

**AN EVALUATION OF THE USE OF ENVIRONMENTAL MANAGEMENT PLANS
IN INTEGRATED ENVIRONMENTAL MANAGEMENT IN KWAZULU-NATAL**

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2004

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Submitted in partial fulfilment of the academic requirements for the degree of Master of Environment and Development in the Centre of Environment and Development, Faculty of Science and Agriculture, University of KwaZulu-Natal, Pietermaritzburg.

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COMPONENT A

Preface

An Environmental Management Plan (EMP) details mitigation measures and monitoring thereof as well management of the whole project implementation. As a management tool, the concept of an EMP was developed to ensure proper environmental management throughout the life-cycle of a development project. Despite EMPs having been in existence for quite some considerable period, environmental damage still persists. Furthermore, the environmental legislation of different countries and in particular South Africa does not use/make development of an EMP a specific requirement. This has implications on a number of issues such as EMP purpose, EMP implementation and the whole rationale behind an EMP.

The motivation to investigate EMPs stemmed from a discussion I had with Dr Quinn, my supervisor, about my research proposal. He mentioned EMPs and encouraged me to investigate further. A review of literature about EMPs revealed the importance of EMPs in Integrated Environmental Management (IEM). A lot of questions arose as I was reading:

- Are the provincial departments actually doing what is said in the literature?
- Does the current use of EMPs achieve its purpose?
- What is the whole rationale behind EMPs?
- How are they implemented internationally and nationally?
- What are the problems affecting EMP implementation?
- How can the current situation be improved?

As these questions came into my mind I thought the best way of discovering problems and solutions with respect to EMP implementation is to actually work with people whom I thought are knowledgeable about the subject. I then chose environmental authorities as the professionals who review EMPs and environmental consultants as the professionals who prepare EMPs as respondents.

I hope some of the strategies suggested here will be implemented by the KwaZulu-Natal (KZN) Department of Agriculture and Environmental Affairs (DAEA) as the relevant

authority in terms of section 22 of Environment Conservation Act (ECA) No. 73 of 1989. DAEA requests EMPs to be submitted as part of the conditions of approval when authorizing projects in terms of the ECA of 1989. If submitted, DAEA is also responsible for assessing and authorizing EMPs. I also hope that in the future there will be a study to investigate any improvements in the EMP implementation.

This dissertation is presented in two parts, Component A and Component B. Component A includes the theoretical underpinnings for the results and Component B includes the analysis. Component A consists of the three chapters which are; the introduction, the literature review and the methods and conceptual framework used for the study. The referencing system used in this component complies with the Harvard System.

Component B is written in preparation for submission to the Impact Assessment and Project Appraisal Journal but the format is in keeping with Component A. However, the referencing system used in this component complies with the journal requirements. The abstract has been placed at the beginning of component B as per the requirements of the journal.

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Thanks to Dr Nevil Quinn for his advice, guidance and patience throughout this course. I will always be grateful. Finalisation of this work would not have been possible if it were not for Prof. Robert Fincham, whose help I sincerely appreciate. Thanks to all the respondents for offering their time to respond to my questionnaires. I will forever be grateful to the Department of Agriculture and Environmental Affairs for offering me this wonderful opportunity to do my studies. Thanks to all my friends for your words of encouragement and support. To my family and my son Mpilo, your support will always be appreciated. Above all, thanks to Almighty God.

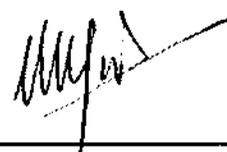
Declaration

I declare that this research is my original work and reflects the findings of my research project carried out for the degree of Master of Environment and Development. No part of this dissertation has been submitted in any form for a degree or diploma to any other University.



Sibusisiwe B P Hlela

31 March 2005
Date



Dr Nevil Quinn
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15 March 2005
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31st March 2005
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Abbreviations

ADB	Asian Development Bank
DAEA	Department of Agriculture and Environmental Affairs
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DTEA	Department of Traditional and Environmental Affairs
DWAF	Department of Water Affairs and Forestry
EA	Environmental Assessment
ECA	Environment Conservation Act, 1989
EIA	Environmental Impact Assessment
EKZNW	Ezemvelo KwaZulu-Natal Wildlife
EMB	Environmental Management Branch
EMO	Environmental Management Officer
EMP	Environmental Management Plan
EMS	Environmental Management System
EMT	Environmental Management Team
EU	European Union
IAIA	International Association for Impact Assessment
I&APs	Interested and Affected Parties
IBRD	International Bank for Reconstruction and Development
IEM	Integrated Environmental Management
IFC	International Finance Corporation
KZN	KwaZulu-Natal
MIGA	Multilateral Investment Guarantee Agency
NEMA	National Environmental Management Act, 1998
NEPA	National Environmental Policy Act, 1969 (United States)
NGO	Non-Governmental Organisation
OD	Operational Directive
OECD	Organisation for Economic Cooperation and Development
OENV	Office of Environment
PAD	Project Appraisal Document

PPA	Post-Project Analysis
ROD	Record of Decision
SA	South Africa
TANAPA	Tanzania National Parks Authority
UN	United Nations
UNECE	United Nations Economic Commission for Europe
USA	United States of America
WCED	World Commission on Environment and Development

Chapter 1: Introduction

1.1 The historical development of Environmental Impact Assessment

The definitions of Environmental Impact Assessment (EIA) vary from one country to another. In essence, it can be defined as a process of assessing the environmental consequences of proposed projects, policies and plans and understanding their environmental consequences prior to commencement (Fuggle & Rabie 1992; Gilpin 1995; Wiesner 1995; Modak & Biswas 1999; Puymbroeck 2002).

An increasing concern for the environment, especially regarding the damage done to it, began in the early 1960s (Welford 1998). Usually environmental damage is caused by development projects and their impacts during their construction and operational phases. Development is necessary for economic growth and for the welfare of people of any country. However, economic development must not lead to the depletion of the resources of the environment. Two examples related to environmental damage caused by developments intended for economic development provided here include the Soviet plan, the Kama-Vycheгда-Pechora Project, and the dam projects and urbanisation in Kano State, Nigeria. In both of these projects the main purpose was to increase water demands for cities, industries, agriculture, alleviation of drought effect, and transportation.

The Kama-Vycheгда-Pechora involved diverting massive quantities of water by building dams and canals. The project did provide benefits such as; halt decline of water-level and increase salinity of the Caspian Sea; led to increase economic development such as logging and provide fish in reservoirs. But it also had adverse results such as: lost of land by flooding behind dams; soils and vegetation affected by raised water table induced by reservoirs; salmon and whitefish blocked by dams from spawning grounds; and inundation of prime wildlife range (Micklin 1971).

The Nigerian irrigation scheme led to the large irrigation schemes being built in the Sokoto Valley, the Kano River basin and near Lake Chad and a number of dams and reservoirs were established. But there were negative impacts associated with these irrigation schemes. For example on the Sokoto River, there was a decline of about 91% flood area; the area planted

with flood-dependent crops such as rice and vegetables reduced severely; and there was a drastic decline in the quantity and quality of fish (Stock 1995).

Prior to the 1960s, as the examples above indicate, greater emphasis was placed on economic development. Isolated pieces of legislation were enacted worldwide to protect the environment by targeting particular issues such as nature reserves and wildlife, marine resources, noxious weeds, pollution of water, air and land (Fuggle & Rabie 1992). What was needed was the integrated approach, that is, consideration of the economy, social issues and environment in evaluating development projects.

It was around the 1970s where environment received worldwide attention. Legislating of environmental laws with integrated approach and holding United Nations Conference on Human Environment, Stockholm, Sweden in 1972 were clear indications of the focus on environment at an international level (UNEP 2002). In 1969 the United States of America (USA) enacted the National Environmental Policy Act (NEPA) to deal with environmental issues in a co-ordinated manner through a procedure called Environmental Impact Assessment. The NEPA was established to ensure that environmental impact assessments of proposed developments are undertaken prior to their commencement. The rationale behind this legislation was to ensure that environmental impacts of development are understood before commencement. Initially, a few high income countries such as Canada and Australia followed this trend and some developing countries also adopted environmental legislation quite early. Developing countries such as Columbia adopted this legislation in 1974 and Philippines recognised it through a presidential decree in 1978 (Lee & George 2000). Two decades later, South Africa (SA) adopted only enabling legislation through the Environment Conservation Act (ECA) No. 73 of 1989. Enabling legislation is legislation which establishes a framework for EIA, but does not make it mandatory.

Even though a number of countries have adopted EIA legislation or at least enabling legislation, countries such as Botswana, Burundi and Somalia do not have any EIA legislation. EIAs are undertaken only on an ad hoc basis or as a result of pressure from non-governmental and conservation organisations. In other countries, EIAs are undertaken for projects funded by

development banks and aid agencies or if a project is likely to have significant impacts on the environment regardless of the source of funding (Lee & George 2000).

Government institutions were not the only ones to adopt environmental legislation. In 1971, the World Bank established an environmental division and the Asian Development Bank (ADB) started their environmental unit in 1987, which became the Office of Environment (OENV) in 1990 (Gilpin 1995). Environmental divisions of these organisations were established to, amongst other things, review environmental impacts of financed projects.

The characteristics of an EIA may differ from country to country but generally it includes screening, consideration of alternatives, scoping, mitigation measures, communication, decision, post-project analysis (PPA) (Gilpin 1995; Lee & George 2000; Puymbroeck 2002). PPA is now considered to form part of the EIA process, which previously ended at a decision stage (Gilpin 1995). The last part of the EIA process, that is PPA, forms the subject of this research.

Different countries use different terminology to refer to PPA. The United Nations Economic Commission for Europe (UNECE), for example, uses the term PPA (Gilpin 1995). Nigeria refers to it as a 'follow-up programme' (Puymbroeck 2002), while, SA and many other countries refer to it as an Environmental Management Plan (EMP) (Lee & George 2000). An EMP is basically "a set of mitigation, monitoring and institutional measures to be taken during implementation and operation to eliminate adverse environmental impacts, offset them, or reduce to acceptable levels" (World Bank 1999 cited in Lee & George 2000:179). The main purpose of a PPA phase is to ensure that the objectives of an EIA are achieved. UNECE views the purpose of a PPA as a fundamental tool in fulfilling the objectives of the whole EIA process. Its purpose is to ensure that mitigation measures of impacts identified in the initial phases are carried forward up to decommissioning phase. SA has a similar view on the role of an EMP. The Department of Environmental Affairs (DEA) (1992a:17) states that the "purpose of a Management Plan is to describe how negative environmental impacts will be managed, rehabilitated or monitored and how positive impacts will be maximised".

Different institutions do not specifically state when EMPs started to be part of the process. What is apparent is that an EMP was not previously considered to be part of the EIA process. According to Hill (2000) although not a legal requirement in all countries an EMP is part of the EIA process and its South African counterpart, Integrated Environmental Management (IEM).

1.2 Problem statement

Views regarding EMPs have evolved and/or are evolving over time. The EIA frameworks for different countries differ in terms of their requirements with respect to an EMP. UNECE acknowledges an EMP as the most effective tool in the EIA process especially with respect to improving EIA quality. The procedure requires a preliminary plan for PPA to be prepared during the EIA process and a final detailed report be submitted after approval. PPA is taken into account when stipulating conditions of approval. Some member countries of UNECE such as The Netherlands and Britain have made PPA a formal requirement of the EIA process while others are still debating whether to accept this concept (Gilpin 1995). The EIA requirements demanded by the development banks include the requirement of an EMP. In some developing countries, an EMP or parts of it form part of the legislative requirement but there are no details on its content. For example, in Chile, an EIS includes the requirement of a monitoring plan but it does not specify its content (Lee & George 2000).

In SA, recognition of the need for a follow-up document can be traced back to the late 1980s. The ECA of 1989, recognised the need to have procedures which should be followed at an implementation stage¹. However, the term EMP is not used as such in the ECA. The ECA only enabled the Minister to regulate the procedure to be followed during the construction and operational phases (RSA 1989). In 1992, SA presented the first discussion on the use of EMPs through the publication of the IEM guideline document series. According to DEA (1992a) an EMP may form part of the conditions of approval or it may be recommended by the Initial Assessment or it may be submitted by the proponent as part of the proposal.

In 1997, the EIA regulations were promulgated in terms of section 26 and 28 of ECA, 1989. These regulations did not regulate the requirement of an EMP or stipulate its content despite

mention of an EMP in the previous documents, such as ECA of 1989 and IEM guideline series of 1992. The omission of an EMP in the regulations did not lessen concerns that an EMP was necessary. In 1998, SA recognised the need for monitoring of projects through the National Environmental Management Act (NEMA). NEMA advocates exactly what was already stipulated in the IEM guideline document series, that is, the need for monitoring the mitigation measures in order to assess their effectiveness after implementation (RSA 1998).

In 1998, SA again emphasised its concern for an EMP in the White Paper on Environmental Management Policy for SA. The White Paper condemned the exclusion of EMPs in the EIA regulations. The White Paper also advocates the need to legislate the entire IEM procedure not just certain portions (DEAT 1998). Recently the Department of Environmental Affairs and Tourism (DEAT) published an information series on environmental management tools. Information series 12 is dedicated to EMPs (DEAT 2004). Currently, the DEAT is in the process of regulating EMPs (Gordon 2003, *pers.comm.*).

SA is not an exception in facing the problem of ambiguity regarding legislative requirements of an EMP. The ECA recognised the need to have procedures to be followed at an implementation stage as it states that the Minister may make regulations regarding “the procedure to be followed in the course of and after the performance of the activity in question or the alternative activities in order to substantiate the estimations of the environmental impact report and to provide for preventative or additional actions if deemed necessary or desirable”². Wood (1999) notes that the IEM guideline document series developed by DEA in 1992 emphasised the need for monitoring and auditing of development projects. However, as several authors have noted, the EIA procedure is ambiguous in its requirements for the EMP despite the fact that IEM is clear on the need for monitoring and mitigation measures (Wood 1999; Hill 2000; Lee & George 2000). Consequently, the EIA regulations of 1997 and the EIA guidelines of 1998 do not mention monitoring of proposed projects yet both of these documents were developed after the IEM guidelines of 1992 (Wood 1999). Even though the IEM guidelines refer to monitoring, this document provides less information on the EMP than on the scoping phase. The IEM guidelines stipulate that conditions of approval may require

that an EMP and an environmental contract be prepared, but provides little guidance on what this plan and contract should contain (Hill 2000).

In KwaZulu-Natal (KZN), the relevant environmental authority, the Department of Agriculture and Environmental Affairs³ (DAEA) requests an EMP as a condition of approval in the Record of Decision (ROD). In some cases a draft EMP is required prior to a ROD being finalised.

Literature reveals that although the concept of an EMP was developed to ensure proper environmental management throughout the life of development projects, environmental damage still persists. Some of the reasons for such persistence are that environmental management tools, and EMPs in this particular case, are not utilised effectively. Hanks and Pearsall (1998:590) define the word effective as something “successful in producing a desired or intended result”. Literature shows different views about EMPs in different countries and also associated with this are numerous difficulties hampering their effective use.

In the light of the above statements it is important to understand the significance of EMPs in an IEM process by trying to answer the following critical questions:

- What is the purpose and role of an EMP?
- What are the factors hindering their effective use?
- What strategies can be developed in order to improve EMP implementation?

1.3 Aims and objectives

The aim of this study is to critically review the role and use of EMPs in KZN with the intention of developing strategies for improved performance. This will be achieved through the following objectives:

- To evaluate the relationship between the procedures and principles of IEM and an EMP.
- To determine current international and national best practice in the formulation of EMPs and their implementation.

