

DUBLIN BUSINESS SCHOOL

**The risk management in environmental protection
of South Africa**

**The investigation of implementation risk assessment methods,
tools and its effectiveness in practice.**

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Abstract

The purpose of the research topic is to evaluate the performance of risk management in environmental protection. The focus area is represented by South African National Parks and other protected areas in the country. It is the area which needs our permanent attention because of its unique character of fauna and flora and the geographical position. Together with the constant interaction of the natural environment and the various cultural human settlements represents the challenge in terms of continual sustainability.

Despite of the highly developed expert analysis from this area, the reality does sometimes not reflect the expected outcome of risk management application. The numbers of projects are closed down before finish or the conducted projects do not deliver the quality requested.

The investigation will be conducted in the area of the effective application of risk management. The target will be to address potential problems in the design or implementation of risk assessment and the possible constraints caused by legislation, lack of resources or insufficient organizational division of tasks. The dissertation contains the introduction of the topic planned to be researched, the literature review, where the characteristics of the risk, risk management, methods and tools are discussed. In the further section is detailed description of proposed methods to be used and also research objectives and proposed questions for in depth research.

The chapter of analysis and findings is based on interviews with the Head of Risk Management at South African National Parks, the other co-operators in the area of risk management application of South African National Parks¹ and the owners and managers of protected areas in South Africa.

¹ SANParks

1 Introduction

The population growth brings more intensive interaction of human activity and natural environment, situation in which are risks unavoidable. Risk evaluation is important part of every successful organization today. Risk occurs in every type of environment and activity and it is part of the main project management constrains. It is difficult to harmonize outcomes of various environmental interactions and eliminate risks.

Every project is divided into phases. Realization of each phase has to be planned and possible risks should be considered.

Risk management in the area of environmental protection is extremely challenging and highly depends on the economic and legal framework. It is usually included in strategic planning of the organization and it should be provided in very systematic way with the always changing environmental factors taken into the account.

The research is concentrated on the environmental risk assessment as a part of project management process and its practical use particularly in national parks of South Africa. The aim is to identify the role of the risk management in the national parks, look at its effectiveness in practice and evaluate the application of the methods and tools. In the recent years the management of the national parks increased their efforts while negotiating risks but despite the rising activities and legislation proceedings the final result of risk prevention and response still doesn't reach desired outcome.

There is a tendency for risk management in environmental protection to be controlled and applied centrally in South Africa, set up the borders strictly based on the sets of laws. According M. Mentis 'the progress in the environmental risk management does not move in the direction of proposed legislation' (Mentis, 2010)

The research is targeting the activities of the managerial level of the national parks and other participants of the risk management analysis in the area. The information and findings can help improve the application of the risk prevention in the process, help to increase effectiveness and be useful in preparation of responses to avoid failures. The topic might be also interesting for wide public and support the foreknowledge (knowing) about protection of natural environment and increase awareness in the area, which existence is necessary and beneficiary for everybody.

The investigation is also highlighting the positive or negative impact of the theory and structural framework incorporated in the management policies. It is important to involve all forces which have adverse impact on the creation and sustainability of the protected areas.

The subject will be investigated on the background of interaction with other influences of the environment as political, legal, economic, technological and social influences.

The structures of the organizations and their interconnection with other government and nongovernmental bodies represent important factor in their activities. The centralization tendencies are vanishing, many responsibilities were moved from central government institutions to provisional and local organs. The local communities became more interested and involved by the organisations in the activities. The awareness of the potential benefits and advantages of healthy sustainable environment was increased within the years. In case of private game reserves the involvement of local communities in their activities differs but the compromise is desirable to avoid and settle the landownership issues².

The potential outcome of the research address to the managerial level of the organizations which is responsible for reducing, mitigating or transferring the risk but sometimes tend to underestimate or ignore the influence of other forces in the environment. The work also review the design of the strategic plans and their impact on the organizational structures. By comparing the national parks with other protected areas is possible to identify the common trends or failures in the processes. Based on the analysis is possible to identify the capabilities and capacities of the organizations and suggest the improvement or recommendation.

The research starts with short introduction of the environment in which is situated and considered the suitability of the researcher and the main objectives. The research is divided into five main chapters. The first chapter is the literature review where the theoretical approaches in the context of the environmental protection are analysed. This part is followed by methodology used in the research, philosophical basis, limitations and ethics of the research. In the part of analysis and findings the results of the primary and secondary data research are assessed and evaluated. And final part of conclusions presents the recommendations, deduction and outcomes of the work.

² In few cases the owners of the private protected areas lost the land ownership to the community and their plans for future business development was not successful

1.1 Suitability of the researcher

The topic of the dissertation was chosen based on researcher personal interest in the managerial activities in the environmental protection and future aspirations to work in this field. The selected territory of South Africa based on its diversity represents one of the most various ecosystems in the world. The researcher have visited many national parks and game reserves in the country and devoted herself to further research to gain more expertise and knowledge about the management of the protected areas. The general approach of the research is based on my theoretical knowledge gained from secondary sources and supported by primary data from experts in the subject of risk management in environmental protection.

1.2 The research objectives

The desired objective of the dissertation is to research the risk management methods, tools and practise, the creation of risk assessment and its application in the actual operations of the protected areas. The research question is:

What are the limitations for the application of the risk management in the protected areas of South Africa and how effective are the methods and tools used in practice?

To fulfil the objectives, the research is designed around following subjects matter:

- a) To analyse how is the risk management incorporated in the management plans and visions of the organisation
- b) Qualify the methods and tools commonly used for risk identification
- c) Examine the high occurrence threats and agreed responses and proposed solutions
- d) Comparison of the best practise in the sector with similar experience in other successful protected areas and the limits for the risk management scope in the area.
- e) Investigation and evaluation of the current design of the risk management activities and the past lessons learned and future indications

2. Literature review

2.1 Legal framework

The National Parks, private game reserves in South Africa and their activities must comply with the legal scope and regulations which represents the main guidance and rules needed to be observed.

One of the main legislation documents is Constitution of the Republic of South Africa (1996) and the 'National Environment Management: Protected Areas Act No.57 of 1998'³ with all its amendments. It is the fundamental legal framework which introduce cooperative governance of environmental matters, establish government institution and introduces new piece of compulsory framework. By this Act the environmental impact assessment became the obligatory part of work with every risk management activity. The objective of this impact assessment is to avoid possible risk if it is possible. The document explains the types of protected areas together with fauna and flora, the most important objectives, its application, norms and standards which has to be followed. It also defines the person or organisation which can be assigned to manage such a protected area. According the Act, the management of the area is obligate to prepare the management plan which has to be approved by Ministry of Environmental Affairs⁴. Also the performance of designated area is regularly monitored and its efficiency is evaluated. The department of Environmental Affairs highlighted the importance of compliance and enforcement actions which were missing in the legislation in previous years. The unit of 'Green Scorpions'⁵ was created for reinforcement. This reinforcement of the policies is performed by litigation, fines and sanctions with financial impact⁶.

Another important part of the legislation is 'National Environment Management: Biodiversity Act (10 of 2004)⁷ where is closely specified the function and characteristics of ecosystems designed as a protected areas with detailed description of species and focus on sustainability of biodiversity and its coordination with activities of management and conservation. By this Act is established The South African National Biodiversity Institute (SANBI)⁸, one of the

³ Provides primary legal guidance; main amendments added in 2003 and 2004

⁴ DEA – Department of Environmental Affairs

⁵ Green Scorpions represent the network of the environmental enforcement officials drawn from many spheres of government. They can issue notices that force offenders to comply with environmental legislation

⁶ 'The largest environmental fine until Jun 2013 was 4 million Rand' (Gilder A, Dhladhla B., 2013)

⁷ Supports conservation of fauna and flora

⁸ The institute leads and coordinates research, monitors and reports on the state of biodiversity in South Africa.

world's most important botanical institute, its structure and responsibilities.

Both Acts are functionally well designed and amended by number of international agreements and other conventions focussed on particular issues as a Protected Trees List of South Africa⁹, Carbon Tax Policy Paper¹⁰, and many others. All the main roles and responsibilities, regulations, guidelines, permits, licenses and other details are elaborated as a part of Environmental Impact Assessment and its Environmental Legislation Handbook. Another important data contains also Freshwater Ecosystem Priority Areas for South Africa (2011) and National Biodiversity Assessment (2012)¹¹. Some Acts are targeting more specific area as National Environmental Management: Integrated Coastal Management Bill (2008)¹², Air Quality Act (39 of 2004), National Water Act (1998), National Forests Act (1998), Mineral and Petroleum Resources Act (28 of 2002)¹³ and many others. All the mentioned documents provide an overview about the status of the ecosystems in the country and protection levels of the areas. SANParks took guidance from these documents, also from wide range of expertise from the local knowledge. All the processes within the legal framework as an environmental policies and national-level decision making, affect the strategic plans, vision, mission and decisions of the organisation.

2.2 Importance of risk management in environmental protection

Risk can be defined in many ways but has always the same meaning. According H. Kerzner ' risk is measure of the probability and consequence of not achieving a defined project goal' (Kerzner, 2013).

'Risk is uncertainty of outcome, and good risk management allows the organization to:

- have increased confidence in achieving its desired outcomes
- effectively constrain threats to acceptable levels
- take informed decisions about exploiting opportunities.' (Filho 2013)

The evaluation of the risk is usually undertaken by analysing two main factors, the

Provides knowledge and information, gives planning and policy advice and pilots best practice management models. (SANBI)

⁹ Declaration which prevent any person to disturb, damage or destroy any protected tree or make business or donation of products from the protected trees without appropriate permit

¹⁰ Act based on which are the greenhouse gas emission regulated and prevented and facilitate the transition to green economy

¹¹ Provides assessment for South Africa's biodiversity and ecosystem; was led by South African National Biodiversity Institute SANBI

¹² Supports coastal and estuarine management system, coastal landscape and seascape

¹³ Very important in South Africa as a country with many mineral resources and mining places which need to be kept under certain limits and control to support sustainable environment

probability of occurrence and by impact of the event on the project.

Risk analysis is important tool in the process of evaluating the success of the operations in environmental protection. The development of the environment and planned strategies has an impact on its status, society and associated industries. 'Experience has demonstrated that direct transposition of risk assessment and risk management frameworks may not work in regions whose social, legal, historical, political and economic situation are not suitable and prepared for the methodologies' (Morel, Linkov, 2006). The risk analysis is usually conducted on the best rational decisions but sometimes might be necessary in the environmental protection to take action in unpredictable situation – 'outside the scope'.

'Considerable controversy revolves around value of risk analysis and the role it should play in environmental decision-making. Risk in environmental protection is defined as the probability of occurrence of a particular adverse effect on human health or the environment as a result of exposure to a hazard.' (Linda Jo-Schierow)

The nature of hazard could have different nature: natural, chemical, technological, physical and biological. For correct reaction and response is important the identification of the risk and its probability and impact. According H. Maylor 'the analysis should be concerned with the effect rather than causes ...what we really need to know is not the symptoms but the outcome.'

According the probability and impact chart there is level of occurrence assigned to each type of risk. And the results give us option to decide if the risk is possible to ignore, it is manageable or highly important.

'Ecosystems are dynamic, changing in both space and time and over multiple scales (Picket, Cadenasso & Benning, 2003)'. Therefore is important that high quality and scale risk assessment is done prior to the risk occurrence and effective application is in place.

'The activities of National Parks of South Africa (SANParks) are mostly concentrated in three main areas: biodiversity, human benefits and wilderness' (KNP - Management Plan 2008). The SANParks has developed high level coordinating policy plan which is designed to provide guidelines for the all main activities conducted by organization in short, middle and long term. 'The policy framework is requirement of the National Environmental Management:

Protected Areas Act 2003 and consist from the institutional, ecological, economic and social environment for parks management' (SANParks, Management Plan Policy Framework, 2006). More information on legal framework is covered in an essential preview of legal background and framework in environmental protection of the country in previous chapter.

The strategic plans for the organization at the moment are the increase of economic opportunities and adjacent (neighbouring) to the protected area. The SANParks defined the risk management as following: 'Risk management is about proactively identifying and understanding the factors and events that may impact the achievement of strategic and business objectives, then managing, monitoring and reporting these risks (SANParks, Management Policy Framework 2006). Their target is to create awareness and understanding of the risks involved, manage risks to satisfaction of the organizational targets, to comply the activities with the legal framework and regulations, and be able to measure the effectiveness throughout the process with the balance scorecard system. The one of the main targets is to develop the risk aware culture which will be beneficial for further development. Increasing the risk awareness in society should be definitely positive and it will influence larger part of population to be more responsible with actions in their own natural environment. Rising awareness will also contribute towards elimination of external risks for the organisations managing the protected areas.

2.3 Process

There is always certain design of the risk management process and certain steps of its application in practice. The project management plan has life cycle which is defined by five stages: Initiating, planning, executing, monitoring and controlling and closing.

According R. Mulcahy (PMP Exam Preparation) the risk identification becomes part of the plan in the phase of planning and monitoring and controlling. At the planning stage the risk should be evaluated and possible reaction and responses properly planned. This activity should help to eliminate the risk, help to avoid it and if it occurs adequately react.

Each organization should design the risk architecture; develop strategy how the risk is approached and then choose the methods of response. These activities have to be supported by the policy and regulations of the organization. 'The risk management realization is designed, implemented, monitored and if effective should be well communicated. The activities which are part of risk management should be also carefully aligned with other activities of the company'(Hopkin, 2012).

