CHAPTER 1
BACKGROUND OF THE STUDY

Introduction

This study seeks to evaluate the interlinkages between the policies at the Kruger National Park (KNP) and how they affect one another, as an avenue to promote comprehensive environmental policy integration (EPI). These policies include the tourism policy, the elephant management policy and the water provision policy. Accordingly, this Chapter presents the context and motivation of the study, the conceptual framework adopted for this research, the literature review and the problem statement. The research objectives, the methodology, the rationale for the study location and the significance of the study are also set.

Context and Motivation of the Study

Recent years have seen a growing need to focus on interlinkages and interdependencies in environmental problem solving and in defining opportunities for policy concerns. This is because environmental problems are never strictly linear, even though some cause-and-effect relationships can be shown. Instead they are embedded in a complex web of interactions (Salem, Chenje and Mohammed-Katerere, 2005). Hence, environmental problems cannot be treated separately by fragmented institutions and policies since they are interlinked in a
complex system of cause and effect. In each situation, policy-makers and resource managers will need to determine the appropriate level of interlinkages to address any specific problem. The explicit link between two or more policy domains is crucial because the implementation of one can affect the other, which may in turn be affected by another. For instance, tourism can be an important driver of biodiversity loss. Loss of biodiversity in turn can affect the tourism business. Furthermore, measures taken to address biodiversity loss might have consequences for the objectives of tourism. In fact, if there is lack of policy coordination due to fragmented administration and compartmentalisation, policy objectives may not be attained as a consequence.

Policy systems are unduly complicated, producing inefficient or even ineffective solutions, giving rise to new problems and the waste of resources (Briassoulis, 2004). Policies, whether national or supranational, attempt to regulate and direct the use of resources to serve common goals. Policies influence directly and/or indirectly: (a) the functioning of the economic system (price support, subsidies, loans, technological innovation, business support and large infrastructure works), (b) the functioning of the social system (income support, local services and support of border regions) and (c) the functioning of the environment (protection and maintenance of forests, ecosystems and sustainable management) (Briassoulis). Hence, creating interlinkages between different policies and programmes is an effective way to develop synergies and enhance opportunities for using the available resources more effectively. It is also recognised that such efforts could promote the elimination of contradictions, lead to the avoidance of overlap, and hold promise for identifying comprehensive
solutions and building synergies between diverse policies, thus maximising the resources available for implementation.

After several decades of policy-making experience, it is now evident that sectoral, unidimensional, unidisciplinary and uncoordinated policies do not serve well the cause of sustainable development (Briassoulis, 2004). Experience has shown that the common practice of developing policies independently of one another and ignoring the multiple functional relationships that should exist among them is not usually effective and does not produce desirable results (Briassoulis). Adopting an interlinkage approach that leads to policy integration can help to ensure that interventions are more relevant, robust and effective, and that these policies are cross-sectional and interdisciplinary. The successful implementation of many policies is dependent on an interlinkage approach (Malabed, 2001).

Briassoulis (2004) suggests that policy integration is needed to hold the policy system together and to manage the numerous policy interconnections so that policy implementation meets demands successfully and effectively. This is because policies have generally unpredictable, uncertain, and contextual and contingent impacts at various spatial/organisational levels, frequently giving rise to undesirable surprises in both the short and long run. At times, policies displace rather than ameliorate problems across time, space and medium (Brown, 2000). Theoretically, integrated approaches to policy-making that address comprehensively and thoroughly the root causes of the problem appear to be promising although these too are not free of problems and drawbacks. Integration of policies may eliminate redundancies in policy programmes and initiatives, instruments and actors, and turn complicated and chaotic or rigid
policy systems into ones possessing organised and manageable complexity (Briassoulis, 2004).

It is within this context that this study is concerned with evaluating the interlinkages between the KNP tourism and biodiversity conservation and management policies to see how they affect one another. Given the inevitable multifarious and departmentalised nature of policy formulation in the KNP, there is a need to analyse interlinkages among policies. It is envisaged that the research will provide the basis for the development of comprehensive environmental policy integration for the Kruger National Park. To allow for in-depth analysis the policies chosen are, the Recreational Opportunity Zonation (ROZ)/tourism policy, the elephant management policy and the water provision policy. These policies are of interest because they are intimately linked to many of the key sustainability challenges and perpetuate some of the most severe environmental problems in the KNP. Generally, these policies face many goal conflicts and involve difficult trade-offs in dealing with them. For instance, tourism activities and facilities exert a strong pressure on water resources, lowering the ground-water table, and causing habitat alteration (Garcia and Servera, 2003), and therefore impacting on biodiversity. Evaluating interlinkages can give policy-makers and park managers the advantage of a better grasp of the range of options available, the possible costs and benefits of their decisions and an awareness of the interdepartmental links that are necessary to promote unit joint policies. Policies that are comprehensive and adopt an interlinkage approach provide better opportunities for addressing multiple related challenges and for developing solutions to them (Mohamed-Katerere, 2001). Hence, it is
important to establish interlinkages that lead to comprehensive environmental policy integration at the local level. The environment, with its seamless web of interactions operating in a continuum, reveals that all systems are interconnected (Briassoulis, 2004). This study is undertaken from within a policy integration conceptual framework.

**Conceptual Framework**

The framework for assessing the policy interlinkages adopted for this study is derived from Briassoulis’ (2004) policy integration, and engrained on well-established concepts of policy analysis (Zingerli, Bisang and Zimmermann, 2004). Policy integration is considered to occur when two or more policies take into account their effect on one another across spatial scales and over time. It refers to a process of sewing together and coordinating various policies, both vertical and horizontal spheres of governance, modifying them appropriately, if necessary, to create an interlocking, nonhierarchical, loosely coupled, multipolicy system that functions harmoniously in unity (Briassoulis, 2005).

Operationally, Briassoulis’ policy integration concerns the analysis of relationships/interlinkages among the elements and the policy designs of two or more policy domains. These elements are the policy objects, goals, objectives, actors and networks, procedures and instruments (Zingerli et al., 2004). Such elements can be compared and their relationships analysed. Such an analysis sheds light on the essential compatibility of policy goals/principles and approaches and the larger issues hidden in implementation conflicts. For
evaluating the analysis of the interlinkages between policies the following criteria are used:

(a) Relationships among policy objects. This element examines two or more policies that have the chance of being integrated, if they have common scope, treat common or complementary facets (environmental, spatial, economic, social and institutional) of a problem situation in a congruent or unified manner, or, equivalently accommodate or respect variously one another’s concerns about the social, economic, environmental, cultural and other features of the issues studied.

(b) Relationships among policy actors. Policy formulation and implementation involves particular networks of formal and informal actors. The key question is whether these networks share some common actors who can induce a degree of coherence between different policies. A second issue is whether the actors belong to policy communication rather than issue networks, experiencing greater consensus and continual interaction (Bressers and Kuks, 2002). This element (relationship among policy actors) addresses two or more policies that could be integrated if they share common actors either by design or for reasons unrelated to intentions to facilitate policy integration. In fact, the evaluation of actors focuses on cooperation and collaboration, and whether the actors are generally, nonconflicting and nonadversarial, have shared values, common vision and goals and abide by the same rules even when these are not within their organisational mandate (Shannon, 2002). When
actors are closely tied to individual favourite policies, policy integration may fail (Shannon).

(c) Relationships among policy goals. Eliciting the degree of interlinkages requires an analysis of goals, objectives and targets of the policies considered to assess whether they are common or mutually compatible, or at least not in conflict with one another. In fact, the evaluation focuses on the congruent, compatible, consistent, common or complementary goals and objectives of two or more policies with a view to enhancing the chances of policy integration. When goals and objectives of one policy accommodate their impact on objects of other policies, or if one policy is considered as a tool for the achievement of the goal of another, the two may exhibit some degree of integration (Briassoulis, 2004).

(d) Relationships among policy structures and procedures. This element analyses whether horizontal and vertical interlinkages exist among the organisational and administrative apparatuses involved with individual policies. The focus is on commonality, congruent, nonconflicting, and cooperative, coordination structures, and on procedures for formulating and carrying out joint, cooperative and integrated solutions to common problems (Briassoulis, 2004).

(e) Relationship among policy instruments. This involves evaluating relations among policy instruments necessary for successful policy integration and it involves three cases. These include (i) relationships among instruments of the same type, (ii) relationships among instruments of different types, and (iii) use of integrative instruments.
Compatible, nonconflicting, coordinated and/or complementary and mutually reinforcing policy instruments of the same type, for example, legal, institutional or financial provided by different policies, suggest some form of integration. Noncompatibility of instruments suggests lack of policy coordination (Robert et al., 2001). Although policy instrument compatibility is tested during implementation, various conflicts can be avoided if the design of a policy’s instrument takes into account the instruments of other policies. An examination of policy instruments of different types focuses on coordination, absence of conflict and complementarity. Noncoordination entails costs and inefficient use of resources leading at times to inaction (Briassoulis, 2004).

Briassoulis points out that the use of integrative instruments (Environmental Impact Assessment (EIA) or Strategic Environmental Assessment (SEA)) is not necessarily an indication of policy integration since integrative instruments assist the integration between policies indirectly by (i) incorporating concerns of other policies in the object of a policy, (ii) inducing the harmonization of policies on theoretical grounds, and (iii) promoting the development and use of integrated assessment methods and data sets. Integrative instruments may promote policy integration only if their use is reciprocal, that is, not asymmetric.

The proposed analytical framework builds on the Adaptive Management Paradigm (AMP) developed to integrate uncertainty in decision-making for complex systems. Adaptive management based on learning-by-doing and experimenting, can be viewed as an approach to managing the risk associated with uncertainty. Policies are considered as hypotheses and management as
experiments from which managers learn from their successes and failures (Briassoulis, 2005). It stresses the importance of two-way feedback management and the state of the resources in shaping policy, followed by further systematic experimentation to shape subsequent policy. Its flexible, iterative, co-evolutionary and science-based character allows for institutional learning, that is, changing resources management institutions to fit the nature of the system being managed (Berkes and Folke, 1998).

In sum, the main constituent elements of a policy to adopt in analysing relationships between policies are its objects (characteristics of the problem considered and the theory about it), interested and/or involved actors, their goals (reflecting their value systems), the available structures and procedures (for formulation and implementation) and the instruments used to achieve the goals set. The evolving tenets justify the adoption of Briassoulis’ (2004) analytical conceptual framework for analysing policy integration. Transferring its main ideas (tenets) to the present case, and blending with the adaptive management paradigm in policies at the KNP could serve as a guide for the analysis of policy interlinkages. The framework has the potential to provide useful evaluation of the interlinkages between tourism and biodiversity conservation and management policies in the KNP. The rationale is the need to create an interlocking, hierarchical, loosely-coupled, multilevel policy system that functions harmoniously and in unity. The output of such an integrated process will be an integrated policy system aiming to achieve multiple complementaries and synergies among policies (Briassoulis). Although a perfect integration policy system may be an utopian ideal, the more policies talk to one another and the
more the right hand knows what the left does, the more satisfactory will be the response of policy-making to the demands of contemporary problems (Persson, 2004). Despite these calls for policy integration in the realm of environmental policy-making, very little has been achieved as outlined in the following section.

**Literature Review**

Thirty years of environmental policy-making at the national and international level reveals striking problems to establish interlinkages that lead to integration of policies (Briassoulis, 2004). Several decades of policy-making experience have made it evident that one-dimensional, unidisciplinary, uncoordinated sectoral policies do not serve well the cause of sustainable development, and that they are especially poor at incorporating more external and environmental aspects (Briassoulis). The literature indicates that the need for policy coordination is crucially relevant for a more effective and efficient as well as legitimated policy. The need to consider economic and environmental policy together has also been widely recognised in recent decades and is emphasised in several classical texts (Nilsson and Eckerberg, 2007).

At the international level, the World Commission on Environment and Development (WCED) in “Our Common Future” (1987) made a strong case for Environmental Policy Integration (EPI). It was seen as integral to the broader policy objective of sustainable development and the two concepts have since been dealt with together. Justifying the need for EPI, the Brundtland Commission argued that:
The integrated and interdependent nature of the new challenges and issues today contrast sharply with the nature of the institutions that exist today. These institutions tend to be independent, fragmented, and working to relatively narrow mandates with closed decision processes. Those responsible for managing natural resources and protecting the environment are institutionally separated from those responsible for managing the economy. The real world of interlocked economic and ecological systems will not change; the policies and institutions must WCED (1987) (cited in Nilsson and Eckerberg, 2007, p.1).

The 1992 United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro supported the views of the WCED and devoted chapter eight of Agenda 21 to the integration of environment and development in decision-making (United Nations Conference on Environment and Development, 1992). By declaring that development cannot be isolated from environmental protection, it called for the integration of environmental protection into development policy concepts also known as environmental policy integration. Four programmes were identified in this chapter: integrating environment and development at the policy, planning and management level, providing an effective legal and regulatory framework, making effective use of economic instruments and establishing systems for integrated environmental and economic accounting (Persson, 2004). Further, the 2002 World Summit on Sustainable
Development (WSSD) in Johannesburg reaffirmed its commitment to Agenda 21 and the Rio Declaration that UNCED adopted ten years earlier\(^1\). At the World Summit, the world’s leaders stated:

> We also reaffirm our commitment to undertake concrete actions and measures at all levels, including integrated sustainable development in national development strategies and enhancing international cooperation, taking into account the declaration of principles of the United Nations Conference on Environment and Development, including the principle of common but differentiated responsibilities (United Nations, (2005) (cited in King and Mori, 2007, p.13).

Yet progress reports fail to show that maintaining this position has had significant results. Further, new international environmental agreements have been institutionalised separately from other policy regimes (Klaus, 2004). A case in point is the implementation of several European Union (EU) policies that reflect uncovered problems of cooperation at the level of the EU and its member states (Robert et al., 2001). These include divergent political objectives and interests, lack of clear positions of the European Commission, different political prospects among the community and national and subnational actors, a high degree of policy and administrative sectoralisation and centralisation in the member states, weak administrative coordination and a low degree of consultation among
subnational authorities (Briassoulis, 2004). Policy implementation has revealed also that asymmetric interaction is ineffective, that is, one policy incorporates concerns of another but this is not always met by similar moves in the other policy.

Historically in the EU, policy-making had followed diverse styles, differing from one area to the other² (Lenschow, 2002). This has led to sectoral/functional specialisation and vertical organisation of administration at both the EU and the national level (Avery, 2001; Hertin and Berkhout, 2003; Robert, 2001; Zahariadis, (2003) (cited in Briassoulis, 2005)). The result has been well documented: a general lack of coherence, coordination and cooperation among policies, generating costs and inefficiencies, taxing limited government budgets and detracting from the achievement of sustainable development (OECD, 1996; O’Riordan and Voisey, 1998; Persson, 2002; Peters, 1998; Shannon, (2002) (cited in Braissoulis, 2004)).

Recently, various EU member states (Italy, Spain, Portugal and Greece) have reflected on the lack of cooperation among policies in coping with land degradation and desertification (Briassoulis, 2004). Although the aforementioned states have drawn policy measures and initiatives emphasising the integration of environmental concerns into sectoral policies, they have also limited their attention to particular sectors. Moreover, they tackled only certain aspects of integration, a consequence of the lack of focus on space and they have missed the most important factors underlying the socio-economic processes driving the phenomenon.
In a similar vein, at the national level, new cross-cutting issues such as environmental protection have been institutionalised mostly in separate ways, without changing the framework conditions for action in the policy sectors mainly responsible for environmental deterioration. In recent years, Switzerland has developed a number of procedural and institutional approaches that could foster coordination and policy integration, mostly in the environmental, spatial planning and construction sectors. However, overall coordination efforts at the national level in Switzerland are still relatively recent and do not go across the entire spectrum of policy sectors. It is still common for policy sectors to proceed rather independently of one another although a certain level of deliberation with other sectors is usually realised (Zingerli et al., 2004). Even Sweden, a forerunner state in environmental policy integration, has not achieved much (Nilsson and Eckerberg, 2007). In the EU another facet of integration that has received minimal attention is the unity of policy formulation with policy implementation.

This scenario is not confined to the above mentioned European countries. The Baltic states of Estonia, Latvia and Lithuania are faced with collaborative planning between park management and the tourism sector (Kaltenborn, Vistad and Stanaitis, 2002). This is because environmental impacts are complex, with overlapping issues involving environmental, socio-economic and political aspects. This complexity places challenging demands on policy makers and resource managers. Further, according to the Asian-Pacific report on the Millennium Development Goals for the 2005 World Summit, only 5 out of 55
countries had even prepared national sustainable development strategies (United Nations Conference on Environment and Development Programmes (UNCED), 2005), of which virtually none was fully integrated into national economic development plans (King and Mori, 2007).

In Africa, the African Ministerial Conference on the Environment (AMCEN) accepted the challenge to develop interlinkages and policy integration, but the interlinkages between institutions and EPI remain relatively weak. The AMCEN is an Africa-wide body for environmental policy development and environmental governance. A mechanism that fully addresses policy interlinkages at the regional level is yet to be developed (Salem, Chenje and Mohammed-Katerere, 2005). This is because African countries are party to a number of international and regional conventions and are still developing systems for incorporating the outputs of the conventions into their programmes and policies and have not yet focused on developing interlinkages. Even at regional and subregional levels new environmental institutions at different administration levels, such as environmental agencies, have been established, to tackle both green and brown environmental issues. Despite such progress, the environment is yet to be fully mainstreamed to all sector-specific policies and economic development. For instance, for Botswana, Kalikawe (2001) asserted that the lack of linkages between policies affects biodiversity conservation. For example, water resources and settlement allows fragmentation of the wildlife habitats, even within protected areas, permitting the siting of hotels and camps next to wildlife water resources.

At present, the South African government is making great headway in establishing enabling legislation for tourism development and biodiversity
conservation and management (Spenceley, 2001). However, a fragmented legal and governance framework remains in place (Kotze and du Plessis, 2006). Moreover, research has neglected the function of interlinkages and interrelationships with other legislation such as that affecting tourism sustainability and environment at national and provincial level. There is a need to recognise the interlinkages and to reflect them in the design and implementation of policies. Glazewski (2000) also noted that despite the administering authorities, South Africa’s legislation regarding protected areas and nature conservation generally remains uncoordinated and fragmented, a phenomenon described in the Biodiversity White Paper (1997), as follows:

The fragmented, polarised and inefficient administrative and legislative structures created by apartheid resulted in no fewer than seventeen government departments having primary responsibility for nature conservation prior to the April 1994 election. This situation did not improve with the establishment of new provinces and government structures. Divided responsibilities, together with a duplication of effort, a profusion of laws, and most importantly, a lack of co-ordination, have been major factors hampering the effective conservation of biodiversity. Aggravating this has been a lack of integration of biodiversity considerations into national decision-making, weak political will with regard to environmental conservation, and the insufficient and declining allocation of resources to conservation. Over and over again, the need to link biodiversity
conservation to the needs of South Africa’s people has been highlighted as a major concern, as well as the importance of integrating conservation into an overall strategy for conserving and using natural resources sustainably\(^3\).

In fact, in South Africa, the degree of fragmentation is very high. Almost every central government department is involved in some aspects of environmental administration, and both resource allocation and pollution control are subdivided and are subject to different legislation and different departments. Fragmentation includes vertical fragmentation among the various spheres of government, horizontal fragmentation among the different line functions in government departments in each sphere, and fragmentation of policies, legislation, government tools, processes and procedures (Kotze and du Plessis, 2006). Fragmentation is also evident in the South African governance regime that regulates biodiversity resources (Kotze and du Plessis).

Botha (2004) notes that fragmented laws impede implementation and are a threat to successful biodiversity conservation. It is vital to ensure integration and synergy among the suites of environmental laws. Achieving this would minimise confusion (for landowners, the public, conservation agencies and the arms of government) and would promote national cohesion in the approach to conserving biodiversity inside and outside state-owned protected areas. Further, there is no stated policy with the effect of law at either the national or provincial level to guide legislators or administrations in the formulation or administration of
conservation legislation. Glazewski (2000) posited that until such policy is determined there can only be piecemeal protection of the natural environment and haphazard growth in the law. There is a clear lack of effective, integrated environmental management since responsibility for natural resource management is shared by many different national and provincial ministries. This means that the institutional framework and the legal system generally fail to facilitate integrative approaches to land use, including the protected areas. Duplicated and uncoordinated pieces of legislation have implications for park management. Although a significant platform for biodiversity conservation in parks has been created in law, several areas of concern remain.

One of the key challenges facing park managers is inefficiency and obstacles resulting from fragmentation. This fragmented governance regime may inhibit the achievement of sustainable biodiversity protection efforts (Kotze and du Plessis, 2006). The Department of Environmental Affairs and Tourism (DEAT) (2003) also noted that the principal constraints to the implementation and management of an adequate system of protected areas have been identified as legal (numerous uncoordinated pieces of legislation dealing with protected areas), fragmentation of protected area management (South Africa has four agencies at national level and ten provincial level agencies responsible for protected areas), and the associated duplication within these institutions. It is vital to ensure integration and synergy among the suites of environmental laws. Achieving this would minimise confusion for the implementers and would promote national cohesion in conserving biodiversity inside and outside of state-owned protected areas (Botha, 2004).
Juxtaposing the above environmental policy integration, that is, capitalising on the interlinkages of complex human-environment systems (Zahariadis, 2003), is an avenue worth exploring to manage problem complexity and provide for a better institutional fit, thus adding value to policies while economising resources (Sanderson, 2000). Despite the growing importance of policy interlinkages and integration, very little has been achieved in this field. The best known interlinkages occur largely between human activities and global environmental issues such as loss of biodiversity, climate change, land freshwater and coastal system degradation (Global Environmental Fund (GEF), 2004). More significant overall are those that span overarching spheres of human activities, for example, those between natural resources and basic human needs, and between ecology and economics. Against this backdrop, this research aims at advancing policy integration at the park level.

Research Problem

Biodiversity conservation has emerged within the past two decades as one of the most important global challenges confronting national planners, world bodies, professionals and academics (Mbale et al., 2005). In the context of the KNP there is a range of challenges confronting biodiversity conservation and management policy initiatives and significant among these are the tourism initiatives in the park, water provision and elephant management. In response to the challenges the Kruger National Park (KNP) management has developed fragmented policies. This is attributed to the fact that the overall research initiative in the KNP is still skewed in favour of compartmentalised knowledge,
lacking in integration, as in most environmental research settings (du Toit, Kevin and Biggs, 2003). Yet, solving environmental problems requires that natural and social scientists bring together such separate knowledge to inform collective deliberation over the issues in question Masca et al. (2003) (cited in King, Biggs and Loon, 2007). Single sectoral policy approaches cannot address the problem as a whole. These approaches have been criticised as inefficient, in that they result in competing and contradictory objectives and duplication of effort, and as ineffective, in that they ignore the complexity of interactions between different areas of policy interest (Kidd and Shaw, 2007). This has implications not only for the KNP but also for other national parks, where policy formulation is also fragmented.

Mabunda’s study (2004) also reflects that the KNP lacks a strategic tourism management plan based on scientific research data to guide its tourism policy implementation, monitoring and evaluation plans. A conflict exists that creates a gulf between tourism and biodiversity conservation objectives (Mabunda). Mabunda recommended a management framework based on a legal framework and an adaptive management philosophy to avoid degradation of the natural resource base and to meet tourist expectations. du Toit, Kevin and Biggs (2003) agree that the KNP must consolidate a balanced plan to guide further development, combine societal values, biodiversity conservation, precautionary principles and sustainable development. If the overall impact of tourism on biodiversity is to be positive and sustainable, it is vital that the policies operate within an integrated environmental policy system in which intersectoral linkages are recognised and incorporated.
To break the mold, there is a need to evaluate the interlinking issues between policies and how they affect one another, with particular reference to evaluating principles, the broad approaches and how these interact at the policy decision-making, economic and political levels. Hence, this research will provide, inter alia, guidelines needed to provide an integrated framework for decision-making by agencies responsible for protected areas. Linkages can be promoted from the local to the national level.

It is within this context that this evaluated the interlinkages between the KNP tourism and biodiversity conservation policies, and determined how they affect one another as an avenue to promote comprehensive Environmental Policy Integration (EPI). The challenge, however, was to understand the interactions and feedbacks among the policies and how these can be reflected in the design and implementation of policies to minimize the negative impacts on each other, and to maximize the positive ones. Another challenge was to evaluate the coordination between agents; (eco-environmental actors and political actors, in this case, park managers, rangers and the South African National Parks (SANParks) officials) actions, strategies and beliefs in creating, maintaining and using linkages to influence policy formulation and implementation. Against this backdrop, the study aimed to achieve the following objectives.
Objectives of the Study

(a) To identify specific interlinkage that represent typical core concerns and challenges for tourism and biodiversity conservation as well as management efforts.

(b) To examine the strengths and weaknesses of the interlinkages between the new policies, that is: tourism policy, elephant management policy and water provision policy.

(c) To analyse how the interlinkages affect one another in terms of:
   (i) principles, approaches and implementation in policy decision-making at the economic and political levels.
   (ii) park management implications of interlinkages for enforcement, implementation, monitoring and compliance with the National Environment Management: Protected Areas Act (No. 57 of 2003) (park legislation).

(d) To examine cooperative mechanisms between policy implementers (park management) and policy initiators (directorate and board).

(e) To identify gaps in the park legislation, regulations and institutional systems needed to support the synergies/interlinkages of the proposed policies at park level.

(f) To propose a comprehensive environmental policy integration framework for tourism, water provision and elephant management policies.
Research Methodology

In selecting the research methodology for the present study, a triangulation approach blending qualitative and quantitative research techniques was decided upon. Conversely, a qualitative account is the major outcome of this study, since qualitative interviews are informed by their ontological, epistemological, axiological and methodological principles to gather in-depth data about the phenomenon being studied (Ritchie, Burns and Palmer, 2005). Hence a realist intensive single-case embedded design was used to investigate the concerns of this study. It usually involves a small-scale local study, the data from which is generalised to some broader theory (analytical generalisation) and not to populations (statistical generalisation) (Seethal, 1993). Moreover, metadata can be collected through a variety of methods and sources of evidence. The inadequacies attributed to the case study method have been overcome by the supportive quantitative evidence used to buttress and clarify the accounts (Robson, 2002). In this study interviews proved to be particularly useful for understanding individual perspectives, experiences and intentions that cannot be derived from documents.

The mixed approach blends with Briassoulis’ (2004) policy integration analytical conceptual framework as well as the Environmental Policy Integration (EPI) approaches (Chapter IV) also adopted for the current study. The policy integration framework provides the structure for analysing the relationships between the corresponding elements of the policy designs of two or more policy domains, these are the policy objects, goals and objectives, actors and networks, procedures and instruments. Hence the policy integration methodological
framework has been adopted to structure the surveys/interview guide in this study. Against this backdrop, various methods of data collection used in the field include content analysis and interview surveys.

**Interview Survey for Park Managers**

The survey targeted senior managers of the KNP, that is, camp managers, tourism and hospitality managers, heads of scientific services, heads of conservation unit and the head ranger. They were selected because, by virtue of their position, responsibility and experience, they are knowledgeable in the management and running of the park. The officials were asked to give opinions about the need to coordinate and integrate policies, to provide information on policy interlinkages, and on park management implications for integrating policies. The officials were also asked to provide information about implementation, monitoring, control measures, cooperation mechanisms at the departmental and political levels, achievements and challenges/impediments facing biodiversity conservation. Finally, officials were also asked to give information on management interventions to maintain ecosystem structure and function in response to policy integration and to probe what could be done to operationalise and cause systematic integration or how environmental policy integration could be made acceptable throughout the Park’s administration. These interviews took the form of a structured interview guide directed by a topic guide to examine the interlinkages through a series of relatively open ended questions (Appendix A, B, C and D).
Some questions for the park management allowed for responses to be rated on the Likert scale scoring 5, 4, 3, 2 or 1, respectively. To supplement the scores, respondents were asked to provide additional information that helped to explain or qualify each score (Hockings, 2003). This question format is valid and useful in monitoring tourism, particularly for measuring attitudes towards different aspects of tourism in a specific destination (Davies, 2001). A total of 21 park managers were interviewed from 16 July to 6 August, 2007. Follow-up interviews to fill the gaps left by the earlier schedule were conducted in 2008, from 28 July to 5 August. The interview guide was designed in collaboration with three research managers at the KNP. The original/preliminary questions were circulated in advance at the KNP in coordination with officials at the KNP. In fact, from the inception of this research project, there was on-going collaboration between the researcher and the research coordinator at the Kruger National Park, in developing the research proposal. The proposal was approved by the scientific research managers and was then registered with SANParks. A number of pilot interviews were also carried out in 2006 in order to gain a general overview of the management structure of the KNP.

**Interview Survey for the South African National Park Executives**

The assessment toolkit provided a structured and an unstructured interview guide administered orally to key informants, that is, the South Africa National Park (SANParks) officials. Among them were the Executive Director:
People and Conservation, the Executive Director: Conservation Services, Executive Director: Tourism Development, Executive Director: KNP and the Executive Director: Parks, Executive Director: Policy Development and the Executive Director: Legal Services. These SANParks officials were interviewed since they are significant role players in policy-making, the implementation of legislation and the monitoring of park activities. The interviews were conducted at the SANParks head office in Pretoria from 21 July to 25 July, 2008. Interviewees for both park managers and the directorate were selected through the snowball method.

Content Analysis

In keeping with the intensive research design chosen for this study, numerous primary sources of documentary data were collected during the principal data collection period from July 2005 to June 2008. Content analysis was used as a companion research instrument in multi-method studies employing diverse methods to enhance the validity of results by minimizing biases (Ritchie, Burns and Palmer, 2005). In this study, content analysis was used to identify and examine the strengths and weaknesses of the interlinkages and linking drivers between the new policies in the KNP. Content analysis was also conducted to examine the principles, approaches and implementation measures, and the cooperation mechanisms between policy actors and networks at the departmental and political levels. Content analysis was further used to examine legislation and control measures and to identify gaps in legislation,
regulations and the institutional system needed to support the synergies/interlinkages of the policies at park level.\textsuperscript{14}

Data Analysis

Each interview was tape-recorded, transcribed in full and coded, then the type of respondent was assigned to each transcript, to enable the application of various themes to detect, inter alia, trends in views expressed by different categories of respondents.\textsuperscript{15} The analysis, interpretation and conclusion-drawing processes were conducted in relation to the research objectives and the overall research problem defining the study (see Chapter VI and VII). Based on the results of the field study and document analysis, an environmental policy integration management framework was developed to serve as a guide for environmental planning that seeks to balance tourism business and biodiversity conservation and management.

Research Location

The KNP covers a total area of nearly 20,000 square kilometres in the eastern Lowveld region of South Africa, adjoining the Mozambique border in the east and Zimbabwe in the North (Figure 1).
The KNP has several advantages as a case study area. It has long been regarded as the vanguard of protection and has a long history of conservation. Firstly, the KNP’s national and international status imposes on the SANParks Board a responsibility to present the KNP as a showcase/flagship of South African conservation management practice. In fact, the KNP provides an experimental setting in which to generate an understanding of approaches to policy-making and implementation and to answer the question of whether the
national parks institutional structures can embrace an integrated policy-making approach. Secondly, the KNP is home to a wealth of wildlife and flora and is recognised as one of the largest parks in Africa and one of the continent’s premier tourist destinations. Though the KNP is endowed with an outstanding natural ecosystem, scenic landscape, cultural and recreational resources rich in biodiversity, the Park has been continuously degraded due to excessive infrastructure development and high use pressure. Currently, criticism of infrastructure development is on the rise and biodiversity conservation is greatly emphasised. Therefore this study seeks to advance the three pillars of sustainability, that is, ecological, social and economic imperatives. The survey focused on the southern region of the KNP, and took place at five up-market overnight rest camps, in terms of visitor activities, namely, Skukuza, Pretoriuskop, Crocodile Bridge Lower Sabie and Berg-en-dal because of their greater concentration of animal wildlife as well as human activity. Figure 2 shows the precise location of the study.

Significance of the Study

The literature indicate that the need for policy integration is crucial for policy implementation. The Earth Summit of 1992 and the subsequent strengthening of the paradigm of sustainable development inform the call for more coordination in environmental issues. This study tackles this critical policy problem that persists across the world, in recognition of the concern that environmental values are not sufficiently integrated into mainstream sectoral policy-making (Nilsson and Eckerberg, 2007). To build such common ground
Figure 2. The Study Location: Southern Kruger National Park - Rest Camps

the conceptual framework underpinning this study (policy integration analysis) helped to provide a methodology in support of advanced environmental policy integration. The question is: To what extent and at what cost the environmental policy integration principle should be advanced? This study probed how change may occur by wedding conceptual insights with empirical results based on the KNP biodiversity experience over time. Recommendations are made to show
how an integrated environmental policy approach can be adopted in the context of the KNP in order to enhance a strong sustainable scenario.

The research serves to add more value to the development of tourism, water provision and elephant management policies. These policies constitute a composite lens through which a range of policy areas can be scrutinized. An improved understanding of the interlinkages and their implications should inform the choice between possible trades-offs that park managers should make between short-term and long-term goals.

**Conclusion**

Given the current sectoral/departmentalised structure of KNP biodiversity conservation and management policies, the role of the study was to steer the policy process towards an integrated approach to policy making that fuses one policy area’s concerns with those of another, so as to lead to integrated policies that better serve the goal of sustainable development. A creative combination of policies can help exploit opportunities and foster novelty in designing policy interventions (Briassoulis, 2004). Responsive and effective policy-making necessitates an understanding of the inherent uncertainty of policy problems as there is no single, universally acceptable way of formulating the linkages between social systems and natural systems. Solutions to problems cannot be imposed, rather they emerge from the interactions among system components following set rules. That fact renders the search for more comprehensive and more inclusive policies by which to address complex socio-environmental problems an imperative.
In order to fulfill this requirement, greater attention needs to be paid to aligning policy frameworks more closely with relevant biodiversity conservation and management policy interlinkages at the KNP. Hence the need to mobilize a comprehensive spectrum of link-up devices that ensure that the whole operates as a complete entity, rather than having it malfunction as a series of disjointed parts (Myers, 1993). Unless this is eventually achieved, the Park’s mission statement, “To maintain biodiversity in all its natural facets and fluxes, to provide human benefits and build a strong constituency and to preserve as far as possible the wilderness qualities and cultural resources associated with the park” (Braack, 1997, p. 5) might not be feasible. In this study, interlinkages help to bring into focus issues such as drivers of change in biodiversity. There is also need to introduce positive feedback mechanisms to reinforce beneficial, and to decrease undesirable, policy impacts. Greater is the environmental sum of the whole Park than that of departmental or compartmentalised operations within it.

**Structure of the Thesis**

This thesis comprises seven chapters. Chapter I introduces the study’s setting, context and motivation, its conceptual framework, a literature review and a statement of the research problem. The research methodology, research location and the significance of the study are outlined.

Chapter II traces some aspects of the transformation of South African wildlife management from the 1930s to the present and how these changes have impacted on tourism, biodiversity conservation and management initiatives.
Thus, while it is important to understand the broader contextual factors that have influenced the development of national parks in South Africa, it is important to understand how changes in institutional structures have shaped tourism and biodiversity conservation management, with particular reference to the KNP. The Chapter also provides a contextual framework of the changing legislation governing national parks in South Africa and its influence on biodiversity conservation and management in national parks.

Chapter III provides a contextual framework that focuses on a deeper insight into the creation and the zoning of the Kruger National Park. The Chapter also presents the administrative management changes in the pre- and postapartheid eras and their implications for tourism, biodiversity conservation and management.

Chapter IV provides an overview of tourism, biodiversity conservation and management initiatives in relation to the formulation and implementation of policies over time. The Chapter provides a more in-depth account of the environmental impacts of each of the three policies and to what extent Park management addresses the environmental concerns. The Chapter also explores how external international political-institutional factors, culture, tradition and style have influenced recent conservation policy reforms in the KNP.

