, 2004:355 and Fodness & Murray, 1997:505). If the internal information search, which is a cognitive process, provides insufficient information, individuals go on to conduct an external search. External information sources can be broadly categorized into: i) family and friends, ii) destination specific literature, iii) media, and iv) travel consultants (Snepenger & Snepenger in Chen & Gursoy, 2000:192, and in Gursoy & McCleary, 2004:356); or into i) personal – family, friends, acquaintances, neighbours; ii) commercial – advertising, salespeople, websites; and iii) the public – mass media, government (Kotler & Armstrong in Lo et al, 2002: 64).

A common finding is that most travellers do not depend on one type of information source as multiple information sources are used (Turnball & Uysal, 1995:90; Blazey, 1992:776; Fodness & Murray, 1997:506; Uysal et al, in Chen & Gursoy, 2000:194; Kerstetter & Cho, 2004:971; and Lo et al, 2002:65). The various types of information sources identified from the reviewed literature are as follows: travel agencies, books, magazines, newspapers, radio, television, visitor and convention bureaus, movies, the internet, travel guides, personal experiences, brochures and pamphlets, advertisements, friends, family, maps, airlines, government/state tourist offices, tour guides, workplace, automobile associations, chamber of commerce, hotels/resorts, embassies, clubs and associations, highway welcome centres and libraries. Use of the internet as an information source was noted in most of the reviewed literature hence suggesting that use of internet websites can be an effective way of communicating tourism information.

It was noted in one study that high information users tend to participate more in activities, spend more money per day in an area, are more positive about their experiences and indicate more intentions to return compared to low information users and nonusers (Woodside & King, 2001:20).

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Determinants of information search include travelling party composition, presence of friends and relatives at destination, past experience, degree of novelty associated with the destination (Fodness & Murray, 1997:505), motivation, individual differences - like age and gender (Kerstetter & Cho, 2004:962), type of trip, distance travelled, expense (Chen & Gursoy, 2000:192) and the length of the pre-trip planning lead-time (Lo et al, 2002: 64).

Ecotourists demand high levels of accurate and competently communicated site and trip information before they undertake the journey. Site information includes: general ecological features of the site, special site features to be expected, special or sensitive species to be encountered, available tourism services, prices and expected behaviours. Trip information includes the cost, the length, the start and end time, accommodation and transport types, expected weather, potential dangers, required clothing, safety issues, equipment needs, physical difficulty of the trip and cultural expectations (Eagles, 2001:611, 616).

The sources of information for the Ugandan ecotourism destination included tourist guidebooks (38.5%), part of tour itinerary (33.5%), word of mouth (22%), adverts in magazines, newspapers and posters (5%) and the hotel/radio/tv (1%). The word of mouth is a popular source of information about ecotourism destination. This is also supported by Locke’s study in the UK, where it was noted that most travellers heard about ecotourism destinations from casual conversations with friends (word of mouth) rather than formal channels like advertisements (Obua & Harding, 1996:499,500).

A South African study shows that agritourists obtained information about destinations from a wide range of sources, which included: word of mouth (73.7%), brochures (57.9%), internet (52.6%), advertisements in magazines (42.1%), travel agents (31.6%), roadside signs (31.6%), advertisements in newspapers (26.3%), advertisements on tv/radio (5.3%) and notices (5.3%) (Speirs, 2003:47). Just like ecotourists, word of mouth is an important source of information as almost three-quarters of the sample used this source. An effective way of targeting agritourists using publications is through advertising in adventure magazines, newspapers and family magazines as these are the sources most frequently used (40%, 27.5% and 20% respectively) by the travellers (Speirs, 2003:47). Agritourism destinations in Israel advertise in special guidebooks for rural tourism, regional tourism associations, yellow pages and the internet (Fleischer & Tchetchik, 2005). Because most tourists use more than one source of information, it would be advantageous to advertise in various different sources so as to capture a wider clientele.
3.9 Summary

This chapter explored the demand determinants, with specific reference to agritourism and ecotourism, thereby further enlightening the characteristics and profiles of agritourists and ecotourists.

All age groups appear to participate in agritourism and ecotourism. However, ecotourism has a higher tendency of capturing a slightly older clientele. Both men and women appear to be interested in ecotourism, whilst more of women have an interest in agritourism. Most of the ecotourism generating countries are developed and are in the low stationary stage, characterised by high levels of income, ownership and access to all forms of media, and low levels of government censorship. Hence participation in tourism is very high.

Generally, ecotourists and agritourists have high levels of education, with most having achieved tertiary levels. This suggests a high probability of computer literacy, access to a computer and the internet, thereby enhancing the chances of the use of internet websites as an effective way of making spatial resource information accessible to these tourists. Ecotourists are financially successful or are affluent, whilst agritourists are reported to be found in all the socioeconomic classes. It is therefore highly likely that most ecotourists and some agritourists are likely to be able to afford and probably own computers, as they are reported to be in upper and middle socioeconomic classes. Hence their access to computers renders the use of internet websites as a possible effective way of making spatial resource information accessible to these tourists. Most ecotourists are professionals or have managerial positions, making it highly probable that they are computer literate. Hence problems encountered with respect to tourists’ ability to handle and process information on graphic websites on the internet will be visibly lower compared to computer illiterate tourists. Given the reviewed profiles of agritourists and ecotourists, it is safe to suggest that use of websites on the internet posits to be an effective way of communicating information to potential tourists as it is likely to be accessible to most of the targeted population.

Ecotourists are willing to pay more for quality experiences, facilities that are eco-friendly and prefer services that are courteous, informative and trustworthy. The demand for accurate and competently communicated site and trip information before undertaking a journey is high. Site information includes: (64)-general ecological features of the site; (65)-special site features to be expected; (66)-
special or sensitive species to be encountered; (67)-if and how destinations are sustainable, environmentally friendly and socially responsible; (68)-available tourism services; (69)-prices/costs and (70)-expected behaviours/cultural expectations. Trip information includes: (71)-the length, the start and end time; (72)-accommodation; (73)-transport types; (74)-potential dangers; (75)-required clothing; (76)-equipment needs, (77)-physical difficulty of the trip; (78)-immigration requirement; (7)-expected weather and (13)-safety issues. Most agritourists are interested in participating in (44)-farming activities, thus require information on the different kinds of production activities taking place and also during which times of the year.

Since the spatial information needs have been identified in Chapter Two and Three, the next chapter identifies the various types of digital resource data currently available. The issue of the possibility of repackaging the available land resource data to meet the identified spatial information needs on the demand side is explored, and in addition, a description of how packaged spatial information on features or resources is currently being communicated to tourists is given.
CHAPTER FOUR: SPATIAL DATA AND INFORMATION

4.1 Introduction

The preceding chapters have analysed travel motivations and demand determinants, from which spatial information needs were derived. It is important to note that the needs assessment identified broad information needs. In spite of this, it does provide guidelines for the assessment of exploring the possibilities of repackaging and processing available spatial land resource data into information for tourists bound for the destinations of South Africa and the SADC region.

Resources found at destinations can be natural, cultural or human-made. There are ‘data’ and ‘information’ on these resources. As discussed in the first chapter, data consist of raw facts and information is what results from the thoughtful analysis, manipulation, and presentation of data in a form that enhances decision-making processes. Different types of information are created by defining various relationships among data and this process requires ‘knowledge’, which guides the transformation process (Stair & Reynolds, 2001:6). There is spatial resource digital data that has been collected for other purposes, like agricultural production and resource planning, and not specifically for agritourism and ecotourism. The tourism spatial information needs identified in Chapters Two and Three will provide the required ‘knowledge’ that will guide the transformation process of converting the same available data (produced for providing information for agricultural planning and resource analyses) into useful tourism information.

This chapter identifies the available digital data for South Africa and the SADC region. The possibility of repackaging and processing this data into useful tourism information, which can fulfil the information needs identified in literature, is further explored. Focus is also given to describing how packaged spatial information is currently being presented and made available to tourists and opportunities for adding value in terms of providing more and/or better tourism information are suggested. Furthermore, the issue of accessibility of tourism information on internet websites is discussed.
4.2 Available Digital Data for South Africa and the SADC Region

Chapter Two and Three identified the spatial information needs, which were derived from information needs from identified motivation factors and demand determinants found in the literature. Table 4.1 links the available resource digital data that has the potential of being repackaged and becoming useful sources of tourism information to the identified motivation factors and demand determinants. Table 4.1 describes the available digital data in terms of the kind of spatial parameter; how the geographical features are stored; the title; the scale; the data citation or who the originators are; and the coverage area. For most of the spatial parameters for South Africa and the SADC region, the geographical features are stored in vector format. Examples of parameters stored in grid or raster format include: elevation, topography, terrain, digital orthophoto images, climate, soils, irrigated areas and agriculture, global lakes and wetlands. The scale for data for the SADC region is generally much coarser (commonly 1:1 000 000) compared to that of South Africa’s data (commonly 1: 50 000, 1:250 000 and 1:500 000).
### Table 4.1: Available Digital Data for South Africa and the SADC Region