Every risk has positive or negative impact on project, where risk appetite and attitude is important. The organization with advanced management hierarchy usually has risk management policy developed which determines the direction of actions. The interesting

method how to illustrate the causal relationship between the risk source and risk management consequence is so called 'bow-tie' scheme (figure 1, appendix).

The event represents the process or activity which is impacted by the risk. Particularly in environmental protection it could be any element involved in the activities of the organization. Risk can arise from all operations and procedures the organization is carrying out and has direct impact on management performance and the result of the projected work.

'Response which is initiated within organization to risk is called internal control and may involve tolerating risk, treating risk to constrain risk to an acceptable level and considering taking advantage, transferring and terminating. The risk remaining after internal control has been exercised, is called residual risk' which will be mentioned in the following chapters. (Orange Book)

'The environmental hazards exist at the interface between natural events and human systems. Human responses to those hazards modify the environment and events and are called degradation. The less is environment affected by degradation the less is vulnerable and its capacity of coping with potential risks is higher.' (K.Gupta, S. Reeja, S.Nair, 2012).

The environment of the national parks is permanently changing and there is a high probability of the influence from unpredictable event. The projects are planned for short time with the importance for the improvement or benefit of particular situation or as a testing trial. Most of the projects are planned for several years and it means that more risk factors have to be analysed and considered. In the fast changing natural environments many projects have to be reassessed in regular periods and the management has to be informed about the possible changes in the projects. This particularly applies for the projects when modern technology is used and it is important that the performance of technological equipment will fit in the design of the project. Kerzner is stating 'tree commonly used classifications for risk appearance - risk averter or avoider, the neutral risk taker or risk taker or seeker. He is also adopted the structure of risk management which consists from 'five stages: planning the risk management, identification of risks, performing risk analysis, planning of risk response, monitoring and controlling risks'. (Kerzner, 2013).

J.Heagney formulates the stages slightly different and involves his theory of trigger point. According his theory, the earlier organization starts with the identification of the risks, the better. Heagney suggest process which remains from 'six stages:

1. Make a list of potential risks
2. & 3. Determine the probability of risk occurrence and negative impact
4. Prevent and mitigate risk

5. Consider contingencies

6. Establish trigger point' (Heagney, 2012, p.57-59)

Many other methods and tools are commonly used to lower or eliminate risk and they are usually investigated in initiating and planning phase of the project, although they can be very useful if they are conducted regularly throughout the lifecycle of the project as a controlling and monitoring tool. It could be different types of analysis as a cost analysis, earned value analysis, life cycle cost, schedule analysis, technology analysis, analysis of the environment and many others. The analysis are tailored for the particular area and even though they might be targeted towards the same threat, the environment, situation and operation they are conducted by is different.

There are many risks involved in the activities associated with the protection of natural environment in SANParks. Therefore the use of impact/probability chart is important to prioritize risks according their probability of occurrence. There are also assigned into the categories according the importance of the projects and other activities joined. The whole process is subject to legal and regulation framework in South Africa. It is highly influenced also by cultural inhabitant and business background.

SANParks define five key areas of risk: financial pressure, safety and security, tourism strategy, regulatory framework and climate change (SANParks, Five Year Strategic Plan for 2013/2014). The most influential documents which modify the rules for environmental protection are Constitution, The Green Paper On An Environmental Policy for South Africa from 1996, National Environmental Management Act (NEMA), National Parks Act and many other together with some international documents South Africa is signatory for. Desirable during the whole process is effective monitoring and controlling system which together with relevant documentation provide necessary information where lessons can be learned in the future.

2.3.1 Environmental risk assessment

Every successful organisation conduct systematic environmental risk assessment which is designed to evaluate available information from monitoring process. Monitoring process involved also in activities of SANParks is important tool for identification of risk initiators, called stressors. These can occur once or have repetitive nature, can reflect positive or negative risk negotiation, positive or also beneficial outcomes of operations.

In the first stage of assessment the possible problems are identified together with the environment they are situated in. The second phase includes the analysis of the threat based on reports from experts in the area where the possible impacts, strengths and exposure effects are described. After the analysis the result is forwarded to executives who are decision makers in the risk management and who provide the various types of measures (measures of exposure, ecosystem attributes, and impacts). The managers usually provide background to the analysis, evaluate the organisational capability and the reasons for the plan, why is needed and which factors it will influence. The examples of the past actions or the best practise of other organisation can be used for learning purpose. The managers also identify the limits, resources available and the acceptable level of uncertainty. The results of the analysis represent important element in the organisational decisions, support action and operations. In case the new findings and information are considered relevant, they can improve the quality of the processes. They are also reassessed and the results are incorporated into the analysis. This approach is known as an adaptive management which SANParks actively focus on. The last step is to discuss possible solutions (as SANParks in their Forum), the wider scale of stakeholders is involved, and the larger satisfaction of parties involved will be achieved. The forum gives opportunity to each stakeholder to formulate their interests, discuss concerns and actively contribute towards risk analysis. Environmental risk assessment is influenced by other factors of the environment and the results support learning process in terms of new data, findings, information which can be used as an example but also for later re-evaluation. The assessment express the changes of the environment, basis for prioritizing, comparing and ranking. The results are unique for particular country, region and situation and the design of assessment can differ.

The guidelines for ecological risk assessment published by Environmental Protection Agency¹⁴ recognise the separate contribution by manager and risk assessor. ‘The manager’s function is to identify the nature of the problem with focus on the managerial goals, decisions and ecological values. The risk assessor identify the ecological endpoints, time scale, recovery, state of knowledge of the problem and based on data available potential constraints. The role of risk assessor is to design the risk hypothesis¹⁵, (EPA,1998). In many organisations the position of the risk manager and risk assessor is supplied by the same person or group of

¹⁴ EPA

¹⁵ Risk hypothesis are proposed answers to questions risk assessors have about what responses assessment endpoint will show when they are exposed and how will the exposure occur. The clarify and articulate relationships which are considered based on available data, information, scientific resources and the best professional judgement of risk assessors developing the conceptual models. The explicit process opens the risk assessment to peer review and evaluation to ensure the scientific validity of the work (EPA, 1998)

people. Often the risk formulation can be difficult especially in cases when environmental threats occur as a consequence of human activities. Therefore each assessment try to identify the endpoints – values which should be protected. The uncertainties are also identified and evaluated based on the permanently changing character of ecosystems.

The SANParks has the position of ‘Risk Champion’¹⁶ (CRMF, 2013) established in their departments and accountable for risk management activities. The person responsible assist with improvement of risk management activities supported by information from ‘the ground’ and creates background for awareness and responsibility. The organisational risks are different on strategic and operational level and so do drivers are different too. ‘The key drivers on strategic level according SANParks Corporate Risk Management Framework are: biodiversity conservation, revenue generation for financial sustainability, sustainable tourism development, constituency building, human resource management, and corporate governance and stakeholder relations. With these key drivers the risk categories are associated: finance, strategic issue, operational, employee value and technology as an internal risks and external risks (CRMF, 2013). Each risk is evaluated and assigned to category based on the impact as is shown in Figure 1:

Score	Title	Description
4	Significant	Will not achieve objectives (cost more than R 2 000 000)
3	Major	Reduced ability to achieve objectives (R 1 000 000 – R 2 000 000)
2	Moderate	Disruptive to normal operations but limited impact on objectives (R 100 000 – R1 000 000)
1	Minor	No material impact on the achievement of objectives (less than R 100 000)

Figure 1. Source: CRMF, 2013

¹⁶ Person who is part of line management in unit, responsible to Chief Exucutive (CRMF,2013)

Each risk should be also considered based on the likelihood of its occurrence with score assigned as it is in the illustration below.

Score	Title	Description
4	Common	The risk is pervasive and occurring regularly (86 – 100%)
3	Likely	The risk is certain to occur in the short term (50 – 85%)
2	Moderate	The risk could occur in the medium term (6 – 50 %)
1	Unlikely	The risk is unlikely to occur even in the medium term (1 – 5 %)

Figure 2. Source: CRMF, 2013

After these two analysis there is still risk left called residual risk, which is risk left after impact and likelihood as it is presented in the evaluation example.

From 12 – 16		Take action to reduce risk with highest priority, accounting officer and executive authority attention
From 6 – 1	Cautionary	Take action to reduce risk, inform senior management
From 1 – 5	Acceptable	No risk reduction – control, monitor, inform management

Figure 3. Source: CRMF, 2013

In the first category of residual risk there is no level assigned because the situation is unacceptable as a residual risk.

‘The risk identification in SANParks is provided on regular basis, continuously. The Corporate Risk Management project, which is in the implementation vehicle for corporate social responsibility, will perform the enterprise wide assessment of risk to form the foundation for the future corporate risk management effort. After completion of the initial corporate risk management project, management will be responsible for ensuring that they update the risk profile of the organisation by reassessing the status of risks and by identifying new risks arising thorough change in the business.’ (CRMF, 2013)

The potential of new risks is usually associated with new activities and operations coming mostly from external environment of the organisation as a competition and legislation. Risk does not always has to represent threat, it could be used as an opportunity¹⁷.

2.4 Parks management

South African National Parks are driven by the adaptive style of management which is based on decision making in highly unstable area with permanent system monitoring. The decisions are made with focus on satisfaction of more objectives in the same time if possible. This style of management reflects in risk management practise and involves high level of cooperation between the elements of the organisation. There is permanent effort for the most functioning dialog between stakeholder when they meet in the forum, also aspiration to involve the local communities in the activities by the educational programs and benefits schemes. National parks and also private protected areas offer option for commercialization and opportunities for further development of business activities. There is many concessionaries and owners of private lodge, also number of gastro facilities, private airport and golf course. The parks actively support development of those business opportunities which increase their revenue. The character of the business development is carefully considered and aligned with the surrounding natural environment.

Main goals of SANParks and other protected areas in South Africa is to achieve effective realisation of their management plans and in the same time negotiate the environmental challenges with interaction of social elements. The process is not easy considering the highly variable surroundings. Management plans are designed and conducted on levels: Strategic,

¹⁷ For example the recent changes in rhino anti-poaching initiatives based on the hot pursuit agreement which allow the police unit follow the poachers across the border to Mozambique. There is risk involved for the police forces in term of lack of communication they might get into the troubles with forces in Mozambique. But the risk represents the higher chances to arrest the poachers.

Tactical, Operational and Authorization. Each level has more categories and it is designed for particular protected area. 'SANParks three main pillars are defined as a mission statement, the context and values and operating principles. Their management plans focus of three main areas - biodiversity, human benefits and wilderness.' (SANParks 5 Year Strategic Plan). Programs as a part of plans used to be very detailed and targeted specific issues as a river management, neighbouring relations, problems with certain species and many other. The effort is orientated towards integrations of these individual plans to merge the programs. The highly developed part of the human benefits is the tourism, benefits for local communities and cultural aspect of the environment. The no negligible aspect of society is the political past which means that the activities take into account the community plan for empowerment initiative¹⁸. SANParks management plans support active development of tourist experience, in the same time create awareness and base for better interaction between human and wilderness. Positive progression also brings advantage and opportunity for the local communities in terms of job creation, preservation of their natural inhabitant, heritage and permanent sustainability of resources. The stakeholders are part of the management plans and their opinions and suggestions are incorporated in the process.

2.5 Best practice in environmental protection

As for the activities associated with environmental protection it is very difficult to find example of best practice. Each protected area has its own unique character and the processes in its ecosystem are permanently changing.

Despite this fact there is World Commission on Protected Areas (WCPA)¹⁹ known as a Conservation Union (IUCN)²⁰ which is considered 'premier network of protected area expertise. WCPA helps governments and other plan protected areas and integrate them into all sectors by providing strategic advice to policy makers, by strengthening capacity and investment in protected areas and by convening the diverse constituency of protected area stakeholders to address challenging issues.' (WCPA)

¹⁸ The Programme initiated by South African Government in 1994 which main aim is to address the inequalities which were created during apartheid and give more chances to groups which were previously discriminated and disadvantaged

¹⁹ It is the world's network of protected area expertise. It is administered by IUCN's Global Programme on Protected Areas and has more than 1700 members across 140 countries, provide strategic advice for government institutions, and strengthen capacity and investment in protected areas.

²⁰ Founded in 1948 as a world's first global environmental organisation. It represents the leading authority on the environment and sustainable development

IUCN try to influence, support and assist all regions in the world and preserve the unity and in the same time diversity of the natural ecosystems to ensure that 'any use of the natural resources is equitable and ecologically sustainable.' (Middleton J., 2003)

One of the main documents The Guidelines for Management Planning of Protected Areas highlight the fact 'that the management planning does not end with the production plan.' (Middleton J. 2003). The risk assessment is the continuous activity and part of the management planning and it does not end with the plan for certain operation. The possible threats and challenges are present during all managing activities therefore even after the closure of the plan or process there is ongoing monitoring and control. Today's management plans are much expanded and involve huge number of stakeholders whose opinions and expertise often oppose each other. The SANParks use effective tool to find the compromise in form of Science-Management Forum mentioned further in following chapters. The involvement of all stakeholders and consultation can potentially prevent or eliminate the risks involved.