Chapter V unpacks detailed conceptual issues underpinning this study, in terms of the environmental policy integration approach and discusses how institutions in the policy-making arena should be structured to advance it. Despite calls for policy integration, information about policy integration in practice and the experience of policy-makers with policy integration is minimal. This
Chapter attempts to shed light on the conceptual issues that inform the development of environmental policy integration.

Chapter VI deals with data presentation and data analysis. Finally, in Chapter VII the summary, synthesis, and conclusion to the study are presented. The conceptual framework adopted in this study constitutes a lens through which a range of policy areas may be scrutinized. Hence the conceptual concerns of Chapter I and Chapter VI are evaluated against the subsequent empirical Chapters. In particular, the findings of the research and their implications for tourism, biodiversity conservation and management in the KNP area are analysed. Suggestions and directions for future research are also outlined in this Chapter.
Notes


4 Triangulation is the use of a series of complementary methods in order to gain deeper insight into a research problem (Hoggart, Lees and Davies, 2002; Limb and Dwyer, 2001). When methods are combined, the advantages of each methodology complement those of the other, making a stronger research design that will yield valid and reliable findings (Decrop, 1999). For example, in a quantitative study, the interpretation of statistical analyses may be enhanced by a qualitative narrative account.

5 Babbie and Mouton (2001) reconfirm the need for this approach, as they indicate that by doing the research in the form of data collection within a natural setting for the employees of the organisation, in this case, the Kruger National Park, a degree of naturalism is encouraged for the interviewees to provide rich descriptions surrounding the organization’s tourism and biodiversity conservation and management initiatives.

6 Sometimes a case study may involve more than one unit of analysis. This occurs when, within a single case, attention his also given to a subunit or subunits (Merriam, 1988) (cited in Seethal, 1993). Such a design is called an embedded case study. In the current study, the KNP represent a single unit and the five targeted rest camps in the southern part of the Park stands for the subunits to be investigated

7 Yin (1984) (cited in Seethal,1993)) warns that analytical generalization is not automatic. A theory must be tested through replication of the findings, for example, by using multiple case studies.

8 Evidence for case studies include, documents/content analysis, archival records, interviews, direct observation, participant observation and focus groups (Davies, Hoggart and Lees, 2002; Ritchie Burns and Palmer, 2005).
These include that qualitative approach may be too subjective, because it is based on perceptions and difficulty in study replication and problems of generalizations, in terms of the messages from documents and perceptions of the communication consultants (Bryman, 2001).

Such scoring is usually based on the often subjective perceptions of the person allocating the rating. Although there may be considerable guidance on how various scores should be allocated, the knowledge base on which respondents allocate their scores may vary considerably.

Conducting the survey face-to-face provides control over who represented each office (Langholz, Lassoie, Lee and Chapman, 2000). It also increases the response rate by giving the interviewer the opportunity to work around the park schedules, and to assure them of confidentiality. In cases where respondents consent, tape recordings were used and this enabled the interviewer to place close attention to discussion. The researcher used the snowballing sampling method with government officials, park managers and park rangers to help obtain the required information at first hand because they are key agents.

Interviewees were asked to identify other persons whom it would be valuable to talk to, (Nilsson and Eckerberg, 2007). The strength of this technique is that it helps researchers to overcome one of the main obstacles to recruiting interviewees and gaining their trust (Robson, 2002; Watts and Selman, 2004; Yliskyla-Peuralahti, 2003). It also allows the researcher to seek interviewees more easily with particular experiences or backgrounds (Flowerdew and Martin, 2005). However, there is a need to guard against the use of single initial contact points to avoid recruiting all informers from a very narrow circle of like-minded people.

These include a survey of government legislation on tourism and biodiversity conservation, reports produced by the KNP authorities, and policy documents, articles, archival records and debates by various interest groups. These documents were also used in order to trace the institutional context in regard to the establishment and management of national parks in South Africa and the KNP in particular. Policy documents in the form of decisions and regulations were used to identify shortfalls or gaps, for example in terms of policy formulation and implementation. Interviews were a crucial part of the methodology, as such, was used intensively in order to learn more about park management initiatives on the tourism policy, biodiversity conservation and management.

However, a pitfall of this approach is that policy rhetoric is often very distant from implementation practice. Incorrect conclusions may be reached by looking at policy documents. Evidence from the actual working of policies and decisions were used to demonstrate whether and how provisions work on the ground.

Any irrelevant data that was obtained in the data gathering process during the transcribing process was deleted. The reduced data was analysed through the
process of looking for themes which appeared to be similar, different or odd. These findings were noted and presented in Chapter VI.
CHAPTER II

THE EVOLUTION OF NATIONAL PARKS IN SOUTH AFRICA

Introduction

This Chapter sets the contextual background for the establishment of national parks in South Africa. The focus is mainly on the politics of national parks, economic imperatives and environmental anxieties behind the establishment of national parks in colonial and postcolonial contexts and the consequences these have on park management. It highlights the rationale and logic behind the establishment of parks in South Africa. It examines the transformation of the South African National Parks from institutions of colonial conservation that predominantly served white minority interests to a community oriented model of conservation that attempts to link the protection and management of biodiversity to human needs. It also shows how Western values and practices of nature conservation became a feature of postapartheid South Africa, and the manner in which these values and practices were introduced into postindependence national parks policies. It further explores the various laws and institutional structures that govern, administer and control biodiversity conservation and management in South Africa’s national parks. Thus, while it is
important to understand the broader contextual factors that have influenced the
development of national parks in South Africa, it is equally important to
understand how changes in institutional structures have shaped tourism,
biodiversity conservation and management, particularly for the KNP.

The Establishment of National Parks in South Africa

National Parks\(^1\) are conventionally viewed as sacred global conservation
places where human habitation is excluded, except for employees and paying
tourists (Adams and Mulligan, 2003). However, Ramutsindela (2004b) noted
that, for a long time, the negative consequences of national parks on the very
nature they were meant to protect were largely ignored, mainly because of the
need to promote the national park idea. In recent years, however, there has
been an acknowledgement that political and economic motives behind the
establishment of national parks world-wide have resulted in a global network of
national parks which did not represent major biotic units. In fact, the political and
economic imperatives were generally stronger than ecological concerns. In other
words, national parks have to protect some of the major ecological systems,
particularly where the imperatives of nature conservation were secondary
(Ramutsindela, 2004b).

Notwithstanding the negative consequences, national parks have served
to keep the idea of biodiversity\(^2\) protection alive, and have contributed immensely
to the survival of species and habitats that otherwise might have disappeared.
More critically, they have become an acceptable and strong currency in national
and international biodiversity policies (Ramutsindela, 2004b).
South Africa has played a leading role in the establishment and management of national parks in Africa for more than a century. During the colonial period, South Africa’s parks and reserves were created as an emerging response to the decimation and rapid decline of wildlife that began as European settlers cleared and fenced land for ranches, agriculture, mines and towns (Honey, 1999; MacKenzie, 1993). Carruthers (2007) attested that wildlife in South Africa had been seriously depleted by the end of the 19th century, due to the activities of commercial and subsistence hunters, and sportsmen. The African elephant *Loxodonta*, the hook-lipped and square-lipped rhinoceros and other large mammals had locally become virtually extinct. Kepe, Wynberg and Ellis (2005) concurred that the first official protected areas in South Africa were proclaimed in the nineteenth century, largely as a response to declining wildlife numbers and the extermination of game. Vermin\(^3\) species, such as lion, leopard, cheetah, wild dog and all raptors were killed whenever they were encountered, in the belief that they were responsible for depleting game species, particularly antelope (Carruthers, 1989). *Trypanosomiasis* scares also led to massive game sweeps in an attempt to clear areas of disease. Until after the Second World War the South African government was also directly involved in game slaughter to make more land safe for settlement (Beinart, 1989). In fact, the underlying aim and rationale for the designation of the parks was to safeguard a sufficient range of species and habitats through protected area management in order that biodiversity might be preserved (O’Riordan, 2002). Within these reserves, the rigorous preservation of specific wildlife was of paramount concern.
At the same time, a number of racially discriminatory restrictions were introduced for hunting and fishing (Kepe et al., 2005). Although hunting legislation introduced in the colonial era was ineffective in saving game, in the course of time, the numbers of game generally declined. Some animal species such as rhinoceros and hippopotamus, for example, became nearly extinct (Carruthers, 1989). Conservationist legislation also failed to save game because the law remained unenforced in republican times (post-1961), and in the colonial and provincial periods the advance of agriculture and industrial development left little room for wildlife. Game reserves, the second thrust of the protectionist effort, were initiated in the 1890s after it had become evident that other statutes/enactments were unsuccessful in achieving their objectives (Carruthers).

The Cape Act for the Preservation of Game of 1886 was the first legislation to be introduced for wildlife conservation. Game reserves were withdrawn from the economy altogether, and the concept of the sanctity of these special areas remained dominant for almost a generation. Later, in the transformation of the Transvaal Game Reserve (the former Sabi and Singwedzi Game Reserves) into the Kruger National Park in 1926, a reservation devoted to conservationist principles was established. Wildlife was once more to be utilized for human ends, and was again recognized as a profitable resource to exploit, this time for recreational game viewing (Carruthers, 1995). With increasing recognition of the importance of national parks around the world and of the values they represent (Kaltenborn, Vistad and Stanaitis, 2002). South African park authorities had two mandates: to conserve wildlife and to promote tourism (Honey, 1999). Preservation during the apartheid regime also served to attract
people to visit South Africa, and bring in foreign exchange to offset international sanctions against the apartheid regime.

In order to protect what little remained; a number of game reserves were proclaimed and staffed with game wardens in overall charge. Their duties were to rebuild stocks of antelope, buffalo and other species that had been hunted for hides, horns, biltong (dried meat) and sport. Management strategies to achieve this goal included guarding these desirable species of wild animals against poaching, preventing public access to game reserve and at times removing people from the reserves and exterminating predators, such as the lion (Kepe et al., 2005).

At the dawn of the 19th century, the first formally protected areas in South Africa were the forest reserves demarcated under the Cape Forest Act of 1888. The first state game reserve to be established in South Africa was the Pongola in 1889, now deproclaimed. The reserve was established because the Afrikaner nationalist, Paul Kruger, wanted to free his people from the British and to gain access to the Tongolaland coast (Kosi Bay) (Ramutsindela, 2004b). The townlands of Pretoria (and the adjacent farm Groenkloof) as well as land in the eastern Transvaal (later to be known as Sabi) were both discussed as suitable game reserve sites in 1895. In 1897, four game reserves were established in Zululand, three of which still exist: Umfolozi, Hluhluwe and St Lucia (Fuggle and Rabie, 1999). Added to these republican reserves after 1900, was the large Singwitsi Game Reserve of the north-eastern Transvaal created in 1903 and the Rustenburg Game Reserve created in 1909 (Carruthers, 1989). Of these, the
most important were the Sabi which was created in 1898, and Singwedzi Game Reserve established in 1903, both of which later formed the KNP in 1926.

Despite this achievement, there was no coherent bureaucracy set up to manage the game reserves in three of South Africa’s four colonies. This is because the National Park Act of 1926 did not define the organizational responsibilities and administrative structure of the parties involved in the management of the parks. In fact, no central governing department was given responsibility for studying or protecting indigenous fauna. The lower tiers of government, the provincial authorities, were tasked with their oversight. There was also no consistency in the calibre and training of the personnel who were appointed. South Africa’s legislation inaugurated a parastatal Board of Trustees responsible to the Minister of Lands and did not create a division or department within the civil service nor did it provide with any management guidelines, principles or strategies for action (Carruthers, 2007). This was exacerbated by the fact that during the 1920s and 1930s, there were two strongly opposing views on wildlife management in South Africa and they were reflected in a divide between the national park structure and agricultural scientists, particularly the veterinarians. Carruthers attested that the primary national goal was the promotion of commercial agriculture through scientific advance and disease control. On the other hand, the wildlife protectionists lacked professionalism in opposing the extermination of wildlife and in studying indigenous biota. Although there were small species-specific reserves such as Addo Elephant, Mountain Zebra or Bontebok, and large ecosystems such as KNP, Kalahari Gemsbok or Dongola, there was no appropriate scientific government structure to monitor and
manage them. In addition, none of the first game wardens or rangers had any formal training in the discipline. Worse, many had no inclination for the tasks and actually resisted attempts to improve their wildlife skills and refused to report on sightings of fauna or flora (Carruthers, 2007). South African parks were at risk.

Impacts on Biodiversity Conservation and Management

The lack of any scientific rationale for what game wardens and rangers were doing and the absence of institutional organization was a major constraint to biodiversity conservation. In consequence, no national park was an ecological unit. Many were infested with alien plants and the few reports available (soil, fish and trees) were fragmented and incomplete. It appeared that the absence of conservation policy together with mismanagement had actually caused the near extinction of species such as the hook-lipped rhinoceros, red duiker and mountain zebra (Carruthers, 2006).

This gave rise to the Hoek Commission (1952) which unearthed the effects of disorganization and mismanagement, in which functions were not defined, accountability was absent, attempts to undermine other staff were widespread, and staff was unqualified. However, the Hoek Commission recommended the development of an appropriate corporation culture and professional management with agreed policies and procedures. The Hoek Commission also proposed the establishment of three separate departments: biology, management, park development and tourism. Furthermore, the Commission suggested that the Chairman of the Board should be a formalised
management position called “Director” of National Parks to whom other Department heads would report directly (Carruthers, 2007). Immediately after the Commission’s enquiry, restructuring of the organisation began, but the recommendation that the Chairman of the National Parks Board be a scientist was not realized because no one sufficiently politically reliable could be found.5

The above scenario did not deter the government from the goal of establishing game reserves and, in particular national parks. The number of parks in South Africa grew slowly, but by the turn of the 19th Century more parks had been created. Leggat, Durrheim and Braack (2001) give a chronology of the creation of national parks in South Africa from 1931 with the creation of the Kalahari Gemsbok and the Addo-Elephant National Parks. In 1937, the Mountain Zebra National Park was established. The pace slowed during the 1940s and 1950s until the establishment of the Bontebok National Park in 1961 was followed by the Golden Gate Highlands National Park in 1963, and the Tsitsikama in 1964. The Augrabies Falls National Park came on board in 1966, and by 1968 the Groenkloof National Park was designated. The Wilderness National Lake Area was established in 1977, followed by the Karoo National Park in 1979. In 1985, the West Coast National Park and Knysna National Lake Area were created, followed by the Vaalbos National Park and Tankwa-Karoo in 1986 and the Wilderness National Park in 1987. In 1991, the Richtersveld National Park and QwaQwa National Park were designated, followed by the Marelele National Park in 1994. In 1998, the Vhembe-Dongola National Park and the Cape Peninsula National Park were established, and this was followed by the Agulhas National Park in 1999. The Namaqua National Park was created in
2002 and other proposed national parks are the Namaqualand Coast National Park and the Knersvlakte National Park (Leggat et al., 2001).

Of paramount significant is the QwaQwa National Park which was established in 1991 in times of great political tension. The establishment of QwaQwa National Park meant that its protected area would remain safe even after the disappearance of the Bantustan in which it was situated. The establishment of the Richtersveld National Park in 1991 appears to have been a result of negotiations over matters of nature conservation. Interestingly, Matshakatini Nature Reserve was established in 1994 at the initiative of the then South African National Defence Force. Eastford Nature Reserve became the first residential development in South Africa to be declared a registered nature reserve under the governance of the Department of Nature Conservation (Ramutsindela, 2004b). The Dana Bay Conservancy also developed originally from a farmland.

In addition to the state’s responses, there were also individuals and organizations that worked hard to protect wildlife and to create nature reserves, including areas where wildlife was nonexistent or where it had already been wiped out. Organizations such as the Wildlife Protection Society contributed to the preservation of wildlife. Furthermore, these often influenced government policies. For instance, the Wildlife Protection Society was instrumental in advancing the promulgation of the Wildlife Protection Ordinance of 1950, which listed a large number of animals and birds as protected game in the Cape (Hey, 1995) (cited in Ramutsindela, 2004b). South Africa’s wildlife scientists and managers came to regard with pride management by intervention. Fresh ideas
such as adaptive management have more recently permeated national park management in South Africa. In addition, the methods of command-and-control that dominated from the 1960s to the 1990s have broadened from concerns around individual species, through a period when populations and communities of organisms were central, to the present focus on ecosystems, biodiversity and even human neighbouring communities (Carruthers, 2005).

South Africa currently (2008) has a well developed system of protected areas, and parks fall under the protected area system. There were some 422 terrestrial protected areas with a total area of 6,638,658 ha or 5.0% of the land area of the country and of these terrestrial areas, 22 were national parks (Figure 3) covering an area of 3,524,352 ha or 53% of the total protected area. The rest of the protected areas were made up of special nature reserves (for example, Prince Edward Island), state forests or provincial nature reserves and 57 marine protected areas, with a total of 332,745 ha (DEAT, 2003).

The national protected parks were established in a somewhat haphazard and uncoordinated manner, largely according to historical circumstances. The range of protected areas has been proclaimed in legislation at both national and provincial levels, with considerable variation in the form of legal protection afforded (Rainbridge, 2001). Kepe et al. (2005) concurred that although the existing system of protected areas protected many of the known plant and vertebrate species, this arose through a largely ad hoc process, rather than being part of a deliberate conservation strategy. Neither terrestrial nor marine protected areas in South Africa formed part of a planned network and there were many gaps and anomalies. Furthermore, the management of such areas was
poorly coordinated among the range of responsible authorities, resulting in variable and often conflicting policies being applied.

Figure 3. South Africa National Parks (2007)
The creation of national parks led to the exclusion of the majority of black South Africans from the parks and this impacted on both the social fabric and the environment (Ramutsindela, 2004b). In many parts of the country, the establishment of protected areas was accompanied by forced removals (of resident black people) and dispossession of their resources (Burns and Barrie, 2005; Fabricius et al., 2001; Kepe et al., 2005). The evicted were left landless and/or squashed into overworked reserves exacerbating the problem of poaching. The dominant approach prevailing during the apartheid era was that protected areas ought to be ‘pristine’ and fenced-off. Once created, these areas serviced the recreational needs of whites, with restrictions being placed on their use by other race groups. In fact, in shaping reserves (parks) in the apartheid era, South Africa reflected the Western model of the exclusion of local people. This model, called “fortress conservation” or “coercive conservation”, dominated conservation thinking for the privileged elite and held little relevance for the majority of South Africa’s people (Kepe et al., 2005).

The transformation and transition in South Africa to democracy in South Africa resulted in the acute need to revisit and redress apartheid practices. A general shift from a protectionist to a stakeholder participation and sustainable use of natural resources paradigm (a new global trend) resulted in protected areas no longer being regarded as isolated islands to be used only for the recreational pleasures of the elite, or as exclusive research laboratories for natural scientists (Glazewsky, 2000). Despite this shift, to date, protected areas
were still widely looked upon as playgrounds for the privileged elite and still held little relevance for the majority of South Africa’s people (Kepe et al., 2005).

Economic benefits were also useful in persuading post-independence leaders to establish and expand nature reserves and national parks. The African National Congress (ANC) policy guidelines, for instance, included the use of national parks to maximize economic benefits. Before coming to power in 1994, the ANC (1992) asserted that,

The potential of national parks, and nature reserves to be a source of foreign exchange should be expanded; wealth should be shared by local communities and used to stimulate local economies. Employment in the park itself can be expanded by developing labour intensive eco-tourism, such as small bush camps offering guided game drives and bush walks. Crafts marketing can be stimulated by giving the local crafts industry preference over imported curios (ANC (1992) (cited in Ramutsindela, 2004b, p. 44).

The economic values that had been developed during the colonial era were readily embraced. Today (2008) South Africa’s national parks generate R115 (Approximately US $10) per hectare per annum, which compares favourably with income from stock farming (Carruthers, 2007). However, the environmental issues and challenges facing the country were that South Africa’s biodiversity stock was estimated to have declined by some 20 per cent in the last century alone and continued to decline relentlessly, while the economy has
grown considerably in the same period (Biggs and Scholes, 2004) (cited in King et al., 2007)).

**Parks ‘Beyond’ South Africa’s Borders**

In the international context, South Africa is signatory to the Convention on Biological Diversity and many other international environmental agreements. For instance, the New Partnership for Africa’s Development (NEPAD) placed strong emphasis on biodiversity conservation across state borders for uplifting impoverished rural people while improving national economies through global tourism. Consequently, the government of South Africa became engaged in an ambitious programme to create cross-border conservation areas or Transfrontier Parks (TFP) in which the primary focus was wildlife conservation. These transfrontier parks contributed significantly to the conservation of biodiversity and tourism in the region.

Three strategies were used to push the TFP idea on the South African side. First, the notion of bioregions was espoused to support conservation (Ramutsindela, 2004a). The notion was advantageous to South Africa, which faced the problem of managing the increasing elephant population in the KNP. Secondly, as the South African National Parks Board (SANParks) is an active role player in the Transfrontier Parks (TFPs) schemes, it incorporated national parks and reserves under its administration within the TFPs. Under these conditions, the establishment of TFPs enabled the government to partially relinquish its financial responsibility for nature conservation, a condition that allowed the private sector to step in. This served the government’s prioritization
of the needs of the poor black majority (Ramutsindela, 2004b). Thirdly, SANParks metamorphosed into different formations during the postapartheid transition period. For example, Leo Braack and Peet van der Walt, former employees of the KNP, were employed as international co-coordinators of TFPs. This gave SANParks, and South Africa as a whole, a comparative advantage over other countries involved in the establishment of TFPs. Furthermore, the think-tank and fund-raiser for TFP projects, the Peace Parks Foundation, was based in South Africa. Clearly, this situation favoured South Africa (Ramutsindela, 2004a). These transfrontier parks contributed significantly to the conservation of biodiversity and tourism in the region given that the diversity of wildlife and the presence of large game were Africa’s most important competitive advantages in the international tourism industry.

The TFPs included Kgalagadi (South Africa and Botswana), Great Limpopo (South Africa, Mozambique and Zimbabwe), Ai Ais-Richtersveld (South Africa and Namibia), Limpopo-Shashe (South Africa and Botswana), Songimvelo-Malolotja (South Africa and Swaziland), Maluti/Drakensburg (South Africa and Lesotho) and the Lubombo (South Africa/, Mozambique and Swaziland) (Figure 4).
Figure 4. The Transfrontier Parks (2007)


Changing Administrative Structure of South African National Parks

In 1910, the South African game reserves and general wildlife preservation were placed under the care of the Transvaal Administration. In 1926, the National Parks Board became responsible for administering the parks.
This was the name confusingly used for both the governing body of nonexecutive board members (technically the Board of Curators) and the organisation as a whole (Cook and Fig, 2000). The National Parks Board was an intermediate authority, sandwiched between its master, the government, and its employees. The organisation as a whole was white-controlled and largely reflected the culture and practice of apartheid.

In the 1940s, South Africa’s national park structures, that is, those the central government managed under the then National Parks Board, were established, but there were concerns that the Transvaal Province’s responsibility with regard to nature conservation was neglected. While the Province had the duty to regulate hunting and natural resource extraction, there was no specialised department to oversee this role. This lack of organisational structure impacted on the administrative management of the KNP. The first warden of the KNP (Stevenson-Hamilton) had frequent tensions with the National Parks Board, because the National Parks Act of 1926 had not defined the precise organizational responsibilities and administrative structure of the parties involved. Initially, when the KNP was in its infancy, there was no problem, but when many thousands of visitors demanded sophisticated facilities and when other national parks were established, some kind of head office and formal administrative bureaucracy was required (Carruthers, 2007).

It was not, however, until after the Second World War that management of the national parks changed from a rather unsystematic laissez-faire approach. A change of government in 1948 achieved this through modifications in organisational structures and institutional cultures. These changes in turn
impacted on wildlife management and shaped many aspects of management. According to Mabunda (2005) management by intervention gained currency in South African wildlife and conservation practices from the 1960s, until recently (2008). In the post-1994 period, there have also been shifts towards adaptive resource management. The National Parks Board was renamed South African National Parks (SANParks) to eradicate the political and racial connotations associated with the National Parks Board. SANParks is more representative than its predecessors in racial and political terms (Cook and Fig, 2000).

SANParks’ Mandate on National Parks

SANParks is a state owned organisation that functions under the ambit of the National Environmental Management Act: Protected Areas Act, 2003 (Act No 57 of 2003). The Minister of the Department of Environmental Affairs and Tourism is the political head responsible for SANParks, and he appointed the 18 member nonexecutive Board of Trustees to manage the 22 national parks across South Africa. The system of national parks is representative of the country’s important ecosystems and unique natural features. The SANParks Board’s term of office is three years, and the Board is accountable for the performance of the organisation. The Board has delegated the day-to-day management of SANParks activities to the Chief Executive and his team of directors (executive managers). SANParks’ core mandate is to administer environmental laws at national, provincial and local levels of government as well as the conservation and management of biodiversity through a system of national parks. In fact,
SANParks represents the highest authority in determining and implementing policies, which formerly had been largely the responsibility of the Warden (Joubert, 2007).

With the advent of democracy in 1994, SANParks has undergone major changes regarding its philosophy and organisational structure, reflecting the new political, economic and social realities of South Africa. The national parks offer visitors an unparalleled diversity of tourism opportunities including game viewing, bush walks, canoeing and exposure to cultural and historical experiences. In view of this, SANParks has three fundamental areas of focus: (1) to conserve a representative sample of the country’s biodiversity, (2) to maintain an ethic of community upliftment and capacity building among people living in and near parks, and (3) to provide recreational outlets to the general public.

A new conception of conservation that was radically different from that generated during the country’s colonial and apartheid past informed SANParks thinking. This new version centred on inclusion rather than the exclusion of people, and sought to link conservation to human benefits (Cock and Fig, 2000). The Board’s transformation statement reads as follows,

South Africa National Parks is striving to transfer power and the control of resources from the minority that had been appointed and privileged due to undemocratic system, to the majority that participates in the new democratic process. It is also directing the benefits of its activities to providing for all South Africans, rather than the wealthier and privileged sections of society (Cook and Fig, 2000, p.123).
This new policy signalled a dramatic shift in the dominant notions of conservation. SANParks adopted a new vision, “that national parks will be the pride and joy of all South Africans”, and the following mission to achieve the vision: “to acquire and manage a system of national parks that represents the indigenous wildlife, vegetation, landscape and associated cultural assets of South Africa for the pride and benefit of the nation” (SANParks, 2006, p. 12).

The organisational structure (Figure 5) was enhanced and embedded accordingly to ensure appropriate focus on the corporate strategy. In it, the balancing three pillars of sustainability, remained the challenge. How these recent institutional shifts will influence policy coordination at park level remain to be seen.

SANParks and Tourism Management Structure

Until 1998 no department of tourism existed at the Pretoria Head Office of the National Parks Board (Mabunda, 2004), however, by 2005/2006, an Executive Director: Tourism with complementing staff had responsibility for giving strategic direction to marketing, product development, and sales and tourism standards within a conservation context. However, Phillips (2003) described the general policy statement and management capacity of the department as very weak. Mabunda (2004) agreed that the corporate tourism department has yet to give a comprehensive strategic tourism direction to the individual national parks.
According to Mabunda, the 2003 corporate tourism business plan that the Directorate approved, resembled that of a hotel group operating in an urban environment. It did not reflect the cross-cutting edges of the symbiotic relationship that existed between conservation and tourism in a protected areas management system context. Its functions were narrow when it came to helping business units (national parks) in formulating management plans with checks and balances to manage tourism impacts and service quality. It lacked a management philosophy to guide tourism development in a protected area and perpetrated the “two-systems-in-one” approach between tourism and conservation. Its focus was purely financial and market-oriented. In fact, the newly created department has not yet succeeded in providing a strategic tourism management plan to give the organisation a strategic tourism direction.

The scenario was exacerbated by the fact that there was no national policy that dealt specifically with the level or extent to which protected areas must be developed or how they should be conserved (Diamantis, 2004). However, recently the tourism industry has begun to acknowledge its environmental impact on biodiversity and hence to appreciate the importance of environmental planning and management. The Department of Environmental Affairs and Tourism (DEAT), a partner in the planning, management and development of some national parks, was pursuing this end.
Figure 5. The SANParks Organisational Structure (2006)

Source: SANParks (2006)
Several cooperative governance agreements were in the final stages of development and focused on aligning legislation and ensuring cooperative governance between DEAT and SANParks (SANParks, 2006). DEAT was also responsible for administering the World Heritage Sites under the World Heritage Act (No. 46 of 1999), as well as the so-called Special Nature Reserves, Protected Natural Environments and Limited Development Areas provided for in terms of the Environmental Conservation Act (No. 73 of 1989) (Glazewski, 2000).

The South African National Biodiversity Institution

Another major role-player and independent statutory organisation for controlling protected areas is the South African National Biodiversity Institute (SANBI), recently established under the ambit of the National Environmental Management Act (No. 10 of 2004). This Institution has the legal mandate to facilitate the coordination and integration of relevant activities of the agencies doing work within the biodiversity sector. The Institution presently administers eight national botanical gardens, three research centres, environmental education programmes and field research throughout South Africa.

Provincial Departments and Local Authorities

In South Africa, the degree of fragmentation is very high and almost every central government department is involved in some aspect of environmental administration. In addition, resources allocation and pollution control were divided between different departments. For instance, various provincial departments and local authorities also administered and controlled protected
areas. Despite the new provisional structures in post-apartheid South Africa, cooperative governance of the parks was inconsistent as regards the relationship between the traditional nature conservation function and the relatively new environmental management functions. In the Northern Cape Province, for example, nature conservation and environmental management were located in different departments (Glazewski, 2000). Some of the provinces have established statutory Boards which have been given certain nature conservation and/or environmental functions. For example, the Province of KwaZulu-Natal has the KwaZulu-Natal Nature Conservation Board, and the Western Cape Province, the Western Cape Nature Conservation Board (Glazewski, 2000). This situation aggravated fragmentation of policy-making on biodiversity conservation management in national parks. A case in point is the KNP. It remains to be seen how the conceptual framework (Briassoulis’ (2004) policy integration) underpinning this study can facilitate environmental policy integration at the KNP.

Changing Legislation Governing the Parks

The democratic elections of 1994 served as a catalyst for a series of fundamental changes to South Africa’s legislation, and the policy and institutional framework for biodiversity conservation (Wynberg, 2002). In 1995, the South African Government initiated a national consultative process to develop a policy and strategy for biodiversity conservation that would reflect the interests and aspirations of all South Africans (Kotze and du Plessis, 2006). This culminated in the White Paper on the Conservation and Sustainable Use of Biological Diversity. The White Paper served as South Africa’s central policy statement on
biodiversity (Kotze and du Plessis). The legal framework that has the direct major bearing for the regulation of biodiversity conservation and management in parks consists of the National Parks Act (No. 57 of 1976), the Environmental Conservation Act (No. 100 of 1982), the National Forest Act (No. 84 of 1998), the Environmental Conservation (ECA) Act (No. 73 of 1989), the World Heritage Convention Act (No. 49 of 1999) and the National Environmental Management Act (No. 57 of 2003). These legislations relate to from the overarching National Environmental Management Act (NEMA) (Act No. 107 of 1998). In addition to these, the National Environmental Management Protected Areas Act (NEM: PAA) is also relevant. The subsequent sections outline the legislation changes in keeping with the post apartheid socio-economic and political climate.

The National Parks Act (No. 57 of 1976)

The South African national parks are established under the National Parks Act (Act No. 57 of 1976). The National Parks Act (No. 57 of 1976) has undergone a series of amendments to reflect the current political and socio-economic climate. The object of the Act has been amended, as follows:

The object of the constitution of a park is the establishment, preservation and study therein of wild animal, marine and plant life and objects of geological, archaeological, historical, ethnological, oceanographic, educational and other scientific interests and objects or events in the history of the park, in such a manner that the area which constitutes the park shall, as far as may be and for
the benefit and enjoyment of visitors, be retained in its natural state (Statutes of the Republic of South Africa (1976) (cited in Hannah, 2001, p. 68).

Thus, in South Africa, national parks are established under the National Parks Act (No. 57 of 1926) and clearly fall within the ambit of the definition which currently forms the basis for the establishment of all national parks in South Africa. Joubert (2007) commented that the Act provided a comprehensive definition of what constitutes a national park, and made legal provision for the conservation of viable ecosystems and the intrinsic natural factors that maintain them. The Act also specified the objectives for the proclamation of national parks and provided parameters within which they need to be managed. Hence, the National Park Act made provision for the three main obligations. Firstly, the retention, as far as possible, of the natural state of an area. Secondly, the preservation and study of the natural, cultural and historical assets of the area and finally, the utilisation of the area for the benefit and enjoyment of visitors.

The SANParks Board has the mandate to effect the implementation of the National Parks Act. In fact, the major function of the Board is to prescribe and approve the policies designed to achieve the objectives of the Act in the various national parks (Joubert, 2007). Although the South African national parks have been proclaimed according to the prescriptions, and are subject to the provisions of the National Parks Act (No. 57 of 1976), there are differences in the primary objectives of each one. The differences were ascribed to the natural assets of primary concern, for example, a number was proclaimed with
the primary objective of providing refuge to animal species in danger of extinction. Others have been proclaimed for the sake of their pristine ecosystems. It stands to reason, therefore, that the policies governing the management of the various parks differed according to their primary objectives (Joubert).

The Environmental Conservation Act (No. 100 of 1982)

In the 1980s, South Africa passed its first dedicated environmental statute via the Environmental Conservation Act (ECA) (No. 100 of 1982). Glazewski (2000) noted that, the ECA did not live up to its stated purpose of coordinating environmental matters within government. The Act also did not include any substantive provisions regarding environmental management. Consequently, the Act was repealed and replaced by the Environmental Conservation Act (No. 73 of 1989).

The Environment and Conservation Act (No. 73 of 1989)

The Environmental Conservation Act (No. 73 of 1989) formed the foundation of environmental conservation and management in protected areas. South Africa’s Environment and Conservation Act (No. 73 of 1989) stated that environmental policy must be applied with a view to,

- the protection of ecological process, natural systems and the natural beauty as well as the preservation of biotic diversity in the natural environment as well as promoting sustainable utilization of
species, effective protection and management of cultural resources, and environmental education in order to establish an environmentally literate community with a sustainable way of life (Statutes of the Republic of South Africa (1989) (cited in Hannah, 2001, p. 70).

The Act has been superseded in part by the pioneering National Environmental Management Act (NEMA) (No. 107 of 1998).

The National Environmental Management Act  
(No.107 of 1998)

The White Paper on an Environmental Management Policy for South Africa (1997), which was the outcome of an extensive public participation process known as the Consultative National Environmental Policy Process (CONNEP) laid the foundation stones for the NEMA (Glazewski, 2000). The White Paper was embedded in the context of the transition to democracy and its socio-economic implications, and adhered to the principles of the globally accepted concept of sustainable development. The Act also emphasised cooperative governance among the different spheres of government. Hence, the Act devotes a chapter to each of the following guidelines: Chapter 3 sets out procedures for cooperative governance; chapter 4 deals with fair decision-making and conflict management; chapter 5 with integrated environmental management; chapter 6 with international obligations and agreements; chapter 7 with compliance and enforcement; and chapter 8 with environmental management (Goolam, 2000). In accordance with the NEMA, the committee for environmental coordination was
established to harmonise the work of government departments on environmental issues and to coordinate environmental management plans at provincial level.

The Act sets out principles for the effective management of the environment, which all organs of the state have to comply with in their decision-making. The Act also requires national and provincial departments to compile environmental implementation plans. Generally, the overall tenor of the NEMA is to facilitate an environmental management system for organs of state, rather than to impose a set of regulatory commands for the private sector (Glazewski, 2000). It is thus evident that the White Paper set the stage in the postapartheid era for more assertive and effective environmental management in South Africa, now encapsulated in NEMA.