<table>
<thead>
<tr>
<th>Spatial parameter or description of data</th>
<th>Storage of geographic features</th>
<th>Title</th>
<th>Scale</th>
<th>1) Area Coverage and 2) Geospatial Data presentation form</th>
<th>Data Citation/Originators</th>
<th>Motivation Factors and Demand determinants from which spatial information needs were identified</th>
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<tr>
<td><strong>Spatial Data (South Africa)</strong></td>
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<td>18-Farming activities; 39-city/high tech environments; 17-rural environments/villages; 16-ecotours; 2-culture/history/heritage; 40-ease of accessibility/travel; 9-fauna/wildlife/national parks/hunting; 13-flora/forests/trees/wildflowers; 3-nature/natural surroundings; 20-outdoor/physical activities; 24-camping; 70-expected behaviors/cultural expectations; 78-immigration requirements; and 45-photography</td>
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<td>Farm Boundaries</td>
<td>Vector (format-arc/info)</td>
<td>Farm Boundaries (farm250)</td>
<td>1:250 000</td>
<td>1) South Africa 2) Map</td>
<td>Chief Director: Surveys and Mapping <a href="http://www.dwaf.gov.za/bi/">http://www.dwaf.gov.za/bi/</a></td>
<td>18-Farming activities; and 17-rural environments/villages</td>
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<tr>
<td>Airports, ports of entry, airfields</td>
<td>Vector</td>
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<td>Agricultural Geo-Referenced Information System – AGIS <a href="http://www.agis.agric.za">www.agis.agric.za</a></td>
<td>40-Ease of accessibility/travel; 44-time efficiency; and 73-trip information on transport types</td>
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<tr>
<td>Railways</td>
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<td>1:500 000 and 50 000</td>
<td>1) South Africa 2) Map</td>
<td>Chief Directorate: Surveys and Mapping - 1:500 000 and 1:50 000 Digital Topographical Data Sets: Department of Land Affairs, Chief Directorate: Surveys and Mapping, Mowbray, Cape Town</td>
<td>40-Ease of accessibility/travel; 44-time efficiency; and 73-trip information on transport types</td>
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<td>Rails Vector</td>
<td>Natural Resource Atlas</td>
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<td>Agricultural Geo-Referenced Information System – AGIS <a href="http://www.agis.agric.za">www.agis.agric.za</a></td>
<td>40-Ease of accessibility/travel; 44-time efficiency; and 73-trip information on transport types</td>
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<td>Roads Vector</td>
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<td>1:500 000 and 50 000</td>
<td>1) South Africa 2) Map</td>
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<tr>
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<td>1:250 000 and 1:50 000</td>
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<td>Agricultural Geo-Referenced Information System – AGIS <a href="http://www.agis.agric.za">www.agis.agric.za</a></td>
<td>40-Ease of accessibility/travel; 44-time efficiency; and 73-trip information on transport types</td>
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<td>Raster and Vector Data for Map Studio Street Guides</td>
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<td>1) Street Guides for Wits, Vaal Triangle, Pretoria, Cape Town, Durban and Pietermaritzburg. 2) Map</td>
<td>Studio, Map, Raster and Vector Data for Map Studio Street Guides: Map Studio, Johannesburg</td>
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<td>Powerline Vector</td>
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<td>1:500 000 and 50 000</td>
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<td>Agricultural Geo-Referenced Information System – AGIS <a href="http://www.agis.agric.za">www.agis.agric.za</a></td>
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<td>Feature</td>
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<td>Infrastructure</td>
<td>Scale</td>
<td>Region</td>
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<td>Water Research Commission (WRC), Catchment boundaries for South Africa (catchment_bound)</td>
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<td>Catchment areas - Primary, secondary and tertiary</td>
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<td>12-Beaches/Oceanside; 30-fishing; 21-sports; 25-water activities; and 31-swimming</td>
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<td>11-Rivers/streams; 25-water activities; 30-fishing; 31-swimming; 35-wind surfing; 37-snorkeling; 27-canoeing; 26-rafting; and 10-lakes</td>
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<td>format-arc/info</td>
<td>Vegter: i) Thermal springs (Groundwater warm_springs) ii) Cold springs (Groundwater cold springs)</td>
<td>(Information not ascertained)</td>
<td>1) South Africa 2) (Information not ascertained)</td>
<td>Mr Vegter – originator Department of Water Affairs And Forestry: Geohydrology – custodian <a href="http://www.dwaf.gov.za/bi/">http://www.dwaf.gov.za/bi/</a></td>
<td>46-Health; 25-water activities; 31-swimming; 64-general ecological features of site; 65-special site features to be expected; and 45-photography</td>
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</tbody>
</table>
| Biome Vector | arcview shapefile | ENPAT/TOURPAT National: Low and Robello Biomes | 1:250 000 | 1) South Africa 2) (Information not ascertained) | Department of Water Affairs and Forestry: Geomatics http://www.dwaf.gov.za/bi/ | 3-Nature/natural surroundings; 4-scenery; 5-wilderness; 6-landscapes; 7-mountains; 9-fauna/wildlife/national parks/hunting; 13-flora/forests/trees/wildflowers; 64-general ecological features of site; 65-special site features; 67-sustainable, environmentally friendly and socially responsible destination; 15-mammals; 16-ecotours; 17-rural environments/villages; 18-farming activities; 14-birds; 20-
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<td>ENPAT/TOURPAT National: Botanical Gardens</td>
<td>1:250 000</td>
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<td>3-Nature/natural surroundings; 4-scenery; 9-fauna/wildlife/national parks/hunting; 13-flora/forests/trees/wildflowers; 64-general ecological features of site; 65-special site features; 66-sensitive species to be encountered; 67-sustainable, environmentally friendly and socially responsible destination; 16-ecotours; 18-farming activities; 14-birds; 20-outdoor/physical activities; 22-hiking/mountain climbing; 23-walking; 24-camping; 33-skiing; 34-horse/trail riding; 38-picnicking; and 46-health</td>
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<tr>
<td>National parks</td>
<td>Vector (format-arcview shapefile)</td>
<td>ENPAT/TOURPAT National: Parks</td>
<td>1:250 000</td>
<td>1) South Africa 2) Map</td>
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<td>Endangered bird species, endangered wildlife</td>
<td>Vector (format-arcview shapefile)</td>
<td>SEA for Water Use: Mhlathuze Catchment, Birds - Endangered</td>
<td>1:250 000</td>
<td>1) Mhlathuze, KwaZulu Natal 2) (Information not ascertained)</td>
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<tr>
<td>Possible distribution of sensitive reptiles, mammals, butterflies and scarbas species.</td>
<td>Vector (format-arcview shapefile)</td>
<td>ENPAT/TOURPAT: Sensitive Bioatlas (4th edition)</td>
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<td>Mountain range</td>
<td>1) Vector (format-arcview shapefile)</td>
<td>ENPAT/TOURPAT National: Variation in Elevation of Terrain Morphological Units (Relief)</td>
<td>1:250 000</td>
<td>1) South Africa 2) (Information not ascertained)</td>
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<td>Slope shape</td>
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<td>1) South Africa 2) (Information not ascertained)</td>
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<td>Topography</td>
<td>Raster</td>
<td>Raster Topographical Images - 1: 250 000 and 1:50 000, South Africa</td>
<td>1:250 000 and 1:50 000</td>
<td>1) South Africa 2) (Information not ascertained)</td>
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<td>1:250 000 and 50 000</td>
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| Topography | Vector | Chief Directorate: Surveys and Mapping - 1:500 000 and 1: 50 000 Digital | 1:500 000 | 1) South Africa 2) (Information not ascertained) | Chief Directorate: Surveys and Mapping - 1:500 000 and 1: 50 000 Digital | 3-Nature/natural surroundings; 4-scenery; 5-wilderness; 6-landscapes; 7-mountains; 8-waterfalls; 9-fauna/national parks/hunting; 13-
<table>
<thead>
<tr>
<th>Topographical Data Sets</th>
<th>Elevation Models</th>
<th>Digital terrain</th>
<th>Terrain Inventory (digitally maps information regarding the environmental potential of the country as a whole, presented as resources, impacts or sensitivities)</th>
<th>Digital Orthophoto Images</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topographical Data Sets: Department of Land Affairs, Chief Directorate: Surveys and Mapping, Mowbray, Cape Town</td>
<td>Elevation Models Grid Chief Directorate: Surveys and Mapping - The South African National Digital Elevation Model</td>
<td>Digital terrain Grid Digital Terrain Model of South Africa</td>
<td>Terrain Inventory (digitally maps information regarding the environmental potential of the country as a whole, presented as resources, impacts or sensitivities) Vector (format-arcview shapefile)</td>
<td>Digital Orthophoto Images Raster Chief Directorate: Surveys and Mapping - Digital Orthophoto Images</td>
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<tr>
<td>Two types of DEM's are available: i) 400/200m DEM and ii) 50m DEM</td>
<td>Chief Directorate: Surveys and Mapping - The South African National Digital Elevation Model: Department of Land Affairs, Chief Directorate: Surveys and Mapping, Mowbray, Cape Town</td>
<td>20x20m grid.</td>
<td>Department of Environmental Affairs and Tourism <a href="http://www.dwaf.gov.za/bi/">http://www.dwaf.gov.za/bi/</a></td>
<td>(Information not ascertained)</td>
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<tr>
<td>1) South Africa 2) (Information not ascertained)</td>
<td>1) South Africa 2) (Information not ascertained)</td>
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<td>Chief Directorate: Surveys and Mapping, 1998/06/09, Chief Directorate: Surveys and Mapping, Mowbray, Cape Town</td>
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<td>6-Landscapes; 7-mountains; 8-waterfalls; 9-fauna/national parks/hunting; 26-rafting; 34-horse/trail riding; 38-picnicking; 26-rafting; 33-skiing; 22-hiking/mountain climbing; 23-walking; 3-nature/natural surroundings; and 4-scenery</td>
</tr>
<tr>
<td>Land cover</td>
<td>(Information not ascertained)</td>
<td>The South African National Land-Cover Database</td>
<td>1:250 000</td>
<td>1) South Africa, Swaziland and Lesotho 2) Map</td>
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</table>

<p>| Land cover | (Information not ascertained) | National Land Cover 2000 (NLC 2000) | 1:50 000 | 1) South Africa, Lesotho and Swaziland 2) Map | (CSIR and ARC) <a href="http://www.csir.co.za/environmentek/nlc2000">http://www.csir.co.za/environmentek/nlc2000</a> | 3-Nature/natural surroundings; 4-scenery; 5-wilderness; 6-landscapes; 7-mountains; 9-fauna/wildlife/national parks/hunting; 13-flora/forests/trees/wildflowers; 64-general ecological features of site; 65-special site features of site; 66-sensitive/special species to be encountered; 67-sustainable, environmentally friendly and socially responsible destinations; 15-mammals; 16-ecotours; 17-rural environments/villages; 18-farming activities; 14-birds; 19-adventure; 20-outdoor/physical activities; 22-hiking/mountain climbing; 23-walking; 24-camping; 32-cycling; 33-skiing; 34-horse/trail riding; 38-picnicking; 46-health; and 45-photography |
| Built-up Areas, Eroded Areas, Sandy Areas | Vector | Chief Directorate: Surveys and Mapping - 1:500 000 and 1: 50 000 Digital Topographical Data Sets | 1:500 000 and 1: 50 000 | 1) South Africa 2) Map | Chief Directorate: Surveys and Mapping - 1:500 000 and 1: 50 000 Digital Topographical Data Sets: Department of Land Affairs, Chief Directorate: Surveys and Mapping, Mowbray, Cape | 22-Cities/high tech environments; 5-nature/natural surroundings; 4-scenery; 24-landscapes; 25-mountains; 32-flora/forests/trees/wildflowers; 23-rural environments/villages; 20-outdoor/physical activities; and 27-photography |
| Wetlands | Vector (arc info format) | Basin study: Wildernis: Wetlands (wetl_geo 1:50 000) 2) (Information not ascertained) | GFJ Consulting Engineers (Pty) Ltd <a href="http://www.dwaf.gov.za/bi/">http://www.dwaf.gov.za/bi/</a> | 58-Ecotours; 5-nature/natural surroundings; 64-general ecological features of site; 65-special site features of site; 66-sensitive/special species to be encountered; 67-sustainable, environmentally friendly and socially responsible destinations; 4-scenery; 32-flora; and 26-fauna |</p>
<table>
<thead>
<tr>
<th>Veld types</th>
<th>Vector</th>
<th>Natural Resource Atlas</th>
<th>1:50 000 and 1:250 000</th>
<th>1) South Africa 2) Map</th>
<th>Agricultural Geo-referenced Information System <a href="http://www.agis.agric.za/agisweb/agis.html">http://www.agis.agric.za/agisweb/agis.html</a></th>
<th>5-Nature/natural surroundings; 4-scenery; 6-wilderness; 24-landscapes; 25-mountains; 26-fauna/wildlife/national parks/hunting; 32-flora/forests/trees/wildflowers; 64-general ecological features of site; 58-ecotours; 65-special site features of site; 66-sensitive/special species to be encountered; 67-sustainable, environmentally friendly and socially responsible destinations; 23-rural environments/villages; 44-farming activities; 20-outdoor/physical activities; 52-walking; 46-camping and 40-health</th>
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<tr>
<td>Geology</td>
<td>1) Vector (format-arcview shapefile) 2) Vector (format-arc/info)</td>
<td>1) ENPAT: Geology (National) 2) Geology (1:1 million)</td>
<td>1:250 000 1:1 000 000</td>
<td>1) South Africa 2) (Information not ascertained)</td>
<td>The Council for Geoscience <a href="http://www.dwaf.gov.za/bi/">http://www.dwaf.gov.za/bi/</a></td>
<td>5-Nature/natural surroundings; 4-scenery; 6-wilderness; 24-landscapes; 25-mountains; 43-waterfalls; 19-adventure; 20-outdoor/physical activities; 45-hiking/mountain climbing</td>
</tr>
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<td>Soil</td>
<td>(Information not ascertained)</td>
<td>(Information not ascertained)</td>
<td>1:250 000</td>
<td>1) South Africa 2) (Information not ascertained)</td>
<td>Institute of Soil, Climate and Water (ISCW)</td>
<td>4-Scenery; 5-nature/natural surroundings; 6-wilderness; 25-mountains; 26-fauna/wildlife/national parks/hunting; 44-farming activities; 32-flora/forests/wildflowers; 58-ecotours; 20-outdoor/physical activities; and 52-walking</td>
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<tr>
<td>Soil classifications which contains depth, texture and relief</td>
<td>Vector (format-arc/info)</td>
<td>Soilgroups :WR90 (soi_geo)</td>
<td>1:2500 000</td>
<td>1) South Africa 2) (Information not ascertained)</td>
<td>Water Research Commission <a href="http://www.dwaf.gov.za/bi/">http://www.dwaf.gov.za/bi/</a></td>
<td>4-Scenery; 5-nature/natural surroundings; 6-wilderness; 25-mountains; 26-fauna/wildlife/national parks/hunting; 44-farming activities; 32-flora/forests/wildflowers; 58-ecotours; 20-outdoor/physical activities; and 52-walking</td>
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</table>
| Climate and weather data | (Information not ascertained) | (Information not ascertained) | (Information not ascertained) | 1) South Africa 2) (Information not ascertained) | South African Weather Service http://www.weathersa.co.za/ or ordering of specific climate records from info2@weathersa.co.za | 7-Weather/Climate; 43-waterfalls; 28-lakes; 29-rivers/streams; 30-beaches/Oceanside; 32-flora/forests/trees/wildflowers; 33-birds; 19-adventure; 20-outdoor/physical activities; 37-sports; 45-hiking/mountain climbing; 46-camping; 31-water activities; 47-rafting; 48-canoeing; 50-sailing; 53-fishing; 54-swimming; 55-cycling; 56-skiing; 59-wind surfing; 62-picnicking; 75-required clothing; 13-safety and 76-equipment needs (Climate - is a prime controller of the physical environment, affecting soils, vegetation, animals and
<table>
<thead>
<tr>
<th>Operation of geomorphologic processes like ice and wind hence most, if not all, tourists will require weather/climatic information. If climate is not the primary motivation factor for choosing a destination, it is a secondary factor that enhances a destination.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Evaporation, Mean Annual</strong></td>
</tr>
<tr>
<td><strong>Flow data, rainfall and evaporation, water quality</strong></td>
</tr>
<tr>
<td><strong>Mean annual temperatures and median rainfall</strong></td>
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</table>
### Spatial Data (Rest of SADC)