- To identify factors hindering effective use of EMPs.
- To recommend approaches for improving the formulation, evaluation, implementation and monitoring of an EMP.

Chapter 2: Literature review

2.1 Introduction

The first chapter has briefly mentioned that an EMP is a significant and integral part of IEM, which was developed with the intention of managing environmental impacts from start to finish. Chapter one also highlights that the effective use of EMPs is challenged by several problems. The purpose of this chapter is firstly to evaluate the relationship between IEM principles and procedures and an EMP. This will be achieved through a brief overview of the IEM principles and procedures using examples development banks, developing and developed countries, defining the purpose of an EMP and thereafter evaluating its role in IEM. Secondly, this chapter will determine current international and national best practice in the use of EMPs. This will be achieved by reviewing the use of EMPs by development banks, developed countries and developing countries. Thirdly, the first chapter will identify from the literature problems in the current use of EMPs. Finally, it will consider some of the approaches that can be implemented to improve current practice.

2.2 IEM principles

It is important to define the purpose of IEM before identifying relevant principles. Environmental management terms differ from country to country. For example, UNECE uses the term EIA (Gilpin 1995) whereas SA uses the term IEM (DEA 1992(b)). UNECE states that the purpose of EIA is to give environment its due consideration right from the inception of a proposed development through to the implementation and decommission stage (Gilpin 1995). The South African meaning and scope of the term IEM is similar to that of UNECE's EIA definition. In SA, "IEM is designed to ensure that the environmental consequences of development proposals are understood and adequately considered in the planning process" (DEA 1992b:5). Furthermore, "IEM provides the overarching framework for the integration of environmental assessment and management principles into environmental decision-making. It includes the use of several environmental assessment and management tools that are appropriate for the various levels of decision-making" (DEAT 2004:1).

2.2.1 Overview of IEM principles

The IEM principles of the World Bank, developed and developing countries are somewhat similar. Canadian principles are used as an example of a developed country and South African principles as an example of a developing country. IEM principles of the World Bank, Canada and SA enunciate the broad concept of the environment, to include human, physical and biological components (World Bank 1991; DEA 1992b; Gilpin 1995). They emphasize the need for an understanding of environmental impacts before making a decision. The information provided must be relevant and well researched in order to allow a decision maker to make a responsible and defensible decision. This ensures cost-effectiveness of the EIA procedure.

The IEM principles are somewhat similar, and differ only in the level of detail. For example, the element of public participation is present in the principles of all sectors reviewed but to differing extents. The Canadian principles include mechanisms to assist the public to participate in environmental assessments. Whereas the South African principles acknowledge a need for public participation, they do not include a means by which public assistance is included in a process. Canadian principles include a 'proponent pays principle', which is not present in the South African principles (Gilpin 1995). However, the 'proponent pays principle' is present in the EIA regulations of 1997 that state that "an applicant is solely responsible for all costs incurred in connection with the employment of the consultant or any other person acting on the applicant's behalf to comply with these regulations"⁴. Principles emphasize that consultation is important to identify issues to be investigated at an early stage of the proposal. Consultation must include all interested and affected parties as well as input from specialists. Canadian principles even stress the need for clearly defined communication procedures with environmental authorities to resolve any difficulties. According to the World Bank (1991), it is also important, during communication in the EIA process, to strengthen environmental management competence of the borrowing country, that is, a country requiring financial assistance from the bank to undertake a development project.

Innovative and flexible principles are well presented in the World Bank and Canadian principles. The innovative principle allows for the occurrence of changes in a variety of circumstances in order to allow for effectiveness and efficiency.

IEM principles emphasize the need to identify issues, mitigation measures, alternatives, follow-up programmes and sustainable development. All sectors emphasize the need to apply these principles throughout the lifetime of the development.

2.2.2 Overview of IEM procedures

In order to evaluate the role of an EMP in IEM it is also important to explain not just IEM principles but also its procedures. Section 2.5 below will explain how an EMP contributes to the fulfilment of IEM objectives. The intention of illustrating IEM procedure is not to detail the contents of each and every part of the process but to establish whether an EMP forms part of IEM procedure or not. UNECE Environmental Assessment (EA) procedure is used as an example pertaining to developed countries. SA is used as an example of a developing country.

IEM procedures of the World Bank, developed and developing countries are similar in many respects but there are also noticeable differences. The initial stage of procedures is the planning stage. Issues to be considered in the initial phase of a proposed development are policies and laws at a national, provincial and local level with which the project must comply. The project must do so by consultation with authorities and interested and affected parties (I&APs), to identify alternatives and the extent to which issues must be addressed. It must also prepare for the terms of reference for the environmental impact statement or environmental impact assessment and alternatives. Also important in the initial phase is a classification of a project. Nature, size and complexity of the project combined with sensitivity of the site determine the classification (DEA 1992(b); Gilpin 1995; Lee & George 2000).

The proposal can be channelled through an impact assessment route if, during the development proposal stage, it is apparent that there will be significant environmental impacts.

It can be channelled through an initial assessment route if there is uncertainty as to whether the proposal may result in significant impacts. If there are no impacts there may be no further requirements (World Bank 1991; DEA 1992b; Gilpin 1995).

Following from the planning phase is the review and decision phase. The authority must determine the amount of information required in order to render a decision. Authorities and the public, through some participatory process, must review a project. A decision is reached after satisfactory consultation with authorities and, where necessary, with specialists and once public input has been secured. The decision of the authority must be released to the public. The decision must state the right to appeal a decision by the proponent and / or public (World Bank 1991; DEA 1992b; Gilpin 1995).

The third and final stage is that of implementation. This stage involves monitoring and auditing a proposed development. It involves implementation of the mitigation measures suggested in the EIA process. The purpose of this phase is to assess the effectiveness of the mitigation measures (World Bank 1991; DEA 1992b; Gilpin 1995).

What is important to note in the IEM processes of the World Bank, UNECE and SA is that, in the World Bank, the EMP forms part of the environmental assessment report submitted for review before approval. The World Bank developed the content of an EMP (Lee and George, 2000). Some member states of UNECE also have made submission of an EMP as a legislative requirement (Gilpin 1995). Whereas in SA an EMP has not been made a legislative requirement, it becomes a legal requirement only if requested as part of the ROD (DEA, 1992a,b).

2.3 Definition of an EMP

As has been explained above, EIA terminology differs from country to country. Before defining an EMP it is important to mention that different countries use different terms to refer to an EMP. UNECE uses PPA (Gilpin 1995). Nigeria refers to it as a follow-up programme (Puymbroeck 2002), while SA and many other countries use the term EMP (Lee & George 2000).

It is through defining an EMP, explaining its purpose and outlining its content that the significant contribution of EMPs in the IEM process will become evident. EMPs are defined in more or less the same way within the literature. For example, the World Bank (World Bank 1999 cited in Lee & George 2000:179) defines an EMP as “the set of mitigation, monitoring and institutional measures to be taken during implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels”. SA defines an EMP along similar lines as it states that “the EMP may simply detail the mitigation of one variable during the construction phase (such as drainage), or provide a comprehensive overview of the management and monitoring requirements for the duration of the project” (DEA 1992a:17). Both of these definitions include the most important parts of an EMP namely monitoring of mitigation measures and management of the whole implementation stage.

2.4 Purpose of an EMP

UNECE views the purpose of an EMP as a fundamental tool in fulfilling the objectives of the whole EIA process. The purpose of an EMP is to ensure that mitigation measures of impacts identified in the initial phases are carried forward to the decommissioning phase (UNECE 1990 cited in Gilpin 1995).

DEA (1992a:17) states that the “purpose of a Management Plan is to describe how negative environmental impacts will be managed, rehabilitated or monitored and how positive impacts will be maximised. The various mitigation measures should be organised and co-ordinated into a structured and well-formulated plan which will guide the construction, operation and decommissioning of the development”.

According to Sadler (1996) the purpose of an EMP is to ensure that the mitigation measures proposed in the EIA process are implemented during the construction and operational phases. Compliance with suggested mitigation measures must be ensured. Furthermore, an EMP can be adjusted to cope with unforeseen changes which might occur during the implementation phase. It must be used as a learning experience to improve the EIA process for future projects.

Brew and Lee (1996) share the view that the purpose of an EMP is to ensure that mitigation measures are properly implemented during the construction and operational phases. As well as that it must be viewed as a dynamic document to be adjusted should the need arise. Brew and Lee (1996) add that an EMP is intended to ensure that EIAs are implemented cost-effectively by ensuring that developers and the environmental authorities carefully consider the mitigation measures to be implemented. The environmental authority must be equally cautious when specifying conditions to be implemented. In this phase it is vital to encourage all those involved in the EMP to fulfil their obligations by providing clear direction with respect to responsibilities.

An EMP involves monitoring and auditing during project implementation. Monitoring and auditing have their own specific purposes, which add value to or strengthen the overall rationale behind EMPs. Modak and Biswas (1999:162) state that, "monitoring is required to evaluate the success or failure (and consequent benefits or losses) of environmental management measures and subsequently to reorient the management plan". In addition, monitoring provides a forewarning that negative impacts, whether predicted or not, are occurring (Modak & Biswas 1999). Therefore recommended mitigation measures must be implemented and maintained. Thus EMP also provide an opportunity to measure the cost-effectiveness of mitigation measures. It provides an opportunity to change the mitigation measures, which were initially recommended, and implement the ones suitable for that particular situation. This is why DEA (1992a) recommends that it should be considered as a dynamic document, which may need to be modified or improved during the lifetime of a project.

Auditing basically has similar purposes to that of monitoring. Donnelly, Dalal-Clayton and Hughes (1998) argue that auditing provides an opportunity and means by which to learn from experience, and to improve project design and implementation measures. Auditing also provides, more especially for regulatory authorities, a framework for checking compliance with, and performance of an EMP.

It is also argued that auditing is a very effective tool in carrying the EIA process through to the implementation stage and that it serves the following purposes amongst others (UNECE 1990 cited in Gilpin 1995):

- to monitor compliance with mitigation measures stipulated in the authorisation;
- to modify mitigation measures with changing circumstances;
- to ascertain the accuracy of predicted environmental impacts and assess the effectiveness of proposed mitigation measures; and
- to evaluate the success of the environmental management for the project being implemented.

Auditing can be divided into different types with different purposes but all of these are intended to ensure the effectiveness of an EMP and hence the protection of the environment.

Modak and Biswas (1999:164) define three types of audits:

- “implementation audits, for determining whether the recommendations or requirements in an EIA were implemented;
- project impact audits, which determine the actual impacts of a project, independent of the predictions made, and
- predictive techniques audits, assessing the prediction made in the EIA report, and the methods of prediction used, by comparing actual outcome with the forecast ones (this would aid future studies)”.

According to Lee and George (2000) the definition and purpose of an EMP states that an Environmental Management System (EMS) is part of an EMP. “An EMS is that aspect of an organisation’s overall management structure that addresses the immediate and long term impact of activities, products, services, and processes on the environment. It provides order and consistency in organisational methodologies through the allocation of resources, assignment of responsibilities and ongoing evaluation of practices, procedures and processes” (UNEP 2001:4).

An EMP and EMS advocate basically the same principles. They both have an integrated approach to environmental management. An EMP and EMS define the environment to include

socio-economic, biophysical and physical issues. Both management systems ensure that environmental issues are taken into account throughout the lifetime of a development activity. Both EMPs and EMSs include identification of mitigation measures, monitoring and auditing, allocation of roles and responsibility for the ongoing management of an operation, training of staff, communication with internal and external interested and affected parties in order to improve performance, and both employ a dynamic approach to allow adaptation in all circumstances (Lee & George 2000).

Lee and George (2000) argue that the need for inclusion of an EMS in an EMP has been due to the realisation that most of the environmental degradation associated with developments has occurred not so much because of the bad implementation of the project, but because it was not managed properly in the operational phase. The purpose of the EMS is to thus prevent this from happening. In simple terms, an EMS documents management procedures to be followed during the operational phase, to minimise negative environmental impacts of a development. Documenting procedures assists an operator and a developer to carefully think whether or not management procedures as documented will achieve the aim of the EIA process. A developer must make modifications in the EMS document where necessary in order to achieve the purpose of the whole EIA process (Lee & George 2000).

2.5 Role of an EMP in IEM

This section will highlight how an EMP contributes to fulfilling IEM objectives. As has been mentioned above, the purpose of IEM is to minimise adverse environmental impacts and to enhance positive impacts. Basically IEM provides a framework that guides the environmental management of projects from the stages of planning, implementing up to decommissioning. Therefore, it is important to highlight how an EMP, as an environmental management tool, contributes to fulfilling and accomplishing IEM principles.

An EMP adopts a holistic approach to the environment, similarly with IEM. It details mitigation measures for biophysical, physical and socio-economic aspects of the environment. The whole purpose of IEM is to prevent unnecessary and costly detrimental impacts to the environment (Roe, Dalal-Clayton & Hughes 1998). The above definitions and purpose of an

EMP show how it carries forward this purpose. The EMP ensures the implementation of agreed mitigation measures, monitoring and auditing for the lifetime of the project, which will then ensure that costly mistakes are avoided. The EMP also provides mechanisms to resolve any problems. This demonstrates that an EMP contributes to the management of the project from start to finish.

Both the IEM and EMP advocate that there should be communication procedures in order to resolve any issues during the lifetime of a project. Communication is encouraged with internal and external stakeholders such as government, non-government organisations (NGOs) and community. An EMP allows stakeholders to report any irregularities during the implementation and operation phase of the development in order to resolve any difficulties. This ensures ongoing management of the activity.

Both IEM and EMP embrace the concept of sustainable development. The concept of sustainable development received worldwide attention in the 1980s. In 1987 the Report of the World Commission on Environment and Development (WCED), well known as the Brundtland Report defined, sustainable development as “development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs” (Glazewski 2000:14). Table 2.1 provides a list of core ideals and themes within the idea of sustainable development.

The core ideals of sustainable development are embraced by both IEM and an EMP. For example, with regards to the concept of social justice, IEM encourages an open participatory system in environmental management. Participation of all stakeholders during project implementation is encouraged. There remains a problem, however, in practice with public participation in EMPs. As Gilpin (1995) reveals, few countries seem to practise public participation as a component in the initial phases of an EIA process not to mention in an EMP phase. This will be discussed later in this chapter.

Table 2.1: Core ideals and themes within the concept of sustainable development (Jacobs 1995 cited in Connelly and Smith 1999)

Economy – environmental integration	Economic decisions should have regard to their environmental consequences
Intergenerational obligation	Current decision and practices should take account of their effect on future generations
Social justice	All people should have an equal opportunity to an environment in which they can flourish
Environmental protection	There should be conservation of resources and protection of the non-human world
Quality of life	There should be a wider definition of human well-being beyond narrowly defined economic prosperity
Participation	Institutions should be restructured to allow all voices to be heard in decision making

Sustainable development requires the consideration of all relevant factors including “that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decision and actions”⁵. The view that EMPs must be considered as dynamic documents provides a chance for any changes to be made should new information become available.

What the extract in Box 2.1 highlights is a change made into an EMP based on a need to adjust mitigation measures due to unanticipated situation. Carter (1996) was involved in the preparation of the EIA and EMP for the bridge and the National Route through Du Toitskloof (Western Cape). At that time little was known about EMPs. During the course of the Du Toitskloof project it was realised that there was a need to amend the EMP.