Although NEMA has set a significant platform for biodiversity conservation, details on governing national parks were not clearly reflected. To address the gap the government introduced the National Environment Management: Biodiversity Areas Act (NEM: PAA) (No. 57 of 2003) within the framework of the National Environmental Management Act (No.107 of 1998 (Botha, 2004).

The National Environment Management: Protected Areas Act
(NEM: PAA) (No. 57 of 2003)

The National Environmental Management Protected Areas Act (No. 57 of 2003) was a response to the obsolescent National Parks Act, and provided for the declaring of protected areas as well as the prohibitions and controls that
accompany such status. The National Environmental Management: Protected Areas Act, 2003, provided for the identification of a management authority for each protected area that must manage it according to a management plan (each park is to have its own plan) that meets agreed-upon national standards. The implementation of the Act meant that norms and standards for the achievement of key policy objectives will be set and regular reporting to SANParks Board to enable regular evaluation of the management effectiveness of the protected areas at site or system levels to take place (Diamantis, 2004). The Act dealt with the system of national parks management more broadly than do the National Parks Act (No. 57 of 1976) and the National Environmental Conservation Act (1989). It linked the system of protected area management with current government policies and programmes, bringing in communities living near the national parks as participating stakeholders in the management processes of conservation and tourism activities taking place in parks. The National Parks Act (No. 57 of 1976) did not prescribe details on how protected areas should deal with the issue of drafting management plans or evaluating of management effectiveness (Goolam, 2000).

The NEM: PAA requires that a management plan be prepared for each national park. NEM: PAA stipulates that the management plan must contain a zoning of the area indicating what activities may take place in different sections of the area and the conservation objectives for those sections. The NEM: PAA also states that the management plan may include development of economic opportunities within and adjacent to the protected areas (SANParks, 2006). For instance, KNP’s master plan deals with zonation of the park, providing for regions
without any tourism activity that are to be retained for their conservation value and wilderness qualities. Meanwhile, other zones are devoted to tourism infrastructure and visitor activities (Diamantis, 2004). In addition, the NEMA: PAA requires that SANParks produce a coordinated management plan policy framework for all national parks in consultation with stakeholders. The coordinated management policy framework aims to address uncooperative, fragmented and disjointed governance efforts relating to the environment in general and biodiversity conservation in particular. It has been observed that environmental governance in South Africa is characterized by serious fragmentation that manifests in legislation, policies, government tools, processes, structures and procedures (Kotze and du Plessis, 2006). The coordinated management policy framework provides the overall framework within which management of the institutional, ecological, economic, technological, social and political environment of national parks can take place. It is necessarily broad rather than detailed, setting out overall guidelines within which detailed management issues can be implemented in a consistent manner for individual national parks.

Having reflected briefly on some of the principal biodiversity conservation laws and the administrative structure governing parks, the questions arises if, and, to what extent, these provisions, advance policy integration in parks? The following section provides a brief analysis in this regard with particular reference to the objectives of the NEM: PAA.
Reflection on the Administrative Structure and Legislation Governing Parks

A review of environmental-related legislation has reflected that amendments have been made that can lead to efficiency in terms of providing appropriate policy instruments for sound environmental management. However, this has been compounded by fragmentation and the distribution of responsibility for enforcing and implementing legislation among several government agencies, unsupported by appropriate institutional structures to coordinate and direct relevant initiatives. This fragmentation often results in turf-fighting, with little general integration of effort among virtually isolated units (Kotze and du Plessis, 2006).

Environmental governance regimes are characterized by fragmentation between various spheres of government departments in each sphere and the fragmentation of policies, legislation, government tools, processes and procedures (Kotze and du Plessis, 2006). Regulation authorities responsible for biodiversity conservation were furthermore fragmented in terms of the three spheres of government and various line functions in each sphere. For instance, fragmentation was especially ubiquitous in the governance structures relating to biodiversity conservation. This was apparent from the fact that authorities that may be involved with the regulation of biodiversity resources include, amongst others, the DEAT, the South African National Biodiversity Institute, and various other authorities in the provincial and local spheres of government and which were not necessarily coordinated (Kotze and du Plessis, 2006). This is a result of the Constitution (Republic of South Africa, 1996) that established a system of
cooperative government in which both legislative and executive powers are shared among three spheres of government, that is, national, provincial and local (Currie and de Waal, 2001). Environmental functions were fragmented within and among these three spheres.

Both national and provincial legislatures were empowered to enact environmental legislation that falls within their functional areas. Whilst legislative competence was fragmented across various levels of government, the administrative distribution of functions is even more complex and fragmented (Rossouw and Wiseman, 2004). Ngobese and Cook (1997) cited in Rossouw and Wiseman) highlighted these problems of duplication. They lamented that the institutional framework for environmental policy in South Africa was not clearly defined and pointed out that a wide range of government departments at national and other levels have overlapping mandates and interests. Hence a considerable degree of legislation overlapping occurs, as sections from different statutes all deal with the same issues under various ministries which have the authority to deal with a given problem. Further, many of these institutions are biased towards protection and regulation on biodiversity and do not adequately address tourism development concerns. A ‘scale-ignoring’ strategy like this is far from attaining biodiversity conservation and tourism sustainability. A more balanced approach between tourism development and biodiversity conservation is needed and existing ideas and legislation should be reviewed.

This scenario was also reflected at park level. Park policies were fragmented and uncoordinated, a case in point being the Kruger National Park. Cooperative governance accordingly represented a mechanism to facilitate
intergovernmental cooperation, coordination and alignment of biodiversity-related structures, procedures, tools, legislation and policies, thereby promoting integration, with the principal aim to achieve sustainable results.

In the framework of the NEM: PAA objectives, the express provision of cooperative governance to enhance biodiversity conservation and management efforts are reflected. The NEM: PAA may be regarded as an Act that regulates biodiversity; it is observed that various other Acts may also be relevant to biodiversity management and governance. Insofar as protected areas or parks are concerned with biodiversity conservation, the NEM: PAA framework provides a fertile basis for policy integration. The onus is on all authorities concerned to get involved and be committed to biodiversity conservation and management to advance policy integration in national parks. However, there are a number of shortcomings.

In particular, the NEM: PAA itself is silent on how to implement the tourism, biodiversity conservation and management plans it aims to establish, and merely states that the Minister must determine the manner of implementation of these plans. The Act, as is the case with most national legislation, did not determine a remedy for the intricate situation where authorities refrain from fulfilling their lawfully expected duties in terms of the legislation (Kotze and du Plessis, 2006). South Africa’s parks face problems due to perpetuating colonial values and practices in managing the parks. Norton-Griffiths (2003, p.1) attested that:

The real problem facing protected areas throughout most of Africa is that they are in thrall to conservation monopolies. The parlous
state of their finances is rarely symptomatic of a lack of resources per se but of three closely related failures. First, institutional failures, in the form of bloated, self-perpetuating bureaucracies, characterized by deeply embedded inefficiencies and unwillingness either to acknowledge, accept or effect change, second, policy failures which, by restricting and impeding the potential revenue streams from both within and outside protected areas, reduce these state institutions to near impoverishment while providing few incentives for investment, and third, a lack of both business acumen and management capabilities so the resources under their tutelage neither flourish nor prosper.

Another problem arising from the formulation of the legislation itself is the significant gaps within the existing regulation code for biodiversity conservation and management which is a result of the sporadic basis on which environmental legislation has historical been passed. Further, there is neither a specific legislative mandate nor a managerial initiative directed towards the use of analytical tools. (Kotze and du Plessis, 2006). In addition there is lack of enabling mechanisms to translate the various affirmations into viable programmes and projects in order to achieve clearly-stated objectives at legislative, managerial and human resource levels, that is, the implementation of regulations not keeping pace with the dynamics of change in society (Rossouw and Wiseman, 2004).
A review of environmental legislation in this chapter reflected that those responsible for biodiversity conservation and management are institutionally separated from those responsible for managing tourism development and the tourism economy. According to Nilsson and Eckerberg (2007), the real world of an interlocked economy and ecology will not change, the laws, policies and institutions must.

The conceptual framework underpinning this study requires that the institutional barriers mentioned above be removed. A new cycle of positive-sum solutions and compatible policy integration is possible. These are the challenges facing the new South Africa.

**Conclusion**

This Chapter has explored the establishment and management of the forerunners of several of the major present-day national parks. This Chapter noted that the establishment of national parks was coloured by its apartheid past, particular its history of land dispossession. The conservation perspective focused exclusively on the preservation of biodiversity of wilderness areas and particular species of plants and animals. This narrow preservation notion of conservation was established throughout Africa by colonial authorities. However, economic interests have been one of the strongest driving forces behind nature conservation schemes, and accounted for much of the environmental crises we face today. The creation of national parks in South Africa involved the expulsion of black South Africans from selected land. Black South Africans under apartheid also experienced exclusion from physical access
to managerial control of national parks. The Chapter also outlined how the new
government instigated some dramatic policy changes regarding biodiversity
conservation and management in national parks. The Chapter also illustrated
how South Africa has positioned its biodiversity conservation and management
efforts through transfrontier parks. In fact, management by intervention was the
hallmark of South African wildlife and conservation biology from the 1960s until
recently, when there have been shifts towards adaptive resource management in
a period of further change in the country’s politics (Carruthers, 2007).

The Chapter has also highlighted that the establishment of national parks
in South Africa not only served to transmit and retain core elements of a national
park idea, but was also accompanied by a regulatory framework that safeguards
it. The Chapter also identified gaps in the recently enacted legislation and their
implications for park management. Having outlined the broader contextual
factors that led to the establishment of national parks in South Africa, Chapter III
will seek to focus on the creation of the KNP, the paradigm shifts in the KNP
management structures and how these have affected tourism and biodiversity
conservation and management initiatives in the Park.
A national park is an area designated for the protection of natural scenic areas of national and international significance of spiritual, scientific research, educational, recreational and tourism purposes, protection of species and genetic diversity (biodiversity conservation) and protection of natural and cultural features (Muir, 2002). These are relatively large natural areas not materially altered by human activities where extractive resource use is not allowed (Bhadar, 1999). National parks have a critical role to play in, among other aspects, providing benchmarks against which environmental change can be measured, conserving unique, representative or otherwise important types of habitat, protecting watersheds, conserving species that are threatened or that have social, economic and scientific value (Kepe, Wynberg and Ellis, 2005).

Biodiversity is absolutely fundamental to the survival of humankind. It brings opportunities for commercial development and provides ecological services such as pollution control, crop pollination and climate regulation which are essential for all forms of life. Measures to conserve biodiversity thus have implications for virtually all economic activities (Kepe, Wynberg and Ellis, 2005).

The killing of vermin, broadly defined to include the big cats, lions and leopards, as well as hyenas and jackals was encouraged and rewarded in the early decades of the 20th Century because they endangered settler stock farming (Beinart, 1989).

Although the National Parks Board had been constituted in 1926, there were no defined portfolios and members were not obliged to attend meetings. When they were present, they often came up with inappropriate and nonscientific suggestions, such as, the jackal ought to be exterminated because they killed fledglings. With an increase of the number of national parks (Mountain Zebra, Addo Elephant, Kalahari Gemsbok and Bontebok) in the mid-1930s the Board appointed H. J. van Graan as secretary to coordinate the organization but still duties and lines of authority were unclear (Carruthers, 2007).

In this regard the role of the Afrikaner Broederbond (Band-of-Brothers) was crucial. This elite secret society (membership by invitation only) was founded after the First World War for fostering Afrikaner unity and advancement and it had become a real force by the 1930s. Pursuing a deliberate practice of baantjies vir boeties (jobs for pal), it turned the bond into a powerful instrument for the advancement of the careers of its members, while simultaneously placing “reliable” people in key positions in the civil service and throughout Afrikaner society (Carruthers, 2007).

A protected area is any area of land or sea protected by legal or other means (IUCN definition).
The Yellowstone National Park was established in 1872 through forced removal of indigenous Native Americans, and remains the icon and the model followed by many countries (Hulme and Murphree, 2001). The same trend was also reflected in Australia of denied boundaries, legislative status, public ownership and exclusion of human commerce and extraction (Adams and Mulligan, 2003; Cook and Fig, 2000). In fact, the colonial authorities established this narrow preservationist notion of conservation throughout Africa.

The South African Government (at least in the case of Kruger National Park) tried to eradicate the perception of ‘white only’ by attempting to attract the black communities through subsidizing admission charges (the National Park Board received 49 million Rand for this purpose) but unfortunately visitors need a vehicle to enter the park and that still excludes a majority of black South Africans (Anton and Gines (1999) (cited in Burns and Barrie, 2005; Muir, 2002).
CHAPTER III

THE KRUGER NATIONAL PARK: HISTORICAL CONTEXT

Introduction

The purpose of this Chapter is to provide an historical overview of the events that made the Kruger National Park (KNP) the world-renowned park which it is today. The Chapter begins with events that led to the creation of the Park and the natural attributes that made the KNP a drawcard for domestic and international tourists. The Chapter outlines park management developments since its inception. The Chapter also identifies changes in managing the KNP brought about by formal science in the 1950s. The KNP tourism and development nexus, visitor numbers, tourist facilities and tourism and biodiversity conservation challenges are recorded. Importantly, these accounts can shed light on how environmental policy integration for tourism and biodiversity conservation at the KNP can be advanced.

The Creation of the Kruger National Park

The development of the KNP had its beginnings in the recognition that the impact of humans on the lowveld game population and on hunting prospects in the late 1800s and early 1900s was unsustainable, and that game protection was
required (du Toit, Kevin and Rogers, 2003). Pressure on animals increased with the growing number of annual winter incursions of parties of hunters and gradual European settlers colonization of the area (Carruthers, 1995). The impact of professional hunting in the erstwhile Transvaal was enormous (Carruthers, 1995), and led to the decimation of some game species. *Rinderpest panzootic* also took its toll towards the close of the 19th Century and several animal populations were pushed to the brink of local extinction. The white and black rhino in particular succumbed to the pressures, while the elephant, buffalo and eland species were reduced and fragmented (Joubert, 2007). From 1884, conservation sentiments grew, and at a meeting of the Volksraad in 1889, Paul Kruger declared that he would like all state-owned land in the Republic to be closed for hunting and that wilderness areas should be conserved for future generations (Bryden, 2005). This led to the proclamation of the area between the Sabie and Crocodile rivers as a game reserve. This was the first step towards what was to become the world-renowned Kruger National Park (Joubert). In May 1902, the Shingwedzi Game Reserve, spanning the areas between the Letaba and the Limpopo/Luvuvhu rivers, was proclaimed. In August 1903, the area between the Sabie and Olfants rivers was added, linking the two reserves.

The Sabie and Shingwedzi game reserves remained separate entities until 1916 when they were consolidated, and renamed the Transvaal Game Reserve (Bryden, 2005; Joubert, 2007). In 1926, the Parliament of the Union of South Africa passed a National Parks Act (No. 56 of 1926) and two large game reserves (the Sabie and Shingwedzi) were renamed the Kruger National Park,
after Paul Kruger, President of the Zuid-Afrikaanse Republiek (South African Republic) from 1880 to 1900 (Joubert, 2007).

Today the KNP is not only one of the world’s greatest game sanctuaries, but also one of Africa’s iconic attractions which shaped the southern African tourism industry. It is one of the 20 largest national parks in the world, and forms part of the 22 national parks the South African National Parks manages (KNP Tourism Management Plan, 2007-2011). The KNP also forms part of the Great Limpopo Transfrontier Park (GLTP). The GLTP links the Limpopo National Park in Mozambique, the KNP in South Africa, Gonarezhou National Park, Manjiji Pan Sanctuary and Malipati Safari Area in Zimbabwe, as well as two areas between KNP and Gonarezhou, namely the Sengwe communal land in Zimbabwe and the Makuleke region in South Africa into one huge conservation area of 35 000 square kilometres (Peace Parks Foundation, 2005).

Notwithstanding the above development, the creation of the KNP manifested its negative footprint when Boer farmers trekked into what they called the Transvaal (today the Northern and Mpumalanga Provinces), forcibly evicted an estimated 3,000 Tsonga people from land between the Sabie and the Crocodile Rivers (Honey, 1999). Colonel James Stephenson-Hamilton, the first warden of KNP spearheaded the move which earned him the nickname Skukuza¹ meaning (“he who sweeps away” in XiTsonga) for the way he forced the indigenous inhabitants (Makuleke people) out of the park from 1902 (Cook and Fig, 2000; du Toit, Kevin, Rogers and Biggs, 2003). However, the members of Makuleke community, who were forcibly removed from their land, lodged a highly publicized claim, and ownership of their land has been restored (Kepe,
The community has agreed that the area be utilised for ecotourism and be comanaged with SANParks for the next 25 years.

**The Kruger National Park Biodiversity Features**

The KNP is one of the largest areas in the world managed primarily for biodiversity conservation. It falls within southern Africa’s savanna biome, and has 20 main vegetation types (Mucina and Rutherford, 2004) on gentle topography ranging from 110m to 850m above sea level (Foxcroft, Rouget, Richardson and Fadyen, 2004). The Park encompasses a diverse natural environment reflecting different levels of human impact, a complex landscape mosaic and rich fauna. The KNP is also a region with a particularly interesting mix of cultural and land-use practices and natural processes. It is precisely this distinct and visible interdependency of nature that makes the KNP a refuge for 147 species of mammal, 500 species of birds, 116 reptiles, 34 amphibians, 49 fishes, 457 types of trees and shrubs, 1 500 smaller plants, 370 alien plants and countless insects (van Niekerk (2002) (cited in Saayman and Saayman, 2006)). In parts of the Park the natural environment is relatively unchanged, including some old forest and a relatively constant diversity of wildlife.

The rich natural environment in the KNP has enabled a significant amount of ecological research, and the Park constitutes an important reference area for scientific purposes. Visitors appreciate and seek this diversity of nature and culture, and this has contributed to major tourism developments, not only in the Park itself, but also in the surrounding areas (Saayman and Saayman). Thus the paramount attributes, and hence the values of the Park, are intimately linked both
to biodiversity, and to social, cultural and economic diversity. Venter et al. (2008) attested that the ecological and biodiversity characteristics of the present-day KNP were strongly influenced by the hopes, perceptions and actions of past politicians, scientists and managers, as is highlighted in the following sections.

**Park Management Developments since Inception**

Like the SANParks, the KNP administrative management structure has been going through a process of transformation involving major personnel changes and restructuring to accommodate South Africa’s changing political and economic landscape. During the early stages of the establishment of national parks, the then National Parks Board (NPB) offered employment opportunities to unskilled and semi-skilled whites (Carruthers, 1995). It was a precursor to the present day affirmative action (Mabunda, 2004). In fact, in the protected area domain, two processes were at work. The first was that of bringing national parks firmly within the Afrikaner cultural ambit, and this was relatively quick and successful after 1948. The well publicised myth that wildlife conservation was a “white” achievement and that national parks were the brainchild of Paul Kruger, president of the Transvaal Republic before the Anglo-Boer War 1880-1900), led to the aggressive preferential employment of Afrikaners in an expanding civil service. Hence the employment of the custodians of national parks was anchored in racial grounds and this affected the efficiency of managing the national parks, and the KNP was no exception.

When the KNP was proclaimed there was no consistency in the calibre and training of the personnel who were appointed. None of South Africa’s first
wildlife managers were scientists or people educated in natural history. The first appointed self-trained warden of the KNP was Colonel James Stevenson-Hamilton in 1902, and most responsibilities were shared between the warden and the rangers until limited outsourcing was introduced in 1931. However, the overall control of conservation, wildlife management, technical operations and tourism services largely remained the responsibility of the rangers. Until the early 1930s, the rangers were also responsible for tasks such as allocating accommodation in rest camps, checking permits, receiving money and issuing receipts for pontoons and rest camps, selling tickets and petrol and providing information (Joubert, 2007). The assumption over the following years was that the various divisions of the Park were specialist in nature and should be run by specialists (KNP Tourism Management Plan, 2007-2011). This responsibility was later shared with the Research Section, established in 1950, and the Steering Committee for Scientific Research of the National Parks Board. This has become a hallmark of research in the KNP to date, hence the fragmentation of policy initiatives, a focus of this study.

Colonel James Stevenson-Hamilton played a decisive role in the development of the conservation philosophy and administration during the formative years of the KNP. Colonel J. A. B. Sandernberg took over from Stevenson-Hamilton as warden in 1946. He outlawed controlled burning of grass and reintroduced carnivore control in parts of the park (du Toit, Kevin and Biggs, 2003). Warden L. Steyn took over and retired in 1961, the last self-trained warden conservationist. When Steyn retired as warden of the KNP in 1961 he was succeeded by a politically appointed scientist, A. M Brynard, a park biologist.
Dolf Brynard became head of the Research Section, and the Park’s management was seen as having a firmer scientific base (du Toit, Kevin and Biggs, 2003). In fact, the appointment of a professional scientist, allowed the institutional politics to calm down and to allow the ethos of scientific management to grow. During the 1990s a major investigation into the staff functions and structures of the National Parks Board led to several changes in orientation and organization. Increasingly, the KNP was managed along agricultural principles of productivity, linked to an ecological paradigm of stability and climax (Carruthers, 2007). In 1998, David Mabunda became the first black director of the KNP.

The leading individuals in the KNP history of research and management include Colonel Stevenson-Hamilton (1902-1946), who played a pioneering role in establishing the Park’s legal status and infrastructure, and also Dr. Uys de Villiers Pienaar who began working in the KNP in 1955, and over the next 32 years rose through the ranks to become park warden while consistently building a tradition of pragmatic management based on research. David Mabunda too must be noted for steering the KNP through a transition phase to align the Park’s management system with the new principles of governance in South Africa (du Toit, Kevin and Biggs, 2003).

These three have greatly influenced the KNP management philosophy since its inception (1926) to date. For instance, about a decade after his appointment, Stevenson-Hamilton embraced to the traditional management objective of game husbandry by preventing public access, stopping poaching and the extermination of predators. He emphasized the importance of keeping the area as natural as possible and did his utmost to prevent scientists from
interfering in the park, fearing that they would conduct experiments, and manipulate the environment and the wildlife. His view was that tourists come for a wilderness experience and not for comfort and entertainment; hence he refused to upgrade the accommodation or provide amenities (Carruthers, 1995; Carruthers, 2007). This view became part of the founding philosophy of tourism in the Park, and still enjoys support from a segment of nature-conscious tourists, particularly the older clients (Mabunda, 2004a). In adopting this hands-off approach to nature in a pre-ecological era, the amateur naturalist Stevenson-Hamilton opposed the actions of state veterinarians and agriculturalists who acted in the name of science and keenly advocated intervention in the natural system (Carruthers, 2005).

Throughout this era (1926-1946), Colonel James Stevenson-Hamilton was virtually the sole policy-maker for conservation issues affecting the Park. Initially his policies remained focused mainly on large mammals, the vegetation being viewed simply as a vehicle for serving the interests of the animal populations. In addition the imperial preservationist ethic of undisturbed wildlife gained centre stage at the time the KNP was established in 1926 because the governing National Parks Act (No. 56 of 1926) was silent on the issue of science. Carruthers (2006) attested that scientific study was omitted from the objectives of national parks because both professional values and scientific politics gave high status to specialized laboratory sciences or to those sciences that contributed to economic growth. Consequently, for many decades, protected areas were considered to be outside the boundaries of any science, their purpose being quite removed from serious academic study. Consequently, the National Parks
Act (No. 56 of 1926) displayed a weakness in the management of national parks and this had an impact on tourism policy-making and biodiversity conservation and management in the following years. However, in time, his scope broadened and came to understand the importance of a harmonious interrelationship between the various components of the system (Joubert, 2007).

The Era of Science

James Stevenson-Hamilton's *laissez faire* approach and principle of leaving nature alone came under increasing pressure as the KNP became hemmed in by modernisation and development, by the expanding population on its borders and by the growing number of tourists and the recreational developments required to service them. Tourism infrastructure impacted on the landscape. The Warden's ideas seemed to be impractical, even irrelevant to the post-war ethos, and by the late 1940s calls for scientific wildlife conservation were becoming more vociferous (Carruthers, 2007).

The time (Late 1940s) was opportune for breaking the link between wildlife management and game-hunting and for reorienting it towards a formalized science. New ideas of conservation biology and management rejected (and denigrated) Stevenson-Hamilton's ideas of wilderness or a balance of nature. These were replaced by a "command and control" mentality that matched the political philosophy of the government more generally (Carruthers, 2007). With the support of a new member, Dr. Rudolph Bigalke, director of the National Zoological Gardens, the then National Parks Board decided in 1950 to establish
a research section in the KNP (Carruthers, 1995). Dr. T. G. Nel was appointed, in 1950, as a senior research officer, followed by Maine van de Schijf as assistant biologist. In fact, before the creation of the research section, observations and documentation of natural phenomena were of a casual and unsystematic nature, while afterwards there was the opportunity for a more systematic approach in the study of the natural assets of the KNP (Joubert (1986) (cited in Rogers, 2002)). During the latter half of the previous era it had already become increasing evident and sporadic recommendations were made to the effect that specialisation was inevitable for the efficient administration of the KNP.

The capacity to understand the ecology of the KNP dramatically increased the ability of the KNP management to intervene in, and modify, the functioning of the natural environment. In 1958, the then National Parks Board launched its scientific journal, Koedo, where research conducted in, or important to national parks, was published. A total of 177 articles have been published to date (2003) in Koedo (du Toit, Kevin and Biggs, 2003). Already in the 1960s, decision-making in terms of management was largely a function of the research section. The government made specific annual grants for research in the Park, and by 1962 a research imperative was explicitly mentioned in the National Parks Act (du Toit et al., 2003).

The main research projects were management-oriented, and monitoring programmes were implemented to measure the effect of management strategies. For the first time, specific management policies were for fire management, water provision and predator control. The research section started collecting baseline
information on vegetation, geology, soils and systematically cataloguing species. Aerial game census techniques were developed, and large mammals were surveyed annually from 1978 onwards (du Toit et al., 2003). To meet all these challenges, the research section was organised into three branches: species research, which concentrates more on traditional species projects; systems research, which aims at understanding broader ecosystem functioning; and environmental impact research, which dealt with human influences, often originating outside Kruger’s boundaries. In order to improve the collection, storage, analysis and presentation of data, a strong quantitative ecology section with geographic information system (GIS) capability was established (du Toit et al., 2003).

Other developments were that Dr. S. J. C. Joubert, an accomplished biologist and subsequently a KNP Director during the 1990s, spearheaded an arduous but successful project of documenting Dr. S. J. C. Joubert’s six volume KNP Master Plan. Currently the KNP Master Plan serves as the basis for newer management plans, and without it the entire history of the Park’s conservation and tourism activities would have been lost (du Toit et al., 2003).

Due to the increase in tourist numbers after World War II, the then National Parks Board decided in the late fifties that tourism infrastructure should be upgraded and expanded to accommodate more tourists (Mabunda, 2004). To cope with the proposed extensive development of a roads network and tourist facilities, a Technical Services Division was established in 1958. The first Park engineer, Albert Kuschke, was appointed in 1958. The mandate of the technical division was, and still remains, management of capital projects (buildings and
roads) and maintenance of infrastructure, equipment, plant and vehicles (Mabunda, 2004). Today the Technical Service Division is responsible for maintaining more than 3,000 buildings, 12 water purification plants, 45 boreholes, 11 solid waste sites, and 1,743 kilometres of gravel tourist roads, 900 kilometres of fire break roads and 885 kilometres of tar roads (Mabunda). The construction and maintenance of buildings and roads infrastructure, water and sewage lines and camp fences are the most critical functions supporting tourism services in the Park. Without the Technical Service Division, there would hardly be any biodiversity sustainability.

The current management regime is an expert regime based on scientific management models. Planning and zoning in the park are based more on biological data, visitor data and interactions with local people. The Park administration is involved in tourism enterprises, providing information, services and facilities for visitors inside the park. The Park has a formalized management regime.

There is also a reorientation under way to manage the Park from the inside out, for example, by establishing partnerships far beyond KNP’s boundaries, and working towards a cooperative stewardship of the lowveld’s main river systems. Notwithstanding this development, decisions made inside the Park have socio-political and economic impacts outside the Park, and along its boundaries. There are many neighbouring communities influenced by, and influencing, biodiversity and other management actions inside the Park. In an attempt to address this challenge, a Social Ecology Section was established in 1995 that seeks to involve neighbouring communities more effectively.
One of the currently attractive opportunities for tourism within the KNP is the establishment of heritage tours and the incorporation of heritage sites in its activities. Unfortunately, a heritage management plan guiding access to and management of sites for tourism has not been developed. Without these guidelines, the opening up of heritage sites for public access and tourism would be irresponsible. This reinforces the vital need for further investigation and development within tourism that specifically integrates the heritage component (SANParks, 2006). Table 1 presents a summary of the KNP management philosophies since its inception.

The Kruger Management Landscape

Prior to 1994 the Corporate Office (Director’s Office) headed the KNP. Nature Conservation, Tourism, Finance, Human Resources and the Technical Services Divisions operated as separate divisions with their own General Manager, business plan, budget and operational goals. This resulted in a silo effect with divisions operating without consultation (KNP Tourism Management Plan, 2007-2011).

In 1995, tourist numbers exceeded 100 000 for the first time, marking the end of the preservationist era. The KNP was becoming an institution run increasingly on business principles. The new democratic government granted reduced subsidies to the KNP and the financial situation deteriorated. This led to proposals of business re-engineering with various outsourcing possibilities being investigated. Hence, decentralization opportunities were incorporated into the management structure of the Park and four business units were introduced.
Table 1. Historical Overview of Strategies used in the Kruger National Park and Evolution of Management Philosophies and Interventions during the Park’s Existence

<table>
<thead>
<tr>
<th>Era and philosophy</th>
<th>Main management strategies</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment</td>
<td>No consultation with public in management actions; Removal of people living within the boundaries of the park; Establishment of a few ranger sections; No scientific background for management actions; Control of hunting and poaching; Consolidation of reserves and establishment of boundaries</td>
<td>Actions were focused on establishing the park in a generally hostile environment. Attempts were made to clear the area of inhabitants, terminate previous activities such as hunting and establish clear boundaries.</td>
</tr>
<tr>
<td>Optimisation</td>
<td>No consultation with public on management actions; Culling of all predators (lion and hyenas) to boost herbivores numbers; Water for game (windmills and dams); Limited scientific background for management actions; Attempted control of fires; Increase of ranger sections</td>
<td>Optimisation maximises production with trade-offs against resilience. Strong farming influence, for example, optimising grazing area by water provision in dry areas, culling of predators, enclosures, and introductions to increase numbers.</td>
</tr>
<tr>
<td>Command and Control</td>
<td>No consultation with public on management actions; Water for game (windmills and dams); Population regulation through culling; Burn blocks, grading of firebreak roads; Fencing of outside boundaries to keep game inside and exert control; Science mainly internal; Breeding camps to boost numbers of rare antelope species</td>
<td>Through “Management by Intervention” (Pienaar, 1983) to stabilise the system to eliminate uncertainty of unpredictable events, considered with caution. Examples are culling of prey species when their numbers are high and overgrazing occurs.</td>
</tr>
<tr>
<td>Transition to Laissez-faire or pluralism</td>
<td>Management plan reflects internal view and excludes public opinion; Discontinue the creation of more water holes and advocate some closures; Initiate integrated catchment management, Fire policy remains insular, only “natural” (that is, lightning) fires allowed to burn; Science mainly internal but some external research initiated; Fences between KNP and private reserves to the west removed</td>
<td>During this era a strong drive was initiated to re-instill natural functioning of ecosystems and a more holistic, hands off view regarding ecosystem management was adopted, allowing “natural” processes to take their course. The fluxes within and interactions and interdependencies between different ecosystems components were recognized</td>
</tr>
</tbody>
</table>
### Strategic Adaptive Management (1995-present)

KNP sets vision and acceptability of management actions in public forums, consult widely for various management strategies

- Large-scale closure of water holes and dams and rehabilitate dam sites
- Full scale integrated catchment management with outside stakeholders in forums to manage rivers
- Culling of animals with known natural population control mechanisms not accepted. Elephant management proposed, but only in selected areas, allowing heavy use ("damage") in other areas.
- Removal of fences and agree on co-management of open conservation areas, both on national and international boundaries.
- Science largely carried out by external agencies
- Patch mosaic burning programme, simulating the original burn regime before the arrival of Europeans, and the burning regime still occurring in most of the rest of Africa
- Co-management with Makuleke community
- Active participation in TFCA

A complex systems approach is embraced, allowing for naturally functioning ecosystems as far as possible, and adaptive management underpinned by progressive structure learning. Learning is further maximized by using decisions, management actions and unexpected surprises (for example, large infrequent events) as experiments. Heterogeneity is maximised to ensure resilience.

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The KNP was divided into four regions: Far North, North, Central and South, each with a complete business unit. Factors that determined the size of the regions were quantity of accommodation units, geographical area, beds per unit, existing rangers' boundaries, income per unit, economy of scale and decentralizing opportunities. In 2005, the number of regions was reduced to
three. With the merging of the North and the Far North in 2006, the regions were officially renamed as the Nxanatseni (North), Nkayeni (Central) and Marula (South) regions (KNP Tourism Management Plan, 2007-2011). Figure 6 indicates the park management structure of the KNP.

Each region has its own of a regional manager, district ranger, finance manager, human resources manager, technical officer and various hospitality services managers. A corporate office supports this structure. Each business unit has a business unit manager (Regional Manager) with Hospitality Services Managers (camp managers) reporting to the regional managers. The hospitality services managers manage the tourism facilities (camps) in the Park.

The regions are patrolled on foot, by bicycle or vehicle on a daily basis. Anti-poaching efforts count very high amongst a long list of responsibilities. Rangers are in charge of the utilisation of sustainable natural resources. The North (Nxanatseni) of the KNP always has low numbers of tourists, with camps often running at a loss (Hannah, 2001).

Currently (2008) a matrix structure wherein the regional managers are responsible for two operational streams, that is, ranging and hospitality services is in operation. The tourism and conservation divisions are regarded as specialist services divisions, and are responsible for providing specialist advice and support to the operational streams.

There is no national policy that deals specifically with the level or extent to which protected areas must be developed or how they should be conserved. Consequently, the KNP is divided into zones allowing different degrees of
development and commercial activities. For example, the revised KNP's management Master Plan 2006 deals with the zonation of the Park, providing for regions without any tourism activity that are to be retained for their conservation value and wilderness qualities. Meanwhile, other zones are devoted to tourism
infrastructure and visitor activities (Diamantis, 2004). This system permits strategic management of the Park to maximize its potential. The management of the KNP has largely practised an anthropocentric approach through a zoning system and a multiple-use approach with elements of biocentric-inspired protection in the form of restricted preservation zones. These zones are an important instrument to meet the objectives of the park and to supply a spectrum of different recreation opportunities

The KNP Tourism and Development Nexus

Tourism development on a limited scale was first initiated in 1926. It was then that tourism became accepted as an integral part of the Kruger Park’s administration, which made it necessary to develop tourist and trading facilities, to establish a road network and to evaluate the general administration of staff structures to cope with new responsibilities (Joubert, 2007). When the KNP was opened for tourists the function of tourism management was incorporated in the ranger’s primary activities. Rangers built accommodation and roads, and regulated tourism behaviour (Carruthers, 1995). However, tourism facilities were provided in an ad-hoc manner. At the end of his career, Colonel James Stevenson-Hamilton (1945) reflected on the progress made in terms of tourism and commented that,

It is admitted that few of the camps were built on a lay-out basis. The reason was that in the early days we lived performance from hand to mouth… The only camps built to plan were the very expensive new camp at Pretoriuskop which was indifferently
constructed and in part wrongly sited, Shingwidzi and Lower Sabie (Joubert, 2007, p.37).