<table>
<thead>
<tr>
<th>Spatial Data</th>
<th>Format</th>
<th>Source</th>
<th>Scale</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airports</td>
<td>Vector (Arc View shapefile format)</td>
<td>VMAP_1V10 - Vector Map Level 0 (Digital Chart of the World)</td>
<td>1:1,000,000 scale vector Base map of the world</td>
<td>1) Global coverage 2) Map</td>
<td>National Imagery and Mapping Agency, Fairfax, VA <a href="http://webgis.wr.usgs.gov/globalgis/metadata_qr/metadata%5Cpolitical_bnd.htm">http://webgis.wr.usgs.gov/globalgis/metadata_qr/metadata%5Cpolitical_bnd.htm</a> 15-Ease of accessibility/travel and 78-immigration</td>
</tr>
<tr>
<td>International boundaries</td>
<td>Vector (Arc View shapefile format)</td>
<td>VMAP_1V10 - Vector Map Level 0 (Digital Chart of the World)</td>
<td>1:1,000,000 scale vector Base map of the world</td>
<td>1) Global coverage 2) Map</td>
<td>National Imagery and Mapping Agency, Fairfax, VA <a href="http://webgis.wr.usgs.gov/globalgis/metadata_qr/metadata%5Cpolitical_bnd.htm">http://webgis.wr.usgs.gov/globalgis/metadata_qr/metadata%5Cpolitical_bnd.htm</a> 17-Culture/history/heritage; 78-immigration requirements; and 15-ease of accessibility/travel</td>
</tr>
<tr>
<td>Country, Province and District Boundaries; Cities, Villages and Settlements</td>
<td>Vector</td>
<td>(Information not ascertained)</td>
<td>1:1000000</td>
<td>1) SADC 2) Map</td>
<td>WRI Africa Data Sampler 44-Farming activities; 22-city/high tech environments; 23-rural environments/villages; 58-ecotours; 17-culture/history/heritage; 15-ease of accessibility/travel; and 73-transport types</td>
</tr>
<tr>
<td>Major road and rail networks</td>
<td>Vector (Arc View shapefile format)</td>
<td>VMAP_1V10 - Vector Map Level 0 (Digital Chart of the World)</td>
<td>1:1,000,000 scale vector Base map of the world</td>
<td>1) Global coverage 2) Map</td>
<td>National Imagery and Mapping Agency, Fairfax, VA <a href="http://webgis.wr.usgs.gov/globalgis/metadata_qr/metadata%5Cpolitical_bnd.htm">http://webgis.wr.usgs.gov/globalgis/metadata_qr/metadata%5Cpolitical_bnd.htm</a> 15-Ease of accessibility/travel; 35-time efficiency; and 73-transport types</td>
</tr>
<tr>
<td>Railroad (linear, eg tunnels; and point structures eg bridges)</td>
<td>Vector (arc info format)</td>
<td>Africa Data Sampler: Railroad (DCW)</td>
<td>1:1000 000</td>
<td>1) SADC countries - AO, BW, LS, MW, MZ, NA, SW, TZ, ZA, ZM, ZW</td>
<td>World Resources Institute <a href="http://www.dwaf.gov.za/bi/">http://www.dwaf.gov.za/bi/</a> 15-Ease of accessibility/travel; 35-time efficiency; and 73-transport types</td>
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</tbody>
</table>

rafting; 48-canoeing; 50-sailing; 53-fishing; 54-swimming; 55-cycling; 56-skiing; 59-wind surfing; 62-picnicking; 13-safety; 75-required clothing and 76-equipment needs
<table>
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<tr>
<th>Roads (linear and point structures)</th>
<th>Vector format</th>
<th>(Information not ascertained)</th>
<th>1:1000000</th>
<th>1) AO, BW, LS, MW, MZ, NA, SW, TZ, ZA, ZM, ZW 2) Map</th>
<th>World Resources Institute (WRI/ADS)</th>
<th>15-Ease of accessibility/travel; 35-time efficiency; and 73-transport types</th>
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</thead>
<tbody>
<tr>
<td>Total road network covers motorways, highways, main or national roads, secondary or regional roads, and all other roads in a country</td>
<td>(Information not ascertained)</td>
<td>Roads – Total Networks</td>
<td>(Information not ascertained)</td>
<td>1) Global coverage 2) Map</td>
<td>World Bank <a href="http://geodata.grid.unep.ch/page.php">http://geodata.grid.unep.ch/page.php</a></td>
<td>15-Ease of accessibility/travel; 35-time efficiency; and 73-transport types</td>
</tr>
<tr>
<td>Commercial vehicles include vans, lorries (trucks), buses, tractors and semi-trailers</td>
<td>(Information not ascertained)</td>
<td>Motor Vehicles in Use – 1) Commercial Vehicles per Thousand People 2) Passenger Cars per Thousand People</td>
<td>(Information not ascertained)</td>
<td>1) Global coverage (data set type - national, regional and sub regional levels) 2) Text table</td>
<td>Statistics Division, United Nations</td>
<td>15-Ease of accessibility/travel; 35-time efficiency; and 73-transport types</td>
</tr>
<tr>
<td>Major utility networks (cross-country pipelines and communication lines)</td>
<td>Vector (Arc View shapefile format)</td>
<td>VMAP_1V10 - Vector Map Level 0 (Digital Chart of the World)</td>
<td>1:1,000,000 scale vector Base map of the world</td>
<td>1) Global coverage 2) Map</td>
<td>National Imagery and Mapping Agency, Fairfax, VA</td>
<td>16-Facilities and 68-services</td>
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<td>Cultural Landmarks</td>
<td>Vector arc /info</td>
<td>SADC: Cultural Landmarks, SADC Region</td>
<td>1:1000 000</td>
<td>1) SADC countries 2) Map</td>
<td><a href="http://www.dwaf.gov.za/bi/">http://www.dwaf.gov.za/bi/</a></td>
<td>17-Culture/history/heritage; 4-scenery; 70– expected behaviors/cultural expectations; and 65-special site features to be expected</td>
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<td>Rural population</td>
<td>(Information not ascertained)</td>
<td>Rural Population - Total (Projection)</td>
<td>(Information not ascertained)</td>
<td>1) Global coverage (data set type - national, regional and sub regional levels) 2) Text table</td>
<td>United Nations Population Division</td>
<td>23-Rural environments/villages; and 44-farming activities</td>
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<tr>
<td>Cities and populated areas</td>
<td>Vector (Arc View shapefile format)</td>
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<td>1:1,000,000 scale vector Base map of the world</td>
<td>1) Global coverage 2) Map</td>
<td>National Imagery and Mapping Agency, Fairfax, VA</td>
<td>23-Rural environments/villages; 22-city/high tech environments; and 15-ease of accessibility/travel</td>
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<td>Major hydrologic drainage systems</td>
<td>Vector (Arc View shapefile format)</td>
<td>VMAP_1V10 - Vector Map Level 0 (Digital Chart of the World)</td>
<td>1:1,000,000 scale vector Base map of the world</td>
<td>1) Global coverage 2) Map</td>
<td>National Imagery and Mapping Agency, Fairfax, VA</td>
<td>31-Water activities; 53-fishing; 54-swimming; 59-wind surfing; 61-snorkeling; 48-canoeing; 47-rafting; 28-lakes; and 29-river/streams</td>
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<tr>
<td>Rivers, streams, canals</td>
<td>Vector</td>
<td>(Information not ascertained)</td>
<td>1:1000000</td>
<td>1) AO, BW, LS, MW, NA, SW, TZ, ZA, ZM, ZW 2) Map</td>
<td>WRI ADS</td>
<td>31-Water activities; 53-fishing; 54-swimming; 59-wind surfing; 61-snorkeling; 48-canoeing; 47-rafting; 28-lakes; and 29-river/streams</td>
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<td>Category</td>
<td>Format/Source</td>
<td>Scale/Type</td>
<td>Coverage</td>
<td>Source/Website</td>
<td>Activities</td>
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<tr>
<td>Drainage points, lakes, islands, inland water areas, reservoirs, lagoons</td>
<td>Vector arc/Info - Africa Data Sampler: Drainage points supplemental (DCW)</td>
<td>1:1000 000</td>
<td>1) Africa 2) Map</td>
<td>World Resources Institute</td>
<td>31-Water activities; 53-fishing; 54-swimming; 59-wind surfing; 61-snorkeling; 48-canoeing; 47-rafting; 28-lakes; and 29-river/streams</td>
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<td>Lakes, reservoirs, rivers, and different wetland types</td>
<td>Raster Global Lakes and Wetlands Database (GLWD-3)</td>
<td>30 second resolution 1) Global coverage 2) Map</td>
<td>WWF <a href="http://geodata.grid.unep.ch/page.php">http://geodata.grid.unep.ch/page.php</a></td>
<td>58-Ecotours; 66-special/sensitive species to be encountered; 31-water activities; 48-canoeing; 47-rafting; 28-lakes; 29-river/streams; 53-fishing; and 54-swimming</td>
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<td>Coastlines</td>
<td>Vector (Arc View shapefile format) VMAP_1V10 - Vector Map Level 0 (Digital Chart of the World)</td>
<td>1:1,000,000 scale vector Base map of the world</td>
<td>National Imagery and Mapping Agency, Fairfax, VA</td>
<td>30-Beaches/Oceanside; 53-fishing; 37-sports; 31-water activities; and 54-swimming</td>
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<tr>
<td>Managed areas (eg national parks, forests, reserves)</td>
<td>Vector (Information not ascertained)</td>
<td>1:1000000</td>
<td>WRI ADS</td>
<td>17-Culture/history/heritage; 26-fauna/wildlife/national parks/hunting; 32-flora, forests/trees/wildflowers, 66-special/sensitive species to be encountered; 65-special site features to be expected; 67-sustainable, environmentally friendly and socially responsible; and 58-ecotours</td>
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<td>Sites that fall under one of three global conventions and agreements:</td>
<td>Vector Protected Areas International - Biosphere Reserves, Ramsar and World Heritage Sites (Points)</td>
<td>(Information not ascertained) 1) Global coverage (data set type - national, regional and sub regional levels) 2) Map</td>
<td>United Nations Environment Programme / International Union for the Conservation of Nature <a href="http://geodata.grid.unep.ch">http://geodata.grid.unep.ch</a></td>
<td>17-Culture/history/heritage; 58-ecotours; 6-wilderness; 66-special/sensitive species to be encountered; 64-general ecological features of site; 66-special/sensitive species to be encountered; 65-special site features to be expected; 67-sustainable, environmentally friendly and socially responsible; and 27-photography</td>
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<tr>
<td>Malaria</td>
<td>(Information not ascertained) Reported Malaria Cases – 1) Total Number per 100,000 Population 2) Total Number</td>
<td>(Information not ascertained) 1) Global coverage (data set type - national, regional and sub regional)</td>
<td>WHO/UNICEF <a href="http://geodata.grid.unep.ch">http://geodata.grid.unep.ch</a></td>
<td>13-Safety; 75-clothing and 74-potential dangers</td>
<td></td>
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</tbody>
</table>
1. **Fungicides and bactericides** include products with: inorganics, dithiocarbamates, benzimidazoles, triazoles, diazoles, diazines, morpholines
   
2. **Herbicides** include: Phenoxy hormone products, triazines, amides, carbamates- herbicides, dinitroanilines, urea derivatives, Sulfonyl ureas, Bipyridils, Uracil

3. **Insecticides** include: chlorinated hydrocarbons, organo-phosphates, carbamates- insecticides, pyrethroids, botanical and biological products

4. **Mineral Oils**

5. **Plant Growth Regulators**

### Aquaculture marine production

- All fish, molluscs, crustaceans, aquatic animals and animal

### Pesticides Consumption

1. **Fungicides, bactericides**
2. **Herbicides**
3. **Insecticides**
4. **Mineral Oils**
5. **Plant Growth Regulators**