There is no general best practice, but examples of successful negotiating of hazard or risk can be used. Management of each protected area create the monitoring reports throughout the process and if successful, the same approach might be used in the future. The strategies of approach and solutions for risks are than tailored according to the situation. As an examples of successfully negotiation of threats are often mentioned members practices of the UNESCO World Heritage Sites. Some of the sites as TEIDE National Park in Spain, Wet Tropics of Queensland in Australia or Cradle of Humankind in South Africa provide excellent documentation which could be applicable in the process of managing risks in SANParks. The Cradle of Humankind 'can be used as a model situation and example of negotiating risks. They successfully managed to solve the ownership issues and also exemplary negotiated issues with number of permits. The communication channels were established to satisfy the needs of all stakeholders and excellent system of coordination was introduced. The management also overcome the technical risk which raised from underground water resources' (UNESCO). The site today is successful example of organisation which attracts the tourism from all around the world.

1.5 Comparison of risk management environment

For the study, the National Parks of Tanzania were chosen as the example of similar political and legal background and also different management models in Canada and USA. The environmental risk management in all mentioned countries use the same methods and tools as a likelihood/impact assessment, balanced scorecard system, cost-benefit and cost-effect analysis, uncertainty analysis and other tools to identify risk and the stressors. There are other factors of the environment which are necessary to consider in the process of risk evaluation. The risk management is highly influenced by economic environment which is one of the main factors contributing in the process of risk assessment and response planning. The figures in the table show the economic effects of the wildlife tourism:

Economic Indicator	USA	Canada	South Africa	Tanzania
% of tourism that is wildlife based		25	56	≥40
% of population employed by wildlife tourism	≤10	1.35	5.0	4.6
% GDP from wildlife (non-consumptive use)	≤1	1.1	4.8	5.3
Expected Annual growth of tourism Contributions to GDP (%increase)	0.8	1.6	4	6

Figure 4. Source: Surridge M., Mawdley J. 2013

In Canada and USA environment has high performance of ecological, social and economic cooperation. The operational costs of parks are from big part funded by taxes and fees paid by hunting activities. People are actively supported to participate on ecosystem actions. The ownership of protected areas is characterized as public and try to promote sustainable environment and the benefits for landowners are more indirect. In both countries, the risk management actively uses elements from guidelines for ecological risk assessment designed by Environmental Protection Agency (EPA). 'It is the process adopted primary in USA for assuring the environmental data quality used for analysis. The specifications and guidelines for quality system for environmental data collection and environmental technology programs recognise several areas that are important to ensuring that environmental data will meet study objectives, including:

- Planning and scoping
- Designing data collection operations
- Implementing and monitoring planned operations
- Assessing and verifying data usability' (EPA,1998)

The causal relationship is considered and organised into models and operations supported by qualitative analysis (intensity scheme – low, medium, high risk) combined with quantitative data extracted from environment. In the risk evaluation in USA and Canada according Environmental Protection Agency following data are used:

1. 'Field observation studies
2. Categorical rankings
3. Comparison of single-point exposure and effect estimates
4. Comparison incorporating the entire stressor-response relationship
5. Incorporation of variability in exposure and/or effects estimates
6. Process models that rely partially or entirely on the theoretical approximation of exposure and effects' (EPA,1998)

The table below shows how the importance of environmental risk assessment is rising in Canada and USA.

Emerging Use of Risk Assessment in Canada and the United States

The presentation of environmental information in terms of risk is becoming increasingly common in various disciplines and jurisdictions. For example, several bills have been introduced in the U.S. Congress mandating that agencies use risk

assessment to set priorities and budgets (e.g., Environmental Risk Reduction Act). Scientific panels, such as the National Research Council, have made similar recommendations, which have been echoed in many influential publications (see Lackey [1994]). From insurance brokerage to public health care, a body of procedures and tools has been developed to assess risk.

The most relevant risk assessment methods come from two distinct applications:

- assessment of environmental risks to human health (e.g., contaminated sites, pesticides); and,
- Population viability assessments for rare or endangered species based on conservation biology.

Risk assessment is also being applied to increasingly complex issues. For example, the U.S. Forest Service has applied concepts of viable population to complex multi-resource analyses, such as assessing habitat management for the Northern Spotted Owl and in developing the 1997 management plan for the Tongass National Forest.

The use of risk assessment in analysing increasingly complex issues has prompted a refinement of methodologies. In particular, many of the methodologies are now incorporating both quantitative and qualitative information. This particular refinement has important implications for land managers, as it validates reliance on professional judgment and allows for the consideration of various aspects of the environment in natural resource management that have thus far been difficult or impossible to quantify.

Figure 5: Source: Environmental Risk Assessment: An Approach for Assessing and Reporting Environmental Conditions (2000)

Effective risk management in protected areas is important for the preservation of the natural resources in all types of political and societal environment. There are many common features in countries compared because of the universal character of risk management methods used worldwide. The same methods used comparable with South African system were found in Tanzania, USA and Canada.

The management structural organisation design is similar with small differences in design of the departments and divisions where activities of the risk management are conducted. Protected areas in Tanzania, Canada and USA have prepared their annual plans for achieving objectives and also the strategic plans for long term. The differences are in the external environment that influence the managerial activities including risk management. In USA and

Canada the legal and political background is very favourable and supportive for the environmental protection projects. As mentioned in literature review the main support is coming from the EPA²¹ which except the legal framework represents the guidelines for environmental protection. The risk management and assessment in North American countries is conducted on all levels of the organisations, starting with the evaluation of the high level objectives and coming all the way down towards risk assessments in the operational level. The risk managers are getting information from all levels and the system of shared responsibilities is applied as it is seen in example from Canada in illustration.....

Shared safety responsibility (agencies, operators, visitors)

Park Managers

- Identify and address priority risk issues related to the environment, infrastructure, communications, visitor characteristics and programme management
- Plan risk management and public safety for the area of responsibility
- Organise targeted prevention education and actions and information programmes which increase the awareness
- Communicate site specific hazard to the managers, tourism operators, stakeholders, visitors and other users and people responsible
- Establish and maintain appropriate levels of search and rescue services
- Establish cooperative agreements, training and communications with other government departments , NGO's, tourism operators, consessionaires and service providers

Tourism Operators

- Identify and where appropriate address priority risk issues unique to their business operations
- Plan visitor risk management and public safety for their business operations
- Carry out targeted prevention education and information programmes for the clients
- Communicate site specific hazards to the clients and park managers

²¹ Established in the wake of elevated concern about environmental pollution, EPA was established on December 2, 1970 to consolidate in one agency a variety of federal research, monitoring, standard-setting and enforcement activities to ensure environmental protection. Since its inception, EPA has been working for a cleaner, healthier environment for the American people.

- Establish appropriate levels of search and rescue services, including training of staff as first responders
- Establish cooperative agreements, training and communication with park managers, government departments, NGO's and service providers

Visitors/Tourists

- Recognise the risk inherent in their activities and ensure that they have a knowledge, skills and physical fitness to participate
- Get trained, be properly equipped, and, if necessary, be prepared to deal with an emergency situation until professional help arrives
- Seek and heed advice from park managers and tourism operators concerning risks and how to prepare form them

Figure 6. Source: Parks Canada 2002

The risk management process in USA and Canada is also assessed and prepared in the similar way as in South Africa and the common methods and approaches are used. First stage is the risk identification associated with the area or activity. The risks are then evaluated and assessed and the hierarchy is created according their priority. After the decision on the appropriate actions are prepared and control measures (eliminate, transfer, reduce risk probability, reduce risk impact, accept risk) are established. The last step is measure and review the impact of the applied assessment. In this last stage the effectiveness of control measures is evaluated and the outcomes are regularly monitored. The research found that the methods are not different from the methods used in protected areas in South Africa. The difference in in the feedback and monitoring system. The parks in USA and Canada has more effective system incorporated which involves the customer feedback and experience. Also availability of the technological equipment is higher compared to African countries.

The risk management and assessment as previously mentioned is based on the similar methods. The difference in Tanzania is the lack of coordination within the departments of the organisation. It means that the risk is assessed separately for the division or department but the outcome is not shared in the lower level divisions. The risk management in the protected areas face many problems which is the result of less professional coordination and communication between sections of the parks. The managerial level of the protected areas in Tanzania also negotiate the problem with not efficiently qualified staff in certain levels of risk management activities. To the problems with risk elimination contributes also the lack of resources available which is caused by the funding system in Tanzania. There are also few

examples that proves that the country despite of the problems is in the stage of positive development as a first private marine park in Tanzania – Chumbe Island Coral Park²². The creation of this protected area is the example of successful sustainable management supporting the conservation. Positive fact is that in their activities also use the volunteers from several countries. Tanzania has to improve many elements in their approach and practice of risk management activities (for example involve the compulsory environmental impact assessment) to avoid the degradation of the ecosystems. There is huge potential (resources, popular tourist destination for wildlife) and with correct improvements the country’s national parks will keep their position and competitive advantage.

South African system is based on combined national and community ownership of land, including large private game reserves. There scheme supports the privatisation and commercial activities and try to combine the benefits of landowners, national interests and local communities. Revenues are provide by tourism, hunting licences, taxes and conservation fees. Design of this system offers more opportunities for individuals compared to North America but also complicates the compromises on risk negotiations. Despite the positives for individuals there is a threat involved in privatisation and empowerment policies, the changing ownership and right can contribute to higher management and risk assessments instability.

System of national parks in Tanzania is based on national state ownership and the land of protected areas often border with large community areas used for farming. The management activities are more centralised with participation of regional governments and local councils. Country try to build the conservation programmes and policies based on the participating approaches and involve the local communities. According the R. Mwalyosi’s research ‘the local people don’t see national parks as beneficial and don’t have so much gratitude towards conservation’ (1999). The benefits presented as an advantage for local people are primary directed towards government.

The occurrence of risks is closely related to social, economic, legal and environmental background and its elements. In SWOT analysis bellow is brief description and comparison the most important factors which has influence on risk assessment in South Africa and Tanzania.

South Africa National Parks	Tanzania National Parks
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²² Award winning private nature reserve that was developed from 1991 for the conservation and sustainable management of uninhabited Chumbe Island of Zanzibar, one of the last pristine coral islands in the region

<p>Strengths:</p> <ul style="list-style-type: none"> - one of the most diverse system of protected areas in the world, eight UNESCO World Heritage Sites - funding mostly from revenue based on tourism - adaptive approach management - Advanced monitoring and control system - cooperation with experts and organisations worldwide - relatively supporting communities willing to participate in tourism and conservation - provincial organisations involved in the planning 	<p>Strengths:</p> <ul style="list-style-type: none"> - One of the most important large ecosystem in the world, two UNESCO World Heritage Sites - Effort to minimize external funding - Developing interdisciplinary planning process which will serve as a tool for considering important aspects in management plans - Increasing private investments into conservation and private environmental development
<p>Weaknesses:</p> <ul style="list-style-type: none"> - Problems with landownership - Wildlife- human conflict - Management opportunities affected by government policies and events at the national, regional and local level 	<p>Weaknesses:</p> <ul style="list-style-type: none"> - Limited skilled and trained human resources - Lack of decentralized budget system which leads to delay on operations - Technological support is weak - no existence of proper functioning feedback system which can support managerial activities - lack of adequate professionals - lack of resources, equipment and better infrastructure - not enough revenue to cover operational costs

<p>Opportunities:</p> <ul style="list-style-type: none"> - Permanently growing tourism - Political support - Support of wide scale of environmental organisations domestic and also international - Ecotourism - Reduction of human-wildlife conflict as communities began to realise socio-economic benefits from wildlife resources 	<p>Opportunities:</p> <ul style="list-style-type: none"> - Growing tourism and its diversification - Increasing effort towards private ownership - Focus on commercialization of certain elements - Support investment in ecosystem activities
<p>Threats:</p> <ul style="list-style-type: none"> - Conflicts with landownership - Climate changes - High rate of crime - Poaching and decreasing number of wild habitats - Mining industry - Environmental degradation - Land demarcation – land boundary issues 	<p>Threats:</p> <ul style="list-style-type: none"> - Rapid population increase - Lack of integrated planning with surrounding lands and farms can lead to conflict between parks and stakeholders - Environmental pollution - Disease outbreaks - Natural disasters - International terrorism - Deforestation - Worsening aquatic system

Figure 7: Source: http://www.tanzaniaparks.com/useful_docs/Corporate_Plan.pdf//

Based on the facts provided in the SWOT analysis, the South African National Park background is more favourable and supportive. Both countries going through the process of strengthening the supportive legislation. South Africa after the end of apartheid where conservation was considered as an element of elite society, developed one of the most successful system of environmental legislation in the world and some of the important environmental act are mentioned in the chapter of legal framework. Tanzania went also through major changes from kind of socialist society to multiparty political system which involves representatives from all regions. The legal support was not productive and many

new acts and amendments were added as ‘The National Land Policy (1995)²³, National Environmental Policy (1997)²⁴, Land and Village Land Act (1999)²⁵, The Land Use Planning Act (2007)²⁶, Wildlife Conservation Act (2009)²⁷, and (Project Document Republic of Tanzania, 2013). ‘The size of protected areas in South Africa is 6.9% of land area and 6.5% marine territory compared to Tanzania’s 28% of the total land surface’ (WDPA 2012). Both countries go through the process of changes and improvements in the management and risk management area and each risk assessment will be designed according to the needs of the country. Despite some similarities as a methods and tools used there are differences in the political, legal, social and economic sphere which makes risk management activities more feasible and successful in South Africa. Tanzania apparently have more risks and challenges involved in the managerial level as the cooperation, skills, qualification, communication and low cross-sectional coordination in overall application of risk management decisions. Compared to South Africa there is lack of human resources and financial situation is influenced by lack of external funding. Certain level of participation from local communities was detected and it is slightly higher in South Africa, although people have still not enough awareness about benefits offered by conservation. Their natural lifestyle and opportunities (in terms of resources – hunting, wood) was taken away and are very limited.