Box 2.1: An example of the reasons for amending an EMP (Carter 1996)

Located as it is in a Mountain Catchment Area, the threat of fire during construction in Du Toitskloof is always present particularly in the dry summer months. Thus, we specified that a four wheel drive vehicle with a 500 litre water tank and pump was to be supplied, together with fire extinguishers for all construction vehicles, to enable the contractor to control fires that occur on site. In addition, welding is restricted to specific areas and no fires are allowed on site. Fires have occurred in the valley during construction and were related to sparks from excavating equipment moving boulders. The fire tender did not meet our ideals since it could not move far beyond the road reserve due to the steep terrain. Furthermore, by the time the excavator operator had identified the fire it was too late for him to control it using his fire extinguisher. After consultation with Cape Nature Conservation we introduced rubber beaters, which have proven effective. A fire fighting procedure, involving Cape Nature Conservation, has also been developed. The lesson learnt from this is that one must carefully consider the equipment specified and decide if it is appropriate to the project and terrain.

2.6 Review of the use of EMPs

Having analysed the role of an EMP in IEM, this chapter will continue by reviewing the use of EMPs in different parts of the world. This review will consider development banks, developed and developing countries. It will focus on the following aspects of the use of EMPs; legal requirements of EMPs, public participation, monitoring and auditing.

2.6.1 Development banks

Development banks, for example the World Bank and the ADB, were established to fund or provide loans to development projects in developing countries. Development banks have established environmental assessment procedures to be followed by borrowing countries. The World Bank's role is to advise borrower countries and to ensure that their practices satisfy the bank's environmental requirements (Lee & George 2000).

The World Bank was established in 1945 and is made up of the International Bank for Reconstruction and Development (IBRD) and its affiliates, the International Finance Corporation (IFC), and the Multilateral Investment Guarantee Agency (MIGA) (Gilpin 1995).

The main objective of the Bank is to fund development projects in developing countries by channelling funds from developed countries to developing countries. Since 1989 when the World Bank adopted Operational Directive (OD) 4.00: Environmental Assessment, EIA has become a standard procedure for bank-financed projects (Lee & George 2000). Development projects are screened to assess the potential impact on the environment. If screening shows that the project will have a significant impact on the environment, a full EIA including an EMP will be required.

The bank staff and sometimes with assistance from outside consultants, review an EA report. Bank staff also review EA results and prepare a draft Project Appraisal Document (PAD) that discusses how social, environmental and other issues will be addressed by a borrower country. When the draft EA report is complete, the borrower country submits EA report to the bank for review. If an EA report meets specified requirements, the bank team is authorized to carry on with assessment of a project. At this stage bank staff review EA procedural requirements and crucial issues with the borrower, resolve any unresolved topics, evaluate the competence of agencies responsible for environmental management, ensure that the EMP is sufficiently budgeted, and determine if the EA's recommendations are properly addressed in project design and economic analysis.

- The World Bank encourages public participation in the whole process including the implementation stage. In contrast, the ADB does not encourage public participation as much as the World Bank does. However, since the mid-1990s the ADB has recognised that public participation is very important especially in the implementation and operation stages (Lee & George 2000). EMPs are also used to translate lessons learned during project implementation in the design of future bank projects and in formulating strategies (Gilpin 1995). Formal loan negotiations resume only after this whole assessment procedure is complete and the appraisal report is issued. Both parties, bank and borrower, must agree on detailed schedules for implementation and on conditions essential to ensure the development's success. The borrower is responsible for project implementation and submission of necessary audits and monitoring reports. The World Bank is in charge of overall project management with the aid of environmental specialists where necessary.

2.6.2 Developed countries

Developed countries and developing countries differ in many respects such as climate, ecology, politics and social and economic development. Consequently, this affects the manner in which environmental issues are addressed (Lee & George 2000). This section reviews how EMPs are used in developed countries and then later how EMPs are used in developing countries.

The examples of developed countries used here are member countries of UNECE. UNECE was established in 1947 by the Economic and Social Council of the United Nations (UN) initially to raise the level of postwar European economic activity, and to ensure the strength of economic relations of European countries, among themselves and with other countries. UNECE membership is made up of European and North American countries. UNECE acknowledges that PPA is a “most effective tool for improving the entire EIA process” (Gilpin 1995:26). The procedure requires a preliminary plan for PPA to be prepared during the EIA process and a final detailed report to be submitted after approval. The UNECE task force recommended that the findings of PPAs should be taken into account when stipulating conditions of approval. Some member countries such as The Netherlands and Britain have made PPA a formal requirement of the EIA process but other member countries are still in doubt about this concept (Gilpin 1995).

UNECE encourages public participation during the implementation phase. It recommends that PPAs must be managed by an advisory board consisting of industry, government, contractors, independent experts and public representatives. Public participation is encouraged not just in the initial phases of the EIA process but also during the PPA stage. The PPA report should be made available for public review. Many countries though are still arguing about issues such as public participation in the initial phases of IEM not to mention in a PPA. Only a few member countries, such as The Netherlands, Britain and Australia have adopted PPA principles. Australia for example has been using the PPA principle for other development projects not regulated by environmental legislation. In New South Wales, granting of development consent does not mark the end of the EIA process but the beginning of a process whereby a variety of Departments are involved in monitoring development projects in respect of their respective

legislations (Gilpin 1995). Table 2.2 provides a range of Departments in New South Wales involved in monitoring conditions of approval.

Conditions of approval may include requirements for environmental audit reports indicating compliance with conditions of approval. Environmental auditing may be undertaken by in-house or independent consultants. Gilpin (1995) notes that increasingly, environmental auditors need to be accredited either by a company or government agency. In Australia, just like in many other countries, the proponent covers costs for audits whereas costs for monitoring are covered by the enforcement agency.

Table 2.2: Implementation of development approval conditions (after Gilpin 1995)

Enforcement Agency	Statutory Duties
Proponent and Department of Planning	Annual reporting; Environmental auditing
Treasury; Local Council	Infrastructure contribution; bonds; levies
Department of Planning	Monitoring implications for zoning and environmental planning
Environment Protection Agency	Control of pollution (air, water, noise, solid waste, chemicals)
Proponent and Environment Protection Authority	Monitoring
Department of Land	Control of land
Department of Minerals Resources	Issuing of mining leases
Department of Agriculture	Assessing implications for agriculture
Department of Conservation and Land Management Service	Soil conservation
National Parks and Wildlife	Management of fauna and flora
Roads and Traffic Authority	Control of roads, highways, traffic
State Rail Authority	Control of rail connections
Proponent; State Emergency	Providing emergency plans and services

Service; Fire Brigade	
Water Board	Providing water, drainage and sewerage
Sydney Electricity or regional body	Providing electricity supplies
Catchment Areas Protection Board	Catchment protection
Forestry Commission	Forestry management
Local Council	Landscaping
Heritage Council	Preservation of heritage, culture
Health Department	Monitor public health
Maritime Services Board/ Port Authority/ Waterways Authority	Management of harbours and marine waters

2.6.3 Developing countries

The most observable difference between the IEM process in developing countries and developed countries is in the implementation part. As has been seen from the definitions above, the purpose of an EMP is should be the same whether it is in a developed country or a developing country. Some developing countries do not include a requirement of an EMP. In some developing countries such as Botswana and Burundi, there is not even environmental legislation to support EIA (Lee & George 2000). Countries such as Angola, Uganda and Bangladesh environmental legislation remains at an enabling level. EIAs are only undertaken on an ad hoc basis or as a result of pressures from conservation movements. In other countries EIAs are undertaken for projects funded by Development Banks and aid agencies or if a project is likely to have significant effects on the environment regardless of the source of funding.

Notwithstanding the above, some developing countries have requirements for an EMP or part/s of it in their legislation although specific requirements are often not set out. For example, in Chile, an EIS includes the requirement of a monitoring plan but it does not specify its content (Lee & George 2000).

With regards to monitoring, several authors have discovered that monitoring of environmental impacts in most developing countries is not afforded high priority. In general there has not been monitoring of compliance with environmental conditions. Monitoring of environmental conditions is left in the hands of environmental authorities and audit costs are covered by a developer (Biswas & Agarwal 1992; Modak & Biswas 1999; Lee & George 2000; Puymbroeck 2002).

The concern regarding EMPs in SA dates back to the 1980s. The ECA of 1989 enabled the Minister of Environmental Affairs to regulate the implementation procedure and a follow-up programme of listed activities in terms of the Act. In 1992, the value of EMPs was further recognized in the publication of a series of IEM guideline documents by the DEA (DEA 1992 a,b). The guidelines stress the need for placing more emphasis on the effective implementation of mitigation measures as well as the monitoring thereof. IEM states that a requirement of an EMP may form part of conditions of approval but it has not been made a legislative requirement. In 1997, EIA regulations were promulgated in terms of section 26 and 28 of the ECA, 1989. One of the serious problems with these regulations is that they did not regulate the requirement of EMPs and stipulate their content despite mention of EMPs in the previous documents. This research will dwell more on this problem under section 2.7 which deals with challenges impacting on the effective use of EMPs. The omission of EMPs in the regulations did not affect the value for an EMP. In 1998, SA recognised the need for monitoring of projects through implementation through the NEMA of 1998. NEMA advocates exactly what was already stipulated in the IEM guidelines series, that is, the need for monitoring the mitigation measures in order to assess their effectiveness after implementation (RSA 1998).

Again in 1998, SA emphasized its concern regarding an EMP in the White Paper on Environmental Management Policy for SA. The White Paper condemned the regulating of certain portions of IEM and the exclusion of EMPs in the EIA regulations of 1997. The White Paper also advocated the need to legislate the entire IEM procedure (DEAT 1998). Recently, DEAT published an information series on environmental management tools. Information series 12 is dedicated to EMPs (DEAT 2004). Once again this proves the significance which is on EMPs within IEM process.

2.7 Challenges

In many developing countries, it has been difficult to ensure that mitigation measures are incorporated in the final design. Numerous projects have been constructed without proper attention to the specified mitigation measures (Lohani, Evans, Ludwig, Everitt, Carpenter & Tu 1997:2).

In practice, many significant hurdles exist that limit the use of monitoring and auditing in almost all African countries (Puymbroeck 2002:38).

Despite the vital role of an EMP in IEM, it is evident that its use, especially in developing countries is not effective. This section identifies problems in the use of EMPs. There are numerous interrelated weaknesses which possibly can be identified. This section focuses on only some of the more crucial aspects. This study by no means prescribes that other problems are not important: this section intends to show that there are problems and more can be identified. Weaknesses identified here include legislation, institutional arrangements and attitudes of stakeholders.

2.7.1 Legislation

Some of the problems with the effective use of EMPs are associated with the fact that the legislation is not clear on its requirements for an EMP. The international study of the effectiveness of EA, a joint exercise by a number of partner countries and international organisations begun at International Association for Impact Assessment' 93 (IAIA) Shanghai, concluded at the International Summit on Environmental Assessment held before IAIA'94 in Quebec City that the frequency with which EIA mechanisms for implementation are "either absent or perfunctory amounts to a systematic weakness of the EIA process" (Sadler 1996:16). As evidence that EIA implementation is not afforded much attention, the effectiveness study itself allocated only five of the 231 pages of the document to this critical part of the EIA process (Hill 2000).

Sadler (1996) also discovered that a large number of EIA procedures, although implicit with respect to the requirement for an EMP make provision for one or more of its constituent

elements. “European Union (EU) Directive 85/337/EEC requires developers to provide a description of envisaged mitigation measures but contains no explicit requirement for the competent authority to stipulate those procedures as conditions of authorisation” (Brew & Lee 1996).

Puymbroeck (2002) further observed that many countries’ laws and statutes reviewed in sub-Saharan African countries define the content of an EIA report in different ways. The content of an EIA report in many sub-Saharan African countries requires the following issues to be addressed:

- a) “description of the project site and the reasons for rejecting other alternatives sites,
- b) a description of the proposed activity, technology, and raw materials to be used and their likely impacts,
- c) an identification of the likely impacts,
- d) comments expressed in the public participation process (where the public consultation and participation is mandated in the statutes or laws),
- e) suggestions of mitigation measures, including restoration if necessary,
- f) *a plan for monitoring or managing the activity in compliance with the existing environmental laws and regulations,*
- g) the uncertainties of information, and
- h) a non-technical summary to be published” (Puymbroeck 2002:32).

Puymbroeck (2002) observed that almost all environmental laws and regulations in African countries are missing the crucial point that the review of the EIA report should be seen as part of the wider process in scope and timing which should include the EIA implementation monitoring and auditing functions. Table 2.3 provides features of an EA system of selected countries in sub-Saharan Africa.

Table 2.3: Features of EA systems of selected countries in sub-Saharan Africa (after Lee & George 2000)

Country	Legal requirements for EA	Implementation	Requirements for monitoring	Expertise for conducting EA from:
Ghana	Environmental Protection Agency Act 490/1994, EIA Procedures 1995	Selected projects, sectoral emphasis	EMP required, EPA monitors	Consultants
Malawi	National Environmental Policy and draft Environmental Management Act 1996	Discretionary, funding agencies	EMP required	Developer
Mauritius	Environment Protection Act 1991 as amended on 6.4.93	Discretionary	No formal requirement	Developer
Nigeria	Environmental Impact Assessment Decree 86/1992, Urban and Regional Planning Decree 1992, EIA Procedure 1994	Funding agencies and multinational companies	EMP formal requirement	Consultants
South Africa	Environment Conservation Act 1989, EIA Regulations 1997	Wide voluntary use from 1989, compulsory from 1997	No formal requirement	Independent consultants
Swaziland	Enabled by Swaziland Environment Authority Act 1992, Environmental Assessment and Review Regulations 1996	Mainly funding agencies	Mitigation plan	Consultants

Tanzania	No general national requirements. Tanzania National Authority guidelines 1993, procedures 1995	24 EIAs 1992-1996	Monitoring by TANAPA	Consultants arranged by TANAPA, at fixed cost to developer
Zambia	Environmental Protection and Pollution Control Act 1990, Regulations	Little experience	Monitoring by developer required	Consultants

SA is not an exception in facing the problem of ambiguity regarding legislative requirements of an EMP. The ECA of 1989 does recognise the need to have procedures to be followed at an implementation stage as it states that the Minister may make regulations regarding “the procedure to be followed in the course of and after the performance of the activity in question or the alternative activities in order to substantiate the estimations of the environmental impact report to provide for preventative or additional actions if deemed necessary or desirable”⁶. Wood (1999) notes that the IEM guidelines developed by the DEA in 1992 emphasize the need for monitoring and auditing of development projects. Several authors (Wood 1999; Hill 2000; Lee & George 2000) note that the EIA procedure is ambiguous in its requirements for the EMP despite the fact that IEM is clear on the need for monitoring and mitigation measures. As a result, it is astounding that the EIA regulations of 1997 and the EIA guidelines of 1998 do not mention monitoring of proposed projects yet both of these documents were developed after the IEM guidelines of 1992 (Wood 1995). Even though the IEM guidelines refer to monitoring they provide much more information on the implementation stage than on the preceding stages. The IEM guidelines stipulate that conditions of approval may require that an EMP and an environmental contract be prepared, but provide little guidance on what this plan and contract should contain (Hill 2000).

The need for monitoring is also acknowledged by NEMA, 1998. It states that “procedures for the investigation, assessment and communication of the potential impact of activities must, as a minimum, ensure the following”⁷, ... “investigation and formulation of arrangements for the

monitoring and management of impacts, and assessment of the effectiveness of such arrangements after their implementation”⁸. Despite this recognition of the significance of an EMP, it has not been legislated for. Hill (2000:52) points out that “the lack of regulations on EIA follow-up constitutes a retrograde step for environmental management in South Africa”. Legislation is one of the first areas that needs to be attended to in order to improve the effective use of EMPs. Hopefully this will come into effect soon because as has been mentioned above, currently the DEAT is drafting amendments to Chapter 5 of NEMA and IEM regulations. According to one official, these amendments will require that a comprehensive EMP be compiled before an environmental authorisation is granted (Gordon 2003 *pers. comm.*).