### FAO References

**http://geodata.grid.unep.ch**

**58-Ecotours and 67-sustainable, environmentally friendly and socially responsible destinations**

**Aquaculture marine production includes all fish, molluscs, crustaceans, aquatic animals and animal**

<p>| Aquaculture marine production includes all fish, molluscs, crustaceans, aquatic animals and animal | (Information not ascertained) | 1) Aquaculture Production – Marine | (Information not ascertained) | 1) Global coverage (data set type - national, regional and sub regional levels) | 2) Text Table | FAO <a href="http://geodata.grid.unep.ch">http://geodata.grid.unep.ch</a> | 53-Fishing; and 61-snorkeling |</p>
<table>
<thead>
<tr>
<th>products, cultivated in marine and brackish environments</th>
<th>Fish, crustaceans, molluscs and all other aquatic organisms</th>
<th>Animal and Plant Species that are &quot;Threatened&quot; - (includes species listed as Critically Endangered, Endangered and Vulnerable)</th>
<th>Droughts, Earthquakes, Extreme Temperatures, Floods, Insect infestation, Slides, Volcanic eruptions, Wave/surges, Wild fires and Wind storms</th>
<th>Drinking Water sources for households</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Information not ascertained)</td>
<td>(Information not ascertained)</td>
<td>(Information not ascertained)</td>
<td>(Information not ascertained)</td>
<td>(Information not ascertained)</td>
</tr>
<tr>
<td>Fish Catch - Inland Waters</td>
<td>1) Animal Species – Threatened  2) Plant Species - Threatened</td>
<td>1) Global coverage (data set type - national, regional and sub regional levels)  2) Text Table</td>
<td>1) Global coverage (data set type - national, regional and sub regional levels)  2) Text Table</td>
<td>1) Global coverage (data set type - national, regional and sub regional levels)  2) Text Table</td>
</tr>
<tr>
<td>Fish, crustaceans, molluscs and all other aquatic organisms</td>
<td>(Information not ascertained)</td>
<td>(Information not ascertained)</td>
<td>(Information not ascertained)</td>
<td>(Information not ascertained)</td>
</tr>
<tr>
<td>1) Global coverage (data set type - national, regional and sub regional levels)  2) Text Table</td>
<td>53-Fishing; 61-snorkeling; 29-rivers/streams; 28-lakes; 30-beaches/Oceanside and 66-special/sensitive species to be encountered</td>
<td>International Union for the Conservation of Nature/Species Survival Commission (IUCN/SSC) <a href="http://geodata.grid.unep.ch/page.php">http://geodata.grid.unep.ch/page.php</a></td>
<td>84</td>
<td>58-Ecotours; 26-fauna/wildlife/national parks/hunting; 32-flora, forests/trees/wildflowers; 66-special/sensitive species to be encountered; 64-general ecological features of site; 67-sustainable, environmentally friendly and socially responsible; 5-natural surroundings; 33-birds; and 34-mammals</td>
</tr>
<tr>
<td>1) Global coverage (data set type - national, regional and sub regional levels)  2) Text Table</td>
<td>13-Safety; 74-potential dangers, 75-required clothing and 77-physical difficulties; 19-adventure; 7-climate and weather</td>
<td>Office of U.S. Foreign Disaster Assistance/The Centre for Research on the Epidemiology of Disasters (OFDA/CRED) <a href="http://geodata.grid.unep.ch/page.php">http://geodata.grid.unep.ch/page.php</a></td>
<td>16-Facilities; 13-safety; and 40-health</td>
<td>13-Safety; 74-potential dangers, 75-required clothing and 77-physical difficulties; 19-adventure; 7-climate and weather</td>
</tr>
<tr>
<td>Improved Drinking Water Coverage –  1) Rural population with household connection  2) Rural population with household connection  3) Total population with household</td>
<td>1) Global coverage (data set type - national, regional and sub regional levels)  2) Text Table</td>
<td>World Health Organization/United Nations Children's Fund <a href="http://geodata.grid.unep.ch/page.php">http://geodata.grid.unep.ch/page.php</a></td>
<td></td>
<td>16-Facilities; 13-safety; and 40-health</td>
</tr>
<tr>
<td>1) Global coverage (data set type - national, regional and sub regional levels)  2) Text Table</td>
<td>53-Fishing; 61-snorkeling; 29-rivers/streams; 28-lakes; 30-beaches/Oceanside and 66-special/sensitive species to be encountered</td>
<td>International Union for the Conservation of Nature/Species Survival Commission (IUCN/SSC) <a href="http://geodata.grid.unep.ch/page.php">http://geodata.grid.unep.ch/page.php</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sanitation</td>
<td>(Information not ascertained)</td>
<td>Improved Sanitation Coverage – 1) Rural populations 2) Urban populations 3) Total population</td>
<td>(Information not ascertained)</td>
<td>1) Global coverage (data set type - national, regional and sub regional levels) 2) Text Table</td>
</tr>
<tr>
<td>Data sets on Africa seasonal land cover; Global Ecosystems; IGBP land cover; USGS Land Use/Land Cover System; and Vegetation Life Forms</td>
<td>(Information not ascertained)</td>
<td>Africa Land Characteristics Database</td>
<td>1-km nominal spatial resolution, and based on 1-km AVHRR data</td>
<td>1) Global coverage 2) Table</td>
</tr>
<tr>
<td>Vegetation</td>
<td>Vector (Arc View shapefile format)</td>
<td>VMAP_1V10 - Vector Map Level 0 (Digital Chart of the World)</td>
<td>1:1,000,000 scale vector</td>
<td>1) Global coverage 2) Map</td>
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<tr>
<td>Wilderness</td>
<td>Vector (ARC/INFO format)</td>
<td>World Wilderness Areas</td>
<td>(Information not ascertained)</td>
<td>1) Global coverage 2) Map</td>
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<tr>
<td>Wetlands</td>
<td>Vector (arc info format)</td>
<td>Africa Data Sampler: Wetlands (WCMC)</td>
<td>1:1000000</td>
<td>1) Africa 2) (Information not ascertained)</td>
</tr>
<tr>
<td>Forests and production forests classified by type</td>
<td>Vector (Information not ascertained)</td>
<td>1:1000000</td>
<td>1) SADC 2) (Information not ascertained)</td>
<td>WRI ADS</td>
</tr>
<tr>
<td><strong>Irrigated areas and irrigated agriculture</strong></td>
<td><strong>Raster</strong></td>
<td><strong>Global map of irrigated areas</strong></td>
<td><strong>Spatial resolution of 5 arc minutes or 0.083333 decimal degrees</strong></td>
<td><strong>1) Africa</strong>&lt;br&gt;<strong>2) Map</strong></td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
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<td>---</td>
</tr>
<tr>
<td><strong>All and major growing areas for cassava, millet, maize, rice, sorghum and sweet potato</strong></td>
<td><strong>Vector</strong></td>
<td><em>(Information not ascertained)</em></td>
<td><strong>1:1000000</strong></td>
<td><strong>1) SADC</strong>&lt;br&gt;*<em>2) (Information not ascertained)</em></td>
</tr>
<tr>
<td><strong>Soil Map and Derived Soil Properties files have data files and interpretation programs that interpret the maps in terms of agronomic and environmental parameters such as pH, organic carbon content, C/N ratio, clay mineralogy, soil depth, soil and terrain suitability for specific crop production, soil moisture storage capacity and soil drainage class</strong></td>
<td><strong>Digital Soil maps Of the World are available in three different formats: one vector format (ARC/INFO Export) and two raster formats called ERDAS and IDRISI (or flat raster) formats</strong></td>
<td><strong>Digital Soil Map of the World and Derived Soil Properties</strong></td>
<td><strong>The scale of the original FAO/UNESCO Soil Map of the World map (and the vector-formatted data) is 1:5 000 000. The cell size of the raster data is 5 x 5 arc-minute</strong></td>
<td><strong>1) Consists of ten map sheets: Africa, North America, Central America, Europe, Central and Northeast Asia, Far East, Southeast Asia, and Oceania. 2) Map</strong></td>
</tr>
<tr>
<td><strong>Soils</strong></td>
<td><strong>Vector</strong></td>
<td><em>(Information not ascertained)</em></td>
<td><strong>1:1000000</strong></td>
<td><strong>1) AO, BW, MW, MZ, SW, TZ, ZA, ZM, ZR, ZW</strong>&lt;br&gt;<strong>2) Map</strong></td>
</tr>
<tr>
<td>Description</td>
<td>Format</td>
<td>Scale</td>
<td>Data Source</td>
<td>Notes</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>-------------------------</td>
<td>-------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Spot elevation, spot height</td>
<td>Vector (arc info format)</td>
<td>1:1000 000</td>
<td>Africa Data Sampler: Spot Elevations (DCW)</td>
<td>1) Africa, SADC countries 2) Map 45-Hiking/mountain climbing, 52-walking; 55-cycling; and 43-waterfalls</td>
</tr>
<tr>
<td>Topography (1000m and intermediate 500m contours)</td>
<td>Vector</td>
<td>1:1000 000</td>
<td>World Resources Institute Derived from Digit Chart of World</td>
<td>5-Nature/natural surroundings; 4-scenery; 6-wilderness; 24-landscapes; 25-mountains; 43-waterfalls</td>
</tr>
<tr>
<td>Elevation</td>
<td>Raster data</td>
<td>Elevation in GTOPO30 are regularly spaced at 30-arc seconds (approximately 1 kilometer)</td>
<td>World Resources Institute (WRI/ADS) Derived from Digit Chart of World</td>
<td>24-Landscapes; 25-mountains; 43-waterfalls; 26-fauna/national parks/hunting; 57-horse/trail riding; 62-picnicking; 47-rafting; 56-skiing; 45-hiking/mountain climbing; 65-special site features to be expected; and 52-walking</td>
</tr>
<tr>
<td>Elevation contours (1000 foot(ft), with 500ft and 250ft supplemental contours)</td>
<td>Vector (Arc View shapefile format)</td>
<td>1:1,000,000 scale vector</td>
<td>The Land Processes Distributed Active Archive Center (LP DAAC) <a href="http://edcdaac.usgs.gov/main.asp">http://edcdaac.usgs.gov/main.asp</a></td>
<td>24-Landscapes; 25-mountains; 43-waterfalls; 26-fauna/national parks/hunting; 47-rafting; 57-horse/trail riding; 62-picnicking; 47-rafting; 56-skiing; 45-hiking/mountain climbing; 65-special site features to be expected; and 52-walking</td>
</tr>
<tr>
<td>Hydrologically corrected DEM, Aspect, Flow Directions, Flow Accumulations, Slope, Compound</td>
<td>Six raster (first six in spatial parameter column) and two vectors</td>
<td>HYDRO1K Elevation Derivative Database</td>
<td>Nominal cell size of 1km 1) Global coverage 2) Data files</td>
<td>43-Waterfalls; 56-skiing; 45-hiking/mountain climbing; and 52-walking</td>
</tr>
<tr>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
<td>Column 4</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>topographic index</td>
<td>(last two in spatial parameter column)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(wetness index), drainage basin boundaries, stream lines</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climate (mean monthly values of temperature, precipitation, cloudiness, potential and actual evapotranspiration)</td>
<td>Vector (Arcview files) Global Climate Database (Information not ascertained)</td>
<td>1) Global coverage 2) Map Global Change Department National Institute of Public Health and Environmental Protection <a href="http://www.agiweb.org/pubs/globalgis/metadata_qr/climate.html">http://www.agiweb.org/pubs/globalgis/metadata_qr/climate.html</a></td>
<td>7-Weather/Climate; 13-safety; 43-waterfalls; 28-lakes; 29-rivers/streams; 30-beaches/Oceanside; 32-flora/forests/trees/wildflowers; 33-birds; 19-adventure; 20-outdoor/physical activities; 37-sports; 45-hiking/mountain climbing; 46-camping; 31-water activities; 47-rafting; 48-canoeing; 50-sailing; 53-fishing; 54-swimming; 55-cycling; 56-skiing; 59-wind surfing; 62-picnicking; 75– required clothing and 76-equipment needs</td>
<td></td>
</tr>
</tbody>
</table>
4.3 Packaged Spatial Information on Features/Resources Available To Tourists

Section 3.8 identified the various types of information sources used by tourists. However, packaged spatial information on features or resources is mostly made available to tourists by tour operators through internet websites; travel books, brochures and pamphlets.