In both countries the environmental issues are still underestimated compared to other more urgent business and economic interests. Despite of the facts Tanzania and South Africa are both aware of importance their protected areas and business opportunities arising from the natural resources.

2.7 Managing of risk

Part of every successful management plan is to prepare the possible scenarios and responses to challenges and threats which can occur. The areas of risk management in protected areas of South Africa are divided in the spheres which are most important and most adoptable on the environment in the country. Each activity or project can be assigned to the category and it could be well demonstrated on the example of triple constrain used in project management.

²³ Promotes better use of natural resources

²⁴ Regulates relations between poverty and environment degradation

²⁵ Laws which empower local communities in terms of land rights

²⁶ Recognises village as a land owner, which can implement plan without further approval

²⁷ Defines wildlife protected areas, their establishment, management and restrictions

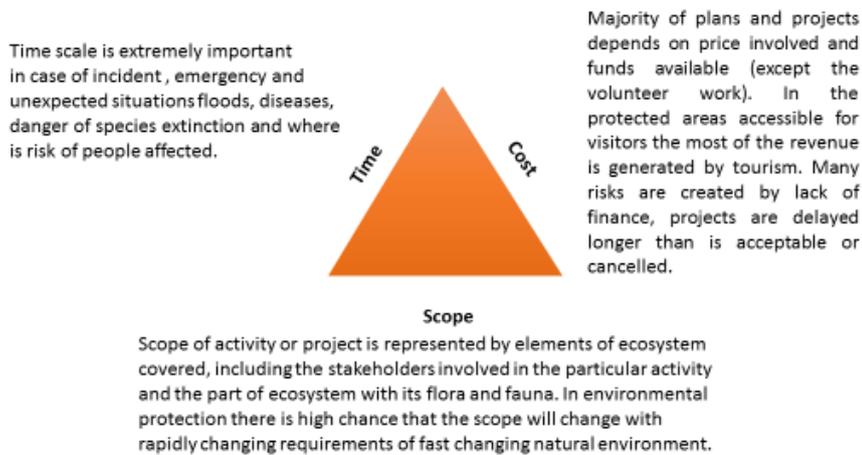


Figure 8

The risk management activities are then conducted in the sequence: identify risk, evaluate the impact of the risk, treat risk and based on the outcome implement or review the strategy. The traditional business model for risk management in South Africa according J. van Wyk will look like following scheme:

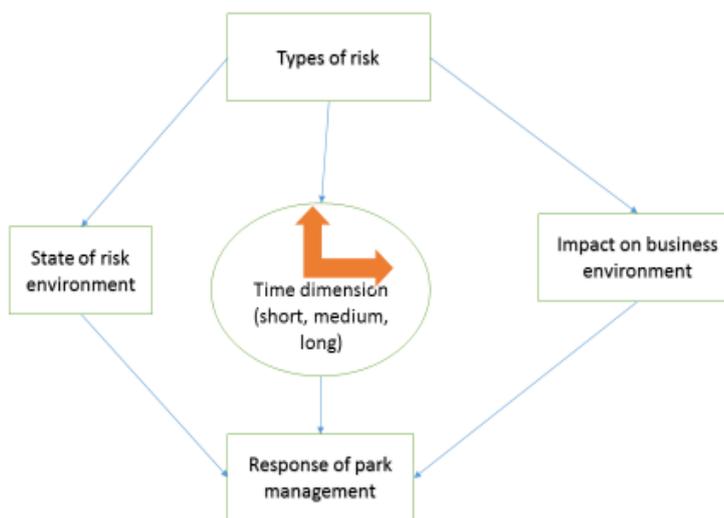


Figure 9: Risk management and risk environment in South Africa (J.van Wyk, 2004)

In the first category are the **types of risk** identified as a societal risk associated with the interaction of natural environment and human being, financial risk as a capability of organisation to finance the activities, unpredictable environmental risk which comes from permanently changing ecosystems, operational risk joined with success or failure of planned actions, regulatory risk represented by compliance status of the organisations norms and regulations with legal requirements. And then the types of risk which occur unexpected and need to be solved without previous planning – emergency situations.

The type of risk has influence on **status of the risk environment** and has **impact on business environment**. In case of protected areas the impact can have various form. It can reduce the number of tourists and increase the cost of services and maintenance. Some territories might become inaccessible as a consequence of existing risk and some species can disappear. This is just few examples of the risk impact on the natural environment when usually human being is in conflict with ecosystem.

For business environment to preserve the productive functioning is necessary to **react on the risks**. With options to tolerate risk, which in some situations might be used as a business opportunity, mitigate, eliminate or transfer risk. The type of response reflects on the status of the environment and if there is no adequate response to the threat the environment is affected. Important in the process of evaluation of the risk is the 'connection of management plans with other plans of the organisation as an operational plans, zoning plans, sectorial plans, development and conservation plans' (s.8 Management plan of Sanparks). The proper planning and assessment of risks brings benefits to organisation as a planned guidance and early warning. It also gives people involved in the activities option for reaction and offers already pre-planned solutions if applicable. Planned response is much more effective considered time, finances and people involved. The tasks during the action should be divided and people should be responsible for them, not for the overall risk.

The character of risks could be human, natural or economic and can occur in each phase of the project. Therefore the 'factors which can affect the future of the protected area must be identified and evaluated' (p.42 Middleton).

Problems could arise in:

Planning Phase:

- Resources
- Regulations and legal framework
- Lack of expertise or conflict of experts on the situation
- Impact on the protected area

- Connection channels (transport, communication)
- timeline issues

Execution:

- Lack of resources
- Insufficient planning of objectives
- Additional permits
- Change of political or societal situation (local protests)

After the closure of the project:

- Problems in impact on environment
- Reaction of environment

Each action taken should be carefully recorded and further monitored for the purpose of lessons learned and further checked on regular basis. This type of activities are useful in the future. The effectivity is extended by functioning communication channels between departments responsible. Permanent reports provide valuable information about situation and further development.

There are certain risks you can predict but some of them are coming suddenly without warning as different types of natural disasters. SANParks apply their corporate risk management to identify factors which can have negative or positive impact on the objectives of the organisation. Their approach is to take acceptable risks and manage them. Their strategic plan contains the minimum requirements, policies and procedures in the risk management framework. Its objectives are:

1. Create correct awareness and understanding of risk
2. Create culture of corporate risk management and risk ownership which is stated as everybody's responsibility
3. Embed CRM in the way the business is run.
4. Comply with appropriate CRM practices in terms of Corporate Governance Guidelines
5. KING II²⁸ guidelines
6. To be able to measure the effectiveness of CRM and effort through the risk management process. ' (SANParks Strategic Plan)

²⁸ Guidelines on the corporate governance in South Africa was institutionalised by the publication of The King Report on Corporate Governance in November 1994 (Institute of Directors in Southern Africa, 2002)

The possible risks are part of all activities and according their character could be summarised into three main categories: natural, human and economic. Into the first group belong all issues around fauna and flora in certain area, land availability, issues joined with conservation processes, diseases, water management, and control of the alien and invasive species. The second area covers risks joined with interaction of human with ecosystem as an tourism and its impact on the ecosystem, infrastructure, awareness of risk joined with tourist activities, health and safety, employees policies and organisation, educational initiatives and programmes. It also involves challenges of organised crime as rhino poaching and illegal hunting. The economic area is represented by financial sustainability, financial support of the operations and overall management plans and activities and options for the technological supplying and continuous improvement.

To effectively negotiate the risks and challenges, the organisation needs functioning support structure which can evaluate the technologies against the benefits. SANParks try to apply the adaptive system of management which 'was first introduced in 70' by ecologist C.S. Buzz Holing and biologist Carl Walters. The system is based on the systematic approach and continuous learning' (Allan C., Stankey G.H., 2009). Adaptive management is approach which management of SANParks try to incorporate in the all management activities and mostly in risk management. According H. Doremus it involves these elements:

- explicitly stated goals and measurable indicators of progress towards these goals
- an interactive approach to decision- making
- systematic monitoring of outcomes and impacts
- feedback loops so that monitoring and assessment produce continuous and systematic learning
- explicit acknowledgement and characterisation of risks and uncertainties
- and overarching goal to reduce uncertainty over time

(Doremus H. et al. 2011)

3 Methodology

This part will look at the methods which are used to achieve the most accurate results of the research. It includes the effort to identify the concept of the research which is followed throughout the timescale throughout the available professional resources. The term research is characterised as an activity during which researcher try to identify or solve some issue or evaluate processes or actions. In the process the researcher concentrates on identification and clarification of the situation, relationship between objectives of research, description, improvement or development of new theory, identification of problems in current existing theory or practice. The researcher based on the knowledge gained and data collected should be able to present the understanding of the topic and draw conclusions and recommendations which should add the value to the work. In the context of methodological definition are specified fundamental approaches. These methods are coming from traditional theoretical and philosophical traditions. They are represented by collection of methods, techniques, tools and procedures used during the data collection and their analysis.

The plan reflect the positivist philosophy in terms of observation and credibility of data produced, 'working with an observable social reality'(Saunders, Lewis, Thornhill, 2009).

The critical realistic approach was adopted in which the structure of the organization and processes was evaluated together with the impact of society and social factors. This approach is used to deliver the best possible interpretation of gained reality form the research.

This philosophical approach try to improve the understanding and application of the environmental risk assessment in the natural environment and its implication on the social structures. The researcher focus is on evaluation the effectiveness of the risk management implementation. 'The critical realism is particularly well suited for case research, it justifies the study of any situation, regardless of the numbers of research units involved, but only if the process involves thoughtful in depth research with the objective of understanding why things are as they are' (Easton, 2009).

The functional environment was tested by inductive research approach, where the risk management methods and tools and their use in practice are confronted with the legal framework for environmental protection and actual management function of the organizations in South Africa. The cognitive approach highlights the management structure, its function in the environment of risk management and access the technique of problem solving. The survey strategy is used for purpose of data collection and the results are be analysed by qualitative method, in some parts of assessing data examples of method weighted score used

for qualitative purpose in risk management. Qualitative is based on understanding the events and phenomena and the results are usually descriptions, narratives and interpretations. 'Qualitative is used predominantly as a synonym for any data collection technique that generates or use non-numerical data' (Saunders, 2009, p.151). This type of approach is positive in terms of better understanding of objectives in this research and because of its flexibility is more suitable for changing environment like the chosen field of interest of this work. The results of the secondary data research are interpreted in the literature review. The credibility is supported by analysis of primary research data, which were obtained through the interviews with experts in the field and executives of the risk management in the protected areas. In the qualitative research the responses by participants tend to be less structured compared to the quantitative research and the form of questions provide more flexibility. The work also use the study of the cases and report, where the risk assessment was previously conducted for better understanding of the actual practice.

As for the research strategy, the grounded theory was used, 'in grounded theory data collection starts without the formation of an initial theoretical framework, theory is developed from data generated by a series of observations. These data lead to generation of predictions which are then tested in further observations' (Sanders, 2009, p.149). The grounded theory use the interviews and observations which are interpreted through the structured form. Observations are based on the annual plans, strategic plans, project reports, risk assessment studies and the interviews with people involved in those activities.

'The grounded theory was originally evolved by Glasser and Strauss in 1967 and late by Strauss and Corbin in 1990. They disagree on the importance of formulation of the research problem' (Fisher, 2007). As for the timing of the framework of concept, in this case was proposed to be formulated at the beginning of the research, which more inclines towards Corbin strategy. The research starts with an observation of the risk management plans and procedures in the area. Further observation are conducted based on the analysis of other secondary data and mostly primary data obtained from interviews.

Within the research the mono method was proposed to be used as the tool by which can be the most accurate results obtained. In qualitative research, the mono-method refers to 'single qualitative data collection technique, such in-depth interviews with qualitative data analysis procedures' (Saunders, 2009, p.152).

As for the time horizon, the more suitable was the use of cross-sectional time horizon which means that it was conducted in short time. Based on this fact the research reflects the situation which is current in the application of risk management in the research area. The

research contains the structural factors of the management structure, policies and philosophy and also operational elements and attitudinal factors – information about the risk management environment, character of the work design and opportunities. There are three types of variables involved:

‘Dependent variable of the research – primary interest represented by risk management and its application’ (Arthur J. 2012). Through the analysis of the risk management is possible to identify the common practices. ‘Independent variable’ (Arthur J. 2012) reflects all other elements of the surrounding environment (social, legal, economic) which has different level of influence on the dependent variable. The literature review describe the relationship between the variables and explain the relationship and helps to understand the connection between them.

3.1 Research questions

Based on the qualitative approach and inductive method used in the observation, the research investigation was conducted based on the research questions. The questions cover relevant part of the planed research area and are directly connected with the investigating topic. They are questions of open type which allowed the researcher to lead the discussion the desired direction.

1. What procedures are used in the process of application the risk assessment in protected areas in South Africa?

This question is designed to reveal the process of implementation of proposed risk responses in cases where risk occurs. The area has broad scope of processes and its not possible to evaluate all of them, therefore the examples of process is provided. It should help to identify the level of preparedness for the emergency situations and also reflect the precautions involved in the actual execution of the project and associated activities.