Despite all this ambiguity on the legislative requirements of an EMP and its content, some Development Banks provide more comprehensive guidance on the content of an EMP (Lee & George 2000). Box 2.2 provides the content of an EMP as defined by the World Bank policy.

Box 2.2: Content of an EMP as specified by World Bank policy (World Bank 1999 cited in Lee and George 2000)

- *A summary of all potentially significant adverse impacts that are anticipated.* This can be taken directly from the EIA report.
- *Full details of each planned mitigation measure, referenced to the anticipated impacts, including any environmental impacts of the mitigation measures, and linkages to any other relevant plans.* This too should be a summary of what is stated in the EIA report plus, where appropriate, design details, equipments descriptions and operating procedures. The measures covered should include all those which, if not undertaken, would lead to impacts greater than those predicted, whether or not the EIA report specifically describes them as mitigation measures.
- *Monitoring and reporting procedures.* These should cover both the monitoring of impacts (to detect when particular mitigation measures may be needed) and the monitoring of progress of mitigation and its results. Reporting procedures should define in detail what monitoring results will be reported to the

competent authorities, when, and in what form.

- *Capacity development, training, and responsibilities for mitigation and monitoring.* While the developer has overall responsibility for all mitigation and monitoring, these measures cannot be carried out unless the developer specifies who will carry them out, and provides suitably trained staff. Responsibility may lie with the developer's own organisation, or it may be the main contractor, or a particular sub-contractor. Often it may be necessary to specify a particular job function (e.g. the site manager) who is responsible for certain activities. Responsibilities should be defined for any necessary training, supervision, monitoring of implementation, remedial action, financing and reporting.
- *Implementation schedule and cost estimates.* This schedule should show how each mitigation measure is phased and co-ordinated with the overall project implementation plan. It is essential to demonstrate that all mitigation measures proposed have been fully costed by the developer before project approval, and that these costs have been included in the developer's financial appraisal of project viability.
- *Integration of EMP with the project.* Responsibilities for implementing and supervising the EMP should be assigned within the overall project plan.

2.7.2 Institutional arrangements

One of the major crippling factors hampering the effective use of EMPs is the nature of institutional arrangements. Lee and George (2000) note that some developing countries and countries in transition have complex arrangements for environmental planning and management, with numerous authorities involved. Hence co-ordination of a monitoring programme becomes complex. In some cases, less developed countries may just have a newly developed environmental authority responsible for all environmental issues. In this case the problem is one of capacity to monitor everything that needs to be monitored rather than co-ordination.

Hill (2000:52) notes a similar problem in the effective use of EMPs, as caused by “inadequate institutional and organisational arrangements”. Hill (2000) adds that environmental management typically involves numerous agencies and individuals leading to complications in co-ordinating monitoring. Stakeholders include a range of regulatory authorities in all spheres of government, that is, national, provincial, regional and local level, groups such as developers, environmental consultants within the (often temporary) organisation tasked with implementing a new project, and interested and affected parties (I&APs) in civil society. Responsibilities are often ill-defined, shared and overlapping, and hierarchies for decision making are often unclear. Co-ordination of all stakeholders becomes complex.

Puymbroeck (2000) notes that in sub-Saharan countries there are numerous authorities involved in authorizing development proposals. Unfortunately, legislation does not always address such potential conflicts and the position of the responsible authority within the government may greatly influence its level of power to effectively review and enforce decisions related to the EIA Report. Lee and George (2000) add that in developing countries the developer is often a public authority. This can cause problems in applying sanctions, more especially when the political will to enforce EAs is weak.

Several authors (Brew & Lee 1996; Wood 1999; Hill 2000; Puymbroeck 2002) note that other major problems negatively impacting on the use of EMPs are; lack of financial resources or under-funding, weaknesses of human and professional capacity and vague schedules. Wood (1999:56) states that “crippling under-funding and under-staffing of provincial and local authorities means that they must rely on the complaints of neighbours and the integrity of developers and their consultants for information about non-compliance. The capacity of relevant authorities to take enforcement action if admonition proves ineffective is obviously severely limited”.

2.7.3 Attitudes

In addition to the legislation and inadequate institutional arrangements mentioned above, different perceptions and the lack of understanding regarding the need for EMPs can be major problems undermining effective use of EMPs. The work of Lohani *et al.* (1997) revealed that

in developing countries, parties tasked with managing development projects may not be readily receptive of the necessity for and benefits of an EMP and of the establishment of an Environmental Management Officer (EMO). This leads to another problem, that of contractors not fully appreciating their obligations with respect to mitigation measures. Often, contractors do not arrange for sufficient provision for this work during bid preparation, and they find themselves without adequate monies to carry out the works needed to implement mitigation measures. Some developers want to spend as little as possible on costs associated with implementing mitigation measures. This makes them reluctant to comply with the requirements of an EIA and EMP. Yet these costs are relatively low compared to the costs of the whole project and they are important to achieve an environmentally sound and sustainable project. Even some decision-makers lack understanding of the need for and benefits of an EMP whereas, this understanding will lead to the design of environmentally sound and effective mitigation measures.

One of the problems facing good use of EMPs over and above those mentioned above includes contradictory perceptions towards the whole EIA or IEM procedure. Wood (1999) notes that many developers do not see the need for an EIA, but rather view it a burden. They also lack experience with regulations, whereas the public tend to view it as a way of delaying proposed development. Consultants naturally view EIA as a valuable system, although environmental authorities think that too many development activities are being assessed.

A similar problem of conflicting attitudes was observed with the implementation of the EMP for the Du Toitskloof construction site. Levitt (1997) notes that during this construction environmentalists and developers had a negative attitude towards each other. This finding has negative implications on the co-operation required in environmental management. Developers need to have a sense of appreciation of the environment; whilst environmentalists need to understand the urgency associated with construction.

2.8 Strategies for improvement

If the road to hell is paved with good intentions, environmental assessments which end at the decision-making stage make costly and misleading paving stones. Their

good intentions are likely to come to nothing if they are not monitored (Lee and George 2000:177).

Environmental Management during project implementation is an essential area for improving the effectiveness of Environmental Impact Assessment (EIA) and its South African counterpart, Integrated Environmental Management (IEM) (Hill 2000:50).

Problems hindering effective use of EMPs undermine the whole rationale behind their purpose, consequently crippling the whole IEM process. Therefore, it is of paramount importance that strategies to deal with weaknesses are developed and implemented if the EIA objectives, IEM principles and the concept of sustainable development are to be achieved. The improvement strategies must be implemented not only by environmental authorities but also by all stakeholders (i.e. developers, applicants, consultants, the public, NGOs, etc.). This section identifies and discusses the strategies for effective implementation of EMPs. The reason for discussing strategies is to show that they also have their own advantages and disadvantages. Consequently, they must be implemented with care. It must be mentioned that although strategies are dealt with separately, they are actually interrelated hence they must not be treated in complete isolation. Another important point to mention here is that the following strategies are by no means the only ones. There are numerous strategies identified within the literature. The intention here is to show that there are mechanisms that can be implemented.

2.8.1 Legislation

Legislation is one of the most important areas that needs to be attended to in order to improve the implementation of an EMP. Different countries are not explicit in their requirement of an EMP and this is a crucial issue. The White Paper on Environmental Management Policy for SA published in 1998 emphasized the need for the revision of EIA regulations and the IEM procedure (DEAT 1998). The White Paper condemned the regulating of only certain portions of IEM procedure by EIA regulations of 1997. DEAT (1998:73) described this as “a major limitation of the current regulations”. Wood (1999) forewarns that marrying NEMA regulations with the existing EIA regulations will need considerable care and should be based

on sound information regarding the EIA performance system. DEAT is currently in that process of marrying the two regulations as has been mentioned above.

According to Connelly and Smith (1999:161) “the use of regulations is in many ways straightforward and uncomplicated; it is readily understood by governments and by the public”. Puymbroeck (2002:37) argues that “enacting legislation is not enough, but it is an important step to foster environmental protection and sustainable development”. What needs to be taken into account is that, for regulations to work efficiently, enforcement must be implemented. Jacobs (1999 cited in Connelly & Smith 1999) argues that when enforcement is not implemented effectively, environmental targets may not be accomplished. Puymbroeck (2002) supports the same arguments by adding that where the national capacity to implement the EIA requirement is lacking, legislation is a useless tool. National capacity refers to capacity at the levels where EIA is to be implemented, reviewed, discussed, and monitored. These include central and local governments, decentralised agencies, the private sector, NGOs, and local communities.

2.8.2 Guidelines

In general, guidelines assist in explaining the legal procedure in a manner that is easily understood by everyone. EMP guidelines can be developed to assist all stakeholders. Although guidelines provide clear information on a step by step basis, they also have their own disadvantages. Donnelly, Dalal-Clayton and Hughes (1998) point out that numerous guidelines have been produced in a manner that is not easily accessible to those involved in impact assessment. This presents two problems:

Firstly, and most importantly, decision-makers, planners and practitioners in need of guidance may either be unaware of the existence of such literature, or cannot gain access to it. This may pose a barrier to effective impact assessment, particularly for developing countries.

Secondly, poor awareness of existing literature sources amongst ‘development professionals’ has led to the duplication of work, resulting in the wastage of scarce human and financial resources that could have been used more productively

elsewhere. Shortages of such resources have constrained the development of impact assessment practices in many countries, but particularly those in developing countries. (Donnelly, Dalal-Clayton & Hughes 1998:3)

Donnelly, Dalal-Clayton and Hughes (1998) further discovered that although guidelines are useful, the problem is that they are not legally binding and remain only guidelines. Despite the abundance of guidelines available, recent work shows that they are often not used. Table 2.4 shows usage levels of guidelines amongst user groups from a survey conducted by the Organisation for Economic Cooperation and Development (OECD) in 1994.

Table 2.4: Usage of guidelines by different user groups (Donnelly, Dalal-Clayton & Hughes 1998)

User group	Percentages
Policy and decision makers	15% never use 49% use occasionally
Advisers	4% never use 59% use only occasionally
Field officers, consultants	10% never use 60% use occasionally

These statistics raise important question such as, are guidelines not effective? Do they address the real needs of stakeholders? Those, who do not use guidelines, do they do so because they fully understand all the procedures? Most of all, given the apparent low utilization of guidelines, are the financial resources and time spent on producing guidelines justified? How does one ensure that guidelines are publicized so as to reach the target audience? (Donnelly, Dalal-Clayton & Hughes 1998). Prior to developing an EMP guideline it is important for environmental authorities to consider these questions.

2.8.3 Institutional arrangements

Institutional arrangements present some challenges affecting the effective use of EMPs. Relevant authorities face a number of challenges such as the capacity problem, the lack of co-ordination and under-funding (Puymbroeck 2002).

Puymbroeck (2002) suggests that one of the solutions to these problems is to, over and above employing appropriately qualified staff, make use of external expertise with a variety of skills to ensure adequate review reports. External expertise need not be permanent staff members but it is a good idea to have “a list of national experts (in universities, consulting firms, industry, other government agencies) and of international experts (with proven expertise in the country) that the relevant authority may use on a contractual basis to review EIA Reports and/or to provide any necessary input during the EIA process” (Puymbroeck 2002:147).

Contracting expertise links to the issue of financial resources. Environmental authorities are suffering seriously from under-funding. This implies that, although contracting environmental expertise is one of the improvement strategies, its implementation suffers from financial constraints. Despite the problems of financial resources, contracting expertise remains important as it can strengthen the human and professional capacity of environmental authorities.

Capacity constraints can also be dealt with by prioritizing work. Prioritization of responsibilities is of paramount importance to those environmental authorities which suffer from understaffing and financial constraints. Arts (1998 cited in Lee and George 2000:186) observed that “in many low and middle income countries, the competent authority for EIA may be a newly created agency, with a shortage of trained staff, and ill defined overlaps between its responsibilities and those of other agencies. In these circumstances, it is essential to focus resources on those impacts, which are of prime importance, and for which monitoring can make a real difference. Otherwise monitoring can become an expensive academic exercise with no clear practical purpose”.

Lee and George (2000) stress that relevant authorities also need to ensure that EMPs clearly define the roles and responsibilities of all stakeholders involved. This is to ensure that responsibility for monitoring can be spread amongst all stakeholders, thus reducing responsibilities for relevant authorities. Relevant authorities need to ensure that monitoring reports are provided by a developer in accordance with a sound EMP. There must also be close co-ordination between environmental authorities, so that a small number of spot-check visits by relevant authorities should be a sufficient means of control.

2.8.4 Participation

An EMP is of little value unless it is monitored not just by the developer but also by an independent environmental consultant, the relevant authorities and the public. For monitoring to be effective the relevant authority needs to co-ordinate monitoring with other relevant authorities (refer to Table 2.2). This need for close co-ordination reinforces the need for effective consultation with other authorities in the earlier stages of the EA process (Lee & George 2000). Current lack of monitoring clearly emphasizes the need to encourage developing countries in particular, “to move beyond EIA into environmental assessment (from cradle to grave) process and from compliance with legal requirements into actual enforcement of environmental safeguards” (Puymbroeck 2002:36).

During the implementation stage, I&APs “are characterised as knowledgeable and watchful publics which will have a strong interest in post-approval environmental management, particularly if a community liaison committee is established” (Bisset 1996 cited in Hill 2000:52). Hill (2000) further states that the necessity for public involvement in the project implementation phase, means that there should be a clearly identified contact office where the public can lodge complaints, either in person or by telephone and e-mail. Public participation would be fostered by establishing a role which I&APs can play in the design and implementation of mitigation measures and monitoring, by providing access to monitoring information, and by constituting a forum for resolving complaints. According to Puymbroeck (2002:38) “without this continuum, the initial consensus built during the EIA cannot be sustained in the longer term, thus wasting the opportunity to monitor actual impacts on the

environment". Public involvement can also assist environmental authorities, because they are frequently short-staffed.

Above all, IEM principles encourage public participation in all stages of development in order to make informed decisions by relevant authority.

2.8.5 Environmental awareness training programmes

Participation of all stakeholders leads to the critical issue of training. According to Puymbroeck (2000) the following factors are of absolute importance:

- accessibility of environmental laws should not be restricted to certain areas such as cities but must be made available to all stakeholders as development occurs everywhere;
- training should include all stakeholders, that is environmental authorities, environmental consultants as well as the public. Training of the trainers should be encouraged;
- resources should be made available in order to enable all stakeholders to implement what they are mandated to do as well as to fulfil their responsibilities.

It is essential that environmental training be conducted for all stakeholders involved in project implementation. Carter (1996) argues that environmental awareness training programmes provide consulting engineers and contractors with necessary information about the environment on site as well as the need to protect it. Awareness training programmes should be conducted at the tender stage especially at the tender site visit so that contractors can quote for the whole project taking into account mitigation measures to be implemented on site.

All stakeholders need to be made aware of the need to protect and of the benefits of protecting the environment and of the wide range of environmental tools that can be used. Training can play an important role in changing people's attitudes towards the environment. Consequently people could start appreciating the value of environmental management.

Training should also inform stakeholders especially contractors about success stories. It must show how other developments that have complied with EMP requirements have benefited from it. The purpose of training programmes must be to emphasise that “the implementation of an effective mitigation programme is more cost-effective than initiating clean-up programme at a future date” (DEA 1992a:17). Box 2.3 provides examples of success stories.

Box 2.3: Examples of success stories on EMP implementation (Levitt 1997 & Middleton; Hamilton & Shadforth, undated)

Environmental Management Plan for the road construction on the N1 between Paarl and Worcester compiled by Hill Kaplan Scott for The Department of Transport.