Globalization and the associated time-space compression means that destination marketers have to deal with an increased volume and speed of information flow (Elliot-White & Finn, 1998:67). Technological advancement has resulted in an explosive growth of the internet and the world-wide-web as an advertising and e-commerce medium, with travel and tourism comprising a significant share of internet advertising and e-commerce (Perdue, 2001:22). The internet as a tool for communication offers many advantages compared to the traditional mass media which are as follows: it is interactive, fast, flexible, and accessible worldwide, and is a dynamic source of information as well as an efficient communication tool for reaching consumers. The world-wide-web facilitates the delivery of various types of information through interactive online communications and also offers a quality environmental simulation that enables users to have a ‘quality virtual experience’ which is otherwise unavailable through other media. Virtual experiences using environmental simulations such as sketches, photographs and videos, provide more real-life experiences for tourists and are therefore considered paramount to successfully creating and communicating an image of a destination (Cho et al, 2002:2). An example of the ability of the internet to provide virtual experiences is Google Earth on http://earth.google.com/. Google earth combines satellite imagery and maps to puts a planet's worth of imagery and other geographic information right on one’s desktop. The images are photographs taken by satellites and aircraft in the last three years. The whole world is covered with medium resolution imagery and terrain data, which allows one to see major geographic features and man-made development. Hence this study was undertaken as a baseline for further studies that would result in enhanced provision of spatial information, consequently improving the creation and communication of destination images to tourists using websites.

Destinations that make use of websites communicate spatial information to tourists in various ways which include text, pictures, maps, videos and web cams, with most using texts and pictures. Websites give descriptions of destinations, with information ranging from the weather; climate and seasonal expectations; precautions (e.g. disease prevalence, vaccinations required and clothing);
culture; habitats (e.g. bush, river, mountain, forest, desert, island, beach, wetlands); flora; fauna; location and historical background (for example: http://www.ecoafrica.com/index.htm).

Agritourism and ecotourism destinations communicate spatial information to tourists on websites by often using texts and pictures\textsuperscript{12}. Agritourism and ecotourism destination websites provide various types of information, including available accommodation facilities, activities that can be undertaken, rates, weather and maps for directions. Some ecotourism destinations also in provide information on kinds of sustainability measures undertaken at the destinations.

4.3.1 Weather and Climate

Weather or climatic information is communicated to tourists on websites using text, maps, weather cams and satellite imagery\textsuperscript{13}, with most websites using the text method. A majority of tourism websites provide information on weather and/or climate, and the types of elements provided varies. The different kinds of elements identified include: minimum and maximum temperatures, precipitation, cloud cover, humidity, pressure and wind conditions. The elements are presented as either actual or average values, but mostly as actual values. One website that provides averages is http://www.wunderground.com/tripplanner/index.asp, which facilitates searches in a historical database for the weather conditions during specific dates in past years. The result is an average that assists one to predict how hot, cold, wet, or windy it will be. However, expansive searches on tourism websites did not yield any website that provided standard deviation values for both climate and weather variables.

With specific reference to weather maps, the spatial location of areas is presented together with the expected weather conditions. An example of this is of a weather map, whose coverage is for the whole world. Clicking on a specific location on the map gives the current conditions and forecasts of that area with respect to temperature, humidity, pressure and wind conditions, snow depth, and visibility (http://www.wunderground.com/). The majority of maps are not interactive, as only one weather interactive map was identified from the various searches conducted on tourism websites. This interactive weather map can be found at http://www.visitpeakdistrict.com/. This website for the Peak District in England allows one to select variables one wants information on, including: visibility, wind, temperature, and wind chill.


\textsuperscript{13} Example of website is http://www.skilouise.com/weather/
It is also important to note that from the extensive searches conducted on tourism websites, none of the websites repackaged weather or climatic data and presented it in the form of models, just like those discussed in Section 3.7. This shows that it might be essential to conduct a further study to find out in what form potential tourists would want weather or climatic information to be communicated to them, that is, as actual or average values, as it is commonly being done, or in modified forms, such as those in models mentioned in Section 3.7.

4.3.2 Landscapes and Mountains

Information regarding these features is communicated in the form of texts\textsuperscript{14}, pictures\textsuperscript{15}, web cams\textsuperscript{16} and maps\textsuperscript{17}, with most websites making use of text and pictures. With regards to use of maps, only one website was identified, for the Peak District in England (http://www.visitpeakdistrict.com/), which had an interactive map whereby one can select what one wants to see regarding the location of towns, villages, roads, railways, water and also offers height shading, which shows how the hills and valleys lie. There is currently limited use of maps and graphic displays for communicating information about landscapes and mountains on tourism websites. There is an opportunity of providing more and better spatial information on landscapes and mountains by repackaging the available raw digital spatial data (for example, draping a digital elevation model over a hillshade map, then making the elevation transparent results in the creation of realistic images of the landscape and mountains), hence increasing and improving the communication of spatial information on landscapes and mountains to tourists.

4.3.3 Nature/scenery

Information regarding nature or scenery is communicated to tourists with the use of text, pictures\textsuperscript{18}, web cams and satellite images, with the most widespread method being text and pictures.

4.3.4 Fauna

Text\textsuperscript{19}, pictures\textsuperscript{20}, videos\textsuperscript{21} and web cams\textsuperscript{22} are used to communicate information concerning fauna (animal life), with the most popular method being the use of text and pictures. Two websites that

\textsuperscript{14} http://www.natron.net/napha/english/whynamibia.html
\textsuperscript{15} http://www.patourism.co.za/meiringspoort.htm
\textsuperscript{17} http://www.visitpeakdistrict.com/
\textsuperscript{18} http://www.paarlonline.com/photo_gallery.html, http://www.tourismdelta.bc.ca/ecotourism.html
\textsuperscript{19} http://www.safaricamlive.com/, http://www.africam.com/index.php
\textsuperscript{20} http://www.safaricamlive.com/, http://www.africam.com/index.php
\textsuperscript{21} http://www.safaricamlive.com/, http://www.africam.com/index.php
\textsuperscript{22} http://www.africam.com/index.php, and http://www.safaricamlive.com/
provide good illustrations of this are Africam (http://www.africam.com/index.php) and Safaricamlive.com (http://www.safaricamlive.com/) as they make use of all these various methods so as to communicate information on fauna.

4.3.5 Flora

Information on flora (plant life) is usually communicated to tourists with the use of text\(^\text{23}\) and pictures\(^\text{24}\).

4.3.6 Hydrology (includes lakes, rivers, streams, waterfalls, beaches and oceans).

Information regarding these hydrological features is communicated to tourists by use of text\(^\text{25}\), pictures\(^\text{26}\), and maps. The information on the maps more often than not shows the water bodies’ location and course or route.

4.3.7 Transport networks

Maps\(^\text{27}\), to a larger extent, and text are the methods often used to communicate information concerning the transport networks. The majority of the maps however, are not interactive.

4.4 Opportunities for Adding Value

The most typical way of presenting spatial data is through the use of maps (Medyckyi-Scott, 1991:20). Maps, which are a type of graphics, have the following advantages over using text and tables: i) maps have a summarising effect as they reduce information overload and can be processed faster by the mind compared to text and tables; ii) because comprehension of data is easier, performance on a task involving use of data tends to improve; iii) information presented graphically is remembered better than text and table information because the spatial aspect of the graphic provides additional information to the user which serves as a ‘cue’ during recall; and iv) people prefer graphics to texts and tables (Medyckyi-Scott, 1991:19).

\(^{23}\) http://www.ecoafrica.com/african/travel/Drakensberg.html
\(^{25}\) http://www.greatbrakriver.co.za/
\(^{26}\) http://www.ecoafrica.com/african/travel/VictoriaFalls.html
Graphical illustrations of tourist attractions coupled with travel-related information are the things that internet users look for at tourist websites (Hanna & Millar, 1997:470). As explained above, the use of maps as a method of conveying spatial information on tourism websites is low with respect to conveying information on landscapes and mountains, nature or scenery, flora and fauna. Mostly maps are used for conveying spatial information about the geographical location of areas, transport networks and to a lesser extent, weather or climate.

Geographical Information Systems (GIS) has the ability to present spatial data in the form of maps and can be viewed as a visualization tool, which allows one to integrate graphics, data analysis, image processing and data animation to visualize and manipulate spatial data. Of greater worth is the possibility of being able to interactively control viewing parameters; to selectively emphasize features which are pertinent to a task while suppressing less relevant information; to modify, in close to real time, colour variables and the degree of transparency of 3D (three dimensional) visualizations, in order, for example, to raise the opacity of ‘interesting’ parts of the visualization whilst lowering those parts closer to the eye which may obscure areas of interest (Medyckyi-Scott, 1991:22).

With GIS, 3D surface visualization is possible, with greater photorealism in the displays being possible due to the use of raster type data, coupled with possibilities of interactive scene manipulation and animation. The most common data source for 3D visualization is derived from digital terrain or elevation models, which is often used in conjunction with other data – vector, satellite imagery and attribute data; or other 2D (two dimensional) and 3D visualization techniques that include hillshade, slope and aspect maps, or statistical data having a surface-like nature, e.g. population. These scientific data visualization techniques have the potential of being used more in tourism for communicating information on landscapes, mountains, natural surroundings and flora. This is possible, as there is digital data that already exists and is available, with the potential of being repackaged into information.

GIS’s capability of combining meteorological and other natural or human-made environmental information (e.g. ecological, climatic, topographic, scenic and other data) broadens its scope for application (Bertazzon et al, 1996:42). A possible application is producing maps showing the potential geographic location of a range of species or fauna. An example of such an application is of a study that modelled the spatial distribution of sheep. Two grid-type GIS systems linked to
physiological-based animal simulation models and the environment were integrated, yielding hourly predictions of the animal’s location (Namken & Stuth, 1997:786). Another example is of a modelling system called HABITAT that related sightings of an ecological distribution, Koala bears in this case, to environmental characteristics. Data describing elevation, temperature, radiation, precipitation, present vegetation, land use, surficial lithology, land type and topography were combined with the ecological attributes of Koala, resulting in the production of a map showing their potential geographic distribution (Walker & Young, 1997:625). In another study, Westervelt & Hopkins (1999:191) used a geographic ecological modelling system (GEMS) to model dynamic mobile individuals (endangered species) in combination with either static or dynamic raster-based landscape simulations (which include dynamics of weather, soils and vegetation). When modelling endangered species, it is important to keep track of individuals over time and space, interactions among individuals, landscape processes over time and space, interactions among landscape processes, and interactions of individuals with landscape processes. This model meets these requirements. The three examples identified from literature illustrate that there is potential for repackaging the available digital data for use in tourism, and combinations of meteorological and other natural or human-made environmental data can result in increased and improved provision of spatial information for tourists.

4.5 Examples of Maps Produced Using GIS

The maps which follow below are just illustrations of GIS’s capability to produce maps that are potentially useful in tourism. The maps are produced using agricultural land resource data for the Western Cape region of South Africa, mainly because the data was readily available.

4.5.1 Homogenous Farming Areas Map

The map shows areas with the same agricultural potential or characteristics, that is, have similar farming patterns. Generally, factors such as the soil type, topography, and the micro-climate of a particular location are similar and together these factors give rise to typical farming patterns. Figure 4.1 shows the classified homogenous farming areas for the Western Cape region, together with the location of towns and the major road networks. Figure 4.2 shows the legend for the classification of the homogenous farming areas. Homogenous farming areas can be overlaid with elevation, the product of which is shown in Figure 4.3.
Figure 4.1: Homogenous Farming Areas for the Western Cape Region
Figure 4.2: Legend for Homogenous Farming Areas
Figure 4.3: Stellenbosch Homogenous Farming Areas
Figure 4.3 illustrates the ability of GIS: a) to integrate various kinds of information, in this case from the agricultural, infrastructural and hydrological fields, and b) to display greater photorealism by making surface visualization possible by means of combining raster data (elevation) with vector data (rivers, roads and homogenous farming areas). Communicating tourism information by utilizing surface visualization techniques of this nature is currently almost non-existent on tourism websites hence there is an information gap that can be filled by making use of these displays, thereby increasing and improving communication of tourism information.

There is a lot of other background information available and related to the homogenous farming areas that can also be made use of in tourism. Table 4.2 below gives an example of background information for one homogenous farming area, Eersterivier, shown in Figure 4.3.