2. How is the quality of the risk assessment reflected in the results?

The information received based on this question should reveal the final results and outcomes of the projected and planed activities. The results should highlight the level of success in terms of risk prevention and risk response in the process of implementation. The positive and

negative results will be researched to provide more accurate comparison of the quality in different environment.

3. How effective is the risk management today, compared to the previous years?

This question should point up the difference, positive or negative, in the field of risk management application. The idea of duality or comparison can offer better evaluation of the situation.

4. How supportive is the legislation and other regulations in the country?

The objective is to identify if the legal framework is useful in terms of implementation of risk management and does not present more constraint instead of advantage.

5. Which elements of risk management can be improved?

Based on the comparison with previous years and results of the primary research it will be more precise to evaluate the findings and build the set of recommendations for the investigated topic.

3.2 Research objectives

The purpose of the research is to identify the position of risk management and its outcomes in the activities of organizations involved in environmental protection. South African protected areas were chosen based on the large scale and variety of the protected areas and the unique character of some of them because of flora and fauna in this geographical location. This area deserves our attention also because of the constant contact of various cultural human settlements with the natural environment.

1. To examine the application of the risk management in national parks of South Africa.
2. To examine the quality of the risk assessments for the area.
3. To establish the level of effectiveness in practice.
4. To draw the analysis from the findings and design recommendations.

3.3 Research design and data collection

The research is concentrating on the risk management in the area of environmental protection. It is focused particularly on National Parks in South Africa - SANParks which is organization managing twenty-two parks in the country and will be compared to risk operations in some privately owned game reserves. The research was conducted on higher and middle managerial level which is responsible for preparation and application of risk analysis.

The research is based on the analysis of the secondary data combined with primary research based on interviews. The interviews were accomplished by the emails mostly, internet and phone communication because of the distance involved. The systematic literature review is combined with narrative literature review which combine the primary case studies, reports and theoretical bases. The data from the national levels are quite standardized therefore the researcher try to focus on particular case studies and reported primary data from specific places. For the purpose of the qualitative character of the research were used open type of questions (general and if possible more specific) which allowed participants to describe the situation without restrictions. The classical analytical approach and critical reflexion was used in the process of assessing data.

3.3.1 Interview questions

The researcher tried to formulate the questions with intention to get the required information for the area researched, but without involvement of personal desire and values. According estimates of researcher each interview took approximately from fifteen to thirty minutes but some of them longer or were repeated. Because of the open type question designed for the interview, in conversations researcher tried to narrow the answers down to the objectives by asking additional questions. The following questions were used for the purpose of the research:

1. How is the risk management assessment incorporated in the activities and projects in the organization?
2. How would you evaluate the performance of the methods are used to identify risk?
3. Which risks have the highest probability to occur?
4. When risk occurs how fast is the response?
5. How effective are the proposed responses and solutions?
6. Did the effectiveness improve within the years?

7. How would you describe changes in the risk management in environmental protection in past years?
8. Do you consider current risk management as a successful and productive?

3.4 Ethics

‘Ethics refers to the appropriateness of the researcher behaviour in relation to the rights of those who became the subject of the work, or are affected by it. Cooper and Schindler define ethics as the norms or standards of the researcher behaviour that guide moral choices about the researcher behaviour and its relationship with others’ (Saunders, 2009, p.184).

The basic element in the research is motivation. The researcher motivation should be based on an effort to understand or improve understanding of methods used in the research scope and contribute to improvement of its techniques or design. The success of the research depend on availability and willingness of the intended candidates for the interview. The research is trying to highlight the potential benefits for the organization, potential cooperation and the use of the findings in practice. The facts observed from interviews are as objective as possible as the researcher is independent from the organization. At all times the voluntary nature of the research and confidentiality was observed. Because of the limitation as a distance and lack of direct verbal communication was more complicated to gain access to some information. The process required the research proposal application form which in case of the national parks of South Africa is designed by organisation. There are also certain procedures as for application methods in some other protected areas.

The purpose of this research is strictly academic, unless the participants of the interview won’t decide otherwise. The work aim not to use personal and sensitive information which can affect the participants. If used for another purpose the agreement of all parties involved has to be guaranteed. Also the anonymity of the interviewed people is respected and preserved as they wished so. The work is supported by permission from parties involved to collect data based on the prior conversation and the data protection is respected. The participants were regularly and detailed informed about the progress and information involved in the research.

‘Research should also avoid causing harm, distress, anxiety, pain or other negative feelings to participants’ (O.Paul, 2010). During the period of the research the objective was to sustain the highest possible level of the objectivity in the process of analysing data.

3.5 Limitations

The main limitation of the research was the distance between researcher and the participants. It was not easy to persuade people to cooperate based on the emails sent only, many of them required detailed information about the project planned. The distance did not contribute towards misunderstanding in the communication while conducting interviews.

Another barrier can be possibly represented by sensitivity and protection of the data. The participants who intended to cooperate are part of the higher managerial hierarchy which is responsible for the application of risk management into the processes and although for the outcomes. Therefore during the analysis of the information, the high level of confidentiality was observed. The problem was also presented in the form of lack of time on the side of potential participants, therefore the interviews and all the required documentation and processes were arranged in advance. The limitation was also present in form of time frame where the interviews were delayed or postponed and the arrangements of interviews were difficult on time management of participants.

The research can be characterized as cross-national which might brought small differences in the interpretation and cultural understanding of the results of the primary research.

Another issue raised in the form of the time demand on the part of researcher. It was not easy to harmonize the full time job and the time requirements of the research. 'There may be four threats to reliability of the research: subject or participant error, subject or participant bias, observer error and observer bias' (Saunders, 2009, p.156). According Fischer, the researcher can be characterized as a 'deep green thinker' (Fisher, p.137) with strongly developed environmental awareness and affection which could have influence on the research. There is the possible risk of personal biases which can present threat to credibility of the research but increased awareness about the possible issue should help to eliminate the risk.

The table below highlight some advantages and disadvantages of this particular qualitative research.

Advantages	Disadvantages
<ul style="list-style-type: none"> - Direct contact and feedback from the participants of the research - Participants could respond in their free time 	<ul style="list-style-type: none"> - Time consuming for participants and researcher - Additional information optional from expert analysis are

<ul style="list-style-type: none"> - Information obtained via email reach the international character of the research - Research question are designed according the research topic and interest of researcher - It provide information which are not available for other competitors – protected areas - The in-depth interviews are possible to conduct, where researcher can get more relevant information – deep engaged conversation - Not limited as for response in interviews - Deep knowledge of the researched area 	<p>expensive</p> <ul style="list-style-type: none"> - Conversation via emails and phone calls, missing the element of direct conversation - The email communication does not allow so much flexibility, so additional questions sometimes have to be used - Multiple application forms required for the research - No flexibility in the asking the additional questions in different time – prolonged responses
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Figure 10

4. Analysis and findings

The research was conducted based on relatively small group of participants, from forty-five possible entrants approached, nineteen cooperated and were available to take part in interview via email or telephone. The findings are explained based on the attributes of information sources. The research was narrowed down from general area of risk management towards the environmental protection with the study of objectives involved in the processes in protected areas of South Africa. The qualitative method proved that is more suitable for the explanation of the effectivity and reciprocal relationships. During the investigation process there was much more diversity involved in responses and there was also option to adapt to the new developments in the conversation. The list of theoretical bases is involved and identify the essence of the risk management and compare it against practice.

All interviews conducted for the purpose of this research were realised based on internet communication and telephone communication because of the distance involved. The questions were formulated based on the research objectives and the topic researched. The participants of the interview were carefully chosen based on their professional involvement in the risk management activities and represent middle and higher managerial level of the organisation.

4.1 The risk management assessment incorporation into the activities and project of the organisation. Methods and tools used for risk identification.

According to the national parks high risk management representative the risk management is divided into more parts. 'The risk management as a first part on strategic level and broader understanding is applicable in strategies, vision, mission and managerial functions of the organisation. The more focused risk assessments are prepared for the individual projects of various size and the detailed assessment methods are used for particular situations. They are assigned the importance and priority levels, the more important strategic and organisational risk have to be dealt with immediately. The most often risk assessment is conducted on the operational level as a support for the actions in the parks. In these methods it brings the activity down towards 'incident level' as a part of incident management²⁹, as in figure number

²⁹ According Toops (year) the incident management was developed after series of catastrophic fires in

11. Shows the incident management can be defined as a system of managerial activities which try to deal and manage risks, threats, and emergency situations as accurate as possible, ensure normal course of operations and minimize the impacts.

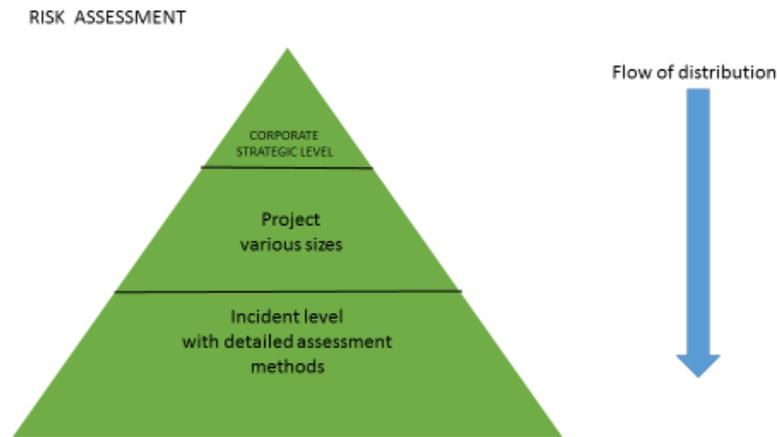


Figure 11

For the majority of the projects in SANParks is used Ecological Risk Assessment method (ERA). The method was successfully previously used in Australia and New Zealand. It is used to identify possible risks and its sources and consider the level of likely impacts, their further development and consequences. The assessment is at the first stage designed to give all stakeholders opportunity to contribute and cooperate on overall strategy. The SANParks created the Science- Management Forum (SMF) for each from its twenty-two protected areas. The Forum has regular meetings where the issues and threats affecting ecosystem are discussed. It provides high quality opportunity of meeting the scientists, conservation practitioners and park managers in one place and choose a common approach which is suitable for all stakeholders involved. For more detailed illustration of high priority objectives discussed permanently see the Table 2 in appendix.

The process has technical and theoretical input included which provides the best practise for compromising approach. The scientists provide theoretical knowledge combined with the practical results of research and joined activities. Conservation practitioners share the results

California. It is a standardised management tool used in small or large urgent situations, can by used for planned events or natural disasters. Various analysis can be prepared as a impact of the risks, likelihood of events and cascading events, area involved, available resources etc.

of monitoring and real data input and park managers ‘knowledge on the ground’ and evaluation for feasibility of operations. The higher level management than consider all documentation and findings and work on design of the strategic approach with effort to eliminate, tolerate of mitigate risks. The SMF gives all members chance to formulate their values and express their concerns. All parts attending are informed and communicated about the potential issues in the proposed layouts.

The process of risk assessment start with evaluation of the main areas concerned:

1. Ecological wellbeing – which involves the system research of ecosystem functions and status and species research.
2. Human wellbeing – the benefits of ecosystem for inhabitants in the area, interaction of social and natural elements, tourism, customer satisfaction and services, employment policies, and all other activities joined with research and educational purposes.
3. Ability to achieve – the capacity of the organisation to cover finances needed and the technical, organisational and human resource capital required for the operation and legal support.