The implementation of this EMP prevented water pollution and vegetation destruction. Cut-and-fill slopes were meticulously shaped to tie in with the surrounding landscape and stately boulders and existing rock outcrops were incorporated where possible. This was a radical departure from the traditional, geometrically smooth slopes. The resulting rock faces between the Molennars and Klip Rivers are truly spectacular (Levitt 1997).

Fletcher Construction and Multiplex Southbank Towers case study

Fletcher Construction and Multiplex Southbank Towers have also made significant savings. Fletcher Construction trailed waste reduction during the Dandenong and Police Courts Complex reducing the total volume of waste by 15%. This combined with strategies to recover and recycle materials led to a 43% reduction in waste to landfill which has meant a reduction in waste disposal costs of 55% saving the company \$73,000 over the life of the project.

Multiplex Southbank Towers saved 46% of its waste removal budget by implementing waste minimisation practices during construction. For its work the company was awarded waste minimisation, the 1998 Master Builders Association of Victoria (MBAV) Excellence in Construction Award for Waste Minimisation (funded by EcoRecycle Victoria) (Middleton, Hamilton & Shadforth, undated).

2.8.6 Sanctions and bonus systems

Carter (1996) argues that contractors and the environmental management team (EMT) have fundamentally different goals. Contractors often are not concerned about the environment. The contractor is primarily concerned with the end result, and obtaining that result on time and within the budget. Conversely the EMT is more concerned with the methods employed to reach the end result in order to ensure that damage to the environment is minimised. Carter (1996) suggests that the introduction of a bonus and penalty system would provide an excellent incentive to the contractor to adhere to the specifications, and would be a deterrent to ignoring them. A bonus system should be planned properly to avoid financial and logistical problems.

Literature presents a wide range of strategies that can be used in the effective implementation of EMPs. As has been mentioned above, the strategies presented are not the only ones available but the intention here is to show some of the crucial areas that need to be attended to if the objectives of IEM are to be achieved. The focus on the EMP is not to say that it is the only important environmental management tool but that it is one of the tools that needs great attention as it has an immense contribution to make to the management of a project from inception to completion.

Chapter 3: Conceptual framework and research approach

3.1 Introduction

The purpose of this chapter is firstly to outline the conceptual framework for this study, and secondly, to explain the research approach and rationale for this study. Finally, the chapter provides methods that will be used in data gathering as well as the rationale behind those methods.

3.2 Conceptual framework

The IEM procedure provides a framework, which guides the environmental investigations to be undertaken to make an informed decision regarding a proposed activity. In the IEM procedure there are a number of tools, which are used to make decisions at different stages of the environmental process. An EMP is one such tool within the IEM procedure. The purpose of an EMP is to fulfil the principles of IEM. Literature reveals that there are problems with the effective use of EMPs, which consequently affects the achievement of IEM. It is imperative to find strategies for the use of EMPs if IEM principles are to be accomplished. Figure 3.1 shows the conceptual framework behind this research.

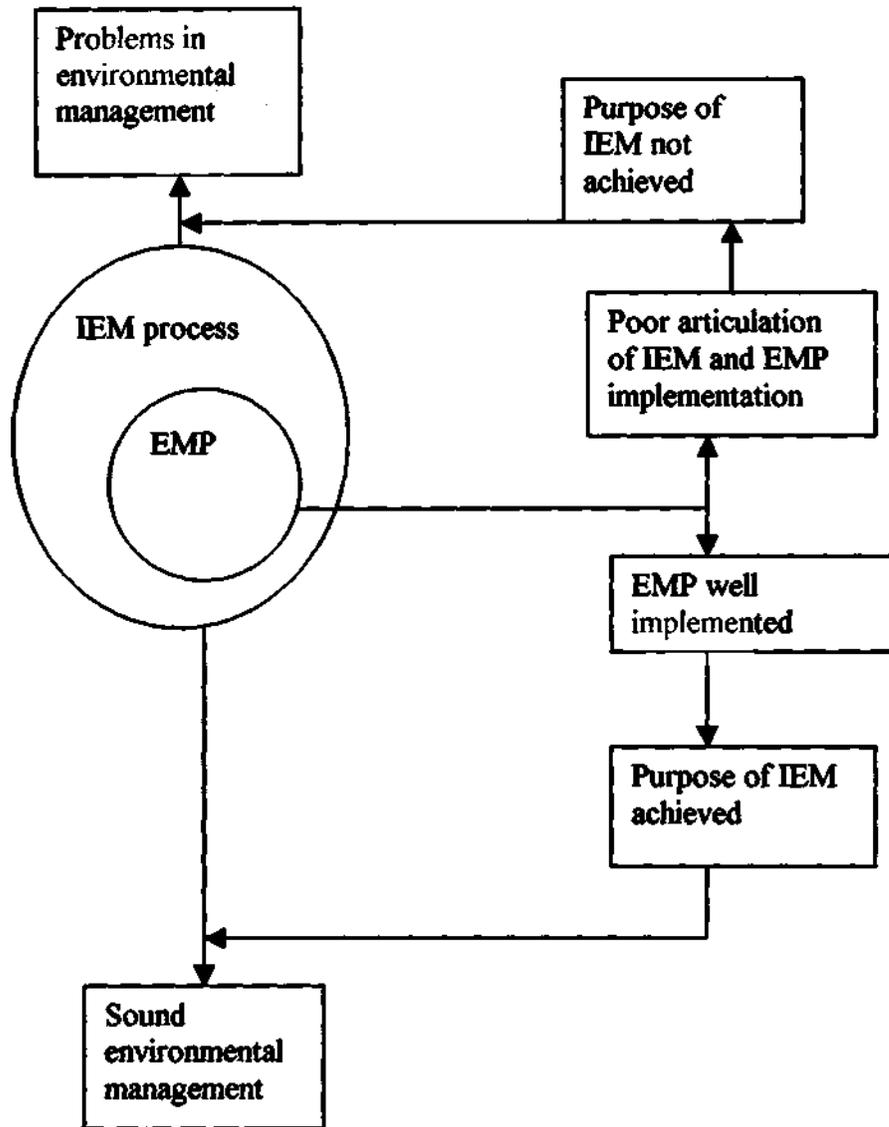


Figure 3.1: Conceptual framework

3.3 Research approach

The research approach undertaken will be to collect information through a literature review, the use of questionnaires and collecting information from the Department of Agriculture and Environmental Affairs' (DAEA) archives. This approach will allow the researcher to obtain qualitative and quantitative information. Qualitative research allows the researcher to investigate people's attitudes, opinions, beliefs and knowledge of a particular issue (Smith 1981; Patton 1990; Giele & Elder 1998). On the other hand quantitative research facilitates

“comparison and statistical aggregation of data. This gives a broad, generalisable set of findings presented succinctly and parsimoniously” (Patton 1990:14).

3.3.1 Literature review

In the light of the above, literature as a source of qualitative data, will be used extensively in this research. Glasier and Strauss (1967) identify some of the uses of literature as a source of qualitative data. Firstly, literature assists the researcher to understand the substantive area under study. Secondly it is used as a descriptive analysis. Finally, it can be used to study changes over time. The literature will be used to understand EMPs, describe current trends and to identify changes, if any, that have occurred over time.

3.3.2 Information from DAEA's archives

Information from archives contains files with the ROD noted by the DAEA. According to DEA (1992a) EMPs can form part of the conditions of a ROD. Therefore, archived information allows the researcher to collect numerical data on the use of EMP, for example, how many EMPs were requested, approved and monitored.

3.3.3 Questionnaire survey

Questionnaires, as one of the sources of qualitative data, will be used in this research. Questionnaire responses allow the researcher to understand attitudes, feelings, thought and characteristics of certain people (May 1993). Furthermore, questionnaires provide “an ability to generalize from a sample of population, to the population as a whole” (May 1993:67). The researcher will send questionnaires to two sectors of respondents: environmental authorities (28) and environmental consultants (23). The questionnaire method will allow the researcher to generalize about each sector's attitudes, feelings and thoughts about EMPs. Responses will be quantified to provide an indication of the significance of the responses.

Purposive and chain referral sampling will be used in selecting people to participate in the survey. Purposive sampling will be used to select “especially informative” (Neuman 1991:206) people. The time constraints of this research allows only people who are knowledgeable about the subject to be surveyed, for example environmental authorities and

environmental consultants. Chain referral sampling will assist in identifying more people within an organisation who have knowledge about EMPs. This will assist in increasing the number of respondents. The chain referral method allows the researcher to start with a small number of respondents and then increase this on the basis of connections with the original group (Neuman 1991).

Combining qualitative and quantitative approaches assists the researcher to “give a complete portrait” (Giele & Elder 1998:221) of a particular issue. Both approaches allow the researcher to “pass judgement, to use reasoning and to reach a conclusion based on evidence” (Neuman 1991:419). Therefore, both qualitative and quantitative data collected will provide a full portrait of the current use of EMPs in KZN.

3.4 Methodological process

The literature will be used to gather information on IEM principles and procedures, the definition of an EMP, the establishment of purpose and role of an EMP in IEM, the use of EMPs in development banks, developed countries and developing countries, the identification of problems hindering effective EMP implementation and the identification of improvement strategies. Questionnaires will be used to establish respondents’ understanding of the purpose and role of an EMP in IEM, review the use of EMPs, and identify problems and strategies for EMP implementation. Information from DAEEA’s archives will be used to gather numerical information on the use of EMPs in KZN. Figure 3.2 presents the methodological process diagram of this research.

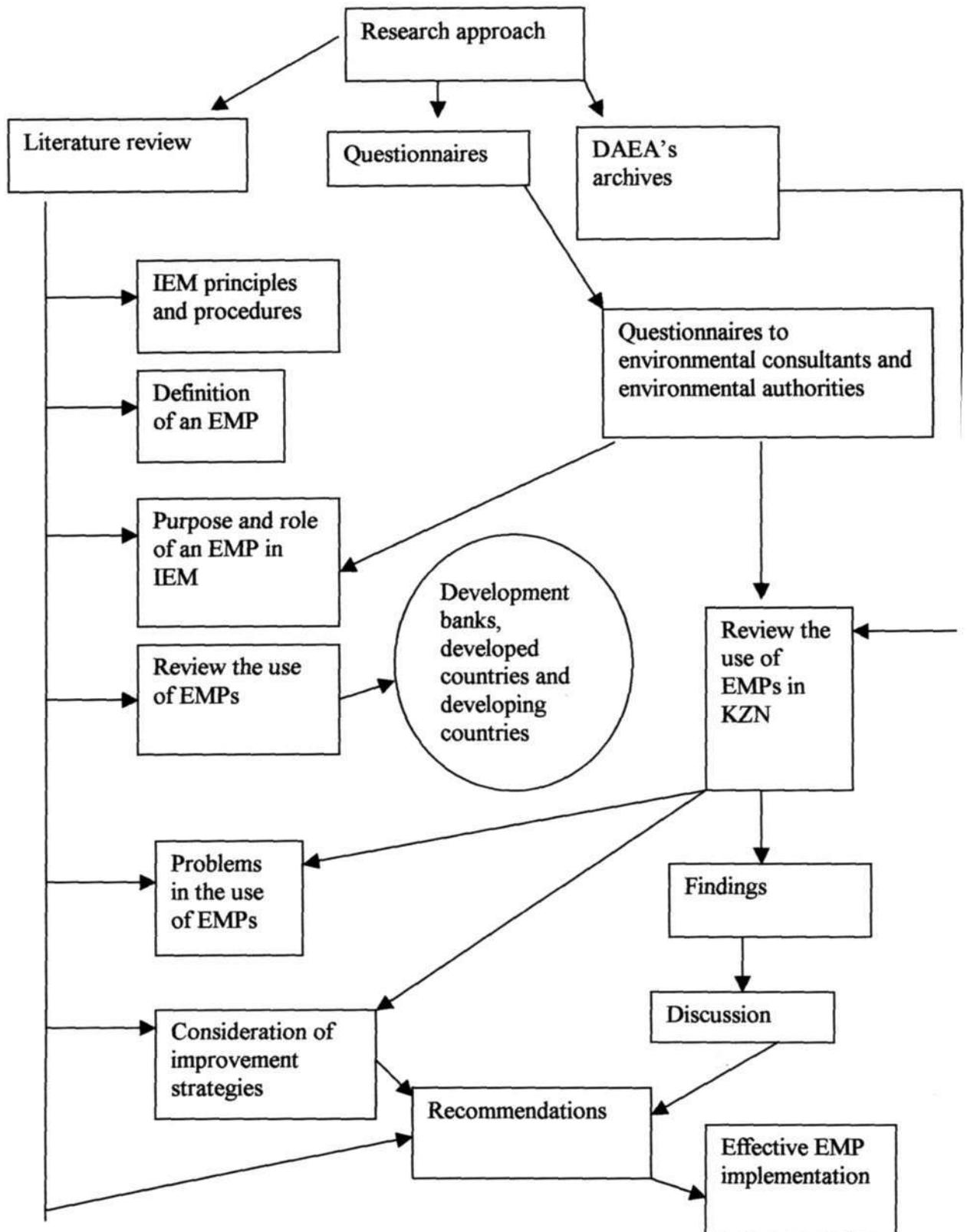


Figure 3.2: Methodological process diagram

3.4.1 Data collection

3.4.1.1 Information from DAEA's archives

An analysis of historical trends will be undertaken by using a quantitative approach. The approach undertaken will be to record the information from each file as per Table 3.1 for each and every year since the establishment of this Department in 1997, then referred to as the Department of Traditional and Environmental Affairs (DTEA).

Table 3.1: Type of information and terminology used in collecting data on the use of EMPs in the DAEA's archives

Terms	Explanation
Date of ROD	Date of Record of Decision
Number of RODs	Number of RODs approved in that particular year
EMPs requested	Number of RODs that stated clearly in the conditions of approval that an EMP must be submitted to the Department for approval prior to construction
EMPs submitted	Number of EMPs submitted as requested in the conditions of approval
EMPs approved	Number of EMPs approved by the DAEA
EMPs already included	Number of EMPs submitted as part of the Scoping Report and / or EIA report
Monitoring	Number of EMPs monitored by DAEA

3.4.1.2 Questionnaires

A semi-structured questionnaire will be used. A semi-structured questionnaire allows both closed-ended and open-ended questions to be used. Closed-ended questions will be used where specific information is required. For example, in some questions, a yes or no answer will be required. This will be followed by an open-ended question where respondents will be requested to substantiate their responses. Two different sets of questionnaires will be designed. One will be sent to environmental authorities. Another one will be sent to environmental consultants. Two different sets of questionnaires will be designed because although some of the questions will be similar, others will have to be sector specific. For example, government

officials will be asked about reviewing and approving EMPs since these responsibilities rest with government. Whereas, consultants will be asked if they submit EMPs if required to do so in the conditions of approval.

The design of most of the questions will be done using a likert scale. The likert scale can be used to measure people's attitudes for example respondents can rate themselves from each of these categories 'never', 'sometimes', 'often', 'almost always' and 'always' (Refer to Appendix 6.1 and 6.2). Categories will be kept to a minimum otherwise they become less meaningful and create confusion (Neuman 2000).

A crucial factor in a qualitative research is to intentionally select informants that fit the objective of the study (Creswell 1994). Hence the researcher will purposefully select respondents who have some knowledge and experience of the topic. This implies that this research will present the views and opinions of people with some experience of EMPs. The selected respondents will include environmental authorities and environmental consultants. The selected respondents will be from the DAEA, the Department of Water Affairs and Forestry (DWAF), Ezemvelo KZN Wildlife (EKZNW), Amafa, the Environmental Management Branch (EMB) of eThekweni Municipality and environmental consultants.