**Table 4.2: Characteristics of Eersterivier Homogenous Farming Area**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Eersterivier farming area</td>
</tr>
<tr>
<td>Extent of arable area</td>
<td>15 900 hectares</td>
</tr>
<tr>
<td>Topography</td>
<td>Undulating</td>
</tr>
<tr>
<td>Climate</td>
<td>Average monthly rainfall, maximum and minimum temperature and evaporation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Month</th>
<th>Rainfall (mm)</th>
<th>Max temp (°C)</th>
<th>Min temp (°C)</th>
<th>Evaporation mm/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>21.4</td>
<td>27.6</td>
<td>15.1</td>
<td>8.8</td>
</tr>
<tr>
<td>February</td>
<td>20.7</td>
<td>27.8</td>
<td>15.1</td>
<td>7.8</td>
</tr>
<tr>
<td>March</td>
<td>37.1</td>
<td>26.2</td>
<td>13.9</td>
<td>5.7</td>
</tr>
<tr>
<td>April</td>
<td>72.5</td>
<td>22.6</td>
<td>11.7</td>
<td>3.5</td>
</tr>
<tr>
<td>May</td>
<td>106.8</td>
<td>19.9</td>
<td>10.2</td>
<td>2.4</td>
</tr>
<tr>
<td>June</td>
<td>108.7</td>
<td>17.6</td>
<td>8.4</td>
<td>2.0</td>
</tr>
<tr>
<td>July</td>
<td>110.4</td>
<td>17.1</td>
<td>7.6</td>
<td>2.2</td>
</tr>
<tr>
<td>August</td>
<td>86.5</td>
<td>18.0</td>
<td>8.3</td>
<td>3.1</td>
</tr>
<tr>
<td>September</td>
<td>56.7</td>
<td>19.9</td>
<td>9.3</td>
<td>4.5</td>
</tr>
<tr>
<td>October</td>
<td>44.2</td>
<td>22.8</td>
<td>11.4</td>
<td>6.9</td>
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<tr>
<td></td>
<td>November</td>
<td>December</td>
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<td>23.9</td>
<td>25.5</td>
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<td>8.2</td>
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<td>24.6</td>
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<tr>
<td></td>
<td>14.5</td>
<td>8.9</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Irrigation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>513 hectares registered for 4 000 m³ water per hectare per annum. The rest of the area receives water from mountain streams, fountains and dams</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major agricultural crops</th>
<th>Winegrapes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pears</td>
</tr>
<tr>
<td></td>
<td>Plums</td>
</tr>
<tr>
<td></td>
<td>Tobacco</td>
</tr>
<tr>
<td></td>
<td>Easy peel citrus</td>
</tr>
</tbody>
</table>


This information can be useful especially for individuals interested in agritourism. For example, with the use of this map (Figure 4.3), if one is travelling from one point to another, one gets an idea of what kind of agricultural activities (vineyard, pear, plum, tobacco or easy peel citrus fruit farming) takes place from one area to the next, together with visualization of the structure of the landscape along the route. Most tourism websites currently use just pictures from a few selected areas to show the structure of landscapes (Section 4.3.2), but with this proposed way, tourists are given more and better information as they are able to visualize the structure of the landscape for a larger coverage, together with detailed information on the farming activities taking place. The presence of roads in the map allows tourists to select routes, which will facilitate their being able to access tourism destinations practicing the type of farming of interest.

Topography\(^{28}\) can provide information regarding the amount of sunlight interception by a slope, exposure of a slope to winds, drainage of soil water and the development of thermal inversion layers (Carey, 2001:12). Together with the climatic data provided, this information from the background data for the homogenous area can be useful for individuals motivated by climatic or weather conditions. In addition, information regarding the inclination of slopes, aspect, altitude and hillshade can also be derived from topography and can be processed into information that meets different objectives.

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\(^{28}\) Topography is a static feature of the landscape and is described by altitude as well as the rate of change of altitude over distance (Schultz in Carey, 2001:8).
4.5.2 Stellenbosch Vineyards Map

The map in Figure 4.3 already discussed, shows the location of various wine estates in different homogenous farming areas. Zooming into the area surrounding one wine estate, Delheim, results in the production of the map in Figure 4.4 that shows the structure of the landscape surrounding the Delheim wine estate located in the Stellenbosch district. The map illustrates GIS’s capability of enhancing surface visualization by giving more photorealism in displays, hence increasing the efficiency of communication of spatial information to tourists. Currently, most tourism websites only provide picture shots of selected areas surrounding establishments (as discussed in Section 4.3.2), but GIS mapping of this nature allows for the visualization of the whole structure of landscapes covering larger areas at finer scales. In this instance, the starting point was the Western Cape region map (Figure 4.1), which was zoomed in to produce a map for the Stellenbosch area (Figure 4.3), which was further zoomed in to produce a more detailed map of the Delheim wine estate in the Stellenbosch district (Figure 4.4). GIS therefore has the potential for enhancing the efficiency of communication of spatial information to tourists on websites using maps of this nature, which is currently not being done. Maps of this kind can be useful to persons interested in farming activities, scenery, mountains, the landscape and mountain climbing (motivation factors identified in Section 2.5).

A good number of tourists that tour wine farms participate in wine tasting and are interested in knowing the quality of the wine. The quality of wine depends on terroir\(^{29}\) and viticultural practices (Carey \textit{et al}, 2002:12). Terroir is defined as a complex of natural environmental factors [climate - temperature, wind, humidity and rainfall; topography – altitude, aspect, slope inclination and shape; geology; and soil – chemical composition, pH, soil color and temperature, depth, texture and structure] that cannot be easily modified by the producer. This ‘complex’ is expressed in the final product with the aid of various management decisions resulting in distinctive wines with an identifiable origin (Carey, 2001:7). Hence, it is likely that agritourists interested in wine tours will therefore also be interested in having access to information on factors that influence the wine’s quality, that is, terroir characteristics.

\(^{29}\) Terroir is translated literally as soil in French. It describes not only the terrain on which the vines are grown, but also encompasses soil, slope, orientation to the sun, elevation and effects of climate. It is also used to describe the earth characteristics found in a wine. (Winegeeks.com: Wine glossary definition for terroir. - http://winegeeks.com/resources/glossary/T/63/terroir/)
Information on the natural environmental factors influencing terroir can be provided and presented spatially on websites (as most of the data needed are readily available), but searches on various agritourism websites did not yield results showing establishments that currently communicate terroir information to tourists spatially using maps. Establishments that convey information about terroir on websites are currently commonly making use of the text method. This shows that there is potential for increasing and improving the provision of terroir information to tourists spatially by use of maps on websites. Figure 4.4 illustrates this point. For example topographical information regarding altitude, aspect, slope inclination and shape can be easily gathered by observing the map. The other terroir influencing factors mentioned above are also readily available (identified in Table 4.1) hence can be incorporated into the map. The ability to interactively control viewing parameters in GIS increases the efficiency of communication of spatial information to tourists as tourists will be able to emphasize features of interest whilst suppressing less relevant information.
4.5.3 Land-use Map

Figure 4.5 illustrates GIS’s ability to combine various types of data from various fields, which in this case are as follows: roads and cities – infrastructure; land use – agriculture; and cultural areas – culture). This map may be relevant to individuals interested in agritourism and ecotourism, as it shows the different types of land use patterns for the Western Cape. There is more detailed data that is available in the digital format (although not shown in Figure 4.5) that expands more and provides detailed descriptions of the different land-use patterns (for example areas where the land is used for growing citrus, vegetables, table grapes, wine grapes, stone fruit, grains, etc). This will provide useful information for tourists interested in farming practices.

Cultural areas are also identified and this is vital for potential agritourists and ecotourists who are reported from the literature reviewed in Section 2.5, to be very interested in this activity. This facilitates tourists’ ability to select their destination routes using the information provided by the land use map. Information that can be derived from the map is visualization of the type of farming activities taking place at particular locations.

Currently, information regarding farming practices (‘flora’ as discussed in section 4.3.5) is usually communicated to tourists with the use of text and pictures, hence the GIS map improves on communication of spatial information as it allows for surface visualization of flora, using maps. Satellite images in GIS can also be used for surface visualization.

Given that agritourists are also motivated by cultural factors, they are in a position to select the different cultural activities that interest them offered around the vicinity of the areas practicing the type of farming they are interested in. The cultural data set for the Western Cape region identifies all areas that have been designated as important culture sites, which include for example museums, caves and archaeological sites, historical buildings, bushman paintings, graves or burial sites and many other cultural destinations. All the cultural destinations could not be included in Figure 4.5 as they are too many. However, examples are given of the location of the following cultural destinations, which include: Platbos 1814’s grave/burial site, Langebaan lagoon fossil site, various locations of San Rock Art, the 800year old Woodville tree, caves and archaeological sites.
Maps of this nature can also provide useful information for individuals interested in scenery or natural surroundings and flora.
4.6 Accessibility of Spatial Information

Communication of spatial data on websites has the implication that potential tourists will have to have access to a computer and the internet in order to have access to the spatial data. Internet use has grown rapidly in Africa but although these are encouraging trends, the differences between the development levels of Africa and the rest of the world are very wide\(^\text{30}\). Africa is the least connected continent\(^\text{31}\).

Each computer with an Internet or email connection usually supports a range of three to five users in Africa. African internet users are estimated at around five to eight million, with about 1.5 million to 2.5 million outside of North and South Africa. This is about one user for every 250 to 400, compared to a world average of about one user for every fifteen people, and a North American and European average of about one in every two people. The UNDP World Development Report\(^\text{32}\) in 2000 presented the following figures showing internet use for other developing regions: one in 30 for Latin America and the Caribbean; one in 250 for South Asia; one in 43 for East Asia; and one in 166 for the Arab States. Accessibility might therefore be a problem for potential tourists from other parts of Africa and one possible solution may involve equipping local tour agents with the hardware, software and training so as to enhance potential tourists’ access to graphic communication of spatial information. It is however important to note that despite the low projected connectivity figures for the African continent, it is possible that potential ecotourists may also have the same profiles as those from developed countries (affluent, well educated and professionals), hence will not experience accessibility problems. Further studies will need to be conducted to determine the profiles of ecotourists and agritourists from elsewhere on the African continent to determine whether using websites to communicate spatial information to them will be effective.

As stated in Chapter Three, most ecotourists originate from developed and high-income countries, which include countries from North America and Europe. The ecotourists are reported to be affluent and, coupled with the fact that one in every two people own computers, it is highly


likely that the targeted population has easy access to a computer equipped with an internet connection. Hence websites are likely to be effective with respect to communicating spatial information.

Despite the great potential for improving the communication of spatial information to tourists through the use of maps presented on websites, it is also important to consider the sophisticated software and skills needed by the user to get value from the more powerful information system. It is of paramount importance to consider the psychological limitations of the user, which results in a classical problem of a trade-off between sophistication and efficiency of information communication. Limitations in a person’s ability to handle and process information are a major constraint on graphic design and comprehension. Resolving the difficulty of the user being presented with too much information (for example, when three combinations or more of data layers are combined or overlaid to form a new presentation) resulting in one being unable to discriminate meaningful patterns from meaningless ones, is a major issue in GIS (Medyckyi-Scott, 1991:22).

This problem of skills can be handled by: a) simplifying the land resource data during the repackaging process into tourism information, b) providing various levels of sophistication for various groups of users, or c) by providing training for tour operators who will in turn use their knowledge gained when presenting and communicating the spatial information to potential tourists. It is important to remember that agritourists and ecotourists are reported in Section 3.2.4 to be well educated, with most possessing tertiary education. Well-educated consumers are most likely to conduct e-shopping (Christou & Kassianidis, 2002:103), so the assumption that use of the computer and internet for searching for information will be very high, can be made. So the targeted agritourist and ecotourist segments will access the spatial tourism information on websites as most make use of the internet as a source of obtaining information on tourism products. In addition, well-educated consumers are most likely to be computer literate; hence the levels of experiencing problems with the graphic websites will be visibly lower compared to computer-illiterate consumers. General hints and guidelines to be followed during web design that increase the user-friendliness of developed websites are provided in Annex 1. These will be essential for the follow-up study where designing takes place.
4.7 Summary

Numerous available land resource digital data for South Africa and the SADC region have been identified in this chapter. The digital spatial data types identified for South Africa are as follows: boundaries (international, provincial, farm, nature and game reserve); airports and airfields; railways; roads; streets; powerlines; markets; wine cellars; abattoirs; catchment areas (primary, secondary, tertiary and quaternary); coastlines; dams; lakes; rivers; thermal and cold springs; biome; flora; national parks; botanical gardens; endangered species (birds, wildlife, fish, grasslands, medical plants and vegetation); distribution of sensitive reptiles, mammals and butterflies; mountain range; slope; topography; elevation; terrain; digital orthophoto images; land cover; land use; wetlands; veld types; geology; soil types; water quality; climate and weather data.