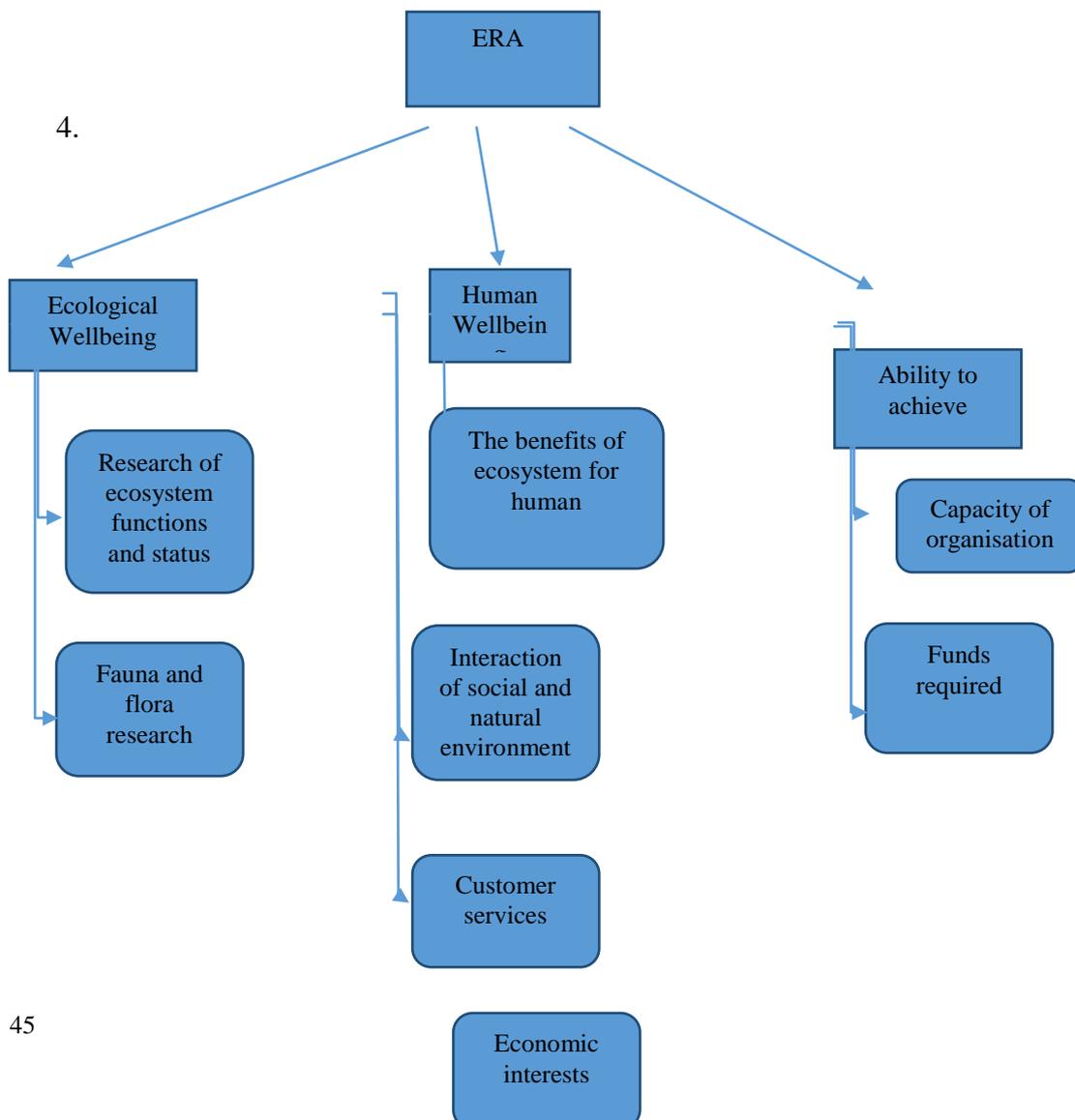


Figure 12: Example of Environmental Risk Assessment concerned areas

The scheme of limits of potential concerns works in three stages:

- A. Identification of risk
- B. Prioritisation of risk
- C. Identification the limit of acceptance for each risk

The process of the communication between participants of SMF is still often affected by conflict of interest between external and internal groups of stakeholders. The external stakeholders have usually more different interest as an land ownership for different use, the existence of protected area affect their business activities, the limitation from use of natural resources and others. Internal stakeholders are usually more devoted to the actions of the organisation and conservation operations. The employees are sometimes less familiar with planning activities of higher management or park managers concentrate on particular problem instead of overall solutions. In these situation it is necessary to unify the objectives of all groups, the lower and higher level targets in common agreement and approach.

After the identification of the threats and challenges they are then assigned into the order according the organisational and environmental priority demands. Priority issues can address the important elements as a water management, predation, adverse effects of herbivory, emergency situations (floods), erosion and alien species. Prioritisation evaluate the risk and set them into the sequence according the level of tolerance.

Another common tool prevalent in risk assessment process of the SANParks is Balance Score Card System. The system is capable to effectively track the performance of the organisation in different departments and units. The system monitor the progress and compare it with organisational objectives. It measure the effectivity of financial objectives, tourism and service objectives, internal processes and learning and growth phases. To each risk is assigned the possible level of likelihood to happen and its impact. Based on the score is possible to prioritise issues and categorise them according the urgency as negligible, low, moderate, high and extreme, where the last two are prioritise. The next step is to set the management responses, targets and indicators. The individual operations can be designed which address particular issues. They also identify potential barriers for the actions planned and financial difficulties to complete the task. Compared the risk assessment of privately

owned game reserves which are designated as a protected areas, the situation is more complicated. As for the methods and tools used based on the responses provided from the owners of the game parks the risk assessment is prepared mostly by environmental experts. They are obliged to present the management plan for the area which has to contain the general assessment and plans of the response. All their activities has to be also closely aligned with the legislation and standards. They use the same methods as a national parks evaluating the risks based on likelihood/impact assessment. The private game reserves are more concerned by conservation costs and other financial obligations involved in the business nature of the parks.

Depending from level of assessment, the process is usually based on consensus and identification and ranking of risk is performed based on objectives to be achieved. One of the most common tool for risk identification used by national parks and also private game reserves is the SWOT analysis which is usually tailored for project specific environment.

In the process of risk assessment where one option has to be selected from more options, the risk will be identified by one of the methods mentioned above and assessed. The risk is then quantified and the one with the lowest residual risk would be normally selected.

4.2 Performance of the methods used for the risk identification

Considered the performance of the national parks in the area of risk management, the organisation is generally satisfied with the outcomes. The processes used are effective based on the fact that there were very few surprises where the risk went unidentified. The SANParks constantly search for the ways to improve the processes and experiment continually to identify new or alternative options. Performance of risk identification methods are also compared with external organisations inside and outside the country with the focus on experience and lessons learned from similar situations.

The managers of the private protected areas were more concerned about the outcome of the methods. 'Despite the prevalently positive feedback from the customers there are processes which present risk to the game reserve and can be eliminated. The tools and methods used seems to be efficient, but sometimes the opinion of bigger group of experts or people affected should be present. Tools and methods without appropriate coordination are not enough'. The better system of cooperation between the game reserves and the provisional institutions and communities is needed, also higher involvement and interest. In evaluation of the methods the often used practice is the comparison with approved and successful solution in the past.

The performance of the hazard identification and negotiation is also influenced by funds available.

4.3 Most occurred risks

According to the managers interviewed for the private game reserves generally one of the main risks for the organisation will be reputational risk which is desirable to be prevented from the business perspective. The loss of good reputation and tourism can be for game reserve unacceptable and can evolve into further problems. In the more specific issues there is always risk as for the financial sustainability involved. Many initiatives developed for risk mitigation or elimination rise from lack of technical support which is financially demanding. The private parks have often a problem to afford the sophisticated technologies and systems required to improve the activities.

The reputation is also a very important fact for SANParks considering the fact that according to M. Wyman 80% of their annual budget is coming from tourism (2011). In the national parks the risks with high probability to occur are according to SANParks risk management the operational risks. According to SANParks senior risk management representative 'these are incidents related mostly to safety and security impacting on the biodiversity assets, guests and staff. Failing internal control or monitoring process relating to visitor management are also frequently occurring'. In the long term the possible threats are coming from climate change which is one of the most important elements for the future of environmental health.

4.4 Risk management response to the risks

In national parks the management is usually capable to predict and plan the response in advance, so there are not many surprises. Depends on severity/impact and ability to tolerate from immediate reaction to overtime. The prioritized are the situations with higher impact (as an unexpected event, diseases, risks from external environment) on the protected area and surroundings. There are situations which can be dealt with within a medium time horizon as structural organisational risks in the lower levels, and risks which are not urgent and have low impact on the performance of the organisation and ecosystem. Some risks also require reassessment or more financial support. The external risks are more complicated and need more cooperation and coordination with institutions and communities from outside of the national park.

In the case of private parks the risk response is also planned in advance but usually ‘when it has been identified that a risk event has occurred, immediate action will be taken to identify what the incident was and how best to contain it’. The potential obstacle in the risk response appear mostly in the unexpected situations where the financial resources are involved and has to be used outside the planned activities.

4.5 Effectiveness of responses and solutions

The representatives of the private game reserves mostly identified that the colleagues are encouraged to report a risk event as soon as it is identified so it can be dealt with as effectively and swiftly as possible. As for the national parks the effectiveness of response or solution according the participants opinion depends on severity and impact and following ability to tolerate the risk over the time or the fast solution is needed. In the discussion, the case of rhino poaching was mentioned which is at the moment one of the most urgent cases to be worked on. There is lots of finance and technological equipment coming into the actions supporting the anti-poaching units and detailed plans for actions and the number is increasing every year. ‘The threat has completely escalated from the protected area, area integrity challenge to full blown military level guerrilla warfare operations. Technically the risk management actions are amongst others at a political level, trying to influence Eastern countries to manage the growing demand for rhino horn at its origin. There is also effort to try to persuade Mozambique to more actively pursue and prosecute poaching syndicates operating from there.’ Every time if there is success achieved with new initiatives or increased intensity, the threat just escalates, by the syndicates giving more money to operators. This operation apparently is not classic case of identifying risk and response, the situation has wide scope involved from individual cases of poached rhinos, management plant of parks, political dimension and on top international cooperation needed. This example is extreme and unique and does not reflect the effectiveness of risk management overall. There are also some situations where the risk miss some elements and its repeated, the operation fail and risk has to be reassessed as an example in figure 13.

<p>The example of missing point was when SANParks reintroduced wild dog into Marakele National Park. The park is situated in cattle farming area but there are also many other game farms located in the region. With elephant already in the park fences</p>

needed only minor adjustment to ensure readiness for the wild dog. Soon was experienced the exits of the wild dogs from the park and nobody could understand how this happened as the fences were virtually impenetrable from inside the park. A number of cattle were killed by wild dog and it didn't take long for the farmers to initiate legal actions against SANParks. After the reassessment of the situation, the findings were made, the fence breakers were in fact warthogs from outside the fence breaking into the park. The dogs were captured again and relocated to other areas.

Figure 13

There are few cases when certain details could be overlooked in preparation of the risk assessment or unexpected events complicated the situation but the performance of national parks on the risk assessment level is rated relatively high. 'SANParks is a public entity established in terms of legislation and partly funded by government but also has got approximately four and half million visitors per year (many of them international) and also interact with scientists and protected area managers across the world. With such a diverse stakeholders SANParks reputation is continually at stake and therefore there is a belief that they have to be effective in responding to risks, effectively managing emerging risks and manifesting risks.

4.6 Improvement of risk management

According to the senior executive for risk management in SANParks the 'effectiveness has definitely improved over the time as we learn from experience of previous risk events'. The risk management in parks is conducted in two main levels – strategic and operational. The strategic level is focussed on achievement of organisational goals and the risk evaluation is provided within the scope of the organisation. The operational level is concerned by the actions and tasks of the projects and operations. As part of effective risk management the constant monitoring program is in place and all the activities are transparent as possible, so all parties involved – stakeholders are aware what is happening. This system generally improves the communication channels in the organisation which makes risk management more effective. To support the quality of risk assessments the independent review by experts from the field is executed on an annual basis. The most common tool to measure effectiveness is the balanced score card, based on which the risks are negotiated. The risks which are not acceptable are dealt with and the acceptable are tolerated and sometimes used as an

opportunity. In the order to be effective the risk management structure is based in every division and these are accountable to head of departments. By the precise following of procedures and improving the communication the effectiveness is improving. The new technologies, funding pressures, trends, competition and legislation have however put significant pressure on risk responses.

4.7 Changes in risk management for protected areas

‘Biodiversity assets are under increasing threat and that is a massive reality for any protected area management agency today. Firstly there are the headline threats to species like rhino, abalone, elephant and others that put huge pressure on law enforcement capacities and the ability to ensure area integrity. Secondly the population growth is bringing communities and urban development in conflict with protected area management which result in subsistence level threats to assets but also exposes neighbours to damages caused by wildlife exiting the protected areas, which is more requiring political and negotiated solutions.

Risk management from an environmental protection perspective has become more complex and detailed over the years as awareness of environmental damage has forced government to introduce more strict laws surrounding the protection of our ecosystems. Therefore the risk assessment is required to be more detailed and the part of risk management plan usually includes the environmental impact assessment as well. The more advanced the structure of the organisation is, the more variability the risk assessment reports provide. It is caused by more people involved in the analysis which creates more opinions and options in the same time and requires more resources.

4.8 Success of risk management

According the risk management executive in national parks the risk management is currently successful and does contribute to the productiveness as a whole. However it is only successful if it can identify risks and preventive action and processes are put in place. The results of success are reflected in the rising tourism, as the national parks and also majority of private protected areas experienced more customers. In many places there is systems of feedback provided, so based on the results the parks appear as successful. As for the productivity, depends often from available resources but generally there are permanently new options for new plans of commercialisation offered and new technological equipment joined

the operations so there is increase in productivity as well. ‘While risk management in SANParks has always been embedded in an informal way, but since risk management become part of more formal governance structures (King Codes on Corporate Governance, PFMA requirements, revised Companies Act, and others) SANParks has been materially compliant – to such level that it has meeting audited requirements and also meeting its stakeholders expectations and requirements.

Conclusions

Theoretical resources

The risk management is desirable part of every project in the area of the environmental protection. Environmental risks are characteristic with their influence through all dimension of the society and are also affected by the elements from all other environments. The activities associated with the risk management involve wide spectrum of different tasks and approaches. There are certain projects which are conducted on national level but majority of them are realized directly in by the management of the protected area. It is very important to use the risk assessment supported by expertise from the resources available. According the Filhos statement mentioned in the chapter on importance of the risk management that ‘the good risk management allows organisation to achieve the desired outcomes’, the South African National Parks as well majority of other privately owned protected areas could be considered as relatively good risk management assessors when evaluating the organisational management outcomes. The big part of the environmental hazards is managed to acceptable levels within satisfactory levels of the objectives achieved. The correct application of the risk management tools, methods and the right access can significantly improve the activities practiced by the organization. The professional approach in this field has beneficial impact not only on the organization but on all shareholders and stakeholders involved.