3.4.2 Data analysis

Data collected will be categorised and presented mainly in tabular form and visual displays. Data will be analysed and categorized according to the themes such as; need of submission of EMPs; public participation in EMPs; and monitoring of EMPs emanating from the responses on these issues. Percentages will be used to indicate the relative significance of views shared with respect to that theme.

3.5 Limitations of the study

As has been mentioned above, due to the nature of the subject, respondents have to be purposefully selected. Due to the limited number of officials assessing EMPs random selection will not be possible. The researcher intends to overcome this problem of a limited number by using the chain referral method. This will assist in obtaining the maximum possible number of

respondents. It will also assist in addressing bias because not all the responded will be familiar to the researcher. Nevertheless because there is reliance from respondents' responses, institutional bias is possible.

The use of the questionnaire method always has a risk of respondents not returning responses. The researcher intends overcoming this problem by sending reminders by means of telephone and e-mail.

3.6 Conclusion

This chapter has described the conceptual framework and research approach to this study. This chapter shows that the methodology to be used will be literature review, both international and national, collection of quantitative data from DAEA's archives and questionnaire method. Questionnaires will be sent to environmental authorities and environmental consultants within KZN. Literature review will provide comprehensive review of EMPs focusing on technical issues. The methodology chosen should also provide insight to the use of EMPs. The chain referral system to be used in sending questionnaires should address bias concerns.

4. Notes

¹ Section 26 (c) of ECA, 1989

² Section 26 (c) of ECA, 1989

³ DAEA is the relevant authority in terms of section 22 of ECA, 1989.

⁴ Section (3) (1) (b) of EIA Regulations, 1997

⁵ Section 2 (4) (vii) of NEMA, 1998

⁶ Section 26 (c) of ECA, 1989

⁷ Section 24 (7) of NEMA, 1998

⁸ Section 24 (7) (f) of NEMA, 1998

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Personal Communication

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6. Appendices

6.1 Appendix A: Questionnaire sent to environmental authorities

I am a student from the Centre for Environment and Development at the University of Natal, Pietermaritzburg. I am undertaking a research on Environmental Management Plans, which are submitted in terms of the EIA process. With your experience with respect to EMPs you are requested to respond to the following questions.

- Please read all the questions before answering.
- Use a cross to indicate your answer where necessary.
- You can cross more than one answer where necessary.

1. In your understanding what is the purpose of an EMP ?

.....
.....

2. What do you understand or suggest to be the most important components of an EMP?

.....
.....
.....

3. In your experience when is an EMP generally submitted?

As part of the Scoping report / Environmental Impact Assessment (EIA) Report

After the approval of the Scoping report / EIA

In most cases as part of the Scoping Report / EIA

Rarely as part of the Scoping report / EIA

Any other way? Please specify

.....
.....

4. Do you think it is necessary for the Department to request an EMP for every application/proposal?

Yes

No

4. Why?

.....
.....

4. 2 In cases where you have requested an EMP, how frequently do consultants submit an EMP?

- In the past (before 2002)

Never

Sometimes

Often

Almost always Always

- Currently (2002 and 2003)

Never Sometimes Often

Almost always Always

4.3 Have you noticed any change in patterns of submission of EMPs since you joined the Department?

Yes No

4.4 Please explain.

.....
.....
.....

4.5 What do you think are the reasons for EMPs not being submitted as requested by the Department?

.....
.....
.....

4.6 What should be done to ensure that EMPs are submitted as requested?

.....
.....

5. Is there any specified method for reviewing EMP in the Department?

Yes

No

Not sure

6. Is there any specified format for approving EMPs in the Department?

Yes

No

Sure

6.1 Do you formally approve EMPs (i.e in writing)?

Never

Sometimes

Often

Almost Always

Always

6.2 Before approving an EMP, do you ensure that it is circulated to other relevant departments?

Never

Sometimes

Often

Almost Always

Always

6.3 Reasons

.....
.....
.....

6.4 Do you ensure that their comments are considered before writing an approval letter?

Never Sometimes Often

Almost Always Always

7. Do you require the stakeholders such as Non-Governmental Organisations (NGOs), public, etc who were involved in the Scoping/ EIA to review the EMP?

Never Sometimes Often

Almost Always Always

7.1 Why?

.....
.....
.....

7.2 Do you see the involvement of stakeholders in reviewing the EMP as necessary?

Never Sometimes Often

Almost Always Always

7.2 Why?

.....
.....

8. How many approved EMPs are you currently monitoring?

.....

8.1 What is your specific responsibility in the monitoring performance with respect to an EMP?

.....
.....
.....

8.2 If there is / are any EMP/s that you are monitoring, do you ensure that other government departments / stakeholders are involved in the monitoring of the project?

• Government Departments

Never Sometimes Often

 Almost Always Always

• Stakeholders

Never Sometimes Often

 Almost Always Always

8.3 Why

.....

9. Have you ever heard of a course offered by any institution, which focuses on EMPs.

Yes No

9.1 If yes, please specify.

.....
9.2 Have you attended any course, which focuses on EMPs?

Yes

No

9.3 Which course?
.....

10. Are you aware of any published EMP guidelines? For example, guidelines on the format, content, procedures to be followed in compiling and implementing the EMP.

Yes

No

10.1 If yes, please specify.
.....

10.2 Do you make use of guidelines in assessing EMPs?

Never

Sometimes

Often

Almost Always

Always

11. Would you support the idea that EMPs must be submitted as part of the Scoping Report or EIA?

Yes

No

11.1 Why?

6.2 Appendix B : Questionnaire sent to consultants

I am a student from the Centre for Environment and Development at the University of Natal, Pietermaritzburg. I am undertaking a research on Environmental Management Plans, which are submitted in terms of the EIA process. With your experience with respect to EMPs you are requested to respond to the following questions.

- Please read all the questions before answering.
- Use a cross to indicate your answer where necessary.
- You can cross more than one answer where necessary.

1. In your understanding what is the purpose of an EMP?

.....
.....
.....

2. What do you understand or suggest to be the most important components of an EMP?

.....
.....
.....

3. In your experience when do you normally submit an EMPs to the relevant authorities?

- As part of the Scoping report / Environmental Impact Assessment (EIA)Report
- After the approval of the Scoping report / EIA
- In most cases as part of the Scoping Report / EIA
- Rarely as part of the Scoping report / EIA

Any other way? Please specify.

.....
.....

4. Do you think it is necessary for the Department/s to request an EMP for every application / proposal?

Yes

No

4.1 Why?

.....
.....
.....

4.2 Do you always submit an EMP if stipulated in the conditions of approval of the Record of Decision?

Never

Sometimes

Often

Almost Always

Always

4.3 What should be done by to ensure that EMPs are always submitted as requested?

.....
.....
.....

4.4 Before submitting the EMP, do you ensure that it is circulated to other relevant Departments for comment?

Never Sometimes Often

Almost always Always

4.5 Why

.....
.....

4.6 Do you ensure that the stakeholders such as Non-Governmental Organisations (NGOs), public, etc who were involved in the Scoping /EIA review the EMP before it is submitted?

Never Sometimes Often

Almost Always Always

4.7 Why?

.....
.....

4.8 Do you see the involvement of the stakeholders in reviewing an EMP as necessary?

Never Sometimes Often

Almost Always

Always

4.9 Explain

.....

.....

.....

5. How frequently are you involved in monitoring/auditing of the implementation EMP during the construction/operation phase?

Never

Sometimes

Often

Almost Always

Always

5.1 How many approved EMPs are you currently monitoring?

.....

5.2 What is your specific responsibility in monitoring performance with respect to an EMP?

.....

.....

5.3 Do you involve relevant environmental authorities in monitoring of an EMP?

Never

Sometimes

Often

Almost always

Always

5.4 Which ones? Please specify.

.....

5.5 Do you see the involvement of the relevant environmental authorities in monitoring EMPs as necessary? Explain.

.....
.....
.....

5.6 Do you ensure that other stakeholders are involved in the monitoring of the EMPs?

Never Sometimes Often

Almost Always Almost

5.7 How?

.....
.....
.....

5.8 Do you see the involvement of stakeholders in monitoring an EMP as necessary?

Never Sometimes Often

Almost Always Almost

5.9 Why?

.....
.....

6. Have you ever heard of a course offered by any institution, which focuses on EMPs?

Yes

No

6.1 If yes, please specify.

.....

6.2 Have you attended any course, which focuses on EMPs?

Yes

No

6.3 Which course?

.....

7. Would you support the idea that EMPs must be submitted as part of the Scoping Report or EIA?

Yes

No

7.1 Why?

.....
.....
.....

COMPONENT B

Abstract

Environmental management tools, and in particular Environmental Management Plans (EMPs), were developed to ensure proper environmental management throughout the life of a development project. In spite of the availability of such tools, environmental destruction still persists. This paper critically reviews the role and use of EMPs with the intention of recommending strategies for improved performance in their use in KwaZulu-Natal (KZN). The recommendation came from the process of analyzing files stored with the Department of Agriculture and Environmental Affairs (DAEA) and analyzing questionnaire responses from environmental authorities and consultants.

The study identified some of the key challenges affecting the effective implementation of EMPs. Potential interrelated strategies were identified. Hence appropriate analysis and prioritization of strategies is fundamental.

Keywords: Environmental Impact Assessment, Integrated Environmental Management, Environmental Management Plan, effective, use, challenges, strategies, monitoring, evaluation, implementation,

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Abbreviations

CME	Compliance Monitoring and Enforcement
DAEA	Department of Agriculture and Environmental Affairs
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DTEA	Department of Traditional and Environmental Affairs
DWAF	Department of Water Affairs and Forestry
ECA	Environment Conservation Act, 1989
EIA	Environmental Impact Assessment
EKZNW	Ezemvelo KwaZulu-Natal Wildlife
EMB	Environmental Management Branch
EMP	Environmental Management Plan
I&APs	Interested and Affected Parties
IEM	Integrated Environmental Management
KZN	KwaZulu-Natal
NEMA	National Environmental Management Act, 1998
PPA	Post-Project Analysis
ROD	Record of Decision
SA	South Africa
UNECE	United Nations Economic Commission for Europe

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1. Introduction

The definitions of an Environmental Impact Assessment (EIA) vary from one country to another. In essence it can be defined as a process of assessing environmental consequences of proposed projects, policies and plans and understanding their environmental consequences prior to commencement (Fuggle and Rabie, 1992; Gilpin, 1995; Wiesner, 1995; Modak and Biswas, 1999; Puymbroeck, 2002).

The introduction of EIA was influenced by a need to ensure that economic development that is not at the expense of the environment. The concept of EIA has been widely adopted by development banks, developed countries and developing countries.

The characteristics of the EIA process may differ from country to country but the process generally includes screening, consideration of alternatives, scoping, impact assessment, identification of mitigation measures, communication, decision-making and post-project analysis (PPA) (Gilpin, 1995; Lee and George, 2000; Puymbroeck, 2002). PPA is now considered to form part of the EIA process, which previously ended at the decision stage (Gilpin, 1995). The last part of the EIA process forms the subject of this paper.

Although different countries use different terminology to refer to PPA, their views on its purpose are similar. The United Nations Economic Commission for Europe (UNECE) uses the term PPA (Gilpin, 1995). Nigeria refers to it as a 'follow-up programme' (Puymbroeck, 2002). Many other countries refer to PPA as an Environmental Management Plan (EMP) (Lee and George, 2000). An EMP is basically "the set of mitigation, monitoring and institutional measures to be taken during implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels" (World Bank, 1999, cited in Lee and George, 2000, page 179).

The main purpose of an EMP is to ensure that the objectives of an EIA are achieved. The UNECE views the purpose of PPA as a fundamental tool for fulfilling the objectives of the whole Environmental Assessment (EA) process, since its purpose is to ensure that mitigation measures for impacts identified in the initial phases are carried forward into

the decommissioning phase (Gilpin, 1995). South Africa (SA) has a similar view on the role of an EMP. The Department of Environmental Affairs (DEA) (1992a, page 17) states that “the purpose of a Management Plan is to describe how negative environmental impacts will be managed, rehabilitated or monitored and how positive impacts will be maximised”.

1.1 Problem statement

The procedures and product associated with the PPA phase vary regionally also. For example, the World Bank requires an EMP to be submitted as part of the EIA process. The World Bank specifies the content of an EMP. The UNECE procedure requires a preliminary plan for PPA to be prepared during the EIA process and a final detailed report to be submitted after approval. PPA is taken into account when stipulating conditions of approval. Some member countries of UNECE such as The Netherlands and Britain have made PPA a formal requirement of the EIA process while others have yet to legislate this requirement (Gilpin, 1995). In some developing countries, such as Chile, a monitoring plan is required but content requirements are not specified (Lee and George, 2000).

In SA the recognition of the need for a PPA phase can be traced to the late 1980s. The Environment Conservation Act, (ECA) 1989, recognised the need to set out procedures to be followed at an implementation stage¹ (RSA 1989). However, the term EMP is not used as such in the ECA. In 1992, SA presented its first discussion on the use of EMPs through a publication of the Integrated Environmental Management (IEM) guideline series. According to the DEA (1992a) an EMP may form part of the conditions of approval or it may be recommended by an Initial Assessment or it may be submitted by the proponent as part of the proposal.

In 1997, the EIA regulations were promulgated in terms of section 26 and 28 of the ECA, 1989. These regulations did not regulate the requirement of an EMP and did not stipulate its content despite mention of an EMP in the previous documents (DEAT 1997). The omission of an EMP in the regulations did not affect the concern felt by many that

there should be an EMP. In 1998, SA recognized the need for the monitoring of projects through the National Environmental Management Act (NEMA). NEMA advocates exactly what was already stipulated in the IEM guidelines series (RSA, 1998).

Again in 1998, SA emphasized its concern for an EMP in the White Paper on Environmental Management Policy for SA. The White Paper also advocates the need to legislate the entire IEM procedure not certain portions of it (DEAT, 1998). Recently, the Department of Environmental Affairs and Tourism (DEAT) published an information series on environmental management tools. Information series 12 is dedicated to EMPs (DEAT, 2004). Currently, the DEAT is in the process of regulating EMPs (Gordon, 2003, *pers.comm.*).

A review of literature reveals that although the idea of an EMP was developed to ensure proper environmental management throughout the life-cycle of development projects, environmental damage still persists (Lohani, Evans, Ludwig, Everitt, Carpenter and Tu, 1997). It also reveals that some of the reasons that can be attributed to such persistence are that environmental management tools, an EMP in this particular case, are not utilized effectively. Hanks and Pearsall (1998, page 590) define the word effective as being something “successful in producing a desired or intended result”. A review of literature shows the presence of different views about EMPs in different countries and also of the numerous difficulties hampering their effective use.

It is important then to understand the significance of EMPs in an IEM process by trying to answer the following critical questions:

- What is the purpose and role of an EMP?
- What are the challenges hindering their effective use?
- What strategies can be developed in order to improve their implementation?

1.2 Aims and objectives

The aim of this paper is to critically review the role and use of EMPs in KwaZulu-Natal (KZN) with the intention of developing strategies for improved performance. This will be achieved through establishing the following objectives:

- to evaluate the extent to which EMPs are used as management tools to achieve IEM objectives in KZN;
- to recommend approaches to improving the formulation, evaluation, implementation and monitoring of EMPs in KZN.

2. Research methodology

2.1 Research approach

The research approach adopted was to collect information through a review of literature, the use of questionnaires and the collection of information from the archives of the Department of Agriculture and Environmental Affairs (DAEA²). This approach allowed the researcher to obtain qualitative and quantitative information. Qualitative research allowed the researcher to investigate people's attitudes, opinions, beliefs and knowledge of a particular issue (Smith, 1981; Patton, 1990; Giele and Elder, 1998). On the other hand, quantitative research facilitated "comparison and statistical aggregation of data. This gives a broad, generalisable set of findings presented succinctly and parsimoniously" (Patton, 1990, page 14).