Furthermore, the development of camp sites took place as and when funds allowed. During the years 1930 to 1945, construction took place at varying rates.

For the entire period 1926 to 1945, management of the camps and tourism fell under the direct control of the warden and the section rangers (Joubert, 2007). Mabunda (2004) uncovered many reports, memoranda and agenda items submitted to the Board of Trustees with regard to the control of tourist behaviour and provision of infrastructure in the early days of the KNP. Notable among such reports and memoranda are those pioneered by park wardens, Colonel Sandenbergh and Louis Steyn, in 1947 and 1956 respectively. Sandenbergh was concerned about the future development of tourist facilities and wished to keep human interference to a minimum. Louis Steyn’s report to the Board was specifically focused on curbing uncontrolled and unplanned growth of tourist numbers to the Park which in turn would force the Board to provide more facilities at the risk of debasing the wilderness qualities of the Park. Steyn wanted the Board to restrict tourism growth to no more than 80 000 tourists per annum (Steyn, 1956) (cited in Joubert, 2007)). Those early reports cannot be regarded as tourism management plans. Most of these were simply reacting to tourism-related problems rather than seeking to devise proactive policy statements and management guidelines.
Previous Attempts at Formulating Tourism Plans

In 1951 a one-man commission of inquiry, the Hoek Commission, was appointed to conduct an investigation into the affairs and administration of the Board. In its report it recommended, among others things, the establishment of a Department of Park Development and Tourism in the KNP. This department was tasked with the development of infrastructure that was to dominate the Park’s agenda for the next 30 years (Hoek Commission (1952) (cited in Carruthers, 2007)). Although the Hoek Commission helped to establish a formal tourism management structure in the KNP, conservationists largely dominated the Park’s decision-making process with very little opportunity provided for participation by tourism staff. The establishment of a tourism department did not yield many benefits, as its approach was reactive rather than proactive, and it hardly engaged in strategic planning. There were no qualified managers in tourism or hospitality to drive the department towards a stated vision. This study has confirmed that this scenario continues unchanged. The Hoek Commission’s findings were used rather to transform the administration of the NPB into an Afrikaner one (Carruthers, 1995).

In 1981, Dr Pienaar, then KNP Park warden, submitted a 10-year development plan specifically aimed at the development of tourism accommodation and roads (Pienaar (1981) (cited in Joubert, 2007)). In this plan there were proposals for the Mopani and Berg-en-Dal rest camps, among others. Due to insufficient funds not all the proposed camps came to fruition. Mopani was a complete miscalculation in terms of size and location. The camp struggles to fill its capacity and is a huge financial drain on the Park’s revenue.
Subsequently, Dr. Salomon Joubert, Pienaar’s successor, submitted a revised 10-year plan to the then National Parks Board mainly for the improvement of tourist facilities (Joubert). However, there is no evidence that those development plans were linked to integrated tourism management plans or financial resources. Public demand for better conveniences and facilities motivated many of them.

The approach to tourism management was that tourism should not be allowed to dictate policy to the conservationists as tourism was perceived to be a threat to wildlife so that the need was to curb tourists’ park usage. The management philosophy was not open to the notion of the integration of socio-economic issues into biophysical management, a notion central to this study. According to Biggs and Rogers (2003), the level of fragmentation was not only evident between departments but it differed from traditional biophysical management in conducting unidisciplinary and single-species studies by natural scientists.

The corporate tourism department has yet to give a comprehensive strategic tourism direction to the individual national parks (Mabunda, 2004). Incumbents drawn from the pool of rangers and scientists occupied the position of Park Warden and senior management positions in the KNP. Their approach to tourism management exacerbated the historical restrictive management style. Conservationists disliked the idea that they owe their existence to tourism because the latter was the “goose that was laying the golden egg” (Joubert, 2007). This animosity surfaced when decisions concerning the introduction or expansion of tourism products and facilities were made. The findings of this research confirm this scenario. Whilst it was in the interest of the KNP to provide
more products and facilities to maximize income from tourist fees, conservationists vetoed such vital revenue earning initiatives. Tourism generally was treated as a secondary activity, and one that did not deserve centre stage attention (Mabunda, 2004). This might have been facilitated by the fact that many tourism managers and staff in the KNP and other national parks do not hold appropriate tertiary qualifications to meet the needs of tourism management, research or to improve service levels. SANParks, in 1999, commissioned a human resource development study and found that the majority of managers and key staff in the tourism department had no relevant tertiary qualifications in tourism and that this affected their ability to develop integrated management plans to improve service quality (Mabunda). This position has also been reflected in the research findings. The dearth of management and research skills is not only experienced in the tourism department but in social ecology as well.

One study often quoted for tourism research is that of Ferreira and Harmse (1999) who provided a spatial analysis of the social carrying capacity of the roads in the KNP (Mabunda, 2004). It picked up on early warning signals of tourist congestion on roads during peak holiday periods and suggested a sustainable scale for tourism development in the Park by using the concept of carrying capacity as a management tool. The study’s findings concluded that it was impossible to determine the increasing number of tourists for the KNP due to the changing socio-economic and political landscape. Such factors exert pressure on the KNP to make it more available to a broader segment of the population. The study suggested various tourist impact management methods to relieve traffic congestion during peak season and public holidays. However, it
did not constitute a holistic tourism management plan. Mabunda (2004) in a series of interviews with the KNP tourism managers, scientists and Park wardens noted that the Park never had a comprehensive tourism study.

The reasons for the dearth of social and tourism research in the KNP are related mainly to historical and capacity reasons. Scientific research in the KNP was always strictly mandated to conduct natural science research and scientists were expected to treat this directive as dogma. In the 1950s, a new breed of scientists attempted to engage in social and cultural research but this was discouraged because it was seen to be the domain of another department. Tourism research was also understood to be the responsibility of the division of tourist management services who then had to conduct such research themselves or contract skilled service providers. This was the reason why the scientific research section performed scientific research and only employed natural scientists. It was only when national legislation in the mid-1990s compelled SANParks to conduct Environmental Impact Assessments (EIA) for all new developments and renovations that scientists were obliged to take on human-related studies to comply with the new legislation. The lack of focus on tourism research reflects an institutional shortcoming at a high level and not a narrow-minded view of the KNP scientists (Mabunda, 2004).

The current KNP management plan acknowledged its shortcomings in providing for an effective tourism policy and management plan and pointed to a number of prevailing constraints at the time resulting in tourism being dealt with perfunctorily. Broad guidelines attesting to tourism being an essential adjunct to the concept of wildlife conservation were adopted. The principles of the
Recreational Opportunity Zoning (ROZ) and road carrying capacities were retained as guidelines for tourism development (Braack, 1997). The ROZ plan on its own does not constitute a tourism management plan, being merely one of the monitoring tools in a park manager’s tool box (the ROZ plan is explained in detail in Chapter IV).

The Kruger National Park Visitor Numbers

Today the KNP is rated as one of South Africa’s top tourist destinations and is the most visited national park in South Africa, attracting almost one million tourists per annum (Saayman and Saayman, 2006). It generates an annual income of around R288 million (2006). The KNP is a drawcard for tourists from Australia, Canada, France, Germany, Italy, the Netherlands, United Kingdom, and the United States. Studies showed that the Park attracted a wide range of visitors even from within South Africa and the wider African continent. Figure 7 shows the visitor arrival trends to the KNP in the last 30 years.
Figure 7 reflects that during the 1970s and 1980s the opening up of the Park to tourism all year round, the rapid expansion of infrastructure provision between 1958-1989 (roads and accommodation) and the successful malaria control programme led to unprecedented tourism growth (Mabunda, 2004). However, the KNP experienced a decline in the number of tourists in 1986-1987 because the country was riddled with violence between political factions. In 1994, there was another sudden drop in numbers because of the uncertainty in political developments. Nevertheless, the rugby world cup led to an increase in the number of tourists in 1995. In 2000, devastating floods that washed away infrastructure and caused extensive damage amounting to over R100 million.
(Mabunda, 2004) hit the Park causing a sharp decline. The Park was closed for 10 months, which affected its revenue and tourist numbers negatively (Stevens, 2002). There was a massive increase in the number of foreign tourists (25%) to the KNP in 2001. After the terrorist bombings of the World Trade Centre in New York on 11 September, 2001, South Africa was perceived as the safest destination in the world and foreign tourist numbers to the KNP increased tremendously since then (Mabunda, 2004). Foreign arrivals to the KNP increased by 340% since 1994 (an average of 34% per annum). This scenario showed that the Kruger National Park enjoyed far more than its fair share of growth in foreign markets (KNP Tourism Management Plan, 2007-2011). In 2005, the Park received 270,457 overseas visitors, 15,992 visitors from Africa, and 888,963 domestic tourists. Day visitors increased rapidly as South Africa statistics showed that 6.4 million tourists visited South Africa in 2002, an increase of 1.8 million over 2001. The KNP now receives 1.3 million visitors, a four-fold increase since the 1970s, and by March 2005, SANParks hosted 3.4 million visitors and sold 1.06 million bed nights (King, Biggs and Loon, 2007). Provincial reserves received approximately half of the number of visitors that SANParks received, and private reserves host at least one million visitors, possibly many more (King et al.).
Visitor Access to the KNP

Prior to the proclamation of the KNP there were no access roads for vehicles to either the Sabie or the Shingwedzi Game Reserve. The Game Reserve Commission of 1918 was well aware of the primary objective for the proclamation of the Sabie and Shingwezi Game Reserves, namely the preservation of fauna. All the same, it believed that the Game Reserves could also come to provide recreation and education for professionals in the field of wildlife and for the general public (Joubert, 2007). Today (2008) the KNP is easily accessible by road from Gauteng in five hours via the N4 and from Maputo by a two-hour drive, and it is covered by a series of tar and gravel roads. There are ten public entry points (KNP Tourism Management Plan, 2007-2011). There are also two entry points from Mozambique (Giriyondo and Pafuri) but these points of entry provide access to a negligible number of tourists.

Gate Arrivals

Table 2 provides the arrivals to the KNP by number of people and number of vehicles by gate. Seventy-three percent of all visitors received in 2003/04 came through the five southern gates of the Park, with the majority via the Paul Kruger and Malelane gates in the south. The southern part of the KNP is more popular because of easy access for key source markets such as the Gauteng and Mpumalanga and general awareness and good game viewing opportunities (KNP Tourism Management Plan, 2007-2011). Peak season statistics show that the southern part of Kruger (all five gates combined) receives up to 6 300 people
(1 660 cars) on a peak day. The current gate quota varies with an average of 500 people per gate per day. Traditionally, entrance fees to the KNP have been kept low as part of a broader social or educational objective, in order to facilitate “accessibility” to what is regarded as a national heritage (Mabunda, 2004).

Table 2. Gate Arrivals in the Kruger National Park (2003/2004)

<table>
<thead>
<tr>
<th></th>
<th>PERSONS 2003/2004</th>
<th>% of Total</th>
<th>VEHICLES 2003/2004</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airport</td>
<td>649</td>
<td>0.0</td>
<td>51</td>
<td>0.0</td>
</tr>
<tr>
<td>Crocodile Bridge</td>
<td>141129</td>
<td>10.6</td>
<td>42343</td>
<td>12.3</td>
</tr>
<tr>
<td>Kruger</td>
<td>263898</td>
<td>19.7</td>
<td>75220</td>
<td>21.8</td>
</tr>
<tr>
<td>Phabeni</td>
<td>165371</td>
<td>12.4</td>
<td>38742</td>
<td>11.2</td>
</tr>
<tr>
<td>Malelane</td>
<td>243300</td>
<td>18.2</td>
<td>52900</td>
<td>15.4</td>
</tr>
<tr>
<td>Numbi</td>
<td>156649</td>
<td>11.7</td>
<td>35796</td>
<td>10.4</td>
</tr>
<tr>
<td>Orpen</td>
<td>119733</td>
<td>9.0</td>
<td>30227</td>
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<tr>
<td>Pafuri</td>
<td>9403</td>
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<td>3068</td>
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<tr>
<td>Pafuri Customs</td>
<td>7749</td>
<td>0.6</td>
<td>1710</td>
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<tr>
<td>Phalaborwa</td>
<td>178341</td>
<td>13.3</td>
<td>51892</td>
<td>151</td>
</tr>
<tr>
<td>Punda Maria</td>
<td>50759</td>
<td>3.8</td>
<td>12463</td>
<td>36</td>
</tr>
<tr>
<td>Total</td>
<td>1336981</td>
<td>100.0</td>
<td>344412</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Tourism Facilities

When the KNP was proclaimed in 1926, there was very little infrastructure and few services. With the advent of tourism and the expansion of the law enforcement section, infrastructure, roads and more modern communications became a necessity and much was achieved (Joubert, 2007). Today (2008), the KNP has a 4 000-bed capacity with a bed occupancy rate of 70%, and is one of the few national parks in South Africa that runs at a profit (Saayman and Saayman, 2006). The extent, quality and diversity of tourism infrastructure and facilities vary greatly between protected areas in the KNP. For example, the KNP has luxury and budget accommodation, extensive tar road networks, 4x4 routes, comprising 832 km of main/paved roads, 1 726 km of gravel/secondary roads, and 4 229 km of management/firebreak tracks, wilderness trails, bush barbecues, guided safari drives, swimming pools, golf course and banking facilities (Diamantis, 2004; Llewellyn et al., 2003). At present (2008) park managers’ sentiment indicates that many visitors have a negative experience due to traffic congestion and overcrowding at facilities (KNP Tourism Management Plan, 2007-2011).

Tourism and Biodiversity Conservation Challenges

The National Parks Act (No. 56 of 1926) as amended provided for the utilization of national parks for the sustained benefit and enjoyment of the public, while maintaining the park’s natural qualities and their potential to meet the needs and aspirations of future generations. However, with tourists beginning to flock to the KNP in increasing numbers and the resulting rapid expansion of
facilities, new situations have arisen. New policies on the administration and control of tourists were needed to deal with this, as presented in Chapter IV. The major challenge facing nature conservation is how to maintain the ecosystems in their pristine state, while facilitating tourism and curbing its associated environmental disturbances (Zhou and Seethal, 2008). Both interests are legally provided for by the proclamation of national parks and the National Parks Act (No. 56 of 1926). It is of utmost importance to reach a clear understanding of what comprises visitor “benefit and enjoyment”, and what national parks, and the KNP in particular, have to offer (Joubert, 2007). Venter et al. (2008) agree that scientists and managers face unprecedented challenges related to understanding and guiding complex ecological systems while simultaneously facing social and political expectations on the part of visitors and neighbouring communities. As resources and wildlife outside the KNP and other protected areas decline, there is ever-increasing pressure to conserve biodiversity and wilderness resources as well as to provide recreation and physical resources for surrounding communities. The ever-increasing social demands for resources and recreation may be simple, such as clean water or campsites, or more complex, such as supply fuel, minerals, or protein. Collectively, these activities impact on the natural resources that conservation scientists and managers are charged with protecting for generations to come. Measures to address tourism and its impact on biodiversity conservation initiatives are presented in Chapter IV.
Conclusion

When the KNP was established in 1926 it was not a sudden event, but a culmination of many movements containing many strands of protectionist thought (Carruthers, 1995). The KNP has significantly altered the core governance structure of the wildlife conservation and protected area management sectors since its inception. The National Parks Act (No. 56 of 1926) did not bring into being immediately all the features of the KNP as we know them today. The amended legislation provided for changes in management structure but many of these took years to manifest themselves (Carruthers, 1995). For instance, the structure of administrative management has altered. A Board of Trustees was appointed and bureaucratic controls curtailed the hitherto undisputed authority and freedom of action of the warden. Hence, Colonel Stevenson-Hamilton’s long-held principle of leaving nature alone came under increasing pressure in favour of scientific wildlife conservation. The 1950s brought changes when biologists flexed their scientific muscles in South Africa’s national parks. This led to a policy that established national parks in scientifically significant localities, so that all the country’s biomes were represented in protected areas. The game reserve policy moved from the imperial preservationist ethic of undisturbed wildlife, and game reserves were opened to visitors.

Tourism has been intertwined with biodiversity conservation concerns since the establishment of the KNP, but at a snail’s pace. However, tourism became a major issue of environmental concern in the late 1990s. In spite of this, development tourism was not integrated into mainstream conservation planning. Hence, the overriding objective of this study is to propose a
comprehensive integrated environmental policy for tourism and biodiversity conservation and management in the KNP. Chapter IV gives a detailed analysis of the evolution of the tourism policy, water provision policy and elephant management policy and their impact on biodiversity conservation and management. The realisation of interlinkages of policy goals requires the three policies to move towards sustainable solutions as ingrained in the conceptual framework (Briassoulis’ (2004) policy integration) underpinning this study.
Notes

1 Skukuza is the main administrative and research centre and also the largest tourism camp in the KNP.

2 When the KNP was proclaimed there was no consistency in the calibre and training of the personnel who were appointed. None of South Africa’s first wildlife managers were scientists or people educated in natural history (Carruthers, 2007).
CHAPTER IV

TOURISM POLICY, WATER PROVISION POLICY AND ELEPHANT MANAGEMENT POLICY IN THE KRUGER NATIONAL PARK

Introduction

The Chapter presents a detailed analysis of the evolution of the tourism policy, water provision policy and the elephant management policy in the Kruger National Park (KNP). A contextual background on biodiversity conservation and management initiatives, and the extent and manner in which they have been pursued is also explored. The Chapter illustrates some key policy issues and their complexity, and discusses the approaches being employed or being considered. An assessment of the environmental impacts from the aforementioned policies is outlined in order to identify the interlinkages in and among the policies. This is a useful departure point for an Environmental Policy Integration (EPI) study as it helps us to characterise the associated policy impacts on biodiversity conservation and management initiatives in the Kruger National Park. To integrate policies in formulation and implementation requires an understanding of the actors and activities that have the most important impact. Hence the international influence on tourism, biodiversity conservation and management in the KNP will set the scene for the analysis.
Global Influence on Biodiversity Conservation and Management in Parks

A combination of romantic notions of nature inspired through the writings of early environmental philosophers such as Thoreau and Muir asserted that the seeds of nature conservation in parks in the developing countries were sown in the early part of the Nineteenth Century. Early proponents of empire forestry in the United States and in European colonies operationalised these ideas (Singh and Houtum, 2004). Thoreau and Muir envisaged the need for parks and protected areas as a sustainable way of managing natural resources. Knowledge creators, such as biologists, ecologists and social scientists validated this notion for states, international institutions and nongovernmental organizations (NGOs). Ever since, Western and European norms and concepts have been used to advance conservation initiatives in developing countries.

To date (2008), international institutions such as the World Bank, the United Nations and NGOs strongly influence developing state actions and policies. For instance, in 1992 the IUCN, the world’s largest and one of the most influential conservation groups with a membership consisting of states, governmental agencies and NGOs, stated as one of its objectives that ten percent of the world’s terrestrial areas needed to be protected in order to ensure the survival of the world’s biodiversity. This objective, although not met as yet, has enormous causal weight on state behaviour towards conservation (Singh and Houtum, 2004).

NGOs such as the World Wide Fund for Nature (WWF) have also convinced states to prohibit trade in endangered species, and to create
mechanisms for international sanctions against violators. Coupled with international environmental treaties, NGOs and international institutions have the ability to shape state interests and practices by providing international legitimation of state policies. These nonstate actors achieve this by collecting, producing and providing scientific information on which states can base their policies. Setting the scientific criteria for state policies, international institutions and NGOs broaden their reach through monitoring and funding implementation, thereby inhibiting state autonomy in domestic rule-making. This influence is partly responsible for the lack of success in implementing biodiversity management regimes which foster their sustainable use in the context of the specific conditions of resource-rich, economically poor sub-Saharan African countries (Kameri-Mbote and Cullet, 2002). For instance, in 1989 the United Nations Convention on International Trade in Endangered Species on Wild Fauna and Flora (CITES) placed a complete embargo on trade in ivory and other products from elephants (Ramutsindela, 2004b).

Recently, indigenous knowledge and authority in South Africa have been recognised, but they are subsumed into formal state government structures. In situating conservation in the domain of NGOs, academic/technical institutions (both international and national) and state bureaucracies, the practice of conservation has marginalised nonwestern knowledge systems. This marginalisation has been achieved by a belief in highly modernist ideologies that valorize the use of western rational science, and compartmentalises the state’s functions into distinct bureaucracies (Singh and van Houtum, 2004). Shultis and Way (2006) concurred that the myth of nature as a machine reducible to parts
best studied in isolation remained the predominant view of nature in the West. This compartmentalisation was also intended to provide a balance between resource use, resource conservation and social control, a scenario reflected in policy-making at KNP. External influence on national parks management continually pressurised park authorities to shift from inward looking towards the global interests executed through local authorities, to regional and national environmental management under the auspices of governmental authorities in cooperation with local and international communities. Table 3 reflects that external influence both at national and international level has largely influenced biodiversity conservation and management in the KNP. The grand challenge was to move, both practically and philosophically, from being more internal and preservationist oriented to being more external and social oriented, while providing for the sustainability of the resources (Venter et al., 2008). The following section explores management practices and changing paradigms on tourism and biodiversity conservation in the KNP.

**Biodiversity Conservation and Management in the Kruger National Park**

The biodiversity conservation and management initiatives in the KNP have traversed many paradigm shifts over a century since its initial precursor, the first Game Reserve, was proclaimed. Conservation in these early stages of the KNP was focused on the preservation of specific species in what was conceived to be
<table>
<thead>
<tr>
<th>Time Period</th>
<th>Conservation Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>1898-1926</td>
<td>(I) Park establishment, removal of indigenous people, Poaching, livestock restrictions, predator reduction</td>
</tr>
<tr>
<td>1898-1926</td>
<td>(E) Public hostility towards Park establishment</td>
</tr>
<tr>
<td>1955-2007+</td>
<td>(I) Biophysical research and inventories</td>
</tr>
<tr>
<td>1970-1990</td>
<td>(I) Fencing Park boundaries, water shortages, construction of dams and boreholes</td>
</tr>
<tr>
<td>1967-1007+</td>
<td>(I) Culling of elephant and other species, poaching, fire policy</td>
</tr>
<tr>
<td>1980-2007+</td>
<td>(E) Major environmental changes and alteration of landuse in up stream catchments affect the Park’s rivers and their flow regimes</td>
</tr>
<tr>
<td>1981-2007+</td>
<td>(E) Climate change (including worst droughts on record, floods), atmospheric deposition of pollutants, arrival of new diseases and invasion organisms</td>
</tr>
<tr>
<td>1990-2007+</td>
<td>(E) Refugees and refugee-set fires</td>
</tr>
<tr>
<td>1995-2000</td>
<td>(I) Adoption of new disease and invasion organisms</td>
</tr>
<tr>
<td>1995-2007+</td>
<td>(E) Objections to culling by animal rights groups and some sectors of the public</td>
</tr>
<tr>
<td>1996-2007+</td>
<td>(I) Removal of fences between the Park, private reserves and megaparks, closure of boreholes and destruction of dams</td>
</tr>
<tr>
<td>1998-2007+</td>
<td>(E) Implementation of National Water Act</td>
</tr>
<tr>
<td>1998-2007+</td>
<td>(E) Rapid expansion of ecotourism, private concessions, holiday homes and private game viewing lodges adjacent to the Park</td>
</tr>
<tr>
<td>2003-2007+</td>
<td>(E) Implementation of National Biodiversity Act</td>
</tr>
<tr>
<td>2003-2007+</td>
<td>(E) Regional Park expansion (TFCA) and demands for regional conservation management</td>
</tr>
<tr>
<td>2003-2007+</td>
<td>(E) Social pressures to provide natural Park resources to local communities</td>
</tr>
<tr>
<td>2004-2007+</td>
<td>(E) Land claims by indigenous people removed during Park establishment</td>
</tr>
</tbody>
</table>

I= largely internal in origin; E= largely external in origin

a primordial, untouched wilderness landscape characterized by a relatively static, steady-state environment through linear order succession (Shultis and Way, 2006).

Tourism management in the Kruger National Park followed the same principles and patterns in holding to a reductionist, deterministic and linear view of nature. This is because the appointment of the first warden of the Sabie Game Reserve in 1926 initiated an era of management policies based on a “common sense” appraisal of the situation without any scientific input (Macdonald, 1988) (cited in Foxcroft and Richardson, 2006). Policies largely focused on issues relating to poaching and the need to increase game numbers by controlling carnivores, the protection of certain species, particularly charismatic megafauna, water provision, and prescribed burning to manage vegetation composition. This scenario was transformed in the 1950s with the introduction of research while the late 1990s saw a dramatic change in the approach to tourism, biodiversity conservation and management.

The advent of the ecosystem management in ecology and conservation biology and the greater need for accountability and transparency also led to the revision of the 1997 KNP management plan. Furthermore, the external influences ranging from impoverished neighbouring communities to animal welfare organizations facilitated the revision of the 1997 KNP management plan (Foxcroft and Richardson, 2006). Current critical features of the philosophical management changes from the so-called “traditional natural resource management” (internal preservation oriented) to the “ecological management system” in the KNP are discussed below.
Changing Paradigm Shift of Biodiversity Conservation and Management Initiatives

The Kruger National Park was introduced to ecosystem management principles in the 1980s during the Rivers’ Research Programme (du Toit, Kevin and Biggs, 2003). Many ideas generated during the Rivers’ Research Programme influenced other spheres of management in the Park (Venter, Naiman, Biggs and Pienaar, 2008). In order to adopt the ecosystem management principles, the Park embraced the concept of heterogeneity as an organising theme, and it has now become the management philosophy underpinning the Park’s ecological research programme and management (Venter et al., 2008). The concept is tied to the basic idea that heterogeneity is the ultimate source of biodiversity and is the basis for ecosystem resilience. It follows therefore that spatial and temporal heterogeneity must be the focus of ecosystem management, and management programmes must be designed with a scientific understanding of the factors that drive heterogeneity (du Toit et al., 2003). Hence the implication for Park authorities on biodiversity conservation and management is that if a variety of natural landscapes, structures and communities are accommodated and vary over space and time, the variation itself will be the best safeguard for maintaining biodiversity, the key mandate of South African National Parks (SANParks) (Venter et al.).

To advance the ecosystem management paradigm, the KNP conservation management unit stressed a small set of generic needs for success as follows:
first, the recognition that we are dealing with spatially and temporally complex adaptive systems; second, to set clear goals and purpose; third, participative learning by all stakeholders and not just by their advisors; fourth, to monitor and test assumptions and finally, to employ adaptive organisational processes that promote institutional curiosity and the ability to capitalise on experience, new knowledge and surprises (du Toit et al., 2003). The KNP management adapted each of these needs through three core elements. First, the KNP developed a vision statement, explicitly embracing spatio-temporal heterogeneity. Based on the three pillars of biodiversity (composition, structure and function), and the recognition that national parks should embrace the wilderness concept and provide benefits to the populace, a vision statement was set up as follows,

To maintain biodiversity in all its natural facets and fluxes and to provide human benefits in keeping with the mission of the South African National Parks Board, in a manner which detracts as little as possible from the wilderness qualities of the Kruger National Park and to maintain the intrinsic biodiversity (hydrological, geomorphic and biotic) of the aquatic ecosystems as an integral component of the landscape, and where necessary restore or simulate natural structure, function and composition (Rogers and Bestbier, (1997) (cited in du Toit, Kevin and Biggs, 2003, p. 210)).

Secondly, the KNP management undertook to develop a hierarchy of objectives in order to implement the vision statement. A hierarchy of objectives begins with a vision at the top of the hierarchy. This vision is progressively
disaggregated through a series of objectives of increased focus. In fact, the broadest objectives indicate statements of strategic intent while the finer objectives provide managers with specific, spatial and temporal end points (Foxcroft and Richardson, 2006). A major theme of the current (1997) KNP Management Plan is biodiversity. Thus biodiversity includes a major “ecosystem objective”, which in turn is subdivided into the atmospheric ecosystem, the aquatic ecosystem, the terrestrial ecosystem and the impact of alien species objectives. Figure 8 illustrates a step-by-step process for decomposing the vision into a series of objectives of increasing focus, rigour and achievability for the management of the rivers flowing through the KNP.

The top section or broadest objectives are value-laden and involve public participation, whereas the bottom or finer objectives represent scientific end-points. Hence managers and scientists construct the technical finer objectives. The finer objectives also represent measurable goals which are defined as Threshold of Potential/Probable Concerns (TPCs).

Thirdly, for the KNP management to strategically reach heterogeneity (and hence sustainable biodiversity conservation), the KNP management developed TPCs, defined as a set of operational goals that define variability or spatio-temporal heterogeneity conditions for which the Kruger ecosystem is managed (Foxcroft, 2004; Gillson and Duffin, 2007). This is because the hierarchy of objectives requires park management to set TPCs and to identify agents and indicators of change in structural, functional and compositional diversity (du Toit, Kervin and Biggs, 2003). TPCs are defined as a compatible and well
Figure 8. KNP: A Simplified Version of the Objectives of Hierarchy (1999)

articulated set of adaptive management goals and end-points, each of which is: a level of concern to monitor; a hypothesis to examine and revise; a trace back to a particular agent of ecosystem change; an achievable environmental goal; and one dimension of the composition desired envelope, represented by all objectives together (Venter et al., 2008). A TPC is reached when one or more of these limits are exceeded. Monitoring determines when the prescribed limits are being exceeded. If a TPC is exceeded, notification is brought to the formal attention of a joint scientific management committee. The situation is assessed and a decision taken. This decision will either be managed by choosing from a range of options (including the explicit option of not managing), to investigate further with a view toward assessment, or to calibrate the TPC more appropriately (Venter et al., 2008; Foxcroft et al., 2004). As employed in the KNP, TPCs contain multiscale elements but produce a park-wide answer to whether the pattern generated is acceptable. This approach can be changed to a command and control strategy. For example, putting out a fire when a ranger’s operating rule is invoked or if life and property are threatened (Venter et al., 2008).

An important aspect of the TPC is that they are preagreed goals, and thus, consensus has already been reached on possible sets of future actions, once the TPC is reached. This therefore implies that management is prevented from stalling at such a point (Bennetts et al., 2007). TPCs were set for fluvial geomorphology, vegetation, fish communities, invertebrates, avi-fauna, and the role of the riparian corridor as an altitudinal migration route into the catchments, water quality and flow regime (du Toit, Kevin and Biggs, 2003). The suite of
TPCs together represents the envelope within which ecosystem changes are considered desirable (Bennetts et al., 2007). This study reflects that TPCs for elephant management and water provision are in place.

Finally, to manage the vision, hierarchy of objectives and TPCs, the KNP management and research unit further adopted the strategic adaptive management approach during 1996. Adaptive management is a process of managed learning which steers strategic action to achieve desired end-points in a complex ecosystem (Biggs and Rogers, 2003). There are many varieties of adaptive management, however, the version used in the KNP is referred to as Strategic Adaptive Management (SAM). The KNP adaptive system is designed to be forward-looking within an explicit, desired future state, and has clearly defined end-points. Hence, the KNP adaptive management permeates the ways in which science, monitoring and management attempt to reach heterogeneity strategically (hence biodiversity) via TPCs (Biggs and Rogers). Figure 9 unpacks two indispensible steps that govern the style and scope of feedback in the adaptive decision-making loop. The first, is to determine whether or not the vision and objectives are actually met once interventions are carried out. The second is that, in the KNP, the very specific TPCs dictate when, how and whether management action will take place, and ensure that subsequent steps check that the outcome of management actions meets the vision and objective. Figure 9 also reflects how science and management interact with environmental changes and societal values and aims at illustrating the linkage between research, monitoring and management processes via the use of a threshold of potential concerns in the Kruger National Park (Biggs and Rogers, 2003).
Figure 9. KNP Strategic Adaptive Management Process (2003)


The Strategic Adaptive Management (SAM) approach, as applied in the KNP consists of short-term practical cycles and longer-term strategic cycles. For example, the short-term cycle is employed with bovine tuberculosis in buffalo, the long-term cycle is employed with sediment accumulation in rivers, and combined
short and long-term cycles are used on elephant management (Venter et al., 2008).

A key component in the functioning of Strategic Adaptive Management (SAM) is the TPCs (Foxcroft et al., 2004). In the KNP, the TPCs form the basis of an inductive approach to SAM because they are invariably indicators of limits of acceptable change in ecosystem structure, function and composition. Hence, they are a mutually compatible and well-articulated set of adaptive management goals and end-points. Their validity and appropriateness are always open to challenge, and they must be adaptively modified as understanding and experience of the system being managed increases (Biggs and Rogers, 2003). Despite this achievement, the SAM approach has not been developed for social and economic systems (Venter et al., 2008), in particular tourism.

**Driving Force behind Tourism and Biodiversity Policy-Making**

The emphasis on heterogeneity in the objectives required a broadening of the monitoring programme in order to assess the negative impacts on biodiversity. Hence, the development of the hierarchy of objectives has influenced policy-making. The KNP policies relate to wildlife management and tourism issues, but also include relevant aspects of the technical services that support the KNP (Joubert, 2007). An outline of the selected policies for this study in terms of principles on which the policies are based is given, and the situation that necessitated the formulation and revision of the policies is explained.
A repertoire of these policies include: a revised elephant management policy, a water provision policy; a tourism policy/Recreational Opportunity Zonation (ROZ). These policies evolved and were reframed over time as a result of the adaptive learning process. The policy developments indicate a shift from the preservationist approach of the 1930s to a strong ecological conservation discourse that takes economic growth to be as consistent with environmental protection. In the following sections, three policy spheres are examined in more detail.

Tourism Imprint in the Kruger National Park

Kruger’s appeal as a tourist destination is enormous, and it is a major driver of economic development in the region. This, together with its annual net income, has led to the KNP being perceived as the goose that lays the golden egg (Ferreira and Harmse (1999) (cited in du Toit, Kevin and Rogers, 2003)). Furthermore, economic and political pressure to increase revenue generation has led the KNP authorities to attract more visitors, provide benefits to neighbouring communities and become more accessible. These developments have not come without a high environmental price. To quote Tapper (2005, p.6):

Tourism is like fire, you can cook your food with it, but if you are not careful, it could also burn your house down. To put it another way, tourism offers opportunities for economic, social and ecological development, but only if the risks involved are not overlooked.
The quotation seems to hold true for the KNP. The tourism impacts on biodiversity include the compounded impact of fencing, resulting in local effects such as injury, maiming and the death of individual animals, road network development, wood, gravel and water use, waste generation, electricity consumption, increased vehicular emissions, invasion of alien species and poaching (du Toit et al., 2003). Joubert (2007) concurs that the ecosystems of the KNP have suffered several unavoidable disturbances. Joubert noted, among others, that developments such as the restriction of animal movements, for example, by erection of fences, the control of bush fires, the excessive demands on resources such as the perennial rivers and the development of infrastructure had negative impacts on biodiversity. These impacts of tourism on biodiversity are expected to increase as needs and volumes of tourism grow (Venter et al., 2008).