The research delivered the examples of analysis on risk management and risk assessment in the protected areas. The types of risks are identified together with their position and impact in the system. The results of the research can challenge the H. Maylors position on the risk management analysis mentioned in chapter two. He is convinced that in the risk analysis the effect is more important than the cause. Based on the findings of the research his statement can be questioned. Especially these days when the methods of adaptive management provide evidence that based on the better monitoring system, transparency, technological improvements and better communication channels the causes might show as more important than effects, because if they are successfully identified they can be eliminated completely without further negative impacts. The importance of the communication in the process mentioned by Hopkin in the chapter on ‘Process’ is proven necessary. Based on the findings the better information are shared and distributed, the more effective is the result of risk

management operations. The research proved that even ineffective and unsuccessful actions should be well communicated and give people involved in the activities the opportunity to take corrective actions, entirely avoid the similar situation in the future and play the role of educational factor within the organisation.

According H. Doremus the adaptive management involve few stages mentioned previously in the part on the managing the risk. Protected areas in South Africa has stated goals and measurable indicators of progress which are reflected in the results of their activities. Interactive approach in decision making process proof the ability to solve problems with multiple criteria. The approaches of the decision makers are supported by reports and computerized graphics, although they sometimes tend to have more utility functions and target the preferred alternative.

Most of the theoretical approaches state that the risk management assessment should comprise from the stages which follow in the order:

1. Potential risk analysis
2. Probability, impact, likelihood, level of uncertainty
3. Actions taken, options, contingencies – accept, mitigate, prevent, treat, transfer
4. Identification of trigger points, stressors

Most of the older secondary resources do not mention the importance of the monitoring and feedback. This field is relatively new in the structural divisions of the organisations. In the past years the theories and practical experience are more supportive and consider the feedback and communication as a desired part of the risk management and management system. These two tools are gaining more importance especially with the use of technological equipment where the amount of additional necessary data can be obtained for better effectiveness of risk management.

Practical approach and process

The key areas of risk in the protected areas for the national parks and the private protected areas remain very similar. Mostly mentioned is the financial pressure and the resources available, following by health and safety precautions and tourism. All these factors reflects in the reputation of the organisation which could have positive or negative impact from the business perspective. The assessment is usually constructed and applied on particular situation, its prepared before the start of the operation and focus on the achievement of objectives.

Based on the sources available for the research the table of benefits and limitations for risk assessment was created:

Benefits	Limitation
<ul style="list-style-type: none"> - Regular and systematic evaluation of the potential threats and hazards to the environment and organisation - The structure of prioritizing risks is very useful – the risk with highest impact is dealt with first - The environmental risk assessment and environmental impact assessment help to reduce uncertainty, gives more accurate predictions of the situation - Risk assessment procedures are flexible – it means applicable on national, regional, provisional, local level of the institution 	<ul style="list-style-type: none"> - Risk tolerance is relative – it varies within the type of organisation, it's not universal and has to be designed according needs and capacities of the organisation - Depends from the information gained from the monitoring activities and environment – certain level of the dependence on technological capabilities of the organisation - Can be limited by certain type of expression or language the organisation use – it makes it more complicated when the information are shared with another organisation - Some critics say that the methods are too simplified and are not efficient to show the real situation

Figure 14

The monitoring system of SANParks given the circumstances of the fast changes in the area and the technological support and opportunities is quite satisfactory. In many risk situations the risk indicators and stressors were identified prior to the impact. The system is apparently improving every year although there were few unsuccessful operations as a previously mentioned example of negotiating the wild dogs transfer into the Marakele National Park. The reason of the primary failure in this case appear to be too much concentration in the risk assessment on particular single occurrence of specific problem. Based on the results of

research, the changes recommend in the future can focus on preparation of broaden assessment in this type of situation evaluation involving external facts from the environment. Also more detailed analysis of the risk factors (like impact of fauna activities and movement) could be considered. It is the example where part of the scope was overlooked which led to development of other type of risk which was not previously identified. This type of unsuccessful operations require good documentation, archiving and further monitoring, so the information gained can be used in the future in the similar situations. The involvement of more stakeholders and parties affected could be also beneficial in this type of scenarios.

Majority of the risk assessment though point towards good use of the monitoring system, communication and awareness within the organisation. The process of risk assessment in national parks fulfil the main techniques identified by Environmental Protection Agency and mentioned in previous chapters. The parks prepare the field observations based on the monitoring systems, categorical rankings, they also compare the points of exposure and effect estimates, identify the relationships and propose solutions. In the private protected areas the process is conducted the similar way with deployment of smaller financial and human resources. The results confirms the information obtained from the risk management representatives of national parks that the effectiveness of risk management is improving every year. SANparks measure their effectivity and improvement on annual basis on all levels of the organisation. The review and evaluation is recommended to be conducted more frequent. The objective is to support the successful, adaptive and participatory process which will represent benefits for the management plan. On the strategic level the risks are evaluated with their influence to mission, vision, innovative strategies and improvements in the processes. The risk assessments are conducted with relation to explicit outcomes across five core components of management – conservation, sustainable tourism, building cooperation, effective operations and corporate support.

Within all actions of risk assessment the risk impact assessment is provided with focus on the response of the environment. The environmental impact assessment has clear structure and prescribed format. Involves the options for multiple possible scenarios and it is formally documented. The ecosystem reaction to the organisation actions is predicted, monitored, evaluated and reviewed. Because of the multiple character of possible options involves more stakeholders. From all impacts on the protected areas the focus is on reducing the crisis management. It strengthens the organisational decisions on risks and sometimes has impact on strategic decisions.

Based on the information obtained from research the importance of risks with low level of impact and high level of impact was identified. Each type of operation or project can be characterised in the environment based on its possible impact. The example is provided below:

Situation	Characteristics for the low risk impact situation	Characteristics for the high risk impact situation
Operation and projects	<ul style="list-style-type: none"> - Characteristic for simple operations, with narrow scope, well identified and planned 	<ul style="list-style-type: none"> - Operations with broad scope, usually economic, legal, societal, strategic character
Impacts	<ul style="list-style-type: none"> - Consequences are well identified and people responsible informed - High level certainty about the expected outcome - Impact are low and usually structured for small action or operation 	<ul style="list-style-type: none"> - more structured and wide scale of impact - Possible multiple impacts which require cooperation of management - Usually projects or operation of big size - Area affected could be national parks regionally or nationally
Legal framework, regulations	<ul style="list-style-type: none"> - Simple activity with low legal requirements - Usually operation which follows previous activity - Internal regulations 	<ul style="list-style-type: none"> - Complex projects which have to comply with legal framework and usually need environmental permits

	and norms	<ul style="list-style-type: none"> - Projects and activities with large scope - Usually operations on national level
Elimination, Monitoring, control	<ul style="list-style-type: none"> - Monitoring of small scale activity - Impacts can be managed during the action 	<ul style="list-style-type: none"> - Require monitoring and control in more levels - The activity is usually divided in tasks - Individual tasks are monitored separately
Stakeholders objectives	<ul style="list-style-type: none"> - Projects which are tailored on particular issue - Usually are located in specific place or problem - Don't have high importance 	<ul style="list-style-type: none"> - More stakeholders interests involved - Stakeholders interests could be coordinated for better outcome - Could be assigned high priority
Overall project/operation	<ul style="list-style-type: none"> - Simple operations, maintenance, technical issues of small scale 	<ul style="list-style-type: none"> - Involved in big projects and operations - Coordination, control, monitoring systems required - Progress need to be regularly evaluated - Accountability assigned

Figure 15

The parks apparently recognising the important role of risk assessor acknowledged by Environmental Protection Agency, benefits which were mentioned in the research in the part on environmental risk assessment. Each division as an operations, technology, portfolio of the organisation, legal division, employee value division and others has its own ‘Risk Champion’ (term used by SANParks) representative who is accountable for risk identification and assessment and further coordination of activities and reporting of the possible risks. The framework for risk identification is well designed according the illustration

In the private protected areas the most common risk involved is the lack of resources and often cost overrun the risk. The projected costs associated with the activities in private areas sometimes exceed the planned budget and the result is that the elimination of the risk doesn’t achieve required outcome. The private parks have to encounter also the operational risks an operating expenditure, skills requirement or employee disputes.

According of strategy for continual improvement the following scheme shows proposed recommendation of better communication system in the feedback application.

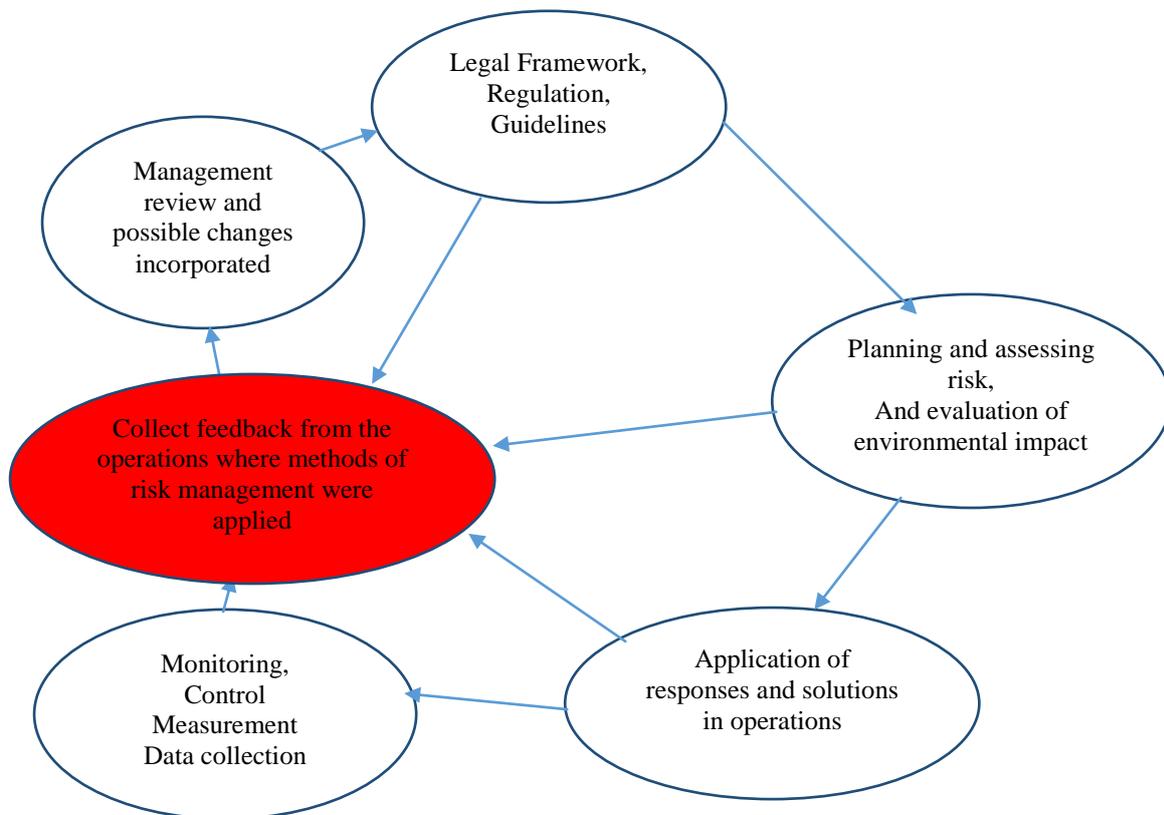


Figure 16

The illustration represents the circle of continual improvement in the risk management of the organisation. In many activities the feedback and communication is underestimated and in some organisations for example private game reserves is not involved in big scale. For the more effective processes the feedback should be given from each section of the process what can evaluate the effectiveness of each part of the system.

The societal and human resource element

The research proposed further recommendations are the strengthening the coordination and connectivity of the departments. According the information obtained from the interviews there is a tendency to separate the risk evaluation areas on the strategic, operational, human resource level, technological level and others. The risks are likely to arise from one section of the organisation and the impact is affecting the other division. This could be prevented by more proactive interconnection of individual divisions and better communication. The areas with the highest risk occurrence are safety and security impacting the biodiversity areas, internal control and monitoring process. The researcher recommends to broaden the awareness of risk and its consequences to the levels of organisation which are affected. Based on the interview ‘ the highest possibility of risk occur in managerial and health and safety issues’ mentioned by head of risk management for national parks. The solution recommended could be better interconnectivity between mentioned divisions which can contribute to mechanisms reducing risk. Useful can be also the extended responsibility and accountability to those parts of the organisation where employees are involved in the risk assessment activities. The better understanding of importance the business objectives, the possible threats, better support of connectivity and information transfer can help in the future risk management.

As for the new hazards coming from the external environment and new activities the wider scale of the stakeholders and more frequent forum meetings are recommended. The communication on regular basis and knowledge of new opportunities, activities and interests of the stakeholders will help to eliminate competition, gain more information on possible threats and also support better cooperation. The external risks which are coming from the political and legal environment are more difficult to deal with. They need a lot of effort and associated additional negotiations. Therefore for the protected areas is desirable to increase the awareness and earn higher level of public support which is capable to influence the political framework. For the more effective results the higher participation of the communities has to be involved which will help to avoid unnecessary conflicts. According

the strategic plans of the protected areas all of the mentioned the importance of human and societal benefits. The communities are limited in use of natural resources from parks but on the other side the tourism development brought significant business opportunities, although these opportunities are not available and affordable for everybody. The research recommends extension of opportunities for the parts of the society which was affected by the parks activities. It could be for example contribution to educational system where skills can be later used in association with protected areas or improved infrastructure connectivity and quality. By proactive approach from the organisations might be able to earn more support from the surrounding areas and general public. These efforts will most probably increase the need of financial resources but in the long term will bring more satisfaction and lower risk occurrence from the society. More connection is recommended to be made with the organisations and public abroad as well. Especially in the times of modern technology, the general public worldwide can be more informed and aware of the activities and limitations of the protected areas. With interconnectivity of the countries across the globe, the sustainability and survival of the ecosystems with their valuable resources, fauna and flora should be in interest of everybody. By more proactive approach the protected areas can gain more international support and also new funding options.