2.1.1 Information from the DAEA's archives

Information from archives contains files with the Record of Decision (ROD) made by the DAEA. According to DEA (1992a) EMPs can form part of the conditions of a ROD. Therefore, archived information allowed the researcher to collect numerical data on the use of EMPs.

2.1.2 Questionnaire survey

Questionnaires, as one of the sources of qualitative data, were used in this research. Questionnaire responses allowed the researcher to understand attitudes, feelings, thoughts and characteristics of respondents about a certain issue (May, 1993).

Purposive and chain referral sampling were used in selecting people to participate in the survey. Purposive sampling was used to select people who would be “especially informative” (Neuman, 1991, page 206). The time constraints of this research allowed only people, who were thought to be the most knowledgeable about the subject, to be surveyed for example environmental consultants and environmental authorities. Chain referral sampling was used to assist in identifying more people within an organisation who would have knowledge about EMPs.

Combining qualitative and quantitative approaches assisted the researcher to “give a complete portrait” (Giele and Elder, 1998, page 221) of a particular issue. Therefore both qualitative and quantitative data collected assisted in providing a full portrait about the current use of EMPs in KZN.

2.2 Data collection

2.2.1 Information from the DAEA’s archives

An analysis of historical trends was undertaken by using a quantitative approach. The approach undertaken was to record the information from each file as per Table 1 for all the years since the establishment of this Department in 1997, then referred to as the Department of Traditional and Environmental Affairs (DTEA).

Table 1. Type of information and terminology used in collecting data on the use of EMPs from the DAEA's archives

Terms	Explanation
Date of ROD	Date of the Record of Decision.
Number of RODs	Number of RODs approved in that particular year.
EMPs requested	Number of RODs that stated clearly in the conditions of approval that an EMP must be submitted to the Department for approval prior to construction.
EMPs submitted	Number of EMPs submitted as requested in the conditions of approval.
EMPs approved	Number of EMPs approved by the DAEA.
EMPs already included	Number of EMPs submitted as part of the Scoping Report and / or EIA report.
Monitoring	Number of EMPs monitored by the DAEA at the time of the research.

2.2.2 Questionnaires

A semi-structured questionnaire was used. A semi-structured questionnaire allowed both closed-ended and open-ended questions to be used. Closed-ended questions were used where specific information was required. This was followed by an open-ended question where respondents were requested to substantiate their responses.

The design of most of the questions was achieved using a likert scale. The likert scale can be used to measure people's attitudes, for example respondents were asked to rate themselves from each of these five categories: 'never', 'sometimes', 'often', 'almost always' and 'always'. Categories were better kept to a minimum otherwise they would have become less meaningful and created confusion (Neuman, 2000).

A crucial factor in a qualitative research project is to intentionally select informants that fit the objective of the study (Creswell, 1994). Hence, the researcher purposefully selected respondents who had some knowledge and experience of the topic. This means that this research presents views and opinions of people with some experience of EMPs. The selected respondents included environmental consultants, the professionals who prepare EMPs and environmental authorities, the professionals who review EMPs. The environmental authorities included the DAEA, the Department of Water Affairs and Forestry (DWAF), Ezemvelo KZN Wildlife (EKZNW), Amafa, the Environmental Management Branch (EMB) of eThekweni Municipality (refer to Table 2). For the purposes of this research all these organisations were referred to as environmental authorities. The reason for choosing these environmental authorities was that they normally participate in the review of EMPs.

Two different sets of questionnaires were designed as although some of the questions were similar, others had to be sector specific. One set was sent to environmental authorities, another to environmental consultants. In total, 51 questionnaires were sent: 28 to environmental authorities and 23 to environmental consultants. In total, thirty nine (77%) were received. Twenty one (75%) responses were received from environmental authorities and eighteen (78%) were received from environmental consultants. For the purposes of this research the word 'respondents' was used to refer to people from both sectors.

Table 2. The representation of respondents that participated in the study

Respondents	Organisations	Questionnaires sent	Returned
Environmental authorities	DAEA	17	14
	EKZN	6	3
	DWAF	3	2
	Amafa	1	1
	EMB	1	1
Consultants	Consultants	23	18
	Total	51	39

3. Limitations of the study

As has been mentioned above, due to the nature of the subject, respondents had to be purposefully selected. Due to the limited number of officials assessing EMPs random selection could not be possible. The researcher endeavoured to overcome this problem by using the chain referral method. This assisted in obtaining a possible maximum number of respondents as presented in Table 2. The use of the questionnaire method always carries the risk of respondents not returning responses. The researcher endeavoured to obviate this problem by sending reminders by means of telephone and e-mail.

4. Results

4.1 Purpose of an EMP

Respondents' views on the purpose of an EMP have been categorized as outlined below. Categories were established based on the themes that emanated from the responses. Table 3 highlights these themes.

Table 3. Respondents' understanding of the purpose of an EMP

Issues	Purpose of an EMP
Management of environmental impacts	To manage the environmental impacts associated with development during its life-cycle. An EMP ensures that environmental considerations are effectively integrated into the processes of constructing and operating a proposed development. It provides for implementation of mitigation measures contained in the Scoping/EIA report. It sets logical and practical goals and actions. Its purpose is to institute mitigatory measures not catered for in the planning or design phase of a project.
Guideline	It serves as a guide and framework to ensure sound environmental management. It sets environmental guidelines for actual and potential impacts of a proposed activity to ensure its compatibility with the natural environment and surrounding land uses by highlighting controls required to mitigate impacts prior, during and after project implementation.
Monitoring and auditing	It acts as a standard against which a site will be audited. It provides a means of monitoring impacts of the activity on the receiving environment. It is intended to store data about impacts and effects of mitigation measures.
Enhance positive impacts	It is a plan to ensure that anticipated negative impacts are minimized and that positive impacts enhanced.
Legal document	It is a legally binding document to manage construction and operation of a project. It states how and when environmental aspects of an environmental system will be addressed to ensure compliance with environmental law. It also stipulates a manner in which non-compliance issues are dealt with. It is legally binding on applicants.

Figure 1 draws attention to what were regarded as being important themes pertaining to the purpose of an EMP.

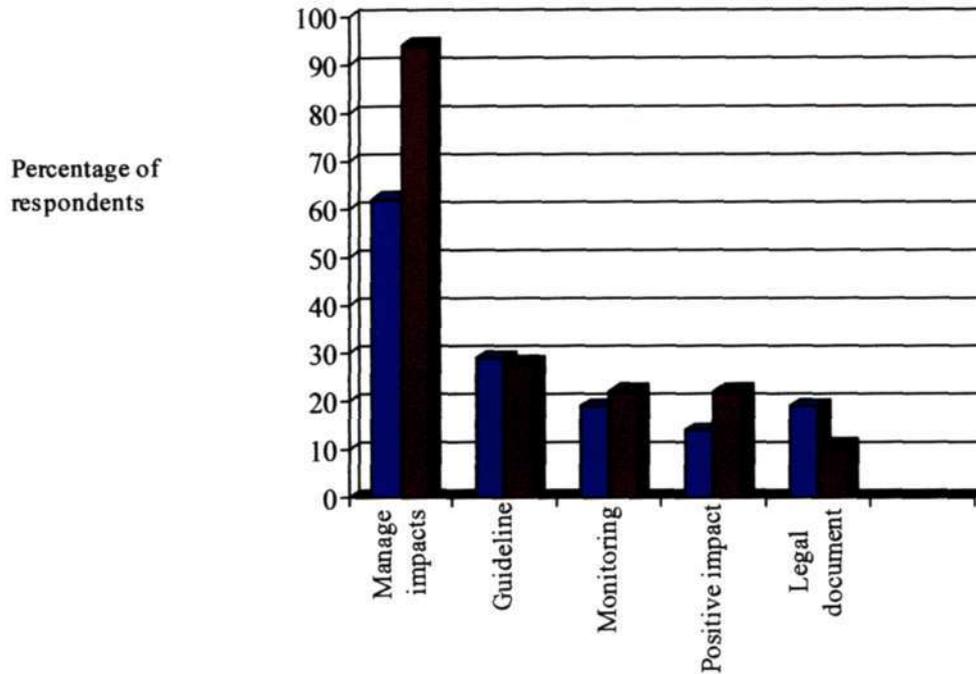


Figure 1. Purpose of an EMP as suggested by respondents

Other purposes mentioned, although not by many respondents, include:

- to detail contractors' environmental commitment for the site during construction;
- to make clear the roles and responsibilities of various stakeholders;
- to view the EMP as a dynamic document;
- to detail rehabilitation measures for environmental impacts; and
- to provide for training of employees and contractors with regard to environmental protection.

4.2 Contents of an EMP

Current environmental legislation in SA does not specify content requirement for an EMP and this affects, amongst other things, the quality and assessment of EMPs. Respondents were asked to indicate what, in their opinion, should constitute the most important content requirements of an EMP. Respondents stated that an EMP must identify impacts as well as auditable mitigation measures prior to, during and after construction. It must detail in an unambiguous manner who is responsible for undertaking each identified action as well as who must follow procedures. Associated with identified action is the timing for their completion. An EMP must show compliance with all applicable laws, regulations, standards and guidelines for the protection of the environment. It must be part of a contractual document for the construction company and should include training of employees. Figure 2 highlights the contents of the EMP as suggested by the respondents.

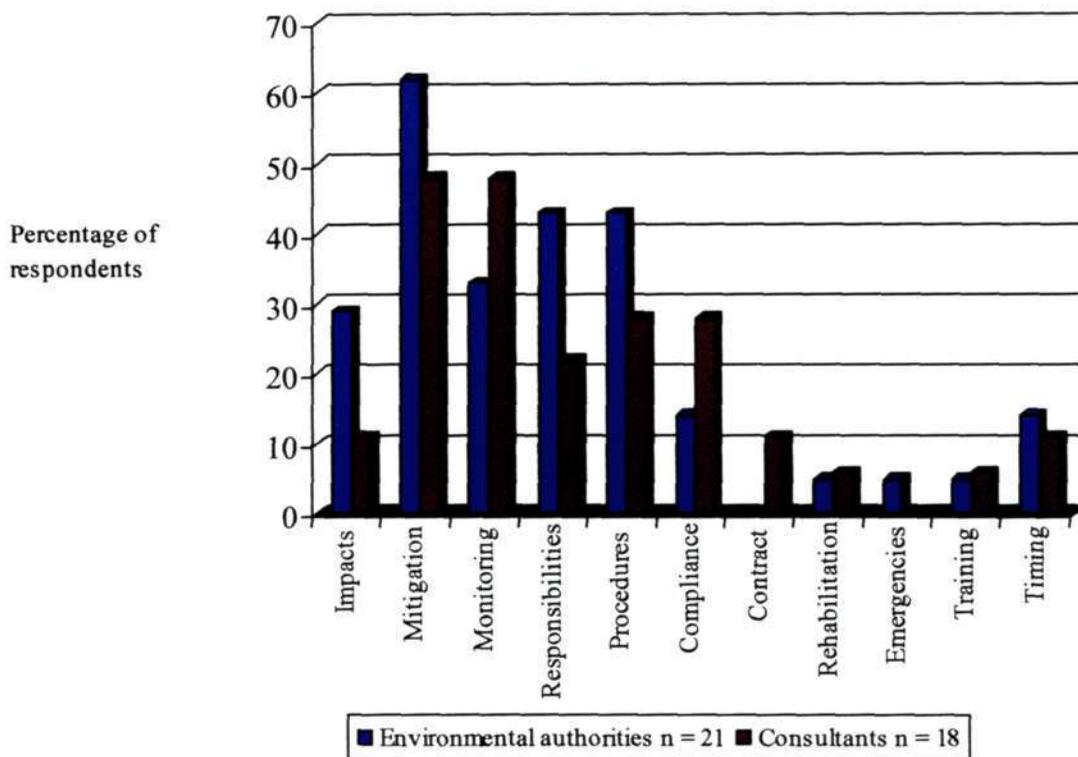


Figure 2. Contents of an EMP as suggested by respondents

4.3 Use of EMPs

Some of the information on the use of EMPs with respect to submission, approval and monitoring, was obtained, from archival material, and presented in figure 3 and 4. The difference between the two figures is that under the row of 'EMPs already included', figure 3 excludes applications with standard EMPs³ whereas figure 4 includes such EMPs.

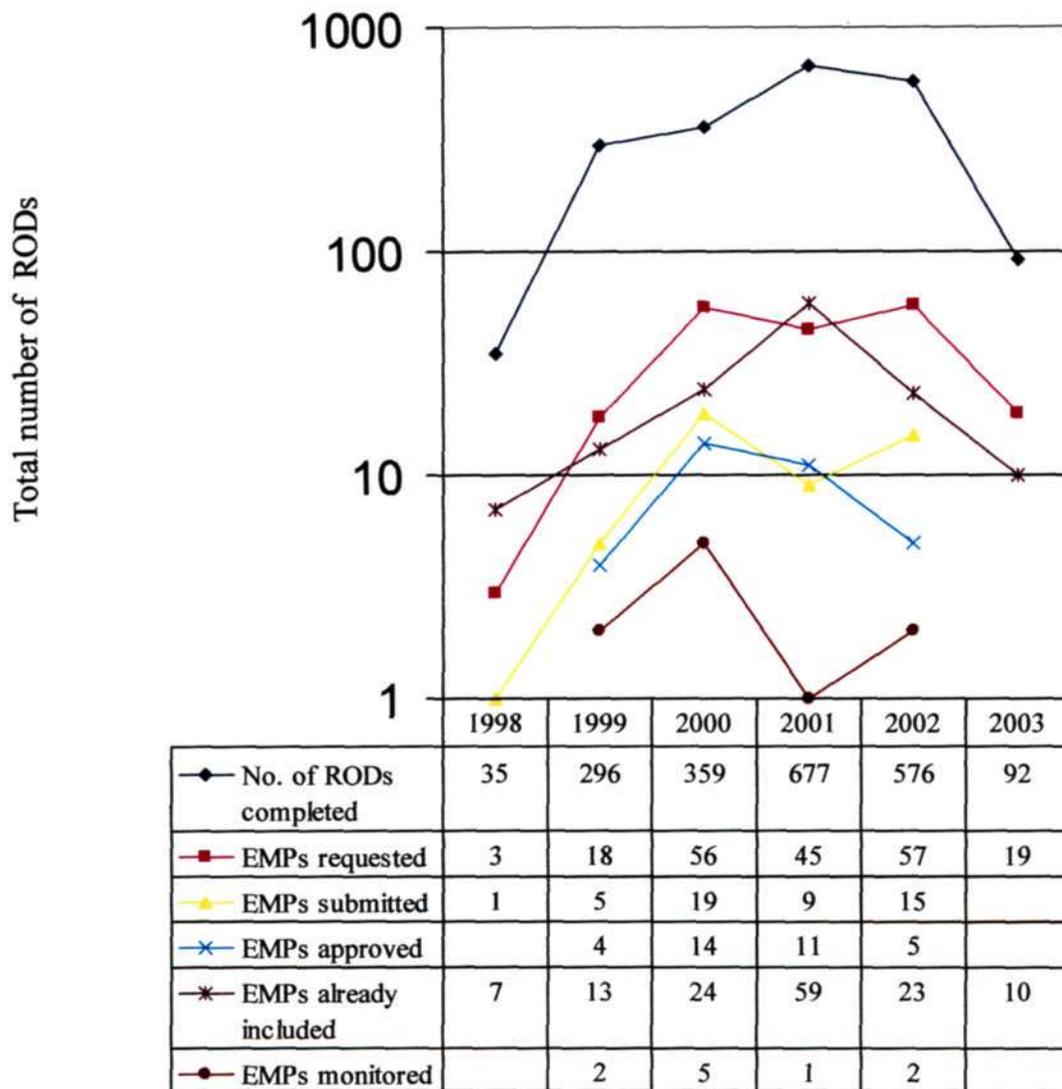


Figure 3. Use of EMPs (excludes standard EMPs)