The identified spatial digital data for the rest of SADC are as follows: airports; boundaries (international, country, province, districts); cities, villages and settlements; road and rail networks; utility networks (cross-country pipelines and communication lines); cities and rural population; cultural landmarks; managed areas (national parks, forests, reserves); protected areas (biosphere reserves, ramsar wetlands and world heritage sites); marine production; animal and plant species that are threatened, critically endangered and vulnerable; disasters of natural origin (earthquakes, extreme temperatures, floods, slides, volcanic eruptions, waves/surges, wildfires, drought and wind storms); drinking water sources and sanitation; hydrological basins and drainage systems; dams, inland water bodies, lakes, rivers, streams, coastlines, reservoirs and lagoons; malaria cases; seasonal landcover; global ecosystems; land use; vegetation life forms; forests; wilderness; wetlands; irrigated areas and agriculture; crop growing areas; soils; spot height and elevation; topography; elevation; hydrologically corrected DEM, aspect, flow directions and accumulations, slope, drainage basin boundaries and compound topographic index - wetness index; actual and mean monthly values of temperature, potential and actual evapotranspiration, precipitation and cloudiness.

The scale for data for the SADC region is much coarser (commonly 1:1 000 000) compared to that of South Africa’s data (commonly 1:250 000; 1: 50 000 and 1:500 000). The geospatial data presentation form for most data sets is in the form of maps, with most features being stored in the vector format.
Links between i) the available land resource digital data that have the potential of being repackaged and becoming useful sources of information, and ii) the spatial information needs derived from identified motivation factors and demand determinants, were established. It shows that existing spatial data sets created for purposes other than tourism, seem to have the potential to offer tourism information in correspondence with confirmed tourist information needs. It can therefore be posited that possibilities of repackaging the spatial data into useful spatial information in tourism is there. However, it is important to note that other issues, like appropriateness of the scale and format, were not addressed in drawing up this suggestion. It is therefore of paramount importance that a particular market segment be identified, from which their specific spatial information needs will be obtained in a follow-up study. The identified specific spatial information needs are those that will determine whether the available land resource data are applicable or not. But generally, this study suggests that there is potential for repackaging the available land resource data into useful spatial tourism information.

Most tourism destinations communicate spatial information to tourists by using text or pictures. The use of maps is particularly high only for illustrating the location of places and transport networks. Given the fact that scientific visualization in the form of maps is possible for communicating spatial information on landscapes, mountains, natural surroundings and flora, it therefore follows that there is the possibility of improving the communication of spatial information on these identified factors to tourists by repackaging the available digital data into useful sources of spatial tourism information on tourism websites.

GIS has the ability to present spatial data in the form of maps, hence to improve communication of spatial tourism information. This was illustrated using the following three maps: i) Homogenous farming areas map, ii) Stellenbosch vineyards map, and iii) Land-use map. These maps illustrate the capability of GIS: a) to integrate various kinds of information, i.e. from the agricultural, infrastructural, cultural, climatic and hydrological fields, and b) to display greater photorealism by making surface visualization possible by means of combining raster data with vector data.

Communication of spatial data on websites implies that potential tourists will have to have access to a computer and the internet in order to have access to the spatial data. Africa is the least
connected continent, but since most of the proposed target market segment of ecotourists originates from developed and high-income countries, coupled with the fact that they are affluent, it is safe to suggest that the targeted population is likely to have easy access to a computer (equipped with an internet connection) and consequently are likely to have access to the spatial information.

Limitations in a person’s ability to handle and process information also pose a major constraint on graphic design and comprehension, hence accessibility of information. This problem of skills can be handled by a) simplifying the land resource data during the repackaging process into tourism information, b) providing various levels of sophistication for various groups of users, or c) by providing training for tour operators who will in turn use their knowledge gained when presenting and communicating the spatial information to potential tourists. Since most agritourists and ecotourists are reported to be well educated, most, if not all, will be computer literate and are likely to conduct e-shopping. Hence the levels of experiencing problems with the graphic websites will be visibly lower compared to computer-illiterate consumers and the use of websites provides a potentially effective means of communicating spatial information on websites.
CHAPTER FIVE: CONCLUSIONS AND SUMMARY

CONCLUSIONS

The literature study broadly assesses the usefulness of available digital land resource data as a source for agritourism and ecotourism information by comparing the inventory of available spatial data sets for South Africa and the SADC region with the needs for spatial data as derived from a literature study of travel motivations and demand determinants.

The first objective was to review literature so as to identify the spatial information needs of tourists, which are derived from the analysis of demand determinants and travel motivation. The information assessment (travel motivations and demand determinants) delivered more general than specific needs but in spite of this, guidelines were provided for the assessment of the spatial land resource data’s potential for repackaging and processing into tourism information. Literature shows that tourists are interested in nature-based tourism products, hence there is demand for these products and consequently, there is a potential for use of available spatial land resource digital data, once repackaged, in agritourism and ecotourism (both of which are nature-based activities).

Numerous digital data on natural, cultural and human-made resources were identified for South Africa and the SADC region. For most of the spatial parameters for South Africa and the SADC region, the geographical features are stored in the vector format compared to the grid or raster format, and their geospatial data presentation form is in the form of maps. The scale for the SADC region data sets is generally much coarser compared to that of South Africa’s data sets.

With respect to how destinations communicate spatial information on resources to potential tourists on websites, the various ways include the use of text, pictures, maps, videos and webcams, with the majority making use of text and pictures. Maps were frequently used to convey spatial information about the geographical location of areas, transport networks and to a lesser extent, hydrology, weather and climate. However, conveying spatial information on tourism
websites of landscapes and mountains, fauna, flora and nature/scenery using maps was very minimal. The second objective was hence fulfilled, involving the identification and description of available digital land resource data and explaining how packaged spatial information on features/resources is currently being communicated to tourists.

The last objective of exploring the possibility of having available land resource data being repackaged to meet the identified information needs of agritourists and ecotourists was achieved by establishing links between i) the available land resource digital data, and ii) the spatial information needs derived from motivation factors and demand determinants. Common ground was found between the spatial information needs and the available spatial data, showing that existing spatial data sets created for other purposes, such as agricultural production and resource planning, seem to have potential to offer tourism information in correspondence with confirmed tourist information needs identified from the literature reviewed. This, coupled with the potential uses of scientific data visualization techniques, and the ability of combining meteorological and other natural or human-made environmental data in GIS modelling, suggests that the possibility of repackaging the land resource data into useful tourism information is there.

**SUMMARY**

Broadly, the purpose of the study was to assess the usefulness of available digital land resource data as a source for agritourism and ecotourism information by comparing the identified spatial information needs with the available spatial data sets. The first objective was to review the literature to identify the spatial information needs of tourists, derived from ‘travel motivations’ and ‘demand determinants’ studies, which involve describing and explaining tourist behavior and profiles. This objective was tackled in Chapter Two and Three.

Chapter Two analyzed travel motivations in order to derive the spatial information needs. General studies on travel motivation were reviewed from the literature, with the focus not only on agri and eco tourism studies because motivation is multidimensional, hence general tourism studies can also encompass elements of agritourism and ecotourism.
The most popular motivation factor for all studies was ‘culture/history/heritage’, followed by ‘friends/family/social gatherings’, ‘rest/relaxation/leisure’, ‘knowledge seeking’, ‘escape’, ‘nature/natural surroundings’, ‘fauna/wildlife/national parks/hunting’, ‘fun/excitement/entertainment/pleasure seeking’, and for the ‘creation/maintenance of interpersonal/personal ties’. With specific reference to agritourists and ecotourists, they are to a great extent motivated by ‘fauna/wildlife/national parks/hunting’, ‘nature/natural surroundings’, ‘culture/history/heritage’, ‘knowledge seeking’, ‘outdoor/physical activities’, ‘rural environments/villages’ and the presence of ‘lakes’. Other motivation factors also identified in literature include: prestige; novel/new experience; scenery; wilderness; weather/climate; rest/relaxation/leisure; visit familiar surrounding; family/friends/social gatherings; safety; escape; ease of accessibility/travel; facilities; budget efficiency/economical expenditure; adventure; cosmopolitan environment; city/gambling/high tech environments; landscapes; mountains; photography; rivers/stream; beaches/ocean-side; water activities; flora/forests/trees/wildflowers; birds; mammals; time efficiency; self discovery/actualization; sports; golf; tennis; health; information; shopping; waterfalls; farming activities; hiking/mountain climbing; camping; rafting; canoeing; kayaking; sailing; cruise boat; walking; fishing; swimming; cycling; skiing; horse/trail riding; eco tours; wind surfing; scuba diving; snorkeling; picnicking; and geothermal. Spatial information needs were derived from the all the relevant identified motivation factors.

It is important to note that most of the motivation factors identified from the literature are broad, as the studies were not designed with the same objective as this research. In spite of the general character of the identified information needs, it did provide guidelines for the assessment of the spatial land resource data’s potential for repackaging and processing into tourism information. There is therefore a need for further research in which market segmentation will result in the identification of a particular target group, from which the objective of finding the group’s specific spatial information needs will be directly addressed.

In Chapter Three, an exploration of the determinants of demand shed further light on the characteristics and profiles of agritourists and ecotourists. This enabled the identification of information needs and assisted in tackling the issue of accessibility of spatial information on internet websites, which is an important factor to consider for the consequent effective
communication of information to tourists. Ecotourists’ demand for accurate and competently communicated site and trip information before undertaking a journey is high. Site information includes: general ecological features of the site, special site features to be expected, special or sensitive species to be encountered, available tourism services, prices/costs and expected behaviours. Information is also required on if and how destinations are sustainable, environmentally friendly and socially responsible. Trip information includes: the length, the start and end time, accommodation and transport types, immigration requirements, expected weather, potential dangers, required clothing, safety issues, equipment needs, physical difficulty of the trip and cultural expectations. Most agritourists are interested in actively participating in farming activities, thus require information on the different kinds of production activities taking place and also during which times of the year. However, further studies are essential for determining the spatial information needs as some of the studies from the literature reviewed did not address the issue of the impact of demand determinants on information needs.

The spatial information needs which were derived from analyses of both ‘tourism motivation’ and ‘demand determinants’ studies are as follows: i) actual values, standard deviations and averages of minimum and maximum temperatures, rainfall, humidity, wind speed and cloud cover; ii) land cover; iii) land use; iv) type, population and location of fauna; v) type, population and location of flora; vi) geology and soil types; vii) hydrology; viii) elevation; ix) hillshade; x) contours; xi) aspect; xii) pollution levels; xiii) topography; xiv) demographics; xv) distance; xvi) road types and quality; xvii) accommodation and facilities available; xviii) attractions, services and products available; xix) prices or costs; xx) adventure and sporting activities; xxi) farming activities; xxii) infrastructure; xxiii) transport networks and types; xxiv) cultural expectations and expected behaviours; xxv) potential dangers and difficulties of trip; xxvi) how destinations are sustainable, environmentally friendly and socially responsible; and xxvii) geographical location of features or areas (e.g. historical/cultural/heritage sites, wilderness, landscapes, mountains, fauna, flora, lakes, rivers, beaches/ocean, agritourism and ecotourism destinations, rural areas/villages, police and emergency services).

Despite the shortcomings of a) the broad motivation factors identified in literature and b) the complications that were encountered when trying to establishing the link between some demand
determinants and spatial information needs; the reviewed literature on motivation factors and demand determinants provided guidelines for the assessment of the spatial land resource data’s potential for repackaging and processing into tourism information. The literature shows that tourists are interested in nature-based tourism products, hence there is a need for the products and consequently, there is a potential for the use of available spatial land resource digital data, once repackaged, in agritourism and ecotourism.

With respect to the issue of accessibility of information derived from demand determinants, ecotourists and agritourists generally have high levels of education, suggesting a high probability of computer literacy, access to a computer and the internet, thereby enhancing the chances of the use of internet websites as an effective way of making spatial resource information accessible. Most ecotourists are professionals or have managerial positions and are reportedly affluent, hence are likely to own computers and are computer literate. Therefore, problems encountered with respect to tourists’ ability to handle and process information on graphic websites on the internet will be visibly lower compared to computer illiterate tourists. The reviewed profiles of agritourists and ecotourists make it safe to suggest that the use of websites on the internet can be an effective way of communicating spatial information to potential tourists as it is likely to be accessible to most of the targeted population.