The findings of the research point towards the conclusion that the effectiveness of risk management in National Parks of South Africa reach the standards required by external environment which is proved by the number of the visitors every year. There are some recommendations which are mentioned in this chapter which can improve the effectiveness of the risk management and preparation of risk assessment. The recommended improvements can help the structure of the organisation to eliminate risks with frequent occurrence and overall extend the quality of their performance.

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Apendix

Table 1:

Self-reflection on learning process

I am student of final semester of MBA in Dublin Business School and I just submitted my dissertation. I am from Slovakia and live in Ireland for seven years. I have got my first 3rd level education in University of Constantin The Philosopher in Nitra, Slovakia. In 2003 I have decided to study political science because I was always interested in international affairs and politics. I successfully completed my study in 2008 and obtained Master's degree. Prior to my studies, I worked as an assistant manager in a tennis club where I got valuable practical skills from organising and managing various tournaments and joined events. Based on that experience I was able to effectively manage my time and organise my priorities. During my full-time study I worked as a sales assistant in outdoor shop where I significantly improved my communication skills based on every day contact with customers. I actively used them at the university where I often had to present the results of my research and also in wide scale of modules orientated on diplomacy and current affairs. I got the opportunity to travel and get experience and took one year break which I spent in Ireland. I have got valuable lessons through interaction with different cultures, which enriched me, further in my life. After this one year hiatus I returned home to finish my degree. Because of my dedication, ***good time management and organisational skills*** I managed to pass all the required exams without losing the year with very good results. The overall study supported my knowledge in areas of politics, diplomacy, international affairs, economics, philosophy and psychology. Except of improvement of my ***presenting and writing skills*** I also developed strong ***negotiating skills*** and high level of ***cooperation*** and tolerance. I have learnt how to ***effectively use my time, prioritize tasks*** and also develop the skills of ***working multiple tasks*** in the same time. These skills I found very useful not just in every working environment but also in personal life.

My study was focussed on diplomacy and I thought it will be positive step forward to explore my options in Ireland where I previously spent some time. At the beginning I tried to find a

job which would match my education, but because of my insufficient English and outbreak of financial crisis I was not successful. I found a job in catering which I work up to the present day and tried to improve my language skills. Throughout this time, the work market was still badly deteriorating and I realised that it will be very difficult to find job position in my field. As a reaction to the bad economic situation I have decided to diversify my portfolio and choose the pro-active approach to improve my existing skill sets and get the new one to support my already gained knowledge and extend my options.

At the moment I almost finished the final semester of MBA. During one and half year of my study I went through the process of very strict discipline which really tested my character in and out. I had to cope with many difficulties of financial character, with lack of time for my partner and family, my interests, sport activities and also my nervousness caused by these factors. I have divided this time into the stages – milestones, where I defined my short-time, middle-term and long-term goals. The short-time achievements were represented by successful participation in assignments and exams. My middle-term plan is to prosperously apply my knowledge and skills I gained from MBA in perspective job with the target to get more experience.

At this final stage of my study I feel urge to move finally forward to fulfil my career plans. During the time spent in college I identified as a strong field of my interest the area of project management in which I would like to work in the future. I found very fascinating the whole process of managing the project by using the wide range of methods and tools used in the project management. I would like to stand on the side of creation new developments and manage them throughout the process towards successful realisation. Therefore my long-term ambition is to build a career particularly in project management, in the organisation with environmental background where I will utilise my skills and satisfy my interest.

2 Skills developed during the study and dissertation process

The MBA helped me to gain and develop the number of skills set. On the first place I will mention *communication oral and written*. The English is not my first language, so it presented a challenge when I started and it is definitely one of the most important skills I have to work on. The biggest challenge was represented by the dissertation as I tried to be as professional and objective as possible. All the assignments and practical exercises were very helpful and within every research or presentation I was practising my writing and communication in English and Business English. The team work was supportive in terms of

training the negotiating skills and compromising. The improvement in communication also influenced my presentation skills, which are one of the most important features in every working environment.

Another crucially important skill set I needed to develop was *business related technical skills* from the wide-scale business field. Although I gained certain business related skills from my previous study, but they were limited and more theoretical, so I needed to develop more from this field. This set includes methods and techniques from marketing, human resource management, finance, international business environment, strategic management and project management. The overall study contributes towards the evolution of not only theoretical but also the practical knowledge how to use the theory in practise. I specially developed the capability to design wide range of analysis and learned how apply them in real scenario. Certainly, the knowledge I gained during the classes and the time I spent by self-study at home will be the first step in making the right decisions for my future. The knowledge and skills I gained were actively used during the dissertation process.

Critical thinking and analytical skills was another package of skills I intended to develop by studying MBA. It is the area, one can actually work on during the lifetime, there is always something to be learned and improved. During the work with secondary resources I learned how to critically evaluate and analyse the different situations and results and also design possible solutions and recommendations. The evidence of development of these skills in the specific business disciplines I see in my assignments and presentations and my final piece of work the dissertation.

My interpersonal skills which I already practice and improve during my previous study and in the workplace were tested once again. I realised how difficult is to persuade professional, who have many other responsibilities and their programme is full, to cooperate with the interviews. At my effort for the first contact I was more disappointed because majority of the people approached did not reply. I did not let this situation to discourage me and tried to contact them again. The second time I was more successful and my effort brought the results. In the overall evaluation of my communication with risk management professional in South Africa I think that at the end I gained many interesting connections and with some participants I still communicate even after the interviews. This reflects kind of continual improvements of my knowledge in the area I am interested in.

During the preparation of my dissertation I encountered few problems. It was not always easy to combine the full time work and the time demands of the dissertation. I have been extremely affected by tiredness, especially at the beginning, before I found the system how to

organise my time cope with lack of energy. Another real challenge was to negotiate the language barrier. As I mentioned before, English is not my first language and for that reason was for me more difficult and time consuming to go through the amount of particular business – related topics. But the progress eventually came, the more I read and communicate the topics, the more I became familiar with it.

3 Lessons learned

During my study of MBA I fully realised the power of the possible impact of it on my personal and professional life, that the development of my skills will help me to achieve the targets I follow. I think the time I spent in DBS fulfilled and in certain parts exceeded my expectations. I gained knowledge of business related disciplines and this fact increased the opportunity to move forward in my life.

If I should refer to outcomes and my personal achievements, I improved my knowledge and awareness of business issues. I also feel progress in the other areas of the skills I wanted to improve like communication skills, analytical and critical thinking and interpersonal skills. At the moment I can prove this progress mostly in my studying environment, based on my so far successful results from my assignment, exams and other activities in the college. I think gained the capability to design potential solution in business related issues in form of theoretical but also practical recommendation. I found myself most attracted to constructivist style of learning where I can analyse set of theory or data and apply it on real situations. I also became more familiar with my learning style which can be characterised as mostly verbal and preferably solitary. I like interesting ideas and concepts and my best learning environment is the one which offers the option of involvement in new experience, where the situation is structured and the purpose well known.

I highly appreciate the dedicated approach of all lecturers I came to contact so far, but especially the lecturers from project management. By their excellent presentation of the subject they inspired me and motivated in my future career prospects. I realised that the project management is very interesting area with number of unique opportunities. Compared to my previous study there was more support and flexibility in terms of lecturer approach. I was given more opportunities to discuss the topic and also present my own findings. I learned a lot during the classes based on our interpersonal communication and critical reasoning.

During the whole learning process I perceived that I can negotiate the communication issues and improve work and work on the skills which I wanted to improve. The environment and

activities very supportive and offer scale of opportunities in terms of team projects, assignments and practical activities in class.

The work on my dissertation gave me strong benefits in terms of extended knowledge field in environmental protection which I intend to use in the future. I utilised all skills which I improved and obtain during my study and I tried to give my work comprehensive format and meaning.

I consider the MBA study an element which fundamentally changed my life. From the perspective of my future career aspirations it upgraded my knowledge and skills area particularly from project management disciplines which I intend to use on the way towards achievement of my professional goals. The study also brought to my personal life entirely new experience in terms of understanding the different cultural and societal backgrounds. In the process of negotiating the problems I came across I have learned that my ambitions are much stronger and I possess more strength than I have thought.

Table 2: Bow-tie representation of risk management consequence.

Source: Hopkin, P., 2012, p. 152

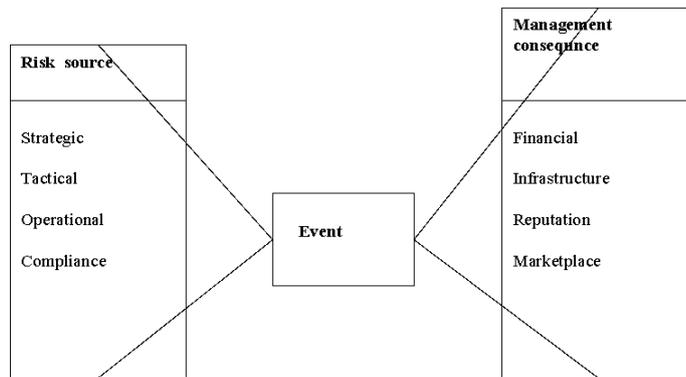


Table 3: Current, higher level biodiversity objectives common to Park Management Plans (March 2008) that form the basis for identifying monitoring requirements.

Source: SANParks Management Plan

Generic Objective Description

(a) Representation of biodiversity and ecosystems includes the description and inventory, as well as maintenance, of biodiversity composition and pattern. Also, the expansion of the park estate to include a representative sample of biodiversity features, evaluated against national targets.

(b) Ensuring persistence and sustainability includes the consolidation and expansion of areas under protection, as well as the maintenance of park integrity. The protection of species and key areas supporting ecosystems and ecological processes.

(c) Enabling process and function Allows and manages ecological processes and functions to, as far as possible, follow their natural, variable course. For example, herbivory, disease, predation, pollination, dispersal, hydrological cycles, fire and biotic evolution.

(d) Mitigating threats and pressures Management of, for example,

- external and internal development pressures
- alien and invasive species
- resource extraction
- human-animal conflicts.

(e) Species of special concern includes the conservation of rare, threatened and protected species.

(f) Restoration of pattern and process Includes rehabilitation of landscapes, restoration of system functioning and appropriate reintroduction and recovery of biota.

(g) Atmospheric and aquatic ecosystems Ensures the provision of, for example, required hydrological regimes (in-stream flows), air and water quality (measuring pollution and addressing sources thereof).

(h) Reconciling biodiversity objectives with other park objectives Includes resource use, development, tourism and recreation.

(i) Wilderness value. The maintenance of wilderness qualities and specifically also areas defined as wilderness areas.

Table 4: Corporate structure of SANParks

Source: SANParks Strategic Plan

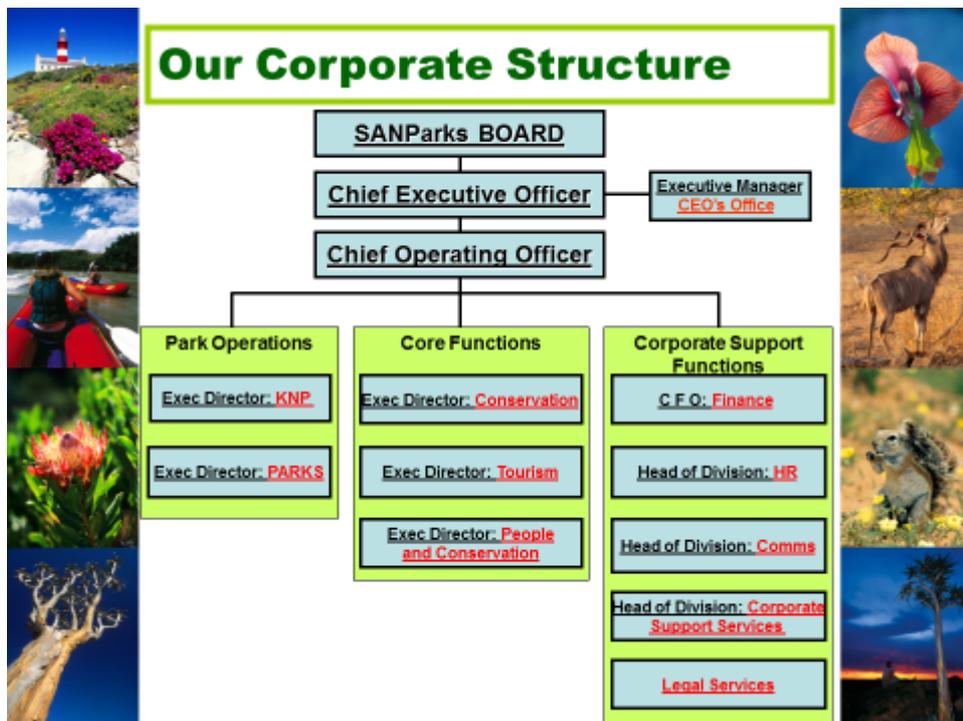


Table 5: Framework for identification of risk

Source: South African National Parks: Corporate Risk Management Framework: Policy, procedure and methodology