Results from the stakeholder engagement sessions, comments contained in the KNP communiqués, and issues raised on the KNP Park Forum website also indicate that some potential thresholds have already been exceeded. These include the number of vehicles on the roads (especially in the Marula region), noise levels in some camps, unacceptable behaviour from stakeholders and some KNP staff, for example, overspeeding (KNP Tourism Management Plan, 2007-2011). Freitag-Ronaldson et al. (2003) also presented a nonquantified assessment of the environmental impacts of tourism within the KNP (Table 4).
Table 4. Nonquantified List of Tourism Impacts on Wildlife and Biodiversity as Observed in Kruger National Park

<table>
<thead>
<tr>
<th>Observed impact</th>
<th>Examples to support this</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disturbance of animal feeding pattern and behaviour</td>
<td>- Ground hornbills beg for food along most tarred roads.</td>
</tr>
<tr>
<td></td>
<td>- Baboons and vervet monkeys have become problems at picnic sites and rest camps.</td>
</tr>
<tr>
<td></td>
<td>- Terrapins at water points along general tourist roads feed on food thrown to them and may even beg.</td>
</tr>
<tr>
<td></td>
<td>- Bushbuck in Letaba Camp often feed on pasta, bread, and a variety of other dishes offered to them by tourists.</td>
</tr>
<tr>
<td></td>
<td>- Honey badgers, various mongooses, and spotted hyenas often raid dustbins and are fed around rest camps, particularly along fence lines.</td>
</tr>
<tr>
<td></td>
<td>- Diurnal birds, such as fork-tailed drongos, have been known to become nocturnal because of permanent spotlights at camps.</td>
</tr>
<tr>
<td></td>
<td>- Artificial lights and lighting attract insects, which attract frogs, which in turn attract snakes, which are often killed.</td>
</tr>
<tr>
<td></td>
<td>- Yellow-billed kites and other birds become problematic at picnic sites and camps where they are fed and/or become thieves in their own right.</td>
</tr>
<tr>
<td></td>
<td>- Vultures have been known to follow helicopters during culling operations.</td>
</tr>
<tr>
<td></td>
<td>- Tortoise picked up and removed from the field.</td>
</tr>
<tr>
<td></td>
<td>- Fish trapped in wire gabions during flood conditions and sometimes exploited by staff and visitors, primarily as a food source.</td>
</tr>
<tr>
<td></td>
<td>- Mutilation and theft of plants for private use or gardens.</td>
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<tr>
<td></td>
<td>- Collection of medicinal plants or plant parts.</td>
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<tr>
<td></td>
<td>- Predation efforts are disturbed, for example, along tarred roads with high volumes of traffic.</td>
</tr>
<tr>
<td></td>
<td>- Conversely, predators may capitalize on the distraction caused to prey by vehicles.</td>
</tr>
<tr>
<td></td>
<td>- Certain KNP lions have become experts at catching giraffe by causing them to slip on tarred roads or road embankments.</td>
</tr>
<tr>
<td></td>
<td>- Predators may kill antelope by chasing them into camp fences.</td>
</tr>
<tr>
<td></td>
<td>- Scrub hares, kudu, often congregate within fenced-off camp areas and attract predators, such as leopard regularly found inside Berg-en-Dal Camp fence.</td>
</tr>
<tr>
<td>Increased collection of wildlife products from the</td>
<td>- Numerous reports and suspected cases of cross-breeding of domestic cats and African wild cats in peripheral areas of KNP.</td>
</tr>
<tr>
<td>field by visitors</td>
<td>- Occurrence of exotic Nile tilapia and silver carp in KNP rivers, and the probability of hybridizing with indigenous fish species.</td>
</tr>
<tr>
<td></td>
<td>- The introduction of alien plant seeds into the KNP system, and further spread thereof on vehicle tyres.</td>
</tr>
<tr>
<td></td>
<td>- Inadvertent introductions of locally foreign animal species into areas of KNP from the Timbavati area and Nyala from Mthethomusha and Sabie Park Reserves.</td>
</tr>
</tbody>
</table>

Table continued
Death of individual animals

- Snakes and scorpions are readily killed in rest camps, as they are viewed as undesirable.
- Poisons and other means are used to remove or kill ants, bees and wasps.
- Monkeys and baboons are regularly killed against powerlines when flushed during night drives.
- Powerlines can potentially kill many large birds. And there have been reports of giraffe electrocuted by sagging powerlines.
- Grey louries and other birds have been recorded as drowning in reservoirs.
- Road kills by speeding tourists and staff are ongoing and include wild dog pups, lion cub, honey badger, impala lambs, and many nocturnal and other birds.
- Numerous night-jar and scrub-hare road kills, especially on tarred roads at night when there is late driving.
- There have been reported incidents of antelope poaching from vehicles.
- Animals have drowned in water troughs.

Habitat modification

- Reeds bush and riparian trees are cut for better game-viewing opportunities.
- Waterholes created as game-viewing points cause unnatural game concentrations and vegetation damage. In some cases, erosion also results due to bad placement on sensitive soils.
- Sewage system/French drains artificial wetlands create unnatural habitats, sometimes in natural dry areas.
- Tarred roads lead to increased runoff stimulating tree growth and encroachment-this is particularly noticeable with Mopani in the northern KNP and sickle-bush in the south.
- Litter degrades the natural scene and is a danger to wildlife. An extreme example is the dump sites.
- Weirs, dam walls, and gabions have a barrier effect in fish migration and may lead to deaths and disturbance of migrations and spawning.
- Widespread harvesting and subsequent transport of thatching grass on open vehicles has increased the distribution of this species along roadsides.
- Building materials (for example, the use and transport of river sand) spread alien seeds and plants.
- Artificial dams and other water surfaces increase the distribution and breeding habitats of mosquitoes and associated malaria epidemics.
- During summer months, tarred roads may be hot barriers to movements of snakes, reptiles, and may be death traps for insects, snails, millipedes, that are killed by vehicles.
- Road construction has resulted in many instances of unnatural damming of water flows.

Disruption of group cohesion

- Vehicle or other tourist activities disrupt animal group cohesion by separating groups of animals on either side of a road.
- Similarly, traffic and tourist interests may result in separation of parents from their offspring when crossing roads.

Tourism and Water Provision

Water is crucial to the survival of plants and animals. The provision of an acceptable quantity, and the protection of water resources for biodiversity conservation, is essential. Water-related stress occurs when an organism is exposed to either deficiency or an overabundance of water relative to its ecological requirements. Tourism activities and facilities exert strong pressure on water resources producing overextraction and lowering of the water table. This is because tourists require constant access to water. A tourist staying in a hotel uses, on average, one-third more water per day than a local inhabitant (European Environment Agency (EEA), 2000). In many tourism areas in South Africa, demand for water exceeds supply and is a serious strain on available water resources. For instance, water is required in guest rooms, kitchens, laundries, swimming pools, lawns and golf courses (Department of Environmental Affairs and Tourism (DEAT), 2003).

The use of fertilizers, herbicides and pesticides on golf courses has been associated with pollution of water resources, death of wildlife and displacement of animal habitats. A golf course in a tropical country such as Thailand needs 1 500kg of chemical fertilizers, pesticides and herbicides per year and uses as much water as 60 000 rural villagers (Holden, 2000). The main consequence of constructing a golf course is the decrease in the groundwater table, which negatively affects biodiversity stability, and the KNP is no exception. This demand on local water supplies interferes with the relationship between
elephants and their environment by limiting the amount of water, with serious implications for biodiversity.

The new vision statement of the KNP outlines a commitment to sustainable operations in order to mitigate the negative impacts on the environment. For instance, an effective adaptive management approach requires agreed and well-defined objectives (for example, thresholds of potential concern) and baseline information, which need to cover key ecological, socio-economic and cultural factors for the area where tourism is taking place. Yet the tourism thresholds in the KNP have not been set or defined (KNP Tourism Management Plan, 2007-2011). Given the scale of tourism activities in the KNP, its territorial dispersion and its use of environmentally sensitive areas, it is clear that it can constitute a major environmental threat. The major challenge facing nature conservation in the KNP is how to maintain ecosystems in their pristine states, while facilitating tourism and limiting its associated environmental impacts. Both interests are legally provided for in the proclamation of national parks and the National Park Act (No. 57 of 1976) as well as the NEM: PAA (Joubert, 2007).

Park Management Policy Response to Tourism Imprint

In order to bridge the gap between economic and environmental imperatives, the KNP management authorities in 1997, proposed a zonation exercise termed the Recreational Opportunities Zoning (ROZ) (tourism) policy aimed at meeting the needs and expectations of widely different levels of wilderness visitors. In this scheme, the KNP management developed zones that
spread tourism activities from high intensity leisure to wilderness, with the prime focus on remote, primitive and low intensity leisure zones in line with the vital attributes and objectives of the Park (Biggs, Freitag-Ronaldson and Eber, 2006). The zoning classification guides the ultimate number of tourists allowed in the Park in order to maintain certain wilderness qualities within particular zones. Hence, the KNP management set up five principles earmarked for the zoning process. Firstly, that there should be due consideration for the distribution of current wilderness areas and associated wilderness trails; secondly, that there should be designation of the most appropriate and suitable environmental zonation for a specific area. Thirdly, that due consideration should be given to the zonation since a specific area could potentially be affected and altered in both kind and degree. Fourthly, that the distribution of the impacts which determine the zonation for a specific area through time and space, could lead to current ‘Primitive Wilderness’ to be upgraded later to “Pristine Wilderness”, for example, through the removal of a highly visible radio mast. Fifthly, that cognisance should be taken of any uncertainty or sensitivity relating to a current zone designation for a specific area (KNP Management Plan, 1997).

In order to complement the tourism policy principles, a series of zonation objectives that guided the process were as follows: Firstly, to maintain within all areas of the KNP those spiritual and experiential qualities associated with the concept of wilderness, achieved through defined management of zones aimed at preserving differing degrees of wilderness experience. Secondly, to develop and implement a zonation system providing a range of differing degrees of wilderness qualities, in a manner which strives to maximize throughout the KNP those
attributes which make up wilderness qualities. Thirdly, to develop appropriate monitoring mechanisms to verify whether those qualities and experiences for which zones have been allocated are being maintained and to target attributes which may require restoration so as to achieve the specifications for individual zones. Fourthly, to promote an appreciation of the intrinsic inspiration and recreational values of wilderness qualities as manifested at different levels. Fifthly, to develop, implement and maintain a collaborative network between the KNP and other conservation or wilderness-associated institutions (regionally, nationally and internationally) so as to promote wilderness qualities and associated values. Finally, to ensure that legislation exists to adequately project the maintenance of zones of wilderness qualities as specified in Recreational Opportunities Zonation (ROZ) and their designated borders within national parks and finally, to establish a regular external auditing capacity to ensure that wilderness qualities are not being eroded (KNP Management Plan, 1997).

Overall, the primary objective or thrust of the park zoning plan was to establish a coherent spatial framework in and around the KNP to guide and coordinate conservation, tourism and visitor experience initiatives. A zoning plan plays an important role in minimising conflicts between different users of a park by separating potentially conflicting activities such as game-viewing and day-visitor picnic areas. A zonation plan also ensures that activities do not conflict with the park’s values and objectives, especially the conservation of the protected area’s natural systems (KNP Tourism Management Plan, 2007-2011).
The following categories of ROZ represent different degrees of wilderness qualities and visitor regulation, with a limited number of visitors in zones A to D and a major increase from E to F.

A. *Pristine Wilderness Areas.* The zone is characterized by unmodified natural environment with no trace of camping. Small groups can hike on foot, backpacking, walking and overnight portable tents.

B. *Primitive Wilderness Areas.* Essentially unmodified natural environment. Several groups may be allowed to sleep in portable tents and recreational opportunities include hiking, backpacking, walking and canoeing.

C. *Semi-primitive General Visitor Areas.* Slightly modified natural environment, accessed mainly by 4-wheel drive on ungraveled dirt roads or by guided or unguided walks. Offers tented small camps for a small number of individuals.

D. *Limited motorized.* There is slightly or moderately modified natural environment, accessed by sedan cars and other suitable vehicles, guided or unguided, and restricted to official roads only.

E. *General access, motorized areas.* Moderately modified natural environment associated with picnic sites, game-viewing routes, viewing points, access by sedan cars, buses and public open vehicles.

F. *High-density development areas.* These zones are characterized by a highly modified natural environment including rest camps, staff villages, administrative buildings, rangers posts and a variety of recreational opportunities.
Park Management Tourism Challenges

Data have been accumulated that can help to determine appropriate levels of tourism within the different zones that have been established in the Park for management purposes. Furthermore, particular types of tourism that are most suitable for each zone have been identified, as well as zones which should be free from tourism. However, the Park does not have sufficiently detailed information for the assessment of ecological and social-cultural impacts. The challenge to the ROZ policy is that its impacts on tourism have not been assessed quantitatively and are considered to be insignificant or absent (Freitag-Ronaldson et al., 2003).

Currently there are no measurable set standards to monitor the impacts. Hospitality manager implementing tourism programmes is based on what each has experienced in his/her previous workplace. In fact, management takes place in an ad hoc and inconsistent manner (Mabunda, 2004). There is a need to develop tourism TPCs to fine-tune management decisions as to the necessary actions to be taken in order to optimise income and mitigate negative environmental impacts. Managing tourism impacts in protected areas is proving to be difficult to accomplish without the necessary determination of tourism TPCs. Throughout the KNP’s history, park managers have expressed concern that tourist pressures were approaching capacity levels, including issues of traffic congestion, overuse of facilities and impact of visitor enjoyment (Joubert, 2007). Water provision is also a cause of concern in the Park.
The Water Provision Policy

When the Sabie Game Reserve was proclaimed in 1898 and the Shingwezi Game Reserve in 1903, there were no artificial waterholes in what is now the KNP (Pienaar (1985) (cited in Smit, Grant and Devereux, 2007)). The KNP water stabilisation programme started as early as 1930, but gained particular momentum in the 1960s after fencing of the western boundary blocked the migration routes of certain herbivores, particularly the wildebeest and zebra (Smith, Grant and Whyte, 2007). Animals could not migrate to the areas in the west that previously served for their dry season grazing, and consequently management aimed to provide more surface water in the Park in order to open up areas previously used primarily as wet season grazing (Pienaar, 1998). Furthermore, it was anticipated that increased water availability would help to stabilise the number of low-density antelope, namely roan antelope, tsessebe and the sable antelope. Pienaar also attested that establishing artificial waterholes was to support an increase of herbivore populations during droughts and to provide water to attract animals for the benefit of tourists. Specifically, the aim was to provide an adequate network of reliable water-points through the construction of boreholes and earth dams (Pienaar, 1970, 1983) (cited in du Toit, Kevin and Biggs, 2003). In essence, the programme was designed to minimise the influence of temporal variability in rainfall by ensuring that most of the Park could be grazed, even in years when natural surface water was scarce (Smith, Grant and Devereux, 2007).

Consequently, more than 300 boreholes were drilled, 50 earth dams constructed, and various seasonal and perennial rivers dammed between the
1930s and the 1980s as part of the water provision programme to ensure a reliable network of surface water, year-round, throughout the Park (Gaylard, Owen-Smith and Redfern, 2003; Smith Grant and Devereux, 2007; Smith, Grant and Whyte, 2007). Additionally, weirs and sluices were constructed to ensure adequate flow of perennial rivers during droughts, provide surface water for ungulates and protect aquatic habitats, thus alleviating concerns that upstream demands on water would reduce the reliability of perennial rivers (du Toit, Rogers and Biggs, 2003). The programme brought most of the Park within less than 10-km of a permanent and reliable surface water source even during drought years (Smit, Grant and Devereux, 2007). This programme has been severely criticised by international wildlife organisations for altering the natural grazing habitats of animal particularly elephants. Initially this programme seemed to achieve its goals, with rare antelope numbers increasing and zebra and blue wildebeest stopping their attempts to migrate to the west in the winter, and settling and stabilizing within the Park (Pienaar (1998) (cited in Smit, Grant and White, 2007)).

Despite this intervention, Smit, Grant and Devereux (2007) pointed out that during the drought of the 1980s, problems, many of them directly or indirectly ascribed to the provision of artificial waterholes, emerged in the KNP and adjacent area. There was also a drastic decline of low density rare antelope species such as the roan, tsessebe, sable and reedbuck during the drought periods of 1982-1987, despite the widespread provision of water-points (Harrington et al., 1999). Reports are that the high density of permanent waterholes was responsible for starvation-induced mortality in Klaserie, a private
game reserve on Kruger’s western boundary, during the droughts of the 1980s. It was also observed that the dense waterhole network was responsible for reducing herbivore diversity by expanding the distribution of common water dependent species like the zebra and blue wildebeest (and concomitantly lion) at the expense of rare species (Harrington et al., 1999; McLoughlin and Owen-Smith, 2003; Owen-Smith, 1996). Oelofse, Brockett, Biggs and Ebersohn, (1999) (cited in Smith, Grant and Devereux, 2007) also found that perennial grasses in KNP declined dramatically after the dry spell of 1990-1992 and failed to recover with the increased rainfall of 1993. In contrast, there was a rapid increase in zebra and lion numbers, a factor attributed to an increase in competition for water sources and concomitantly predatory species such as lion (Pienaar, 1998), coupled with deteriorating veld conditions. Rogers and Biggs (2003) concurred that the widespread distribution of waterpoints may also have homogenised the woody vegetation structure across the KNP by spreading elephant impacts more evenly across the landscape. This has reduced the zebra numbers on the plains while the roan numbers stabilised (Pienaar, 1998). Hence, a new water provision policy was proposed with the mandate to close a large number of Kruger’s artificial water points (Pienaar).

A Review of the Kruger National Park Water Policy (1994)

A shift towards a heterogeneity-based perspective, coupled with the concerns emanating from water provision as early as 1930, led to a review of the water provision policy (Smit, Grant and Whyte, 2007). This gave rise to the
decision to close more than half of the waterholes for animals in the period from 1994 to date (2008). This signalled a shift from the previous paradigm of suppressing variability, towards maintaining spatial and temporal fluxes believed necessary for sustaining biodiversity and crucial ecosystem processes (Gaylard, Owen-Smith and Redfern, 2003).

The new water policy initiated in 1994 was based on four principles. Firstly, it was accepted that the availability of surface water resources other than perennial rivers in the KNP was primarily dependent on the annual, medium and long term rainfall cycles. Secondly, due to the fluctuating nature and intensity of rainfall, both in terms of medium and longer term cycles, it is also accepted that the surface water resources will fluctuate accordingly and that such fluctuations played a decisive role in molding the intricacies of the lowveld ecosystems. Thirdly, it was also accepted that the KNP has been restricted in its natural development by spatial and other unnatural limitations (boundary fences), although the extent of this has not been accurately assessed. Finally, development in the catchments of the rivers, beyond the Park boundaries influenced the quality of the water in the perennial rivers in the KNP. This situation was exacerbated by the fact that very limited managerial options were available to address water provision in the KNP. The KNP management, in line with the essence of the KNP’s vision to maintain biodiversity, strove to ensure that heterogeneity in the Park was not extensively impacted. Artificial water sources were now being closed in an attempt to restore seasonal migration patterns and course-scale landscape heterogeneity, and to re-establish certain patches as dry-season refugia simply by their distance from water (Gaylard,
However, another mammoth task faced by Kruger National Park authorities came with the impact associated with the increase of elephant population in the Park.

**Elephant Impacts on Biodiversity, and Policy Response**

High densities of elephants in African savannas have been blamed for shifts in vegetation community composition, with reductions in populations of rare, vulnerable and/or palatable trees, and implications for possible reduction of biodiversity (Gadd, 2002). This is exacerbated by the fact that elephants are mixed feeders, consuming a range of plants and plant parts from grasses, through to browse and bark, including roots, leaves, twigs, branches, fruits, flowers and bulbs. The large body size of elephants and their robust feeding style allow them to be very broad in their dietary use and, to date (2008), a total of 146 plant species (representing 51 families) have been recorded from their diet (Davis, 2004). Elephants are classified as mega-herbivores (larger than 1 000kg) (Owen-Smith, 1992), with their daily food consumption amounting to approximately 150kg for an adult cow and about 300kg for an adult bull. In addition, they may be destructive and wasteful foragers through the actions of debarking, browsing and felling, which can carry important ecological implications (Cowling and Kerley, 2002).

There is ample evidence that high levels of elephant activity can and have had deleterious effects on biodiversity in national parks. For example, in the riverine woodlands of Northern Botswana, elephants created a significant decrease in acacia density (Skarpe et al., 2004). In the Ruaha National Park in
Tanzania, elephants browsing have greatly impacted the acacia albida (Barnes, 1983). In the Akagerea National Park, Rwanda, elephants have been responsible for the decrease of the acacia Senegal species. In the 1950s and early 1960s, there was a growing feeling among some prominent biologists, including Beuchner and Buss of the Murchison Falls National Park and Glover from Tsavo (Kenya), that elephant numbers should be controlled to prevent habitat change (Bryden, 2005).

In South Africa, there are biodiversity concerns with regard to the management of elephants in Kruger, Mapungubwe, Marakele and Addo Elephant National Park (Mabunda, 2005). In the case of Addo Elephant National Park (AENP), elephants have caused damage to vegetation in succulents (Johnson, Cowling and Phillipson, 1999). Lombard, Johnson, Cowling and Pressey’s (2001) study concluded that elephants in the AENP had a negative impact on plant species diversity, with the endemic and threatened component of the succulent thickets being most vulnerable. They recommended a system of botanical reserves, in addition to those already proclaimed in order to conserve this floristic component.

Elephants have significantly decreased the population of marula, in particular in small game reserves in South Africa (Duffy, et al., 2002; Gaad, 2002,). For example, the Sabi Sand Wildtuin (SSW), Peel (2003) reported an increased impact on the wood composition and structure. Swart (2003) concurred that the current status of the overall elephant impact appears to be at a critical stage. Swart stressed that if measures were not taken to reduce the number of elephants in the SSW, the reserve ran the risk of seeing the habitat drastically
altered and several targeted tree species reduced to critical numbers. Hiscocks, Peel and Kruger (2003) also noted an increasing elephant population in SSW impacting on the vegetation surrounding water points.

Botha, Witkowski and Schackleton’s (2002), study showed that the population of acacia *xanthophyllous* (fever trees) in the lowveld of South Africa has declined in number. Elephants negatively affected the riparian vegetation along the Limpopo river. Trees are declining in number and seedlings are completely absent. Bezuidenhout (2004) reflected on the impact elephants have on the vegetation in Marakele National Park, converting thickets into closed shrublands and closed woodlands into open woodlands.

In the KNP, elephants had a profound effect on the dominant vegetation type as early as 1959 (Biologiese, 1959), for example, the eradication of the stands of aloes from the Doispane Sabi River in 1959. van Wyk and Fairall’s (1969) study concurred that elephants impact on vegetation and proposed that the highest number of elephants that could be carried would be one per 0.29 per square kilometre (that is, 6 000 elephants for the KNP) to avoid destruction of vulnerable areas near water points.

In the KNP, elephants highly impact on the marula trees (Coetzee, Engelbrecht, Joubert and Retief, 1997). In some stands, 6.5 percent of all trees were felled or ring barked in a single season. Rangers’ reports of severe damage to knobthorn trees (acacia *nigrescens*) in the Punda Maria area led Engelbrecht *et al.* (1997) to an investigation of the elephants’ impact. Engelbrecht’s (1997) study showed that from a sample of 951 trees, elephants damaged 64.3 percent. Viljoen (1988) also reported a decline of the amarula
and knobhorns in the Satara area of Kruger. Trollope et al.’s (1998) study of comparative changes in the density of large trees on four of Kruger’s major landscape types from aerial photographs for 1940 and 1960, and 1960 and 1986-1989 showed that elephants had been primarily responsible for the killing of trees more than 3m in height after 1960.

Most recently mortality in the woody cover and density of shrubs and trees has been assessed from aerial and fixed-point photographs (Eckhardt et al., 2000). Jacobs and Biggs’ (2002) study showed that the marula population has become extinct due to elephant impacts in the KNP. Losses in the number of trees may result in structural homogenization at landscape scale, thereby impacting on the ecosystem. Whyte (1996) (cited in Hofmeyr and Eckardt, 2004) found that after 10 years approximately 1 000 baobab trees had died due to elephant utilization in the KNP. Given the abundance, generalist feeding behaviour and diversity of impacts of elephants, it can be expected that elephants can have a number of cascading effects on ecosystems. Despite the evidence that elephants impact on biodiversity, other studies point out that elephants do not single-handedly impact on vegetation.

Kelly (2000) conducted a survey of the effects of elephant utilization on the Sterculia rogersii and Adansonia digitata populations of the KNP. Kelly concluded that elephants do not play a significant role in the mortality of tree species, especially to the north of KNP. Kelly argued that management factors are required to improve regeneration of these species. In research paralleling that of Kelly (2000), Hofmeyr (2003) studied the spatial demography of elephant impacts on selected tree species in the KNP. Hofmeyr found that although
elephants were utilising the trees, very few trees were directly linked to elephant impact. Most of the mortality was in the form of bark-stripping and ring-barking. Hofmeyr concluded that a combination of elephant damage in the form of bark stripping, burning of the exposed main trunk and high winds blowing weakened trees.

Jacob (2001) conducted an ecological study of marulas in the KNP, examining the impact of elephant and fire on marula species in four different landscapes. This study showed that fire changes the structure and morphology of the woody vegetation, but not its composition and diversity. Stevens (2001), on the other hand, found that even though elephants and soil solidity were identified as core factors in tree mortality, variables such as water movement, nutrients and trampling continually modified vegetation structure and vegetation.

With reference to the above studies, it is evident that there was no conclusive proof that elephants were the sole modifiers, directly or indirectly, impacting on vegetation structure, composition and function. Elephant management in conservation areas has presented policy and decision-makers with burgeoning populations and a loss of biodiversity, giving rise to the so-called elephant problem. Elephant management was particularly challenging given the high cost and strong public emotions elicited by culling, contraception and translocation (Kerley and Landman, 2006). Furthermore, the information on which managers base decisions was frequently contradictory, and overviews of elephant impacts on savanna landscapes have only recently become available (Kerley and Landman).
There was an increasing concern that increased elephant populations in KNP may affect biodiversity in a way that was not reversible and this ran counter to the core mission to preserve biodiversity (Mabunda, 2004). A loss of biodiversity as a result of the effects of a large elephant population is therefore unacceptable (Smit, Grant and Whyte, 2007). Bryden (2005) attested that there was significant scientific evidence of the negative impact of the current elephant population on the environment, especially on certain sensitive and rare plant species. A surplus of elephants in the KNP was destroying vegetation, thus adversely impacting on the existence of other animals (Scholtz, 2005).

The results of research on elephant impacts have shown that these animals influence many ecological processes and patterns, including soil features, landscape patchiness and plant biomass and diversity. Furthermore, elephants influenced insect, bird and antelope abundance, and reduced browsing availability for the black rhinoceros (Kerley and Landman, 2006). There were also concerns that elephants were depleting water resources in the Park at the expense of other animals. However, whether the KNP has long reached, or was about to reach or will ever reach an elephant population density that will cause structural homogenization or cause a loss of biodiversity, are highly debated topics (Annon, 2004). Hence elephant management, or lack thereof, remained controversial (Whyte, van Aarde and Pimm, 2001; Gillson and Lindsay, 2003; Skinner (2005) (cited in Smith, Grant and Whyte, 2007). The following section diagnoses this issue.
African elephants are considered a water dependent species (Owen-Smith, 1996). For instance, adult elephants on average drink every 43 hours (they drink 1-3 times daily when water is prevalent, and once every 2-3 days during the dry season) (Owen-Smith 1988). Breeding herd adults each drink up to 86.61 litres at a time, and bulls twice the amount. Elephants consequently restrict their forage range to water points, particularly during the dry season, depleting resources as a result of high utilization pressure (Redfern et al., 2003). To address this, the KNP management has opted for the closure of artificial waterpoints since 1994. However, opinion is divided on the elephants’ effects on biodiversity as linked with water provision in the KNP. This remains controversial because the issue has not been considered in a scaled fashion (du Toit, Kevin and Biggs, 2003) with particular attention to elephants.

Smit (2005) argued that elephants are highly mobile while natural water resources are abundant in Kruger, hence they are not found to congregate around waterholes but aggregate along rivers. This is exacerbated by the fact that rivers, floodplains, ecotones and sodic sites provide nutritional and habitat benefits for animals. He suggested that the closure of water points will have no impact on elephant numbers. Large scale closure of water points may have compromised nontarget species. Gaylard et al. (2003) asserted that the presence of water points has a more significant impact, as they would focus elephant impacts on vegetation and significantly reduce habitat heterogeneity. Owen-Smith (1988) studied the role of water provision on elephant effects on
vegetation. He suggested that the provision of artificial water points in the uplands would have an impact as many of the vulnerable species are found in these areas. Thus, provision of these in uplands would constitute a significant threat to tree species vulnerable to elephant damage. This debate points to linkages between the water provision policy and the elephant management policy, the focus of this study. However, following concern about the effects that these animals were having on vegetation, a policy of culling to maintain the elephant population below a ceiling of 7 000 animals was first implemented in the KNP in 1967,

Scenes of the culling provoked such a tremendous domestic and international outcry that a moratorium was imposed on this practice in 1994 (Scholtz, 2005). Animal rights groups challenged the culling policy as lacking a scientific foundation, which led to a moratorium being placed on further killing, while the policy underwent review. Culling operations in South Africa stopped in 1995 when South African National Parks undertook to review its policy for the management of elephants in the KNP after a public debate (2004) held in Midrand, Johannesburg (Bryden, 2005). Notwithstanding this, the Minister for Environmental Affairs and Tourism, who has ultimate responsibility for elephant management within South Africa, convened a Science Round Table in 2005 to advise him on the issue. Consequently an extensive review process involving 63 experts as chapter authors, and a further 56 persons including scientists, policy-makers and stakeholders was carried out to gather, evaluate and present all the relevant information on elephant management (Sholes et al., 2007). The sections below present an overview of the summary of the scientific assessment
of elephant management strategies in South Africa and why different researchers and practitioners take different positions.

Assessment of the Elephant Management Strategies in South Africa

Elephant research experts have found that high levels of elephant impact result from the concentration of animals in specific habitats or areas at particular times of the year, rather than the absolute numbers of elephants. Hence, methods of altering the distribution of elephants in the landscape such as fencing to keep elephants inside protected areas have been recommended to be effective. This would also keep them out of sensitive locations within the protected area. However, it has been found that this management intervention strategy may result in high stress for migrants caught against fences as well as creating local hotspots of high impact. Researchers elsewhere in Africa have shown that elephant movements can also be influenced by nonphysical barriers (such as chemical repellents, sound or disturbance, referred to as conditional aversion methods) but the control is spatial and often temporary (Scholes et al., 2007).

Elephant distribution can also be altered by the manipulation of water availability. However, researchers have found that this management intervention practise has resulted in high density of elephants in areas where there is water provision. It is also for this reason that the KNP managers closed artificial waterholes. The view is expressed that this intervention strategy is feasible in very large reserves with a sparse natural distribution of water, such as the
Mozambican part of the Great Limpopo Transfrontier Conservation Area (Scholes et al., 2007).

It is important to note that the setting of a nationwide target maximum elephant density (elephant carrying capacity) is unfeasible, since the ecological circumstances and management objectives vary greatly across South Africa. Hence, it is also recommended that elephant populations should be managed on a case by case basis relative to land-use objectives, rather than directly in relation to their numbers. This could be achieved by developing thresholds of acceptable change as key indicators in areas that are sensitive to elephant impacts, and these should be tailored to the objectives and circumstances of the area under management (Scholes et al., 2007). The KNP has adopted this position.

Increasing the size of the elephant range is a third elephant management intervention strategy that has been recommended to reduce the effective rate of increase of elephant densities in the source areas, and thus delay the onset of elephant impacts. This strategy includes the addition of land to existing protected areas as the Addo Elephant Park, translocation of elephants into new areas, particularly private reserves, and by the creation of transfrontier conservation areas, such as the Great Limpopo and Limpopo/Shashe Conservation Areas (Scholes et al., 2007). However, while this strategy can result in lower problems of overshooting resource base in the original areas, problems can erupt in the recipient area.

Immediate population reduction employing techniques such as capturing, immobilizing, transporting and releasing elephants into new environments to the
point where elephant mortality is low has also been found to be feasible in South Africa. However, cost and logistical constraints have limited the applicability of translocation. Furthermore, the current lack of new receiving areas is the greatest limitation for using translocation as a means of controlling elephant population size (Scholes et al., 2007).

Experts have also found that immuno-contraceptives, particularly of female elephants, have proven to be an effective and viable elephant management strategy to reduce growth rate. However, it is noted that because of the longevity of elephants and the 22-month gestation period, contraception is not a technique for reducing elephant numbers in the short term. Furthermore, contraception also proved impractical because its prohibitive costs to South Africa as well as the ethical problems which involve the false oestrus that results from some chemicals in the female elephant, and the disruption of the matriarchal structure of elephant breeding herds (Venter et al., 2008).

Culling is another elephant management strategy for reducing elephant densities where intervention is urgent. However, key concerns associated with culling include the impacts on the behaviour associated with the surviving elephants and the subsequent population growth rate as a result of reducing elephant numbers and disturbing the age and sex ratios.

According to Scholes et al. (2007), the approaches outlined above have evolved over time, and will continue to do so. However, experts contend that the best approach to implement is active adaptive management. Scholes et al. noted that in adaptive management, actions are accepted as being provisional, and are undertaken as deliberate experiments, with the necessary controls
before, during and after data collection. The results of the experiment are then used to refine future management, including the possibility of changing the goals which it seeks to achieve if they prove unattainable or inappropriate.

There is consensus among the elephant management experts engaged in this assessment that a single set of policies and management rules cannot be uniform to all situations. The appropriate management depends on both ecological factors (such as the type and condition of the habitat, the elephant density and the size of the area, and the presence and status of other species) and human factors (such as the objectives for which the area is managed, the proximity to other land uses and the economic technical capacity to undertake actions) (Scholes et al., 2007). This entails that elephant management strategies for South Africa are not necessarily applicable in other African countries. Management of elephant populations that straddle international frontiers (such as those in Maputaland, Limpopo and Mapungubwe) should be coordinated. In the same vein, populations that move between private and public protected areas would benefit from being managed in an integrated and consistent way (Scholes et al., 2007). Table 5 shows differentiated guidelines for the management of elephants in South Africa. Within the KNP, initially elephant management used a laissez-faire philosophy but this changed to command and control and eventually to a Strategic Adaptive Management (SAM) approach as the elephant population expanded and socio-political influences complicated it. The KNP is once again experiencing a crisis because of the rising number of elephants. The elephant population has increased from approximately 7 000 to nearly 12 000 (Scholtz,
Table 5. An Example of Differentiated Guidelines for the Management of Elephants in South Africa

<table>
<thead>
<tr>
<th>Primary management objective</th>
<th>Ecosystem type</th>
<th>Biodiversity conservation (mainly state protected areas)</th>
<th>Tourism income (mainly private or communal areas)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium sized (50-5000 km²):</td>
<td>Semi-arid savannas and their included riparian forests</td>
<td>Laissez-faire may work in certain areas or particular circumstances. If not, and if sufficiently arid, attempt limiting elephant range by controlling perennial water supply. Internal translocation and localised mass contraception to protect areas of high sensitivity. Appropriate fencing on all boundaries adjacent to inhabited areas. Impact indicators relate to the maintenance of landscape-scale biodiversity and thresholds linked to degree of reversibility in 25 to 50 year timeframe.</td>
<td>Long-term population control by individual contraception, short term by translocation to other private areas, or culling if no recipients are available. Elephant-proof fencing of any boundary adjacent to crop agricultural or human settlement. Key indicator of elephant overpopulation is effect on the overall economic viability of the land use.</td>
</tr>
<tr>
<td>Small areas (&lt;50 km²):</td>
<td>Species-rich restricted-range ecosystems</td>
<td>Do not introduce elephant, translocation out if already present</td>
<td></td>
</tr>
<tr>
<td>Arid Scrubland (Karoo):</td>
<td></td>
<td>Stocking with elephant not recommended</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Historical evidence for the necessity of continuous presents of elephant is weak and seasonal stocking is unfeasible.</td>
<td>Should be contemplated in medium to large areas only. Restriction of access by limiting distribution of perennial water should control elephant impact.</td>
</tr>
</tbody>
</table>

That is good for tourists, but park managers say overpopulation threatens biodiversity sustainability (Zhou and Seethal, 2008).