The other study objective included the identification and description of available digital land resource data for South Africa and the SADC region. This was addressed in chapter Four. Resources found at destinations can be natural, cultural or human-made. Certain spatial resource digital ‘data’ (raw facts) exist for South Africa and the SADC region, which has not been primarily produced for use in tourism, but has the potential of being repackaged to meet tourism information needs.

The digital spatial data identified for South Africa are as follows: boundaries (international, provincial, farm, nature and game reserve); airports and airfields; railways; roads; streets; powerlines; markets; wine cellars; abattoirs; catchment areas (primary, secondary, tertiary and quaternary); coastlines; dams; lakes; rivers; thermal and cold springs; biome; flora; national parks; botanical gardens; endangered species (birds, wildlife, fish, grasslands, medical plants and
vegetation); distribution of sensitive reptiles, mammals and butterflies; mountain range; slope; topography; elevation; terrain; digital orthophoto images; land cover; land use; wetlands; veld types; geology; soil types; water quality; mean annual temperature, rainfall and evaporation; and climate and weather data.

The identified spatial digital data for the rest of SADC are as follows: airports; boundaries (international, country, province, districts); cities, villages and settlements; road and rail networks; utility networks (cross-country pipelines and communication lines); cities and rural population; cultural landmarks; managed areas (national parks, forests, reserves); protected areas (biosphere reserves, ramsar wetlands and world heritage sites); marine production; animal and plant species that are threatened, critically endangered and vulnerable; disasters of natural origin (earthquakes, extreme temperatures, floods, slides, volcanic eruptions, waves/surges, wild fires, drought and wind storms); drinking water sources and sanitation; hydrological basins and drainage systems; dams, inland water bodies, lakes, rivers, streams, coastlines, reservoirs and lagoons; malaria cases; seasonal landcover; global ecosystems; land use; vegetation life forms; forests; wilderness; wetlands; irrigated areas and agriculture; crop growing areas; soils; spot height and elevation; topography; elevation; hydrologically corrected DEM, aspect, flow directions and accumulations, slope, drainage basin boundaries and compound topographic index - wetness index; actual and mean monthly values of temperature, precipitation, cloudiness, potential and actual evapotranspiration.

For most of the spatial parameters for South Africa and the SADC region, the geographical features are stored in the vector format. Examples of parameters stored in the grid or raster format include: elevation, topography, terrain, digital orthophoto images, climate, soils, irrigated areas and agriculture, global lakes and wetlands. The scale of data for the SADC region is generally much coarser (commonly 1:1 000 000) compared to that of South Africa’s data (commonly 1:250 000; 1: 50 000 and 1:500 000).

With respect to the objective of exploring the possibility of having the land resource data being repackaged to meet the identified information needs of agritourists and ecotourists, links were established between i) the available land resource digital data that has the potential of being
repackaged and becoming useful sources of tourism information, and ii) the spatial information needs derived from motivation factors and demand determinants. A lot of common ground was found between the spatial information needs and the available spatial data, showing that existing spatial data sets created for other purposes, like agricultural production, seem to have the potential to offer useful tourism information in correspondence with confirmed tourist information needs identified from literature reviewed. It can therefore be posited that possibilities of repackaging the spatial data into useful spatial information in tourism is feasible. However, it is important to note that other issues, like appropriateness of the scale and format, were not addressed when drawing up this proposition. It is therefore of paramount importance that a particular market segment be identified, for which specific spatial information needs will be obtained in a follow-up study. This study only identifies the building blocks of a spatial information system for tourists, of which the actual design will have to be done and evaluated with the information needs and contributions of a specific tourist segment. The identified specific spatial information needs are the ones that will determine whether available land resource data is applicable or not, that is, provides the knowledge to be used for the transformation process of converting data into useful tourism information. But generally, this study suggests that there is potential for repackaging the available land resource data for South Africa and the SADC region into useful tourism information for tourists.

However, other kinds of data not identified amongst the available spatial data sets, but that have the potential of being made available in the spatial format to satisfy the identified information needs include: standard deviations of minimum and maximum temperatures, rainfall, humidity, wind speed and cloud cover; how destinations are sustainable, environmentally friendly and socially responsible; demographic information; prices or costs; and the different activities that can be undertaken at areas (e.g. type of water or land based activities).

The study also aimed to explain how packaged spatial information on features/resources is currently being communicated to tourists. Packaged spatial information on features or resources is mostly made available to tourists by tour operators through internet websites; travel books, brochures and pamphlets. Globalization and the associated time space compression has resulted in destination marketers having to deal with increased volume and speed of information flow.
Hence technological advancement has resulted in the explosive growth and use of the internet and the World Wide Web as an advertising and e-commerce medium in the tourism industry.

With respect to how tour operators communicate spatial information to potential tourists on websites, the various ways include the use of text, pictures, maps, videos and web cams, with the majority making use of text and pictures. The most typical way of presenting spatial data is through the use of maps, which have the following advantages over text and tables: a) maps have a summarizing effect, reduce information overload and can be processed faster by the mind compared to text and tables; b) because comprehension of data is easier, performance on a task involving use of data tends to improve; c) information presented graphically is remembered better than text and table information because the spatial aspect provides additional information to the user that acts a cue during recall and people prefer graphics to texts and tables. However, conveying spatial information on tourism websites of landscapes and mountains, fauna, flora and nature/scenery using maps is minimal. Mostly maps are used to convey spatial information about the geographical location of areas, transport networks, hydrology, weather and climate; and to a lesser extent landscapes, mountains, nature or scenery, flora and fauna.

There is potential for having the digital land resource data repackaged and communicated to the tourist, thereby improving the availability and quality of spatial information. Scientific data visualization techniques have the potential of being used more in tourism for communicating spatial information on landscapes, mountains, natural surroundings and flora. As its core, tourism ‘sells’ images of the geography of different parts of the world and the use of scientific visualizations enhances the creation of the images, hence promoting the chances of destinations’ success. With GIS, three-dimensional surface visualization is possible, with greater photorealism in the displays being possible due to the use of raster type data, coupled with possibilities of interactive scene manipulation and animation. The most common data source for three-dimensional visualization is derived from digital terrain or elevation models, which is often used in conjunction with other data – vector, satellite imagery and attribute data; or other two dimensional and three-dimensional visualization techniques that include hillshade, slope and aspect maps, or statistical data having a surface-like nature, e.g. population.
There is potential for repackaging raw digital data for use in tourism, and the possibility of combining meteorological and other natural or human-made environmental data in GIS modelling enhances the potential of achieving increased and improved provision of spatial tourism information.

GIS’s ability to present spatial data in the form of maps on websites, hence improve tourism information provision was illustrated using three maps: i) Homogenous farming areas map, ii) Stellenbosch vineyards map, and iii) Land-use map. The maps illustrate the ability of GIS: a) to integrate various kinds of information, like from the agricultural, infrastructural, cultural, climatic and hydrological fields, and b) to display greater photorealism by making surface visualization possible by means of combining raster data with vector data.

There are two important issues regarding accessibility that need to be considered when promoting destinations using graphics on websites. Firstly, effective communication of spatial data on websites is dependent on the potential tourists having access to a computer and the internet in order to have access to the spatial data. Africa is the least connected continent, but since most of the proposed target market segment of ecotourists originates from developed and high-income countries (majority from North America and Europe), coupled with the fact that the ecotourists are affluent; it follows therefore that the targeted population is likely to have access to a computer equipped with an internet connection thereby rendering the use of websites as an effective method of communicating spatial information to tourists.

Limitation in a person’s ability to handle and process information is another important issue to consider for effective communication of spatial data, as it is a major constraint in graphic design and comprehension. This problem of skills can be handled by a) simplifying the land resource data during the repackaging process, b) providing various levels of sophistication for various groups of users, or c) by providing training for tour operators who will in turn use their knowledge gained when presenting and communicating the spatial information to potential tourists. Most agritourists and ecotourists are reported to be well educated and are likely to be computer literate; hence the levels of experiencing problems with the graphic websites will be visibly lower compared to computer-illiterate consumers. The likelihood of conducting e-
shopping is significantly high, making the use of websites an effective method of conveying spatial information to the potential tourists
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Google Earth - http://earth.google.com/

Great Brak River - http://www.greatbrakriver.co.za/

Lake Louise Hotel - http://www.skilouise.com/weather/

Namibia Professional Hunting Association - http://www.natron.net/napha/english/whynamibia.html
Paarl Tourism - http://www.paarlonline.com/photo-gallery.html,
http://www.paarlonline.com/area.jpg


Prince Albert Meiringspoort - http://www.patourism.co.za/meiringspoort.htm

Safaricamlive.com - http://www.safaricamlive.com/


Tourism Delta - http://www.tourismdelta.bc.ca/agritourism.html,
http://www.tourismdelta.bc.ca/ecotourism.html


Welcome to South Africa - http://www.southafrica.net/

Wellington –the cradle of the vine -
http://www.visitwellington.com/picture_gallery.htm

Winegeeks.com: Wine glossary definition for terroir. -
http://winegeeks.com/resources/glossary/T/63/terroir/
APPENDICES

Appendix I: General Hints and Guidelines for Web Design

Design considerations

- Reduce worker’s workload by automating as much of the site's function as possible. Eliminate the need for users to perform tasks like performing mental calculations, making estimations, recalling account numbers and passwords by letting the computer perform as many tasks as possible so users can concentrate on performing tasks that actually require human processing and input (Gerhardt-Powals, 1996).

- Include Logos and place logo(s) in a consistent place on every page to ensure users are fully aware they are on your Web site. Frequently users are unaware when they have clicked to a different Web site. Logos are the most effective way to ensure that users know where they are. The logo should be in a consistent location on each page; many designers place the logo in the top left corner (Nielsen, 1996).

- Provide Feedback to inform users where they are in your site. Feedback provides users with information they need to proceed to the next activity. Feedback can be as simple as changing the color on a link after it has been clicked by a user (IBM, 1999).

Content

- Important information should be as close to the top of hierarchy as possible. When creating a Web site that lends itself to a hierarchical style of organization (i.e., pyramid structure with most important information on the top), it is beneficial to "flatten" the hierarchy and to provide more information sooner. The more steps (or clicks) users must take to find the desired information, the greater the likelihood they will make a wrong choice (Zaphiris & Mtei, 1998).
Links

- Position important links and information higher on the page, at a minimum. When pages have more than a screenful of information, users spend much more time on the top of the page and less time on the remaining screen of information. Research emphasizes that there is an 80-20 split, with 80% of time spent on the first screenful and the remaining 20% on the rest of the page (http://usability.gov/guidelines/links.html).
- Use text links and it is unadvisable not to use image links. Text links generally download faster, are preferred by users, and change colors after being selected.
- Show used links. In a study of the speed with which users could find certain information, providing this type of feedback was the only aspect found to improve the speed of finding information. Users continue to use link colors to understand which parts of a site they have visited. Where no evidence of link use, or non-standard colors are used, users repeatedly bounce among a set of pages not knowing that they are going back to the same page again and again (Nielsen, 1999).

Graphics

- Graphics take time to design, implement, and maintain and may slow downloading, hence use small and few graphics where possible to reduce download time (Nielsen, 1999).

Accessibility

- Use color wisely by not allowing color alone to communicate a message. Ensure that text and graphics are understandable when viewed without color (Chisholm et al, 1999).
- Design for device independence by using features that enable activation of page elements by a variety of input devices. Users should be able to interact with the
Web site using a preferred input (or output) device. The input device may be a mouse, keyboard, voice, head wand, etcetera (Chisholm et al, 1999).

- Provide equivalent alternative formats for users who don't have the appropriate software or text readers. Some users cannot use images, movies, sounds, applets, etc. directly, hence one can for example, use the HTML "alt" tag for giving users a simple text description of a visual element.

- Allow users to control time-sensitive content changes, so they can pause or stop moving, blinking, scrolling, or auto-updating of objects or pages (Chisholm et al, 1999).

**Software/Hardware**

- Reduce downloading times by creating web pages that load quickly. Slow download times may result from too many graphics, inappropriate use of applets (when dynamic HTML would work as well), and slow server performance.

- If special software is required that is not common to most users, provide a downloadable version of the software (Chisholm et al, 1999).