The elephant impacts on vegetation led the Park authorities to propose four possible options to address the problem. The first is culling which was still contested from many angles. The other options are immuno-contraception, translocation with movement corridors (Smit, Grant and Whyte, 2007) and limiting the elephant home range by closing artificial water points and expanding the range of the elephant mega-population through transnational parks (Scholtz). For contraception to work in the KNP, the SANParks would need to introduce contraceptives to 4 000 sexually active females (Scholtz, 2005), hence it is not a viable strategy. After this consideration, scientific and management staff drew up a policy that focused on the extent and intensity of elephant impacts on biodiversity, rather than on the numbers of elephants per se (Bryden, 2005).


The elephant management policy was based on four fundamental principles. First, that ecosystems were not static and that fluctuations of conditions and population responses were an inherent and desirable attribute of the Lowveld ecosystem that contributed to biodiversity. A range of elephant impacts, achieved through different densities of elephants in different areas at different times, was also natural and desirable. Secondly, that elephants were important agents of habitat modification and thus contributed to biodiversity. Thirdly, that elephants should not be viewed in isolation, but as one component of a broader,
integrated system. Fourthly, that elephant population that were confined but whose growth was not limited through management are very likely to ultimately increase in number to the point where there were negative impacts on the system’s biodiversity (KNP Management Plan, 1997). The thrust of the policy proposal was that the elephant population should not be managed purely for its benefit, instead, elephant impact should be managed in conjunction with other ecosystem processes (such as veld fires) to promote biodiversity in general (Bryden, 2005).

To put in place appropriate biodiversity conservation efforts, research managers developed a new policy for managing the KNP elephant population according to measured impacts on biodiversity rather than in terms of absolute numbers of elephants. Different management options will continue until there is clear evidence that the prevailing density of elephants is having a negative impact on some aspects of biodiversity as to warrant concern. Hence it is suggested that the KNP be divided into zones (Figure 10) which will receive different treatment in terms of the management of their respective elephant populations. These zones are:

(a) two botanical reserves
(b) high-density elephant zone
(c) two low-density elephant zones

In the high-density elephant zone the population will be allowed to increase (no culling or live removals) until there are indications that one or more of the TPCs has been reached or exceeded. It is expected that the elephant population in these zones will increase at 7% per year.
Figure 10. The Elephants Impact Zones of the Kruger National Park (2006)

Source: Adapted from SANParks (2006)
In the low density elephant zones the population will be decreased (through culling or live removals) until there are indications that low densities of elephants have induced change to a point that one or more of the TPCs has been reached or exceeded. The population management zones serve firstly as a safety valve to simulate the effects of dispersal and predation, and secondly, as a guaranteed refuge for impact sensitive species (Mabunda, 2005).

At the time of writing (2008), the outcome of the options discussed above are uncertain, and may not provide adequate guarantees for biodiversity conservation. Even the proposed elephant management plan that uses heterogeneity (high and low elephant density zones based on biodiversity and social attributes) rather than carrying capacity as its basis does not provide a lasting solution. This proposal will allow elephants to highly alter approximately 50% of the Park (Venter et al., 2008). The effective option is the lethal removal of elephants. This latter part of the policy has yet to be implemented, mainly due to the Minister of Environmental Affairs and Tourism allowing further consultation with animal rights groups, external scientists and neighbouring communities (Venter et al., 2008). This reflects how external, in particular global, influences shape policy-making in developing countries.

**Conclusion**

This Chapter has examined the current tourism, biodiversity conservation and management initiatives in the KNP. The policy analysis described in this Chapter highlights the different impacts, actors and activities. Impacts identification provided a fuller picture of what needs special awareness in the
chosen three policies (the tourism policy, the water provision policy and the elephant management policy). This is crucial to developing measures suited to reduce the major negative environmental impacts from the policy initiatives. The assessment has shown that there are substantial challenges for both policies in the environmental area. An integrated park policy should consider widely different phenomena, including science, recreation, aesthetics, wildlife, biodiversity, natural and cultural history, spiritual aspects of nature, economy and sustenance of life processes (Kaltenborn, Vistad and Stanaitis, 2002). International environmental institutions have had considerable impact on the shape of regional and national laws and policies dealing with biodiversity management in the KNP.
CHAPTER V

SHAPING THE INSTITUTIONAL LANDSCAPE FOR ENVIRONMENTAL POLICY INTEGRATION

Introduction

This Chapter has a distinctive nature relative to the other parts of the study, because its function is different. Building on the idea of policy interlinkages as the basic building blocks for policy integration (Chapter 1), this Chapter aims to unpack the Environmental Policy Integration (EPI) principle, and how institutions in the policy arena can be shaped to advance it. Although EPI is frequently associated with governmental or European policies, it is also relevant for local authorities and private sector institutions. The need to integrate disciplines, institutional systems, policies, organisations and interventions is frequently mentioned (Dovers, 2005). Within the context of the Kruger National Park (KNP), it refers to the ability to bring a range of biodiversity conservation and management policies into a more comprehensive, aggregated and consistent integrating approach. This is a process that needs to involve relevant people, approaches and strategies in an effective and efficient manner.

The Chapter starts by briefly outlining the rationale and status of the EPI principle in contemporary environmental and economic discourse. The basic building blocks of policy integration towards a general definition of EPI are
explored. The Chapter also highlights the criteria that qualify a policy as integrated, as well as the principles for integration and the different ways in which integration can occur. Furthermore, the Chapter clarifies when and where EPI can take place and the different directions it can take. Policy procedures and approaches to achieve EPI as well as the key factors to reinforce the approaches are also highlighted. Finally, the Chapter concludes by identifying EPI implementation challenges and how they can be overcome, as well as emphasising key requirements or institutional guidelines specifically addressing conditions that can help to shape the institutional landscape to enable effective implementation of EPI.

Imperatives of the Environmental Policy Integration Principle

Environmental Policy Integration (EPI) is the term used for incorporating environmental aims into other policies (Kivimaa and Mickwitz, 2006). This means that environmental objectives are reflected in other policies, including those aimed primarily at economic sectors, in order to contribute to sustainable development. The aim is to move away from traditional ‘end-of-pipe’ environmental measures that seek to ‘clean-up’ after damaging economic policies and practices. Such a reactive approach is not only environmentally undesirable, but also inefficient since it undermines the effectiveness of policies. It also does not make long-term economic sense, because long-term social and economic development depends on the existence of a healthy environment (Nilsson and Eckerberg, 2007).
Originating with the United Nations Environment Programme in 1972 and strengthened in the Brundtland Report, “Our Common Future” in 1987, environmental policy integration or the need to consider environmental issues in all decision-making has developed as part of the wider discussion on sustainable development (Kivimaa and Mickwitz). The idea of integration has featured in international environmental discourse since at least the Stockholm Conference (1972), and was operationalised in numerous procedural arrangements such as environmental impact assessment (EIA), sustainable development criteria and indicators, and obligations to notify or consult with other national states and role-players/stake-holders in gathering and disseminating environmental information (Richardson and Wood, 2006).

Beginning in the 1990s, concerns were voiced that the departmentalisation of policy-making and the lack of coordination among policies, developing along narrow sectoral or departmental and interest-centred lines, were frequently generating negative policy externalities (Briassoulis, 2005). Implementation of one policy caused unwanted impacts on the object of another, the most prominent being that of the environmental impacts of sectoral policies (Briassoulis). In fact, EPI arose from the normative concerns that environmental issues were underprioritised in sector policy-making (Nilsson and Eckerberg, 2007).

Classical political science and public administration literature has nevertheless demonstrated how policy integration and coordination in general rationalised and increased the efficiency of decision-making by preventing unwanted impacts and side-effects at the earliest possible stage (Nilsson and
Eckerberg, 2007). EPI is a policy principle with great intuitive appeal, in that it offers a progressive and common sense policy approach so that environmental problems are addressed at their source and win-win opportunities for achieving desirable environmental and socio-economic objectives are maximised (Nilsson and Eckerberg). The most optimistic EPI supporters view it as key to bridging the gap between traditional environmental protection policy and an ecological, sustainable society. A corollary to this line of reasoning giving priority to environmental objectives was the assumption that environmental policy integration was always and automatically desirable from the point of view of sustainable development. However, it is not difficult to find examples of situations where policy integration is actually just given lip-service without a genuine intention to actually improve policies and achieve real integration (Nilsson and Eckerberg).

**Conceptual Exploration of the Notion of the EPI Principle**

There is no single accepted definition of EPI. The meaning of EPI depends on how policy and integration are conceptualised. Integration can mean to shape, coordinate, or blend into a functioning or unified whole or to unite with something else or to incorporate into a larger unit (Persson, 2004). Within the context of this study, integration is defined as the bringing together of different but separate policies to achieve an outcome that addresses the requirements of all policies, building on the synergies/interlinkages, and to achieve the compromise needed to advance the policy objectives efficiently.
There are different types of integration, for example, integration of different goals such as biodiversity conservation, social and economic development. Integration can also be between different institutions and actors such as government and communities, and can also occur on different scales from local to international, and across scales. Integration can also occur among different ecosystem services to improve human well-being (Rosendo and Brown, 2003).

A step further is goal integration which involves the integration of environmental, economic and social dimensions in ways that secure a simultaneous realisation of the goals of each in a single policy, programme or project intervention. This ideal integrationist conception assumed that all apparent differences can be overcome through attaining an underlying unity of purpose (Thomas, 2003).

Furthermore, policy integration concerns the management of cross-cutting issues in policy-making that transcend the boundaries of established policy fields, which often do not correspond with the institutional responsibilities of individual departments (Meijers, 2004). Integrated policy-making also refers to both horizontal sectoral integration (between different departments and/or professions in public authorities) and vertical intergovernmental integration in policy-making (between different spheres of government), or combinations of both (Briassoulis, 2005). Within this perspective, leading scholars in environmental policy analysis have arrived at different interpretations of the concept EPI.

The definition of Underal (1980) (cited in Kivimaa and Mickwitz, 2006) serves as a starting point. In his view, a perfect integrated policy is,
One where all significant consequences of policy decisions are recognised as decision premises, where policy options are evaluated on the basis of their effects on some aggregate measure of utility, and where the different policy elements are consistent with each other. In other words, a policy is integrated to the extent that it recognises its consequences as decision premises, aggregates them into an overall evaluation, and penetrates all policy levels and government agencies involved in its execution (p.6).

From a different angle, Lafferty and Hovden (2002) have, in turn, defined EPI as,

The incorporation of environmental objectives into all stages of policy-making in non-environmental policy sectors, with a specific recognition of this goal as a guiding principle for the planning and execution of policy, and an attempt to aggregate presumed environmental consequences into an overall evaluation of policy, and a commitment to minimize contradictions between environmental and sectoral policies by giving priority to the former over the latter (p.15).

Lafferty (2004) asserts that the basic notion of EPI as goal of governance is to bring policy-making closer to such an ideal situation, where other sectors or departments become responsible for meeting the environmental norms and targets. Primarily, EPI requires changes in the actions of the policy-makers as well as the policy interventions that follow (Kivimaa and Mickwitz, 2006).
Integration also makes sense from a purely good governance perspective: the more integrated and mutually reinforcing policies are, the easier their effective delivery will be. Despite a plethora of different meanings of EPI, Underal (1980) (cited in Nilsson and Eckerberg, 2007) suggested criteria for a policy to qualify as integrated as outlined in the next section.

Criteria for Policy Integration

Underal set three criteria for policy integration: comprehensiveness, aggregation and consistency. The first criterion is comprehensiveness, in terms of inclusiveness of space, time, actors and issues in the input stage. A rule-of-thumb is that policy comprehensiveness should be measured in relation to the fund of knowledge about policy consequences available at the decision time (Nilsson and Eckerberg, 2007).

The second evaluation criterion is aggregation, which means that an overarching criterion is used to evaluate different policy elements in the processing of outputs. With regards to aggregation, Underal admitted there was a problem with the simplest solution, which is a sum-perspective of weighing costs and benefits. Aggregation should be conducted in a Pareto optimal way. Thus, an integrated policy is one where all significant consequences of policy decisions are recognized as decision premises, where policy options are evaluated on the basis of their effects on some aggregate measure of utility, and where the different policy elements are in accord with each other (Persson, 2004). Thus Underal seeks to stipulate what distinguishes an integrated policy from other forms of policy-making.
Consistency of the environmental aspects in relation to other aspects, as well as assessment of the role policy documents ascribe to consistency when addressing environmental issues constitute the third criteria. The criterion is not used to evaluate consistency in the documents, but to assess whether the policies themselves take the issue into account. Some degree of “inclusion” is thus a prerequisite for the “consistency” criterion (Kivimaa and Mickwitz, 2006). The consistency criterion also involves two dimensions. Vertical consistency means that a policy should be consistent at all levels, in terms of policy goals to more detailed guidelines. Horizontal consistency means that all actors pursue the same policy at a given policy level and in relation to a given issue (Persson, 2004).

The three criteria: comprehensiveness of inputs, aggregation to a common measure in processing, and consistency of the outputs, cover the most essential aspects of policy integration. While comprehensiveness and aggregation clearly refer to the EPI process, consistency is actually an output criterion, although of a generic character. EPI is a long-term process that requires changes in administrative practice and government culture, institutional adaptation and also specific tools. The integration of environmental aspects into other policy areas must contribute to policies that effectively lead to greater environmental protection and greater sustainability (Briassoulis, 2005).
Principles for Policy Integration

With regards to the usefulness of these criteria for policy integration (comprehensiveness, aggregation and consistency), it is argued that they are principles which require significant concretisation in order to be made operational. The design of integrated research needs to be guided by principles that reflect this. These principles include both principles for integration across disciplines and principles for integration in policy and management. The following set of principles is proposed for facilitating integration in policy and management: First, recognition of the many purposes of integration, such as understanding linked phenomena, informing policy design, improving management actions and promoting participation, is required. Secondly, linking the problem at hand to the various potential contributions from different knowledge systems is desirable. It would prevent narrow problem definition and facilitate policy integration. Finally, the crucial one: the importance of communication as central to the integration task must be acknowledged (Dovers, 2005).

The policy principle needs to be linked to actual organisational or process change in order for EPI to generate substantial results, and evaluation is needed to ascertain the degree to which this connection exists. A separation of principles from actual practices may occur if there is inconsistency between organisational goals and institutional requirements and a low willingness or ability to act, or if there are multiple incompatible goals imposed on the organisation by institutional constituents. The separation may be caused by organisational avoidance strategies to disguise nonconformity behind a façade of acquiescence.
or simply by a lack of know-how to perform the necessary activities (Kivimaa and Mickwitz, 2006).

Lenschow (2002) underpinned the notion of policy principles as a road map for policy integration. Lenschow defined EPI as representing a first-order operational principle to implement and institutionalise the idea of sustainable development. Defining EPI as a principle allows us to see how it can, with varying degrees of success, be translated into decision-making tools that may or may not contribute to a broader paradigmatic change (Nilsson and Eckerberg, 2007). Defining EPI as a principle is appropriate, in order to distinguish it from its potential consequences in terms of tools or a broader process of change.

**Policy Objectives to be Integrated**

To develop operational expressions for EPI as well as measures to achieve EPI, it is necessary to clarify: (a) what exactly should be integrated in the policy concerned and (b) in what sense, along which dimension. In general, the object of policy integration is to incorporate environmental or ecological objectives or concerns through proper procedures (Lafferty and Hovden, 2002).

It has been found that environmental objectives and concerns are the most logical and practical answer at this point, rather than including dimensions such as policy actors, of institutional levels and of more extensive time, space and perspectives. The basic idea of EPI is that it should lead to sustainable development by putting environmental objectives on a par with existing economic and social sector objectives. EPI thus refers to the process of improving the meaningful consideration of the physical implications of all policies and activities
which impact on the physical environment, in sectoral policy or activity formulation, in subsequent decision-making and their implementation (Thiel, 2005).

Having clarified what should be integrated, the next question is when and how integration can take place. Collier (1994) (cited in Nilsson and Eckerberg, 2007) argued that integration can take place at three different stages of policy-making: (a) integration of objectives in policy formulation; (b) translation of objectives into policy measures; and (c) implementation by government agencies and other actors. Thus policy integration can happen in all stages of the sector policy process. Though the classification of EPI actions in these stages is imperative, Nilsson and Eckerberg noted that it is easier to reach consensus at the policy formulation stage, regarding higher-level integration objectives.

Underal (1980) (cited in Briassoulis, 2005) also suggested that vertical consistency throughout all its levels, from policy goals to more detailed guidelines is vital. The EPI literature leans heavily towards procedural measures and instruments for implementation (Hertin and Berkhout, 2003; Persson, 2004). Dimensions also steers policy integration procedural/instruments or substantive (norms and value).

The Procedural and Substantive Dimensions of EPI

The policy procedures perspective on EPI involves creating opportunities and systems for applying the EPI principle in individual decisions. This implies that environmental consequences should be recognised and assessed through various formal procedures and that decisions be adjusted accordingly. However,
the interpretation of EPI as a procedural principle also has some problems in terms of addressing the relationship between the integration process and substantive policy output, and eventually, environmental impact.

In the absence of clearly defined policy goals, indicators and timetables, however, there remains ample room for sectoral policy-makers to evade such substantive environmental responsibilities. The integration process currently faces the challenge of ensuring that substance follows from procedure (Lenschow, 2002).

**Approaches to Achieve Environmental Policy Integration**

Different interpretations of EPI lead to different understandings of how EPI is best achieved, what the key factors and barriers are, and which practical tools are most effective. To answer these questions, Nilsson and Eckerberg (2007) recommended using four viewpoint categories that can influence the success of EPI: procedural, organisational, normative and reframing. These four approaches are neither mutually exclusive nor exhaustive, but rather show what kinds of variables can be emphasised (Nilsson and Eckerberg, 2007). From a procedural perspective, an emphasis on various procedural means for EPI, such as monitoring systems, and strategic assessment tools suggest that the focus should be on existing sector decision-making processes and how they can be made more rational or be infused with certain normative values such as environmental priority (Persson, 2004). From an organisational perspective, for example, interdepartmental relationships and allocation of resources should build upon assumptions regarding the importance of governmental power structures,
the influence of formal mandates and accountabilities in policy-making, and the embeddedness of organisational identity. A tendency to emphasise normative factors such as political commitment and the need to change overall policy-making cultures, implies an assumption that the rationale for EPI has not been established well enough among those responsible for implementing it, and that the political influence on policy-making is strong. Finally, the reframing approach involves a revision of traditional sector objectives and reformulation of the sector policy rationale in the longer term (Nilsson and Eckerberg, 2007). Against this backdrop, it is useful to consider how these variables are related to one another.

Procedural Approach

Among procedural factors, there are two types: a sequence of measures for implementing a system for EPI in a sector government department or authority, and routine procedures to be applied continuously as tools for decision support (Persson, 2004). The first step towards EPI consists of imposing changed procedures for policy-making or adding specific EPI procedures. These include environmental impact assessments, green public procurement requirements, sector environmental reporting requirements and environmental management systems (Nilsson and Eckerberg, 2007), institutional measures such as interdepartmental committees and commissioners for sustainability and/or the environment, and techniques such as natural resource accounting and sustainability indicators (Richardson and Wood, 2006). These could be considered the low-hanging fruits of EPI, but if applied ambitiously, there is no reason why they could not result in environmental policy integration effectiveness.
and efficiency (Nilsson and Eckerberg). Advocating these procedural types of tools suggests that the status quo is maintained at the overall level, and that the EPI challenge is delegated to sectoral authorities and government departments. Furthermore, these procedural tools are intended to work within the given organisational structure, with given professional expertise and knowledge. Assumptions underlying these tools are the responsiveness to imposed tools among administrators, a view of the policy process as stages in a rational decision-making process, and that the problem with EPI is not who should undertake it or what should be integrated but how it should be done (Nilsson and Eckerberg, 2007).

Another important procedural tool is the strategic environmental assessment (SEA). SEA is suggested as a promising and practical tool for EPI (Eggenberger and Partidaro, 2000). However, it could be more challenging to apply at a policy level than at a planning level, due to the uncertain and complex activities from which to predict impacts. Regarding the effectiveness of impact assessment, simply to establish a procedure may not be sufficient. Rather, it is the interest in the perceived usefulness of, and capacity for, undertaking environmental assessment that determines its effectiveness in pursuing EPI (Persson, 2004).

Procedures also refer to the institutional rules of decision-making in a policy system. Rules can refer to the right to set formal agendas, the right to develop policy proposals, and the timing of participation by environmental departments or agencies (Persson, 2004).
Another important procedure for promoting EPI is the budgetary process through highlighting the need for an appropriate allocation of resources and capacity in order for policy-makers to carry out EPI effectively. This can be done through various means, such as including environmental performance objectives and providing incentives, rewards and sanctions for better environmental performance (Nilsson and Eckerberg, 2007).

Finally, training and awareness programmes in sector organizations are often part of the proposed strategies for EPI. For example, the Swedish Environmental Protection Agency (SEPA) (2004) found that many smaller sector authorities do not have the expertise or skills to consider environmental objectives systematically in their work (Nilsson and Eckerberg, 2007). The rationale for increased consultation and participation is twofold: it can make the EPI process more democratic and more efficient by both providing more knowledge and information, and increasing the chances for broad acceptance of the policy outputs (Nilsson and Eckerberg, 2007).

The Organisational Approach

In addition to, or instead of, imposing procedural tools, an organisational approach can be chosen to promote EPI. This can focus on restructuring the organisation of policy-making to address lack of competence and mandate, problems of communication, lack of resources and capacity, and power imbalances (Nilsson and Eckerberg, 2007). Three underlining assumptions of this approach are that the policy process is a process of communication and
bargaining among actors, that organisational identity matters, and that policy-making takes place in a certain power structure.

Hertin and Berkhout (2001) (cited in Nilsson and Eckerberg, 2007), asserted that administrative structures that are compartmentalised within an institution cause fundamental problems for achieving EPI. Hertin and Berkhout also observed that institutional fragmentation or sector specialisation, departmental pluralism, functionalism differential of environmental and sectoral policy-making are the consequence of inefficient objectives. Jordan (2002) concurred that compartmentalisation can give rise to a tendency towards competition between sector departments in realising their interests. Compartmentalisation has become an entrenched practice that precedes and obstructs any rational assessment of a new policy problem.

Different responses to this and other organisational impediments to EPI have been suggested, for example, the manipulation of organisational arrangements, improvements in coordination and communication processes, provision of incentives through budgeting, and extended interactions with external actors (Persson, 2004). Responses to the compartmentalisation challenge, in terms of changes to the organisational arrangements, can take the form of (a) integrating departmental functions, (b) establishing new institutions, or (c) assigning existing institutions a new mandate, responsibility and accountability. With regard to the first two forms, possible reforms cited in Nilsson and Eckerberg (2007) include establishing committees or boards to monitor sectors or departments, and/or appointing a minister or official with a coordinative portfolio.
To keep existing organisations intact, there is relatively strong support for various accountability mechanisms and the formal assignment of new responsibilities or mandates to promote EPI. Establishing formal accountability requires setting up an internal sector environmental monitoring and reporting mechanism. In the longer term, changes in accountability and formal responsibilities may lead to an evolution of policy tradition and administrative culture, as new professional roles and tasks are developed. Another accountability mechanism is to place responsibility on an external organisation to monitor and evaluate EPI progress (Nilsson and Eckerberg).

Overcoming institutional fragmentation can also be facilitated by increasing coordination and communication, without changing organisational mandates or hierarchical relationships. Interministerial committees and task forces can be implemented. Environmental correspondents are sent to sector departments and a central unit responsible for overview can be installed (Hertin and Berkhout, 2001).

The Normative Approach

Normative factors in this context refer to values, norms and traditions that set the general parameters for policy-making and determine the basic significance of the EPI concept in the policy-making system (Persson, 2004). Compared with procedural and organisational tools, the normative approach directly addresses the trade-offs involved in EPI and thereby complements the construction of an EPI infrastructure. The underlying assumption here is that
political will and priorities from the top down are the driving forces of sector policy-making. However, success will depend on the extent to which normative commitments and frameworks have high status and enjoy wide support, as opposed to being merely symbolic statements with limited critical engagement with the issues involved.

There are two types of normative factors of primary importance to EPI: political commitment and leadership, and policy tradition and administrative culture. However, most of the EPI literature emphasised the need for high-level political commitments to make EPI a credible and active aspiration, as opposed to a principle on paper (Lenschow, 2002). This commitment should also involve clear and strong leadership on EPI issues, in order to maintain a sustained momentum. In addition to making EPI more prioritised further down the governmental hierarchy, clear commitment is also necessary in order to provide a democratic basis for EPI.

While high-level political commitment can be thought of as pressure from above for EPI, Lenschow (2002) argued that societal backing and public support was also necessary. The normative approach towards EPI will be less effective if high-level commitments and policy frameworks are merely symbolic, since they will fail to provide guidance and legitimacy for EPI efforts in downstream policy-making.

Equally important are the normative aspects of EPI that have their roots in the normative rationale for integration. The argument is that environmental objectives have for long been systematically undervalued in sector policy-making and should be given a higher priority since environmental functions are
prerequisites for many economic activities (Persson, 2004). However, Lundqvist (2004) (cited in Nilsson and Eckerberg, 2007) makes a useful distinction between normative and organisational integration. The rationale for organisational integration, or rational EPI, is that it is more efficient to consider inevitable (environmental) implications of a policy decision at the outset. Early considerations of environmental objectives and addressing environmental problems close to the (sector) source are central tenets of the ecological modernisation paradigm. The objectives of this type of EPI are not just to promote environmental values but also to avoid contradictions and realise potential win-win solutions (Collier (1994) (cited in Persson, 2004)).

The Reframing Approach

Another approach to achieving EPI is to understand how more embedded and implicit sectoral ideas and discourses may lead to a revision of traditional sector objectives and the reformulation of the sector policy rationale in the longer term. The question is whether sector actors can reframe their fundamental problem perceptions, causal narratives and overall policy goals into more environmental terms (Lenschow and Zito, 1998; Nilsson, 2005). Framing is a way of selecting, organising, interpreting and making sense of a complex reality to provide guide posts for knowing, analysing, persuading and acting (Lenschow and Zito, 1998). All this anticipates the metamorphosis of environmental policy frames to sustainability thinking. Such a reframing process would involve more actors than just top-level politicians and would occur in a cumulative way, rather
than by simply issuing a new strategy. Revision of fundamental ideas could take place at both an individual (attitudes, values, beliefs) and a organizational levels (Meijers, 2004).

Comparing Different Approaches

The above brief overview of different ways and means to achieving EPI suggests that they facilitate EPI in different ways. For example, enabling a new policy paradigm to emerge facilitates more consensual decision-making by redefining policy-making roles, or informing decision-makers on important environmental aspects to be considered. Other considerations involve the existing competence and legal basis for intervening in sector activities, and the technological potential for genuine win-win solutions (Hertin and Berkhout, 2001). Although these procedures do not guarantee a perfect policy, they provide a clear explanation of how EPI can be developed, and this in turn provides a framework for constructive comment and debate.

Although these are various approaches to improving integration, effective EPI will need to combine various options and tailor these to the specific issues or sectors being tackled, as well as the organisation(s) seeking change. There will not be a one-size-fit all solution, although there are a number of solutions that are widely promoted (Coffey and Dom, 2004). Analogous consideration should be given to the factors that can play a key role in reinforcing the implementation of the approaches.
Factors Reinforcing EPI Approaches

To grapple effectively with the afore-mentioned approaches, it is necessary to consider other factors facilitating EPI. Among the more concrete means suggested of making a policy tradition and administrative culture more conducive to policy integration are research, training and socialisation among decision-makers. This would lead to a more comprehensive and holistic perspective. Furthermore, it recognises the importance of understanding how new ideas and commitments may be accommodated and internalised in the sectors (Nilsson and Eckerberg, 2007).

Apart from sector policy stages, the definition and characteristics of the sector have a bearing on the pursuit of EPI. Generally, particularities of the sector context have been less explored in the EPI literature than the organisation of policy-making (Nilsson and Eckerberg).

It is important to understand EPI from the policy-making end of the spectrum. It is also important to understand the nature of the ultimate target for EPI. In the context of this study, it is important to note that Nilsson and Eckerberg (2007) point out that the characteristics of EPI are significant for implementing policy integration. From an organisational perspective, Hey (2002) proposed that regulatory capacity was also a key factor for EPI. This capacity depends on financial resources, legal competencies, legitimacy and target group support and information on the sector’s regulatory authorities. If capacity is weak, there is a risk that there will be only symbolic or defensive EPI, or a general lack of policy and regulation (Nilsson and Eckerberg). Again, in different relationships between sectors, policy-makers emphasised the need for more
sensitivity to the particular sector context when working with EPI, and the problems with assuming that a uniform EPI approach in all sectors is going to be effective.

Research that goes beyond disciplinary boundaries is core to understanding linked phenomena, and to informing policy and management settings (Dovers, 2005). A history of increasing disciplinary specialisation, each with its epistemological commitments (Schoenberg, 2001), theories, methods and data requirements has contributed to specialist knowledge, but can work against integrated understanding.

The role, status and tradition of using knowledge and science in the policy-making system may also be influential to the achievement of EPI (Persson, 2004). Integration requires the creation of policy processes, institutional settings and organisational structures that enable integration of environmental, social and economic factors. Division of responsibilities and information across portfolios and agencies can be a barrier to integration and thus sustainability (Dovers, 2005).

Finally, communication represents an integrative strategy, either in and of itself or as an ingredient of another strategy. Straight forward communication among disciplines, professions and policy sectors can advance integration by facilitating mutual understanding. Communication is also necessary for the success of other strategies. Interdisciplinary research, methodological development, participation, and policy and institutional change, all involve new groupings of people, and new flows of information and knowledge. The designing of suitable interactive contexts, and appropriate forms and channels of
communication are necessary components of an integrative approach (Dovers, 2005). These steering conditions are deemed necessary to achieve EPI. However, there are challenges that institutions need to be aware of.

**Achieving EPI: Key Barriers and Solutions**

Although integration approaches imply synergies and win-win solutions, in practice they also involve important trade-offs, which need to be identified and negotiated so that solutions are minimally acceptable to all stakeholders (Rosendo and Brown, 2003). To achieve sustainable development in relation to EPI principles, the need to identify trade-offs between environmental and socio-economic objectives is emphasised. If environmental objectives are assigned less weight than economic objectives when making trade-offs for the sector, there will be no integration but rather dilution. Indirectly then, the dilution argument sets the criteria of equal weight for decisions to qualify as concordant with the EPI principle (Nilsson and Eckerberg, 2007).

There are many issues that affect the level of attention given to environmental issues in policy design and implementation. Within governments, the level of political commitment to environmental issues, the way in which governments and other organisations organise their work, and the policies or instruments used to manage economic activities, are all important factors.

A lack of high level and clear political commitment to EPI is frequently identified as a key challenge facing integration, with the result that organisations are not given a clear and unequivocal message about the importance of EPI. The environment may simply not be a vote winner. Such barriers are difficult to
address but may be overcome, for example, through a provision of information on the consequences of action or inaction, or simply through political pressure. Strategic statements or commitments are often used as a way of securing even if only gradually, political commitment, and can subsequently be used to guide the work of organisations (Coffey and Dom, 2004). This involves political commitment supported by rules, which may be formal or informal, but with a clear established agenda of integration. This might entail public programmes and organisational strategies. Such a commitment provides some certainty and an enabling context by directing resources (Morrison, McDonald and Lane, 2004).

There are also numerous external issues that affect EPI, such as the nature of the economic or sectoral activity and the extent to which this has environmental impacts, the perceptions of society at large and of specific stakeholders, international and regional conservation laws, as well as the wider political and economic context.

Fragmented government has contributed to ministers and officials focusing on the delivery of specific and often rather segregated objectives. The weaker the high-level political commitment, the more important it is to find other ways to promote EPI across organisations (Steurer, 2004). Even if environmental concerns are high on the political agenda, departments may resist taking on new objectives and perspectives (Wanden (2003) (cited in Nilsson and Eckerberg, 2007)) or may take them on, but in very marginal ways (Sorenson, 2003) and operating in relative isolation from one another.

There are various options to help overcome fragmentation: developing clear internal missions and strategies; changing the structure of, and coordination
within, organisations. Resources and capacity may need to be enhanced to support environmental integration, and various information, management and decision-support mechanisms introduced to ensure information, knowledge and decisions reflect environmental considerations in an appropriate way.

Apart from developing suitable multilevel structures, committees and communication channels, there are various policy instruments that are considered particularly effective in driving integration during subsequent implementation stages. Funding and ensuring the right of environmental organisations to participate in decision-making are examples (Coffey and Dom, 2004).

The constraints to more effective integrated conservation and management are often seen as being related to the lack of understanding regarding the linkages between conservation and development, insufficient technical and managerial capacity of implementation agencies, inability and unwillingness to involve all stakeholders, and isolation from wider planning processes. While these limitations are certainly important, empirically, the underlying constraints to more effective integration between conservation and management are primarily institutional. Negotiation of trade-offs needs to be more central in the design and implementation of integrated conservation and development initiatives. More effective stakeholder inclusion is essential to reach legitimate and equitable decisions (Rosendo and Brown, 2003). In addition, there are also institutional components/elements addressing these strategies and helping to shape the institutional landscape to enable effective implementation of EPI.
Ingredients Shaping Institutes for EPI Implementation

There is no specific guideline for an EPI process, it being a general concept or principle (Persson, 2004). The practical application of the principle of integration must therefore be based on tools and their utilisation. Tools must be organised in a sequential and functional system based on specific requirements:

(a) The need to allow the preventive description of environmental impacts.

This is the base description of environmental targets, while strengths, weaknesses and opportunities and threats (SWOT) analyses can suggest potential solutions.

(b) The assessment procedure (of policies, plans and projects) must be a disciplined and cooperative process.

(c) The selection of environmental targets and the consequent definition of selected criteria for decisions, actions and plans represent the core of the assessment and integration process because they orient the results of the sectoral integration process, while constituting reference points for the assessment of the internal and external coherence of policies in the preliminary, intermediate and final stage. The selection must obviously be based on the assumption that the system offers several and valid options.

(d) Finally, indicators represent the tools used to monitor and evaluate the integration process. They can provide a measurable indication of the degree of integration and of results reached; they assist in making the evaluation; possible and must be defined in relation to the estimated environmental impacts, targets and selected criteria. The last
consideration goes to the application of the principle of integration. Experience has shown that the application is easier when the mission supporting environmental sustainability and of achieving sectoral integration (that is, evaluation of plans, programmes and projects, control rooms, environmental authorities for structural funds) is entrusted to one specific structure only (Abrahams, 2005).

There is no single path to integration, but many ways can contribute to it in many forms. The guidelines outlined highlight that the EPI principle operates through a limited but articulated number of environmental policies and actions or, in other words, with instruments suited to governing of complexity to attain more effective results and higher levels of environmental protection than before.

**Conclusion**

Much like other broad concepts such as sustainability and governance, there are difficulties involved in translating EPI, a value-laden, political principle with many connotations and interpretations, into a working concept for analytical study (Nilsson and Eckerberg, 2007). Notwithstanding this, the Chapter has clarified the guidelines for understanding EPI and the processes around it, when and where EPI can take place, and the approaches and factors that can be decisive in shaping institutions for EPI implementation. The major issues to be integrated have been clarified. To this end, environmental objectives and
concerns are the most logical and practical answer at this point, rather than including dimensions such as actors or time horizons.

Pitched within the context of the Kruger National Park, the guidelines outlined for achieving EPI can shed light on the extent to which policy formulation and implementation has followed EPI principles and in which areas further effort is needed. One of the purposes of EPI is to build upon established successes in proactive policy-making and to turn problems into solutions.
CHAPTER VI

PRESENTATION OF FINDINGS

Introduction

This Chapter presents the main findings of the policy analysis undertaken in this study. The Chapter will commence by identifying possible policy interlinkages between tourism, water provision and elephant management policies. It is envisaged that policy interlinkages can help the KNP authorities to better understand and integrate these policies into successful conservation practices in the common interest. In a multipolicy scenario, the starting point is to know the environmental impacts and concerns of the three policies and how these are addressed. Other themes in line with the policy integration approach to be presented include administrative procedures in policy formulation and implementation, effectiveness of policy formulation and implementation, policy interlinkages, policy strengths and weaknesses, interlinkages and management implications, policy cooperation among policy initiators and actors, a review of baseline information among Park managers, instruments suitable for policy integration, factors facilitating policy integration, factors impeding policy integration and finally, administrative structures for promoting policy integration. First, the characteristics of the informants are described.
Profile of Informants

Data was gathered from four groups of respondents, namely; the tourism department (administrative heads of the rest camps), marketing manager and the head of tourism department; conservation services (administrative heads); scientific research services (researchers based at Skukuza camp) and executive directors based in Pretoria. A total of 25 informants provided data for this study. The age range of the informants in this study ranged from 30 years to 50 years. However a large number of participants were in their middle ages (25-30 years), particularly, in the tourism department. The professional and academic qualifications of the participants in this study varied. Informants from the conservation services and scientific research services hold Doctoral degrees, except the science liaison officer who has a Master’s degree. The majority of the tourism department staff are secondary school graduates. These differences in academic background had implications on park management as discussed in the sections below.

Policy Environmental Impacts and Concerns

The policy environmental impacts and concerns are considered for each of the following: tourism policy, water provision policy and the elephant management policy.

Tourism Policy

The development of rest camps and roads was cited as causing severe environmental impacts in the Kruger National Park (KNP). Concerns expressed
were that a lot of infrastructure development was placing biodiversity at risk and also that tourism policy did not necessarily look at all environmental concerns since the focus was on generating more revenue. This meant that environmental concerns were given less weight than economic objectives. One interviewee describes the impacts of tourism on biodiversity as follows:

Tourism presents serious challenges for effective management and biodiversity conservation. Tourism has visible effects such as loss, conversion and degradation of vegetation at picnic sites, erosion of trails, road kills, displacement of wildlife through fencing, roads blocking wildlife routes, tourists feeding animals and growth of invasive plants (Manager ‘J’, personal communication, 18 August, 2007).

The interviewee emphasised that the changes in biodiversity degradation were not considered to be a problem at all. Hence, there has been a lack of research on tourism impacts on the environment. Tourism activities remained business as usual, leaving environmental concerns marginalised. The Park also faced pressure to produce tourism revenue and to demonstrate economic sustainability. In this regard one of the respondents commented that: The tourism staff focuses mainly on tourism enterprises, providing information, services and facilities for visitors inside the Park, but struggles to define the role of tourism in the Park in relation to biodiversity conservation initiatives (Manager ‘L’, personal communication, 18 August, 2007).
Water Provision Policy

Supplementing surface water has become a contentious issue, with increasing concern about the effects of increased surface water availability on ecosystem processes such as productivity, resilience and stability. The respondents pointed out that the artificial waterholes caused unnatural wildlife concentration, leading to vegetation damage that facilitated biodiversity loss. The respondents further pointed out that the water provision policy interfered with the natural migration of animals and impacted on specific animals that were not water dependent, while it also enhanced the growth of certain animal populations that were water dependent, for example, elephants. These views were also cited in the literature where the provision of additional surface water was thought to have had a negative effect or opposite to that originally anticipated (Walker et al., 1987; James et al., 1995; Parker and Witkowski (1999) (cited in Smit, Grant and Devereux, 2007)). This has also been argued for the Kruger National Park. In fact, a major concern expressed was that water provision should not disrupt the natural ecological system. Hence Park authorities have embarked on closing the artificial waterholes. One interviewee criticised the water provision policy: Water provision was just an end-of-pipe solution. There is need to address other factors that facilitates the scarcity of water in the Park such as tourism development. The policy-makers of the tourism policy were only looking for “technical fix” solutions, neglecting the causes of the problem (Manager ‘L’, personal communication, 18 August, 2007).
Elephant Management Policy

The respondents reiterated that the presence of elephants in the Park led to the regression of many wild plants and other animal populations. The consequence has been the endangering of some plant species as well as the depletion of water resources for other animals. One of the conservation manager’s comments reflected some of these impacts/changes:

There has been a decrease of the marula tree species in the Park, and in the dry season elephants have been found aggregating around waterpoints at the expense of other animals species. On average, the cover of tall trees has decreased in the Kruger National Park since the 1970s. There is wide recognition that the elephant impacts on biodiversity should be regulated by culling (Manager ‘J’, personal communication, 18 August, 2007).

The literature confirmed this position that increased elephant populations in the KNP may have affected biodiversity in a way that was not reversible (Bryden, 2005; Kerley and Landman, 2006; Mabunda, 2004; Scholtz, 2005; Smith, Grant & Whyte, 2007). Hence, the major concern was that if the elephant management policy was not implemented (in particular culling), elephant impacts may compromise biodiversity sustainability. However, another Park manager commented that:

Although there is evidence that elephant impacts on other species of plants and animals, as well as the livelihood and safety of people
adjacent to the elephant range, there is a vigorous debate as to whether the loss of diversity can be directly attributed to elephant impacts as contributors to loss of biodiversity in the Park (Manager ‘B’, personal communication, 17 August, 2007).

The tourism, water provision and elephant management policies impact on the functions of the ecosystem and services, leading to loss of biodiversity. The next section investigates how the KNP management authorities addressed the concerns highlighted above.

**Administrative Approaches in Policy Formulation and Implementation**

On the policy formulation front, the KNP management adopted the public participatory mechanism or stakeholder participation approach. The Organisation brought in external expertise to provide additional assessment and research to the scientific service unit and the conservation unit based at the Skukuza camp. If the directorate (SANParks executive directors) approves the proposals, they are forwarded to the public for comment and then to the Minister of Tourism and Environmental Affairs to endorse for implementation. One interviewee describes how policy is formulated:

Administratively speaking, for approaches to policy-making at the KNP, numerous stakeholders from the public, private and voluntary sectors are involved in the policy-making process at the Kruger National Park. Stakeholders are involved at an early stage in the
policy-making process. However, though the process is inclusive, there have been some barriers to reaching consensus. Some stakeholders have found it difficult to cede much influence over planning and decision-making. This has rendered stakeholder participation as a relatively ‘token exercise’ (Manager ‘B’, personal communication, 17 August, 2007).

Another respondent supported this position and stated that that:
Environmental policies tend, at present, to evolve as need arises, that is when problems begin to surface, as with the case of water provision policy. This has been the trend over the years, with policy-making being formulated as awareness of the problem increases among park managers. Therefore a large proportion of various pieces of existing biodiversity policies were formulated in response to a growing recognition of a concern with activities in a fragmented approach. This fragmentation often results in turf-fighting, with little general integration of effort among departments. Further, measures adopted are directed at the symptoms rather than the causes of the problems, hence impacting on other policies. Another problem in the Park is that tourism staff do not want to come to meetings. We need tourism staff to get on board (Manager ‘K’, personal communication, 19 August, 2007).

This different ways of handling biodiversity concerns reveal a tension among the disciplines involved.
Policy-making is divided among departmental entities, each of which tended to have a relatively narrow range of responsibilities. This difference in the breadth of responsibility applied not only to formulation but also to implementation. This was attested to by the fact that compartmentalised research tended to slice policies into departmentalised strands, with different objectives and different principles and tools. Another criticism of the policy-making was that:

Research at the KNP has often been perceived in a narrow context, with the tendency to deal with major sectors in isolation and failing to recognize intersectoral linkages. The KNP biodiversity conservation initiatives or management functions have historically been dealt with as isolated problems in response to specific issues as they emerge, rather than as coordinated and comprehensive policy executive issues. To date, these fragmented policies are therefore seen as being reactive rather than proactive. Insufficient attention of such issues prolongs myriad current environmental problems confronting the KNP today, including implementing the elephant management policy. Similar *ad hoc* tourism policy and water provision approaches are formulated as such. This has implications on park management (Manager ‘F’, personal communication, 18 August, 2007).
When it came to policy implementation, the Park adopted the adaptive management system. The adaptive management approach formed the central pillar because it set the research agenda and integrates the outcomes into decision-making to meet societal aspirations for the management of elephants in a social and biodiversity context. The KNP adaptive management process has been designed to reduce the uncertainty of decision-making that comes from having imperfect knowledge under changing environmental and societal contexts. The adaptive management system is revised every five years. Provision is made within the adaptive management process to address specific problems. Here provisions or best options are developed and weighed in terms of the anticipated consequences. In fact, monitoring forms part of the whole management process. The KNP management authorities have also developed Threshold of Potential Concerns (TPCs) to identify problems for the water provision policy and elephant management policy. TPCs for tourism policy have yet to be developed.

**Effectiveness of Policy Formulation and Implementation**

The effectiveness of policy formulation and implementation is examined for each of the three policies: tourism policy, water provision policy and the elephant management policy.
Tourism Policy

Despite the wide consultation in policy formulation and the incorporation of the Strategic Environmental Assessment (SEA) and zonation approaches, the respondents affirmed that there were no specific operational monitoring procedures for the tourism policy. No indicators or Threshold of Potential Concerns (TPCs) were in place to monitor the effects of tourism in the KNP. In this regard, one of the Managers expressed the following:

Although the Park has largely practised an anthropocentric approach through a zoning system and a multiple-use approach, is a kind of reactionary process, end-of-pipe solution. Little was done upfront. No specific system for monitoring is in place, while tourism impacts were not measured (Manager ‘C’, personal communication, 17 August, 2007).

The explanation given for the lack of monitoring procedures in the tourism department was that the department lacked scientific training and capacity, and strategic leadership to design and monitor biodiversity impacts. One Manager confirmed this perspective as follows:

There is no capacity building for design of tourism activities in relation to biodiversity conservation or for identification and management of the impacts that tourism can have on biodiversity. Further, there has not been interest since the inception of the Park to develop this area. Tourism has not been viewed as a priority for research and monitoring in the past. There is a need to train the technical and
operational staff in the Park to respond to external tourism pressures which could affect biodiversity conservation (Manager ‘L’, personal communication, 17 August, 2007).

For this manager, the dearth of research on tourism impacts on biodiversity is also a result of a low skills base. SANParks commissioned human resource development study (1999) that found that the majority of managers and key staff in the tourism department had no relevant qualifications in tourism and this deficiency affected their capabilities to develop integrated management plans (Mabunda, 2004). Eagles et al., (2002) point out that when tourism is a critical component of park management, it is important for a park to have staff members who are experts in the field to ensure that the visitor experience is maximised in terms of services and the environment. Hence it is imperative that a strategic human resources development programme complement environmental management and conservation policy formulation and implementation.

Interviewees also highlighted that tourism policy was lagging behind in developing TPCs because financial interests received preference. This scenario prevailed in the post-1994 period given that tourism was not included in the African National Congress’ detailed planning when it achieved power in 1994 (Mabunda, 2004). Goodwin et al. (2002) concurred that tourism had largely been a missed opportunity for South Africa, and noted that tourism planning had been inadequately resourced and funded,
with inadequate environmental protection. Mabunda (2004) noted that the last 100 years of conservation success in the KNP focused on the development of the biodiversity conservation while tourism happened by default. The approach to the provision and management of tourism services in the KNP was that tourism should not be allowed to dictate policy to the conservationist because it was perceived to be a threat to wildlife and that there was an urgent necessity to apply severe curbs on tourists’ park usage. Up to now (2008) tourism in the Park is managed separately.

Effectiveness of the Water Provision Policy

The revised water provision policy that targeted closing of the artificial waterholes has been effective. Figure 11 reflects the increase in artificial waterholes from 1933 to 1994 and their significant decrease in 2006-2007. The challenge was the lack of financial resources to close down all artificial water sources and to rehabilitate them. Another challenge was the objections from tourists and tourism staff to the closing of the artificial waterholes in tourist hotspots, especially around the Skukuza camp.

Despite the reduction in the number of boreholes, the water provision policy was still undergoing revision, incorporating the best available (ecological) knowledge and thinking, and trade-offs with other KNP objectives (for example, tourism). Currently (2008), the Park management is proposing the rotation of waterholes (that is, alternately open and close boreholes) to allow the natural recovery of the degraded areas around waterholes caused by unnatural
concentration of animals as well as reducing interference in the migration of animals.

Effectiveness of the Elephant Management Policy

The elephant management policy (in particular culling), was still controversial considering its impacts on biodiversity and implementation. The interviewees pointed out that the elephant management policy was very complex and not easy to implement, as it raised both political and public concerns. In fact, the elephants management policy in the KNP has attracted the lion’s share of the attention of the media and scientists and has been politicized. As the animal
rights groups do not support culling, they have exerted considerable pressure, in particular the Convention on International Trade in Endangered Species (CITES).

Due to the elephants’ charismatic and iconic status, there was passionate support for their protection. Tourists enjoy the thrill of finding and observing elephant because of their size and power, and also their experiences such as elephant-back safaris (Manager ‘I’, personal communication, 16 August, 2007). This created problems for pushing the implementation of the policy since politicians are very mindful of public opinion. Hence the elephant management policy had not been implemented at the time of the survey (2008). The discussion now turns to interlinkages among the three policies, that is, tourism policy, elephant management policy and water provision policy.

**Policy Interlinkages**

The interlinkages between the tourism, water provision and elephant management policies and the implications on park management were generally poorly understood. The following response emphasised the interlinkages among the three policies: Tourism activities can significantly affect the demand for water, hence water use and quality needed to be recognised more strongly in policy making (Manager ‘B’, personal communication, 16 August, 2007). Another Park Manager stated that there was wide recognition in the Park that biodiversity was increasingly challenged by the effects of tourism development. It was important that sufficient connections were made among the tourism, water provision and elephant management policy formulation and implementation (Manager ‘C’, personal communication, 17 August, 2007). Another respondent confirmed that
the availability of water has become the determinant for both tourists and animal attraction (Manager ‘C’, personal communication, 17 August, 2007). Yet another respondent admitted that the water provision policy and elephant management policies were tightly linked mainly in policy design because both policies use the adaptive management system as well as the threshold of potential concerns for monitoring their impacts (Manager ‘D’, personal communication, 17 August, 2007).

These statements highlight that the three policies are intertwined. The onus was on policy actors (park managers) to establish policy integration. The strengths and weaknesses of the interlinkages of the three policies in the following section, fortifies this position.

**Policy Strengths and Weaknesses**

A comparative question was asked concerning the strengths and weaknesses of the interlinkages among the tourism, water and elephant management policies. Table 6 reflects a summary of the findings.

**Interlinkages among the Three Policies and Park Management Implications**

Within this theme, data were sourced on how the three policy interlinkages affected each other in terms of policy principles, approaches and implementation at policy decision-making, and at the economic and political levels. The respondents showed that they did not fully appreciate or understand the interlinkages. However, the KNP documentation testified to the interlinkages and

<table>
<thead>
<tr>
<th>Policies</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
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<tbody>
<tr>
<td>Tourism policy and elephant</td>
<td>1) Generally, there is interdependence between the two policies. The</td>
<td>1) Focus on economic interests at the expense of environment.</td>
</tr>
<tr>
<td>management policy</td>
<td>charisma of elephants attracts tourists.</td>
<td>2) Tourists are interested in or like to see animals, hence tourists are sensitive to culling of elephants.</td>
</tr>
<tr>
<td></td>
<td>2) The two policies are linked to the zoning management plan.</td>
<td></td>
</tr>
<tr>
<td>Tourism policy and water</td>
<td>1) Tourists are attracted to see animals around waterpoints. In short,</td>
<td>1) There is a conflict between the need to close artificial waterpoints, and the need to provide tourists with wildlife viewing opportunities.</td>
</tr>
<tr>
<td>provision policy</td>
<td>artificial water provision improves the viewing of animals.</td>
<td>2) Tourism development/activities can significantly affect the demand on water, hence increasing pressure on natural environments.</td>
</tr>
<tr>
<td>Elephant management policy</td>
<td>1) Recognise the problems that are caused by providing an abundance of</td>
<td>1) Increase in the number of elephants due to abundance of water supply impacts on biodiversity.</td>
</tr>
<tr>
<td>and water provision policy</td>
<td>artificial waterpoints</td>
<td>2) Elephants have a negative impact on vegetation and biodiversity around artificial waterpoints. Waterpoints reduce the natural movement of animals in the Park.</td>
</tr>
<tr>
<td></td>
<td>2) Policy approach (adaptive management) is supportive of each policy and</td>
<td></td>
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<td></td>
<td>the use of TPCs for monitoring impacts.</td>
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Source: Zhou (2008)
gaps surrounding policy principles, approaches and implementation as outlined in the following section.

Policy Principles, Formulation Approaches, Implementation and Monitoring Interlinkages

Water provision and elephant management policy principles as well as tourism policy principles have been prescribed without a sound understanding of the interactions or interlinkages. Irrespective of a common vision of the KNP, principles for the tourism policy made no explicit reference to the water provision and elephant management policy principles. However, the elephant management principles noted partially the importance of dealing with nature in a holistic approach. For instance, the third principle stated that elephant management should not be viewed in isolation, but as one component of a broader, integrated system (KNP Management Plan, 1997).

In terms of policy formulation approaches the respondents noted that the interlinkages in policy design were affected through wide consultative processes, in particular the elephant management policy and water provision policy. In addition, the adaptive management system was part and parcel of the process of policy-making at the KNP. The Park zoning approach linked the tourism policy with the elephant management policy.

When analyzing data surrounding interlinkages on policy implementation, the findings indicated that the three policies were tightly linked. The explanation given was that the implementation of the water policy was done in consideration of animal population dynamics as well as addressing tourists interests. The
monitoring of environmental impacts of water provision on the ecosystem and elephants was linked through the use of the adaptive management as well as TPCs. Hence TPCs and adaptive management linked these two.

Park Management Operations Compliance with the National Environmental Management: Protected Areas Act (NEM: PAA) (No. 57 of 2003)

Under the present conditions, the compliance of Park management operations with the NEMA was recognised in all the three policies. SANParks relied primarily on the provisions of the NEMA as well as the regulations promulgated under the NEM: PAA for the administration and management of national parks assigned to it. Regulations for the proper administration of special nature reserves, national parks and world heritage sites were issued in terms of section 86 (1) of the National Environmental Management: Protected Areas Act (No. 57 of 2003), in Government Gazette No. 28181 dated October 2005, Notice No. R1 060. In fact, KNP management operations were in line with the requirements of the NEM: PAA.

The implementation of the provisions as per NEM: PAA was done through the Park management plan subject to park audit at park level. However, NEM: PAA is silent on the question of tourism in protected areas. At the legislation level, environmental and economic legislation on tourism and other socio-economic issues should be coordinated. Environmental legislation in
South Africa has successfully raised the profile of the environment on the corporate agenda, though managers perceived enforcement to be patchy.

On a positive note the NEM: PAA came in the form of directives that were binding in their objectives, but not necessarily as they related to specific means or language. These differing balances had important impacts on institutional responsibilities and policy-making, and on policy outputs relating to tourism in particular. Compliance with the National Environmental Management: Protected Areas Act (No. 57 of 2003 (NEMA: PAA)) stipulates that tourists have the right to benefit from biodiversity. Against this background, there was no single comprehensive regulation code for biodiversity conservation and management, which resulted from environmental legislation having been passed only sporadically. To date (2008), for instance, infrastructure development, a recognised problem among tourists and management alike, has not been dealt with in any of the legislation. Critical value judgments were not made in legislation but were left for resolution at the local level where the interests of the numerous and diverse local and supralocal biodiversity and tourism actors may are often in conflict. Compliance with the National Environmental Management: Protected Areas Act (No. 57 of 2003 (NEMA: PAA) stipulates that tourists have the right to benefit from biodiversity.

Policy Cooperation between Policy Initiators and Actors

There were differences of opinion among the respondents regarding the appropriate level of coordination. However, the popular opinion was that various means of coordination among the actors, such as regular meetings, workshops,
emails, and the KNP newspapers were not adequate. There was still a lack of cohesion and clarity on the level of policy responsibility, and a lack of feedback on the effects of policy interactions. For example, one of the Managers stated,

The problem is that we make a decision in the scientific services in consultation with park managers and then the information is communicated to rangers but we do not get feedback from them. For example, we suggested that certain waterholes should be closed and for other reasons the rangers did not comply, and we did not get feedback again. So what is decided in policy formulation and implementation is not communicated. It's hard to know what is happening in the field. I think communication is a big problem. There is a difference between how the policy is implemented and getting the feedback (Manager ‘E’, personal communication, 18 August, 2007).

Another explanation given was that biodiversity conservation is seen as a restraint on the development of tourism facilities and services, for example, tourism staff do not want the waterpoints at the Skukuza camp as they attract more visitors (Manager ‘M’, personal communication, 18 August, 2007).

Interaction between policy-makers and policy actors was further complicated by enduring partitions among policy domains within the KNP institutional structure. Tourism policy issues on biodiversity conservation were in fact marginal to the very best efforts of KNP managers and scientists. This
research established that coordination and communication was lacking. For example, one interviewee captured the sentiment as follows, “There is a low degree of cooperation in particular among camp managers” (Manager ‘F’, personal communication, 18 August, 2007). This scenario is reflected in Figure 12. It was noted that of twenty-one respondents at management level, six respondents disagreed and another four strongly disagreed that there was shared leadership with regard to policy making and implementation of the policies. Furthermore, Figure 12 reflects that six out of twenty-one respondents strongly agreed and five agreed that there was conflict of interests among the heads of departments with regards to policy making and implementation.

![Graph](image)

**Figure 12. KNP: Policy Cooperation Between Policy Initiators (2007)**

*Source: Zhou (2008)*
On improving cooperation, park managers and camp managers acknowledged that there was more that they could do to improve multilateral relationships, for instance, the establishment of a coordinating chair to foster information flows and information exchanges. Again, the explanation given for the lack of cooperation among park stakeholders was that there was no unity in policy formulation and implementation. Consequently, this limited their attention to particular issues due to the compartmentalisation of policies. Policy-making and implementation was split among the departments. This was also attributed again largely to the departmental character of policy-making at the KNP. The other factor was that departments have been historically separate from one another. There was a separation of the disciplines within science, and between science and management (Manager ‘G’, personal communication, 19 August, 2007). This fact helped to explain the low implementation potential and effectiveness in terms of achievement of stated goals.

A Review of Baseline Information among Park Managers

Within this area of baseline information with regards to policy formulation and implementation among the park managers, it was evident that they have little knowledge about the existing information sources and documents that other departments hold. An explanation given was that managers were too busy focusing on their own jobs, and therefore have neither the interest nor the background to understand policies and their contents. One of the Managers commented that, “The lack of knowledge was a result of insufficient communication. Each department is chasing its key performance areas. There
is not enough information readily available” (Manager ‘H’, personal communication, 19 August, 2007). For example, the camp managers have little knowledge of the contents of the tourism policy as well as other policies relating to biodiversity conservation sustainability. Thus another Manager commented that:

Certainly tourism people are not informed properly and we need to work on that. They have not had an opportunity to be driven around the Park, so they don’t know the area. Knowledge production plays an important part. Park managers should be able to provide opportunities to educate visitors about functions of biodiversity landscapes and their importance. Regulations regarding littering and poaching, for instance, are difficulty to enforce. … You cannot put a policeman behind every tree, hence it is crucial for park managers to disseminate biodiversity importance to the public (Manager ‘L’, personal communication, 05 August, 2007).

In addition, this Park manager further commented that:

As for tourism there is a need to improve information awareness and also provide tourism staff with courses for them to get informed about conservation issues to carry the message across because they are the people who talk to tourists. Scientists (research managers in the Park) need to be able to present the conservation issues in an effective manner, and then to transfer
this knowledge through training or education programmes both to camp managers and ranger. This should not simply be a question of downloading information to implementers. It should be a two-way process between scientists and implementers (Manager ‘L’, personal communication, 05 August, 2007).

One of the implications of the above was that the lack of knowledge on the part of the tourism staff has resulted in an uneasy relationship between them and the scientific service unit. However, one of the respondents commented that, “We invite people from tourism when discussing water and elephant management policy, but they do not really engage” (Manager’K’, personal communication, 24 August, 2007).

These findings revealed that coordination among the policy initiators and policy actors (implementers) was problematic. This can be attributed to compartmentalised policy-making and the administrative functioning structure of the organisation. To improve the situation, a significant number of respondents pointed to the need to improve communication. One respondent suggested the need to initiate greater communication via a science management forum and modifying the KNP’s core agenda to focus more on policy integration. Suggestions also included improving communication, the presentation of material in an easily understandable way, and the introduction of an induction course for new staff members during which they are informed about the policies in the Park. One respondent had this to say, “Our effort is more external and for other
interested parties, rather than internal. There is a need for effective communication in the organization” (Manager ‘L’, personal communication, 04 August, 2007).

Some interviewees also pointed to the establishment of a committee or forum for developing the three policies or to ensure that there was close communication and consultation, and/or the designation of a dedicated person with good administrative skills to look at various policies and see how they can talk to each other. These sentiments pointed to the necessity to focus on instruments that can promote balanced and mutually reinforcing communication and cooperation among Park managers and for policy instruments that can pave the way for integration

**Instruments Suitable for Policy Integration**

Difficulties in employing the policy instruments across the administrative, economic and regulatory frameworks included red tape, lack of human capacity (skilled staff), inadequate financial resources and lack of adequate implementation mechanisms. With regard to regulation, the lack of appropriate and adequate implementation mechanisms and the lack of financial resources and skilled manpower were also identified as barriers to policy integration. Although the above instruments were perceived as having negative integrative attributes for the KNP, the respondents also noted other major factors that can facilitate policy integration.

The most firmly and extensively supported instrument having a strong integrative character was administrative (see Figure 13), in particular, planning
and research. They helped managers to understand what needed to be done and constituted a rigorous approach for analysing problems. Given the historical tradition of research at the KNP, it was also suggested that research be used for monitoring the proposed solutions to environmental conservation problems.

Figure 13. KNP: Instruments Suitable for Policy Integration (2007)

Source: Zhou (2008)

Regulatory instruments (for example, setting environmental quality standards, via Environmental Impact Assessment (EIA), Strategic Environmental Assessment (SEA), and zoning) were considered to be vital for enhancing policy integration (Figure 13), ensuring that the processes became environmentally friendly, and securing compliance with environmental protection (for economic development). In this regard, respondents attested that the EIA and SEA
instruments provided a coordinating and integrating function, both within and outside environmental policy and individual decisions. For example, the SEA can facilitate stakeholder participation in the policy-making process. Furthermore, the SEA process and its outcomes can help raise awareness of the interlinkages among the water provision policy, tourism policy and elephant management policy. While research can help to integrate different policies, respondents also highlighted the need for strong communication links, and an institutional support structure to enable regular communication, even with outside researchers and field staff.

The third highest ranked variable in terms of policy integration was economic. Overall, however, communicative instruments were identified as an indispensable complement to other instruments. In general, respondents were positive about policy integration, reinforcing the significance that the KNP places on policy integration.

Factors Facilitating Policy Integration

The importance of having a project manager with authority to cut across programmes was ranked as the highest integrative facilitating variable for the tourism, water provision and elephant management policies (Figure 14). This variable related to the need to bring instrument support to deal with the problem of fragmented policy-making and implementation. Figure 14 also reflects that opportunities to learn and adapt, and develop competences, were second in significance. Thirdly, the respondents felt that a central overview and coordination capacity to ensure horizontal consistency among policies would
significantly advance policy integration. The variable ranked fourth was shared leadership, pooled budgets, merged structures and joint teams. Comments on this variable were that some departments tended to defend their budgets rather than their policy or functions, for instance, the fire policy department. However, the overall perspective was that while it was possible to move towards policy integration, it is a difficult process requiring substantial effort, including on-going channels of communication. These statements reflected the need for policy integration at KNP.

Figure 14. KNP: Factors Facilitating Policy Integration (2007)

Source: Zhou (2008)
Factors that can Impede Policy Integration

In terms of variables that can undermine policy integration at the KNP, reluctance to promote interdepartmental cooperation ranked highest due to the complex relationships and various lines of accountability that posed risks and can be difficult to manage (Figure 15).

Next in significance in obstructing policy integration was that the institutional structure encouraged greater interest in what an individual department contributed to the corporate goal, rather than encourage an interest in what the organisation as a whole contributed. Thirdly, respondents felt that recognition tended to be given in the form of incentives and awards to individuals.
skilled in perceptive policy analysis. Fourthly, it was observed that some departments were over-prescriptive in specifying the means of delivery, even conflicting with objectives the other departments set. It is necessary for the KNP authorities to address these obstacles to policy integration.

**Administrative Structure for Promoting Integration**

There was a strong argument that KNP’s administrative structure was relatively well placed to effect environmental policy integration. Its institutional organization (in the form of the research managers based at Skukuza camp) can enable the organization to develop the necessary policies. In addition, the KNP’s widespread consultative process in policy-making provided an avenue for a democratic process that can facilitate integration via participatory compromise and consensus. Policy integration has meant more opportunity for teamwork. One interviewee said,

Policy integration can increase the efficiency of decision-making by preventing unwanted side effects between and within policies at the earliest possible stage. Policy formulation must be integrated at the onset or at the start, not bolted on later. Care must be taken that these serve common interests. It can be easier to reach consensus in the policy formulation stage with regards to higher-level integration objectives. Disagreements may not emerge until the implementation stage, where explicit decisions and trade-offs need to be made, with visible cost
redistribution and change of actor responsibilities (Manager ‘L’, personal communication, 05 August, 2007).

The respondents also agreed that policy integration reduced conflicts and overlaps, thereby helping to achieve joint savings in financial and human resources, time and effort, and that if policies talk to each other the best will be achieved. Other benefits outlined were the ability to manage uncertainty, solve invisible and complex problems as well as increased ability to diversify. Group support, group synergy and harmonious working relations, as well as providing a platform for resolving potential conflicts and making trade-offs were identified. The respondents also pointed out that the integration approach enables the systematic assessment and evaluation of the relative importance of different types of policies.

While some park managers inevitably tried to portray the importance of policy integration as positive, many admitted communication difficulties amongst different levels within the institution. These were partly due to a lack of human capacity, conflicts and the difficulty of trade-offs in dealing with the policies, and resistance to change amongst administrators and staff. The respondents also pointed to the high costs involved in marshalling the required human and financial resources to make it happen. Some respondents commented that overcoming fragmented departmentalised policy making can be a huge task requiring active and sustained effort on the part of Park managers as well as political backing. They also mentioned delays in implementing solutions due to problems in coordination, time wasting due to direct and opportunity costs of
management, and the time staff spent establishing and sustaining cross-cutting working arrangements.

Conclusion

The data presented in this Chapter reflected evidence of policy interlinkages, and the need for policy integration. However, issues of coordination among policy initiators and actors, lack of capacity and compartmentalised research needed to be addressed for policy integration to materialize. However, the challenge was to change the KNP institutional policy structure arrangements so that it was not to be split among departments. Park managers acknowledged that fragmented institutions and policies cannot treat environmental problems in isolation since they are interlinked in a complex system of cause and effect. Generally, the respondents seemed to support this policy approach.

The following and final Chapter of this study will interpret the key findings in relation to the objectives of the study. This will facilitate the development of a basis for explaining the findings of the research.
CHAPTER VII

FINDINGS, RECOMMENDATIONS AND CONCLUSION

Introduction

This study focused on evaluating the interlinkages among three proposed policies at the Kruger National Park (KNP), namely tourism, water provision and elephant management. The evaluation provides a basis for the development of integrated policy-making for the KNP. A summary of the study is as follows: Chapter I outlines the conceptual framework underpinning the study and then locates this study in relation to current debates in the literature about policy interlinkages and integration. It also discusses the problem to be investigated, and the methodology to be used in the investigation. Chapter II explains the genesis of parks in South Africa. It argued that national parks were established in a haphazard and uncoordinated manner, largely according to historical circumstances, resulting in variable and often conflicting policies being applied that affected biodiversity sustainability. It also reflected that the institutionalisation of tourism has been weak from its inception in national parks development. Chapter II also outlines the administrative and legislative changes that contributed to the development of national parks. Chapter III focused on the creation of the KNP and how the administrative management structure of the KNP altered from an unsystematic laissez faire approach, into more scientifically
informed management practices with an efficient bureaucracy in charge.
Chapter III also outlined the challenges in constructing an institutional balance
between tourism and biodiversity conservation and management. Chapter IV
outlined the paradigm shifts in the formulation and implementation approaches of
the tourism and biodiversity conservation policies at the KNP. It argued that
tourism was heavily skewed towards business. Chapter V demonstrated how an
integrated approach to Environmental Policy Integration (EPI) or management
can help sustain tourism and biodiversity conservation.

Chapter VI showed that the KNP achieved considerable management
initiatives, but was held back by the lack of interaction and cooperation among
departments. It also showed that responsibility for policy-making at the KNP was
divided among departmental entities, each of which tended to have a relatively
narrow range of responsibilities.

This final Chapter (VII) aims to synthesize, integrate and interpret the key
findings presented in Chapter VI. This synthesis provides a platform from which
to arrive at an interpretation surrounding the findings of the research, thereby
facilitating the conclusions emanating from the study. The findings are
contextualized with reference to the conceptual framework underpinning this
study. Recommendations and further research ideas based on the study are
suggested. The Chapter concludes with remarks on policy interlinkages and how
they can help the KNP management to understand conservation practices better
and integrate such knowledge into successful future conservation practices. In
short, for the KNP policy-making process to be effective, knowledge about
interlinkages is needed to ensure policy integration.
Policy Formulation and Implementation

The findings (as outlined in Chapter VI) that the policy-making process at Kruger National Park (KNP) became more interactive and participative. Consequently, Stringer et al. (2007), argued that processes that actively involved a wider range of stakeholders and which combined different forms of knowledge (formal, informal, theoretical, experimental, expert, lay) enhance the legitimacy, integrity and value of the knowledge generated. Pitched within the context of the KNP, this inclusiveness paved the way for a more democratic policy-making process. However, policy-making was split among departments at the KNP. In the policy-making arena, strongly separate functional interests in the KNP contributed to a narrowly defined and fragmented jurisdictional structure for policy-making, which was often mirrored in the implementation process. These findings concurred with the assessment that fragmentation in policy-making was attributed to the overall research initiative that is still skewed in favour of compartmentalized knowledge, with a backlog in integration in the KNP (see Chapter I, page 20; du Toit, Kevin and Biggs, 2003). In addition, Biggs (2003) explained that the level of fragmentation was not only evident amongst departments but was also discerned in the natural scientists’ tradition in biophysical management of conducting unidisciplinary and single-species studies.

One important result of these narrowly defined scopes of institutional responsibilities was that the KNP stakeholders have had difficulty coordinating management operations. This difficulty has often led to an inability to achieve a
high degree of biodiversity conservation (see Chapter VI). In fact, tourism issues and biodiversity conservation were also marginal to the very best efforts of the KNP managers and scientists. The elephant management policy was not implemented at the time of the survey (in 2007-2008) mainly because the Park was reacting to public opinion, pressure from interest group and the media at national and international level.

Effectiveness/Success of Tourism Policy

The very limited success in the area of tourism policy is regrettable, particularly in view of the high levels of infrastructure development at the rest camps. Findings in these areas have shown a very low degree of success in assessing and addressing tourism impacts on biodiversity despite the fact that there were many built-up areas in the KNP. This has been attributed to the lack of capacity, both at park level and ministerial level. Goodwin et al. (2007) support the position that management capacity in the tourism division was still inadequate and unless this changed, current and future efforts to conserve biodiversity will be in name only. The Department of Environmental Affairs and Tourism has only a very small professional staff dealing with tourism and it is seriously stretched (Goodwin et al., 2007).

Goodwin et al. (2007) contend that uncontrolled tourism growth, often based on short-term priorities, invariably resulted in unacceptable impacts that harm society and the environment. This is not acceptable in South Africa. The White Paper on the Development and Promotion of Tourism pointed out that tourism had largely been a missed opportunity for South Africa, and noted that
tourism planning had been inadequately resourced and funded, with inadequate environmental protection and infrastructure development (Department of Environmental Affairs and Tourism (DEAT), 1999). This study echoes the observations pointed out in Chapter II, that within the establishment of national parks in South Africa, tourism concerns were never put into perspective. The tourism management plan did not come into force until 1988. Tourism activities in the parks, in particular, the KNP were largely divorced from corresponding efforts as enacted in the National Parks Act. Even though the Act was amended, it fell short of mapping out how park managers can balance biodiversity conservation and tourism activities. Furthermore, tourism was not included in the African National Congress’ detailed planning, when it achieved political power in South Africa in 1994. However, the 1996 White Paper recognised that tourism was one of the best opportunities available to South Africa to create employment and livelihoods for the urban and rural poor.

Cooperation among Park Managers

This study has revealed a yawning chasm, that of a lack of communication and cooperation among park managers. Interaction between policy-makers and policy implementers was weak, but this was further complicated by enduring partitions among policy-making domains within the KNP institutional structure. For instance, relations between tourism staff and scientist conservation managers were tense. If park authorities do not address this gap, the polarization between tourism policy initiatives and those of water provision and elephant management efforts will further increase. The fact remains that both
sides need each other in order to understand complex economic and socio-ecological systems (Buscher and Wolmer, 2007) and are thus jointly responsible for defusing this potential polarization. This scenario simply means that the tourism sector critique should not persist without suggesting solutions, while water provision and elephant management policy-making cannot remain isolated. Yet, solving environmental problems requires that natural and social scientists bring together such dispersed knowledge to inform collective deliberation over the issue in question (Masca et al. (2003) (cited in King, Biggs and Loon, 2007)).

Single sectoral policy approaches cannot address the problem as a whole. These approaches have been criticized as being inefficient, in that they can result in competing and contradictory objectives and duplication of effort, and are ineffective in that they ignore the complexity of interactions among different areas of policy interest (Kidd and Shaw, 2007). Moreover, these policy approaches have significant consequences for biodiversity conservation which increasingly has to work within a more integrated sustainable development framework, involving social and economic development. It is important to note that these three policies all impact on one another, and that addressing impacts across these three policies generally involves trading environmental gains and/or economic costs in one area for gains and/or costs in another area. Park managers need to be highly pragmatic and strategic in establishing priorities within the confines of the budgets. A sound strategy must include openness around intentions, a wide knowledge base, transparent decision making processes and a willingness to share power (Kalternberg, 2002).
Policy Interlinkages

There were common features of the impacts and concerns of biodiversity among the three policies. Generally, there was interdependence among the three policies, for example, biodiversity attracts tourists. Tourism's demands impacted on water provision, which was also critical for animals. Tisdell (2001) wrote that once a component tourist activity suffered damage or if the natural resources were destroyed, correction cannot be postponed to a later date, nor is the damage removed to another place without harming the competitiveness and profitability of tourism. Tisdell further stated that tourism induced infrastructure development and activities benefiting from tourism services. Many aspects of tourism interact with biodiversity, for instance, tourism should contribute to the conservation, protection and rehabilitation of ecosystems. Links to biodiversity included the need to protect the integrity of ecosystems and habitats. The need to maintain tourism and biodiversity on a sustainable basis was part of the Briassoulis' (2004) policy integration conceptual framework reviewed in Chapter I (page 5) and as well as the Environmental Policy Integration (EPI) guidelines outlined in Chapter V. In the framework it was shown that once there was management of the cross-cutting issues in policy-making that transcend the boundaries of other policies, implementation of the policies becomes effective. This was because implementation of these policies caused unwanted impacts on the object of another (Briassoulis, 2005). Integrated management of the policies therefore needed to be effected through improved cooperation in governance. Recognising this and working together in an interdisciplinary manner to find
common ground and a common language will help to bridge these divides (King, et al., 2007). This, in turn, will provide the basis for an improved and increasingly integrated understanding of all the policies.

The biodiversity sustainability of the three policies, that is, the tourism policy, the water provision policy and elephant management policy forms a convergence which is generated at the center of the triangle (see Figure 16). Coming together, these three policies are like sides of a triangle, in that elimination of any one of them would compromise the integrity of the whole.

![Figure 16. The Relationship between Tourism, Water Provision and Elephant Management Policies](source: Zhou (2008))

An alternative representation and set of possibilities might be that indicated in Figure 17. Relation (a) indicates that environmental quality deteriorates marginally with tourist development indicates, (b) that environmental quality deteriorates substantially with tourism development, and (c) that environmental
quality actually improves tourist development (Pilgrim (1980) (cited in Tisdell, 2001)).

These insights suggest that problems rarely fall within the boundaries of a single discipline, which is true for the KNP. A balance between biodiversity conservation and tourism management is a prerequisite for sustainable development and highlights the need for greater integration of environmental policy and economic development. The principles and approaches on biodiversity conservation and tourism management should be treated as such by the policy-makers and practitioners. Within the context of the KNP, this study reflected that conservation efforts still focus on the protection of certain species, particularly charismatic megafauna (for example, the elephant), which on the
other hand, tourism follows the principles and patterns that are reductionist, deterministic and linear in respect of service delivery. Therefore, unless environmental linkages influence the development process, along with social and economic imperatives, the outlook for driving integration to ensure the optimum sustainable benefits from the resource base is uncertain.

A dual development lesson is that economic growth (in this case tourism) cannot be sustained for long if the environment continues to be undermined (Bramwell and Lane, 2000). From a tourist-and-ecology perspective, the need to pay attention to interactive policy-making is reinforced strongly by the tendency towards integrated policy-making. Regional governments, especially, no longer tend to produce separate policy plans that deal with just one domain or sector (be it nature, agriculture, tourism, water management). Instead, they tend to make combined plans, in which various domains are integrated. (Bramwell and Lane, 2002). This development stems from increased recognition of the multi-functionality of natural resources. Briassoulis (2005) also attested that the connectedness of human-environment systems implies that policies inevitably have positive or negative spill-over effects. In other words, a policy designed to address a given issue provides for arrangements that may also address other issues. Further, it is possible that a scheme suitable for one problem may prove unsuitable for another. Therefore people and organizations that deal with tourism and ecology-related activities challenge each other. Hence, the need to reflect on interactive policy-making (Bramwell and Lane, 2000).
Conditions for Policy Integration

The integration policy approach at the KNP was not a novel idea, but was one that has not been exploited fully. The integration approach was first developed or mooted as a river project. However, for effective integration of the policies, it is imperative that the institutional structures be conducive to such integration. Park managers acknowledged that environmental problems cannot be treated separately by fragmented institutions and policies since they are linked in a complex system of cause and effect. Notwithstanding this, the challenges at the KNP were the institutional structure arrangements that favoured departmental interests.

Advancing Policy Integration at KNP

There were comprehensive sets of interlinkages that could facilitate the integration of policies with values and beliefs, improve insight into the range of issues impinging on policy development and increase cooperation among participants in addressing policy problems. This meant the incorporation of guidelines of policy analysis derived from the conceptual framework underpinning this study (see Chapter I (page 7)). These included analysing relationships/interlinkages among policy objects/concerns, principles and objectives, actors, structures and procedures and finally policy instruments. According to the conceptual framework underpinning this study the aforementioned guidelines could help policy-makers identify important pieces of information related to a policy problem and decide what was being done about it. They could also help users gain an understanding of how they (and other people)
fit into the overall process. Although these guidelines do not guarantee a perfect policy, they provided a clear explanation of how the policy could be integrated, and in turn provide a framework for constructive comment and debate. In addition, Chapter V provided detailed policy criteria and approaches to achieve policy integration.

Integrated approaches to the analysis of economy-environmental interactions have long been and are still advocated in the literature and applied in several circumstances. The proposed framework for the analysis of the three policies belongs to this strand of approaches.

The use of this interdisciplinary approach requires a substantial effort because it requires a change in the habitual ways of thinking and understanding. Clark et al. (2000) wrote that a key requirement to interdisciplinary/integration problem-solving was the possession of a framework that can accommodate, conceptually and practically, diverse data, epistemologies and disciplines. Figure 18 introduces the framework that Briassoulis (2004) advanced on how the three policies can be integrated.

The framework presented is not immune to the perennial challenges of integration approaches, a factor that affects seriously its operationalisation and application cost. Despite these challenges, it is believed that an integrated approach to policy-making and implementation is vital. Its application at the KNP will test its ultimate usefulness and contribute to ensuring that comprehensive policy-making translates to effective implementation. For Briassoulis (2005), the connectedness of human-environment systems implies that policies inevitably have positive or negative spill-over effects. In other words, a policy designed to
address a given issue provides for arrangements that may also address other issues. Briassoulis, continuing in the same vein stated that some policies may be used as instruments for the achievement of the goals of other policies.

![Diagram of Environmental Policy Integration Framework](image)

**Figure 18. Environmental Policy Integration Framework for the Tourism, Water Provision and Elephant Management Policies, Kruger National Park**

Source: Zhou (2008)

However, it is imperative to note that not all possible cases of cross-cutting issues need to (or can) be considered, but only a few strategic ones. Therefore, the task is to find those strategic policies that should be integrated at each level so as to provide an enabling environment for the integration of policies on the same and other level as indicated in the statement below:
Clearly, everything is connected. But because everything is connected, it is beyond our capacity to manipulate variables comprehensively. Because everything is interconnected, the whole environmental problem is beyond our capacity to control in one unified policy. We have to find tactically defensible or strategically defensible points of intervention (Lindblom, 1973, cited in Briassoulis, 2005, p. 5).

At the policy formulation level, the integration among the three policies provides for more potential to balance and control the pressures exerted on environmental resources. At the policy implementation level, it offers a framework for coordinating the interventions of the three policies in space, recognizing and capitalizing on their synergies. A deepening of the integration content of policy could only strengthen such mainstreaming functions that could provide a framework for the coordination of variegated policy instruments originating in various policies, achieving valuable synergies among them that are necessary to address complex policy problems such as biodiversity loss (Briassoulis, 2005).

Tourism policy exhibits considerable potential to become integrated with a variety of other policies. Experience demonstrates that it has often acted as a Trojan horse for the mainstreaming, for example, of environmental concerns and measures within development practice, with the gradual mainstreaming of EIA as one example.
When studying environmental policy-making in general and EPI in particular, it is important to bear in mind that environmental problems are seldom easily solved. There are many aspects of every issue, often requiring the involvement of several sectors in order to successfully move towards ecological sustainability, which is the ultimate goal of EPI (Hertin and Berkhout, 2003; Lenschow, 2002; Persson 2004; Soderberg, 2005). This fact renders the search for comprehensive and all-inclusive policies to address complex socio-environmental problems a futile endeavour (Briassoulis, 2004). While there is no guarantee of the success of this kind of effort, the conceptual framework underpinning this study (Briassoulis' (2004) policy integration approach) is an appropriate context in which to test if this kind of endeavour holds true for policy improvements.

**Recommendations**

How do we deal with the integration of policies within the context of the compartmentalised policy formulation nature/challenge at the KNP? The following suggestions/recommendations can create a platform for policy integration:

1. Joint drafting. All departments should be involved in the drafting of the policies at an early stage. Joint drafting makes policy coordination a key strength. The policies should be integrated into all decision-making, regardless of sector or discipline, as discussed in Chapter V.

2. Policy awareness among the park managers. There is a need to increase awareness among park managers of environmental issues, in particular
policies. All staff need to have an understanding of different policy concerns. Scientists/research units need to be able to present the conservation issues in an effective manner, and then transfer this knowledge through training or education programmes both to camp managers and rangers. This should not simply be a matter of downloading information for the implementers. It is a two-way process between conservationists and implementers (Vaughan, 2000). This means that feedback or communication needs to be improved. If biodiversity conservation and tourism are to work more closely together, there is a clear need that each understands the other’s objectives. Briassoulis, (2000) (cited in Briassoulis, 2005) writes that the interaction between policy-makers and policy implementers depended on: (1) how clear and unambiguous the policies) sent are, and (2) whether the transmission channels utilised (media, instruments, personnel) are appropriate.

3. High political commitment. For effective policy implementation there is need for a high level of political will and bureaucratic commitment towards endorsing the implementation of the elephant management policy (discussed in Chapter V. Park managers need to be allowed a certain amount of space to manoeuvre, and bureaucrats must be willing to transcend departmental or sectoral boundaries. Furthermore, there must be strong political will towards countering strong administrative resistance and bureaucratic inertia. More tangible measures include clear communication of legislation requirements, a vigorous, target-oriented definition of policy integration; and the enhancement of human and technological capacity, in particular, in the tourism sector. After all, human activities are not only a result of the interpretative processes
induced by communication, but also of economic incentives, power relations, laws and regulations.

4. The respective administrative and management roles and responsibilities, including communication between departments, should be defined. This would allow timely and comprehensive updating of the status of policies. Communication intervention is but one of the important strategies that can be employed to this end, given that no meaningful social change will come about without it. Briassoulis (2005) reaffirmed this position that communication is a very important mechanism through which human beings process reality, develop perceptions and thoughts, and produce practices.

5. Interaction. Efforts to foster greater interaction are needed, not only among park managers, but also within the scientific service unit, with a view to consolidating ideas, finances and human resources for more effective and efficient management. For this, interdepartmental cooperation in establishing and implementing policies should be established. In fact, additionally, related research and studies conducted in different departments should converge into a single institute at park level. A change in thinking on the possibilities of linking biodiversity and tourism is required, and existing ideas and policies should be reviewed. Understanding linked phenomena informs policy design and helps in improving management actions (Chapter V. In consequence, at the administrative level, coordination among different departments should be provided. If the links and coordination among policies are designed and not left to chance or at the discretion of the numerous policy implementers, it will
be easier to communicate, explain and implement them at lower (implementation) levels.

6. Tourism. The drafting or development of TPCs for the tourism policy should be expedited. Nilsson and Eckerberg (2007) (see Chapter V) emphasised that this is a move away from traditional ‘end-of-pipe’ environmental measures that seek to ‘clean-up’ after damaging economic policies and practices. The lack of trained specialist personnel needs to be addressed and organizational resources must be in place. Tourism should not be treated as a separate activity but as one of the economic activities which needs to be managed such that it also contributes to sustainable development.

7. Integration should not be confined to the three policies. Other policies which relate to tourism and biodiversity conservation, such as the fire management policy need to be explored. Integrated policy-making should be instituted and should be the basis for policy design. This can be done by establishing a formal body or a coordination chair/portfolio (as stated in Chapter V. This should be established at policy-making and implementation level, with adequate ability and authority to support the continuous and consistent interaction among the departments. This can be executed in the form of an environmental project manager, a single point of responsibility to meet the needs of the organization, stakeholders and individuals working on the project and across different line functions (see Figure 19).

This matrix organizational structure is meant to enable companies and organisations to work on many projects at the same time, share resources, address scope overlap and underlap and, most importantly, have one person
with the responsibility for communicating with the client (Burke, 2003). Burke writes, that as a single point of responsibility, it is the project manager who integrates and coordinates all contributions, and guides them to a successfully completion of the project. Figure 19 highlights the project line of responsibility overlaying the functional lines of responsibilities of heads of departments and their subordinates. The matrix structure answers the question: “If the (environmental- my emphasis) project manager is not coordinating the project who is?” (Burke, 2003, p 12). It is more important that such a structure be implemented to ensure close cooperation among all departments.

**Benefits of Environmental Project Management**

There are many possible benefits of environmental project management. Burke (2003) points out the following: (1) accountable to provide information about every aspect of the environmental project in the form of procedures and work instructions which are tailored to the specific needs of the project, (2) communicates the what, where, when and who in relation to the environmental project undertakings, (3) coordinates and integrates the contribution of all environmental project stakeholders as well as reports to interested parties including management and finally (4) plans and controls the system’s database around the work breakdown structure for the project.
In summary, the main messages that this study generated can be divided into challenges and achievement on tourism and biodiversity conservation initiatives at the KNP. The challenges include:

1. Limited knowledge on the impacts of tourism on biodiversity. Current procedures for tourism policy-making and implementation are weak; little is done on assessing impacts.
2. Policy coordination and cooperation between departments is weak.
3. Communication within the institution is poor.
4. Camp managers have only piecemeal and partial understanding of the full implications of the policy design of other departments.

However, milestones in the KNP biodiversity policy making include:
1. Democratic policy formulation is evident, and
2. The KNP has a rigorous scientific research unit based at Skukuza that provides park authorities with state-of-art knowledge in order to achieve its mission statement. In short, Kruger National Park is a fertile ground for policy integration.

Future Research

This chapter wrestled with certain aspects of the integration of the three policies: the tourism policy, the water provision policy and the elephant management policy. The Kruger National Park’s policies should be examined following the conceptual framework proposed in Chapter I of this thesis. In particular, the resource use policy, the fire management policy and the waste management policy should be explored as they constitute distinct subdomains within the broader concerns of environmental policy. The analysis should focus on the relationships among the objects, goals and objectives, actors, procedures and instruments with those of several policies including physical policies.

Another research strand could focus on how policy integration can cope with the inherent complexity of institutional/tourism development problems and contribute to reducing policy disparities. The lack of communication among the
KNP management needs to be further explored. The Threshold of Potential Concerns (TPCs) for tourism policy need to be developed. Finally, dedicated studies are needed to examine the implications of policy integration in the context of the KNP tourism policy as it is a serious problem that impacts on several other policies.

**Limitation of the Study**

An important limitation was the rather poor response from the tourism department at the KNP. It was difficult to make time for interviews. Some respondents including senior personnel from the tourism department felt that the research was not particularly relevant to them and therefore chose to spend little or no time on the interview and referred the researcher to other staff members. In contrast, interviews with the scientific division managers proved very successful. The data provided was relevant, rich and accurate. It was a challenge to fit meeting times into the busy schedules of the executive directors at the head-quarters in Pretoria as they were always in meetings. Regardless, sufficient information was obtained during each interview to make this study comprehensive.

**Concluding Remarks**

This study showed that the establishment of national parks in the 1930s was focused on the preservation of specific species in what were conceived as primordial untouched wilderness areas. Tourism was later introduced in the 1950s. This paradigm shift was a reflection of changes in epistemological and
ontological aspects of ecological science itself, to new principles and practices of conservation and tourism management. At the same time, thinking within the ecological sciences shifted towards an understanding of the environment as a dynamic, self-organizing system in a continuous, chaotic flux. Similarly, theoretical work on environmental planning started to embrace complexity and treat knowledge about environmental problems as both uncertain and pluralistic. The study reflects that to date, the KNP faces challenges in constructing an institutional balance between tourism and biodiversity conservation and management, as tourism activities flourished at the expense of biodiversity sustainability. A balance between biodiversity conservation and tourism management is a prerequisite for greater integration of environmental policy and economic development strategies. This trend is gaining currency in many parts of the world (see Chapter I). Hence, this study has offered a general interlinkage analysis of selected aspects of economic and environmental policies from the perspective of addressing complex socio-environmental problems. These include the tourism policy, the water provision policy and the elephant management policy.

This study illustrated the need for a better understanding the different interlinkages between the policies and how they affect one another. That trajectory can pave way for policy integration. In the KNP, current institutional governance structures favour departmental interest in policy-making and this gave rise to narrowly defined institutional responsibility for policy-making and implementation. Furthermore, the study also reflected that in the KNP, the lack of effective communication and coordination among the departments is a trend
that exhibits a number of characteristics that predate the apartheid era (pre-1994), with a dominant compartmentalised research approach that is still operating in an essentially fragmented rather than a holistic manner. Hence, the study reflects that policy-making has had less of an impact on the policy-making process than anticipated. The study reflects that the KNP system of policy-making currently lacks the necessary feedback loops among key actors. Yet, this is crucial in order to create a cycle, where policy making and implementation would emanate from all stakeholders, and reiterate and refine the policy process. The policy actors associated with the three policy areas should be linked through formal communication, cooperation and coordination procedures. Influential informal (public at large) policy actors should be encouraged to participate and communicate more openly with formal actors. An important challenge is to maintain this fit; hence, the need to set up a common administrative chair capable of liaising with all stakeholders. Burke’s (2003) project management guidelines provide the lead integrating role across line function departments.

A main prerequisite of policy-making and implementation at the KNP is the need to embrace the conceptual framework adopted in this study, to support policy design and practical applications. This study provided justification and guidance and framed the practical aspects of the spatial integration of the three policies. This integration policy approach can span different departments. However, in the spirit of adaptive management, the integration policy approach should be tested and implemented as an experiment whose outcomes are used to update the policies, and to adapt them to changing socio-economic and environmental circumstances.
Finally, there is no blueprint that can be applied to all situations requiring the integration of tourism and biodiversity policies. Sets of guidelines, such as the conceptual framework underpinning this study, provide a useful starting point but need to be tailored to fit the specific context of the problems they are aimed at. Routes to influence policy integration have been established. Finally, the future research agenda is long and demanding given the number and variety of the policies that have to be thoroughly analyzed to provide practical advice and policy support.
APPENDICES

Appendix A: Qualitative Semi-Structured In-Depth Interview Guide for Park Managers

This questionnaire survey is designed for Kruger National Park (KNP) senior managers (camp managers, head rangers, tourism and hospitality manager, heads and senior managers in scientific services, and research coordinators), who are based at five camps in KNP, and environmental control officers at the seven concessions.

Objective of the study

The present survey is concerned with evaluating the interlinkages/relationship among the new proposed policies on tourism, water provision and elephant management, hereafter referred to as the proposed policies". It is envisaged that the research will provide the basis for the development of integrated policy-making for Kruger National Park.

Position
Department
Name of restcamp
Contact details
Interlinkages with respect to policy objects (concerns)

1. What are the environmental impacts with reference to the three proposed policies?
   (a) tourism policy

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   (b) water provision policy

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   (c) elephant management policy

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2. What are the environmental concerns with reference to the three proposed policies?
   (a) tourism policy

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3. Do you think the three proposed policies ignore environmental concerns? If yes, please explain?

(a) tourism policy

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(b) water provision policy

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(c) elephant management policy

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Interlinkages with respect to policy administrative structures and procedure

4. How does SANParks identify problems with the formulation and implementation of the tourism, water provision and elephant management policies?
   (a) tourism policy
   ……………………………………………………………………………………………
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   ……………………………………………………………………………………………
   (b) water provision policy
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   (c) elephant management policy
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5. How does SANParks address problems with the formulation and implementation of the tourism, water provision and elephant management policies?
   (a) tourism policy
   ……………………………………………………………………………………………
   ……………………………………………………………………………………………
6. What do you think are the administrative barriers to implementing the following proposed policies?

(a) Tourism policy

(b) Elephant management policy

(c) Water provision policy
7. How can the policy administrative structures and procedures facilitate the integration of the tourism, water provision and elephant management policies?

Interlinkages with respect to policy instruments

8. Authorities use policy instruments\(^1\). How effective are the following instruments for integrating the proposed policies? (Please score with 5 as the most effective)

<table>
<thead>
<tr>
<th>Issue</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative (planning, research)</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Regulatory (setting environmental quality standards, that is, Environmental Impact Assessment (EIA), Strategic Environmental Assessment (SEA), zoning,)</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Economic, fiscal/financial (charges, subsidies)</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Policy instruments refer to the set of techniques/institutional measure authorities use to achieve set objectives (Van Deveer and Selin, 2003).
9. What are the difficulties in employing the instruments referred to in question 8?

(a) Administrative (planning, research)

(b) Regulatory (setting environmental quality standards, that is, EIA, SEA, zoning)

(c) Economic, fiscal/financial (charges, subsidies)

10. What are the advantages in employing the policy instruments referred to in question 8?

a) Administrative (planning, research)
(b) Regulatory (setting environmental quality standards, that is, EIA, SEA, zoning.)

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…………………………………………………………………………………………

(c) Economic, fiscal/financial (charges, subsidies)

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11. How can the policy instruments specifically facilitate integration, for instance, planning, research?

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Interlinkages with respect to policy actors/implementers (e.g., park managers)

12. Are there or have there been ways for policy actors to coordinate their work?

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13. Do you think the administrative structure of KNP can integrate the proposed policies? If yes, please explain, how?

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14. How does SANParks design, administer and monitor the implementation of the tourism, water provision and elephant management policies?
(a) tourism policy
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(b) water provision policy
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(c) elephant management policy
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15. Do SANParks influence or assist park managers to have up-to-date picture/understanding of their responsibilities connected with biodiversity conservation concerns? If so, how?
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…………………………………………………………………………………………
16. Do SANParks Executive Directors facilitate policy integration for the tourism, water provision and elephant management? If so, how?

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17. What are the operational relations among the heads of departments (policy actors/implementers e.g. park managers) for the tourism, water provision and elephant management? (Please score with 5 as the most effective)

<table>
<thead>
<tr>
<th>Issue</th>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is shared leadership in regard to tourism, water provision and elephant management</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>There is conflict of interests among the heads of departments for the tourism, water provision and elephant management</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Other (Specify)</td>
<td>1 2 3 4 5</td>
<td></td>
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</tbody>
</table>
**Interlinkages with respect to approaches and principle**

18. What are the interlinkages among the approaches of the tourism, water provision and elephant management policies?

19. How can these be strengthened?

20. How can the principles and approaches for the tourism, water provision and elephant management facilitate interlinkages?
21. To what extent do the following variables facilitate integration among the tourism, water provision and elephant management policies? (Please score with 5 as the highest)

<table>
<thead>
<tr>
<th>Issue</th>
<th>Score</th>
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</thead>
<tbody>
<tr>
<td>A central overview and co-ordination capacity to ensure horizontal consistency among policies</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Shared leadership, pooled budgets, merged structures and joint teams</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Opportunities to learn and adapt, develop competencies, or jointly develop new products</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Importance of having a project manager with authority to cut across programmes</td>
<td>1 2 3 4 5</td>
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</tbody>
</table>
22. To what extent do the following variables undermine attempts to integrate the policies? (Please score with 5 as the most effective)

<table>
<thead>
<tr>
<th>Issue</th>
<th>Score</th>
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<tbody>
<tr>
<td>Some departments are over-prescriptive in specifying the means of delivery and this has conflicted with objectives set by other departments</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>The institutional structure encourages more interest in what an individual department contributes to a corporate goal, rather than what the whole organization contributes to the goal</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Recognition tends to be given to individuals skilled in perceptive policy analysis, and not to policy actors (park management)</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>There is often a reluctance to promote inter-departmental working because it involves complex relationships and lines of accountability, which means they can be risky, or at least difficult to manage.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Other</td>
<td>1 2 3 4 5</td>
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</table>
23. What do you think are the gaps in the National Environment Management: Protected Areas Act (No 7 of 2003) that need to support the interlinkages and integration of the policies at park level?

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24. How can policy decision-makers address the gaps to facilitate integration for tourism, water provision and elephant management?

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25. How does the concessionaires management structure contribute to integration for the tourism, water provision and elephant management policies?

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26. At what stage (policy-making, policy implementation) can the integration of the tourism, water provision and elephant management policies best achieved? Justify your viewpoint.

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27. How can your portfolio promote integration of the three policies?

28. What are the main opportunities and obstacles for achieving integration of the three policies?

29. What are the implications of policy integration for park management?
   (a) Costs.
   (b) Benefits.

30. Which other new proposed policies need to be integrated with the tourism, water provision and elephant management policies?

31. How can the other proposed policies be integrated?
1. How effective are the approaches on the formulation of the proposed policies? Justify your response.

a) Tourism policy

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(b) Elephant management policy

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(c) Water provision policy

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2. How can the current approaches on the formulation of the proposed policies be improved? Justify your response.

a) Tourism policy

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3. How effective are the approaches on the implementation of the proposed policies? Justify your response.

a) Tourism policy

(b) Elephant management policy

(c) Water provision policy
4. How can the current approaches on the implementation of the proposed policies be improved? Justify your response.

a) Tourism policy

(b) Elephant management policy

(c) Water provision policy

5. It seems as though several park managers at KNP do not have, in general considerable knowledge about other department’s policy concerns and/or their impacts.  (a) Why is this case?

(b) How can the above be improved?
6. (a) Why are there no indicators or Threshold of Potential Concerns (TPC) to monitor and assess the effects of tourism in the Kruger National Park?

(b) How can the tourism management plan at the Kruger National Park be improved?

5. (a) What does your department do to facilitate and ensure cooperation between the initiators and implementers of the tourism, elephant management and water provision policies?

(b) How effective is your department in achieving the planned cooperation?
6. What are the strengths and weaknesses of the interlinkages between the proposed policies?

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<tr>
<th></th>
<th>Strengths</th>
<th>Weaknesses</th>
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<tbody>
<tr>
<td>Tourism policy and elephant Management policy</td>
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<tr>
<td>Tourism policy and Water provision policy</td>
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<tr>
<td>Elephant management policy and water provision policy</td>
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</table>
7. Indicate how each of the following policy elements interlink across the three proposed policies.

<table>
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<tr>
<th></th>
<th>Tourism</th>
<th>Elephant management</th>
<th>Water provision</th>
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<tbody>
<tr>
<td>Principles</td>
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<td>Approaches</td>
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<td>Implementation</td>
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<td>Monitoring</td>
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<td>Control measures</td>
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<td>Compliance to the NEMA</td>
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</table>
Appendix C: Qualitative Semi-Structured In-Depth Interview Guide

for the Directorate: Tourism, Conservation and Parks

Department
Position
Contact details

1. What specific role does your directorate play, directly and indirectly, in designing, administering and monitoring the implementation of the tourism, water provision and elephant management policy policies?

a) Tourism policy

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(b) Elephant management policy

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(c) Water provision policy

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2. (a) What are the principal/critical concerns in respect of the tourism, elephant management and water provision policies?

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(b) Why are these aspects of concern?

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3. What are the strengths and weaknesses of the interlinkages between the proposed policies?

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<tr>
<th></th>
<th>Strengths</th>
<th>Weaknesses</th>
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</thead>
<tbody>
<tr>
<td>Tourism policy and elephant</td>
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<td>Management policy</td>
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<td>Tourism policy and</td>
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<td>Water provision policy</td>
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<td>Elephant management policy</td>
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<td>and water provision policy</td>
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</tbody>
</table>
4. Indicate how each of the following policy elements interlink across the three proposed policies.

<table>
<thead>
<tr>
<th></th>
<th>Tourism</th>
<th>Elephant management</th>
<th>Water provision</th>
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<tbody>
<tr>
<td>Principles</td>
<td></td>
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<tr>
<td>Approaches</td>
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<tr>
<td>Implementation</td>
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<td>Monitoring</td>
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<tr>
<td>Compliance to the NEMA</td>
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</table>

5. (a) Do you think that the processes followed in the formulation of the policies were (or were not) appropriate, inclusive and effective? Justify your response.

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(b) From your perspective as the Executive Director: People and Conservation, do you think that the implementation of the proposed policies is achieving the intending goals and objectives at KNP?

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6. How can the approaches to the implementation of the proposed policies be improved to attain, inter alia, outputs/results? Justify your response.

a) Tourism policy

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………………………………………………………………………………………………

(b) Elephant management policy

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(c) Water provision policy

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7. What in your view are the administrative difficulties to implementation of the proposed policies? Why?

a) Tourism policy

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(b) Elephant management policy

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(c) Water provision policy

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8. (a) On the basis of earlier interviews I conducted at KNP, it is evident that park managers in general do not seem to be adequately informed about the policies (and their impacts) of other departments.

(a) In your opinion, why is the situation/case?

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(b) How can this situation improved?

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(c) What would the implications of such support be for your Directorate?

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10. (a) What mechanisms and/or strategies were in place within your department to ensure/facilitate cooperation between the initiators and implementers of the tourism, elephant management and water provision policies so that specific interests of your Directorate are incorporated and enhanced?

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(b) To what extent are the mechanisms/strategies effective in achieving the planned cooperation?

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11. How can integration among the proposed policies be best achieved? Justify your response.

a) Tourism policy


(b) Elephant management policy


(c) Water provision policy


16. Authorities use policy instruments. To what extent are the following instruments for integrating the proposed policies significant?

(a) Administrative (planning, research)

Comment


(b) Regulatory (setting environmental quality standards, that is, EIA, SEA, zoning)
Comment

(c) Economic, fiscal/financial (charges, subsidies)
Comment

Other (Specify)
Comment
Appendix D: Qualitative Semi-Structured In-Depth Interview Guide

for the Directorate: Policy Development and Legal Services

Department
Position
Contact details

1. What specific role does your Directorate play, directly and indirectly, in designing, administering and monitoring the implementation of the tourism, water provision and elephant management policy policies?
   a) Tourism policy
      …………………………………………………………………………………………………………
      …………………………………………………………………………………………………………
      …………………………………………………………………………………………………………
   (b) Elephant management policy
      …………………………………………………………………………………………………………
      …………………………………………………………………………………………………………
      …………………………………………………………………………………………………………
   (c) Water provision policy
      …………………………………………………………………………………………………………
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      …………………………………………………………………………………………………………
2. What support does your Directorate provide, if any, in ensuring that park managers comply with the National Environment Management: Protected Areas Act (No. 57 of 2003) (park legislation) and other relevant legislation and the policies on tourism, water provision and elephant management?

3. Has your Directorate identified any gaps and/or legal difficulties in the National Environment Management: Protected Areas Act (No 7 of 2003) in so far as interlinkages and integration of the policies at the KNP?

4. How can your Directorate provide assistance and support in facilitating the integration of the tourism, water provision and elephant management policies at KNP?
5. (a) On the basis of earlier interviews I conducted at KNP, it is evident that park managers in general do not seem to be adequately informed about the policies (and their impacts) of other departments. (a) In your opinion, why is the situation/case?

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(b) How can your Directory assist in overcoming this situation?

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(c) What would the implications of such support be for your Directorate?

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6. From a legal perspective, how can policy decision-makers at KNP enhance the integration of the tourism, water provision and elephant management policies?

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7. How are the external (foreign) role-players and stakeholders influence and impact on the formulation of policies at KNP in respect of tourism, water provision and elephant management policies?

8. (a) Is the directorate legal services required to respond to foreign/external threats (e.g., tourism boycott) internationally emanating from the adoption of specific policies at KNP in regards to tourism, water provision and elephant management?

(b) What is the nature of the response?

9. What role, if any, is the legal services Directorate called upon to play in defending the water provision, tourism and elephant management policies that KNP has adopted?
10. What is your Directorates’ perspective on how the KNP responds to external pressures in the formulation of its policies, in particular with respect to tourism, water provision and elephant management?


11. What is the nature of the interrelationship between the national Ministry of Environmental Affairs and Tourism (on the one hand) and the KNP on the other in terms of designing of legislation and policies in respect of tourism, water provision and elephant management?


Appendix E: Affiliations of Persons Interviewed

Tourism Department

1. H.O.D: Tourism and Marketing
2. Marketing Manager
3. Skukuza Camp Manager: Hospitality
4. Crocodile Bridge Camp Manager: Hospitality
5. Pretoriuskop Camp Manager: Hospitality
6. Bergen-dal Camp Manager: Hospitality
7. Lower Sabi Camp Manager: Hospitality

Conservation Services

8. Environmental Manager
9. Wildlife Management Manager
10. Regional Ranger, Conservation Services, KNP
11. General Manager, Conservation Services
12. Fire Management Manager
13. Water Resource Manager
Scientific Research Services

14. GIS: Research Manager
15. Programme Integrator: System Ecology
16. Science Awareness: Research Manager
17. Programme Integrator: Elephant Management
18. Invasion Ecology: Programme Manager
19. Science liaison Officer
20. Water, Mechanical Services and waste management
21. Social and Economic Researcher

Executive Directors

21. Executive Director: Kruger National Park
22. Executive Director: Tourism
23. Executive Director: Conservation
24. Executive Director: Policy Development
25. Executive Director: Legal Services
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