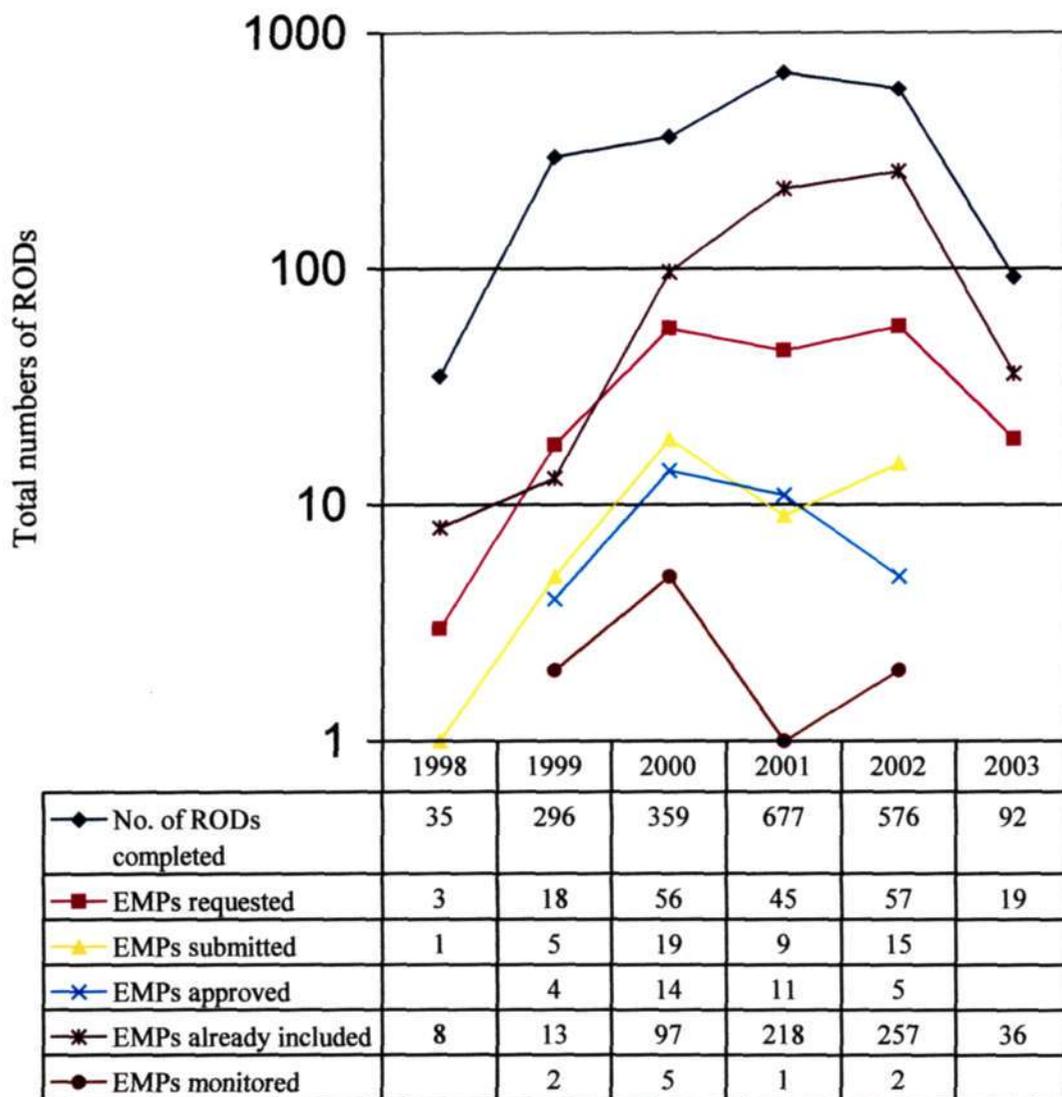


Figure 4. Use of EMPs (includes standard EMPs)

Furthermore, questionnaires were used to supplement data from archives on the use of EMPs. Questions were asked to gain information on issues such as submission, review, approval, involvement of Interested and Affected Parties (I&APs) and monitoring of EMPs.

4.3.1 Submission of EMPs

Environmental authorities request EMPs to be submitted even in the absence of legislative requirement.

Seventy six percent of environmental authorities indicated that EMPs are submitted after authorization by DAEA of development projects, whereas 67% of consultants indicated the same. Twenty four percent of environmental authorities indicated that EMPs are submitted as part of a Scoping Report, especially an EIA report as defined in the EIA regulations of 1997. Forty four percent of consultants indicated the same. Environmental authorities (10%) and consultants (11%) indicated that in certain circumstances EMPs are submitted without any Scoping or EIA document. Figure 5 presents the general submission of EMPs as indicated by respondents.

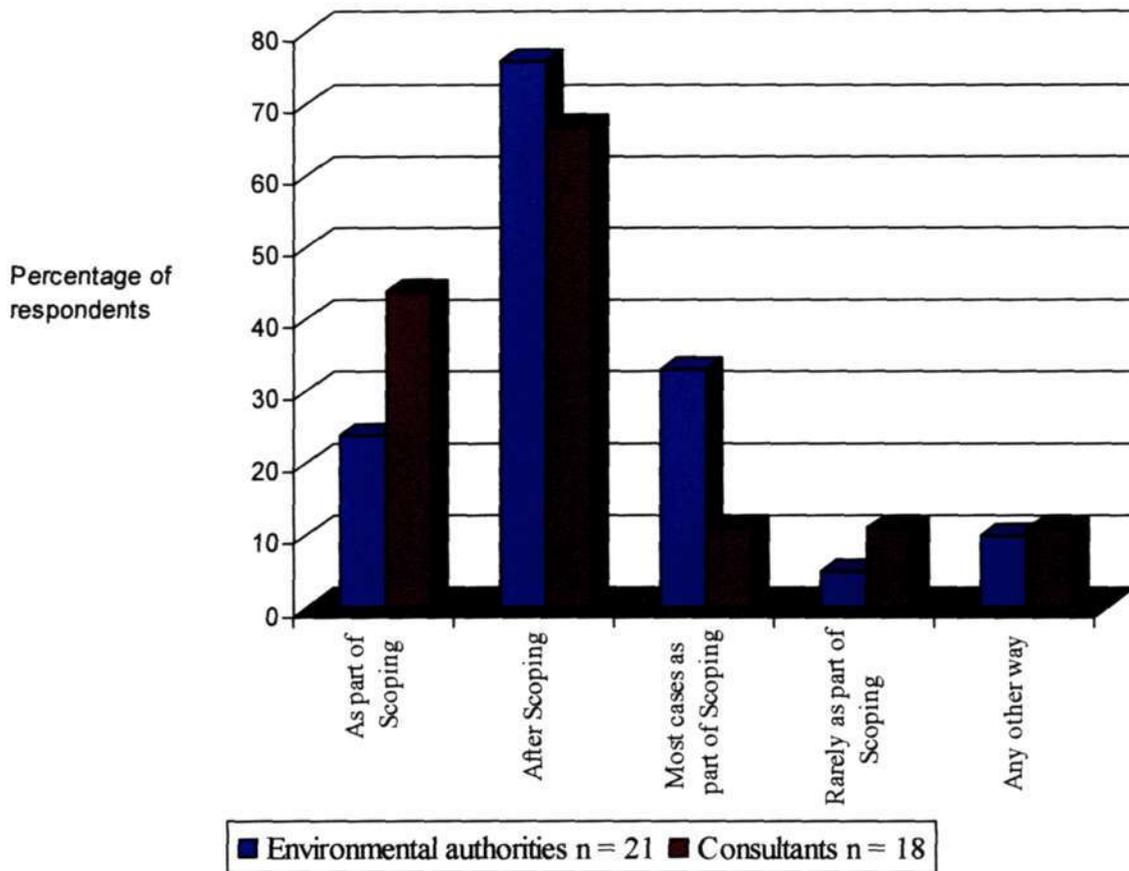


Figure 5. Respondents' responses regarding submission of EMPs to the relevant authority generally

Figure 6 below shows that 43% of environmental authorities indicated that EMPs are sometimes submitted as requested. Eighty nine percent of consultants indicated that they always submit EMPs as required. Nineteen percent of environmental authorities and 11% of consultants did not respond to this question.

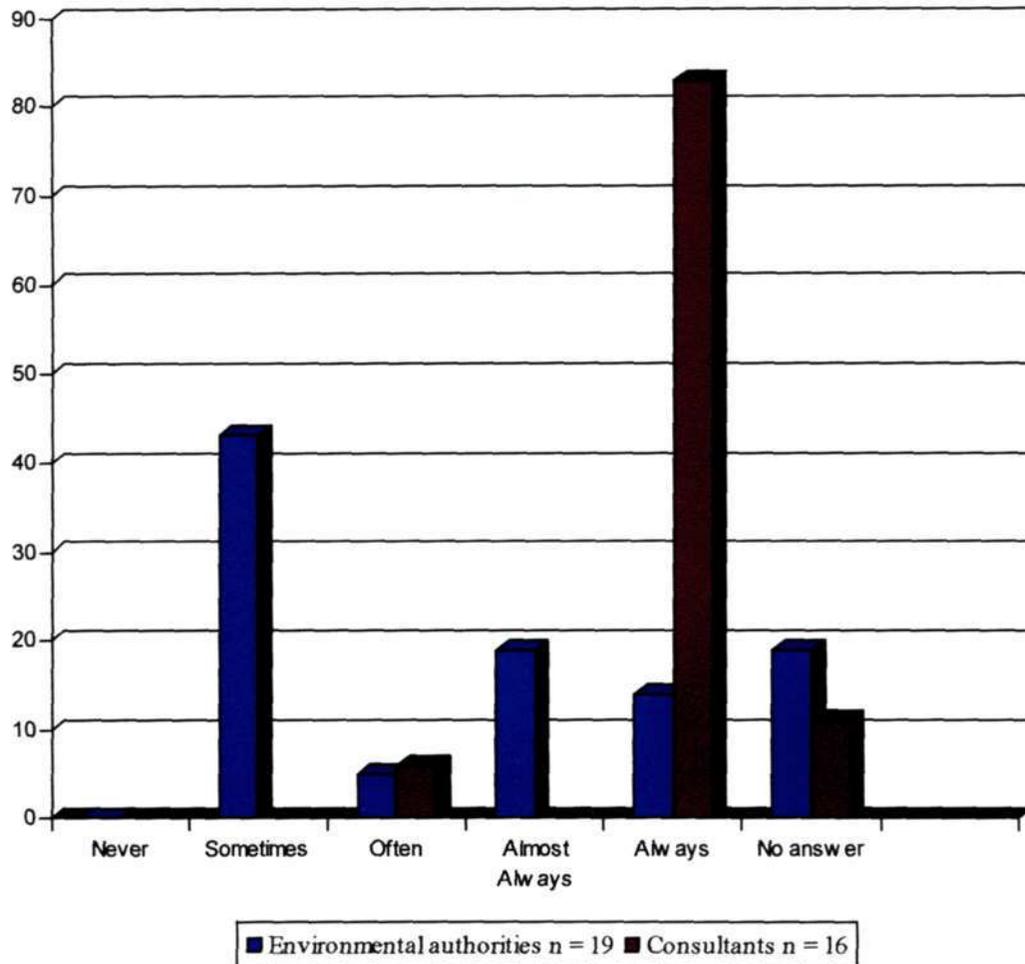


Figure 6. Respondents' responses regarding submission of EMPs when these are specifically requested by environmental authorities

4.3.1.1 Changes in the patterns of submission of EMPs

Environmental authorities also indicated historical trends, that is, currently (2002 – 2003) as compared to before 2002 in the submission of EMPs. Forty eight percent indicated that there is an increase in the submission of EMPs while 43% have not observed any changes. Table 4 indicates areas where there have been noticeable changes and / or no noticeable changes with respect to the submission of EMPs.

Table 4. Responses from environmental authorities regarding changes in the patterns of submission of EMPs since each official joined the organisation

Responses	Areas	Changes
Noticeable changes	DAEA	DAEA has made some effort. The requirement of an EMP (if required) is included in the conditions of approval and is required prior to the commencement of a development. Greater emphasis on monitoring has resulted in an improvement in feedback regarding success of suggested mitigation measures and status of impacts identified.
	Quality and quantity	The quality has improved. The level of detail and structure has improved to include aspects such as monitoring, responsibilities and auditing requirements. EMPs are beginning to conform to a standard format. More quantitative information on impacts is being supplied with the result that suggested mitigation measures have improved. The number of EMPs submitted has increased.
	Consultants	The number has increased because consultants have developed a pro-forma and try to fit all applications to their model. The disadvantage of this is that such EMPs do not address specific issues of a project. It seems as if consultants are aware that the DAEA now has a Compliance Monitoring and Enforcement (CME) unit.
	Awareness	There is an increasing awareness amongst applicants and consultants that an EMP is an essential component of an EIA process although not referred to in legislation.
No noticeable changes	Guidelines	There are no changes because there are no guidelines available to assist.
	Quality	EMPs are all different in terms of quality but there is a need to get them standardised.

	Consultants	Consultants (some of them) have no understanding of what is required for an EMP. Consultants rarely submit EMPs.
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4.3.1.2 Problems affecting submission of EMPs

After finding out about how EMPs are currently submitted, the research investigating problems affecting their submission. Table 5 sets out the main findings.

Table 5. Problems affecting submission of EMPs as identified by environmental authorities

Problem area	Problems
Financial implications	Consultants do not include the cost of an EMP in the original quotation. This is a cost factor for applicants. Applicants see their profit margin shrinking with an additional capital expense so they are reluctant to spend any more money than they legally have to on things like EMPs.
Applicants	Applicants do not believe that an EMP is necessary. Most probably believe that environmental authorities are unreasonable by requesting an EMP. There is laziness and general disregard of law. Applicants do not realise the importance of EMPs and they lack interest in environment generally. Development commences as soon as the ROD is issued. Once the ROD is issued, the applicant considers an EMP to be a paperwork exercise. As a result, no EMP is submitted or an EMP is compiled after construction is almost complete. There is ignorance, laziness and general disregard for environmental law.

	Some applicants/developers do not read RODs and they claim ignorance as to the provisions of RODs.
Environmental authorities	Files are just kept in the archives and there are no follow-ups made on those applicants or consultants who have not submitted EMPs. There is no strict enforcement of conditions of approval. The DAEA is ineffective in terms of compliance and monitoring, people know that they can get away without having any follow-ups. There is a lack of monitoring. EMPs are not always requested in conditions of approval. EMPs are not always requested prior to approval. EMPs are not always approved. There is no specified format for reviewing EMPs. There is no specified format for approving EMPs.
Lack of awareness or capacity building	Uncertainty as to their need. EMPs are seen as a beauracratc requirement. No guidelines to build capacity. Lack of courses, which focus specifically on EMPs.
Consultants and developers	Lack awareness of the importance of EMPs. Apathy on the side of consultants. It seems as if consultants are employed to obtain RODs only. Previously they knew that DAEA did not have capacity to monitor compliance.

Environmental authorities identified these problems as tabled out in Table 5 to be the main causes affecting EMP submission. Figure 7 below shows the relative significance of these problems.

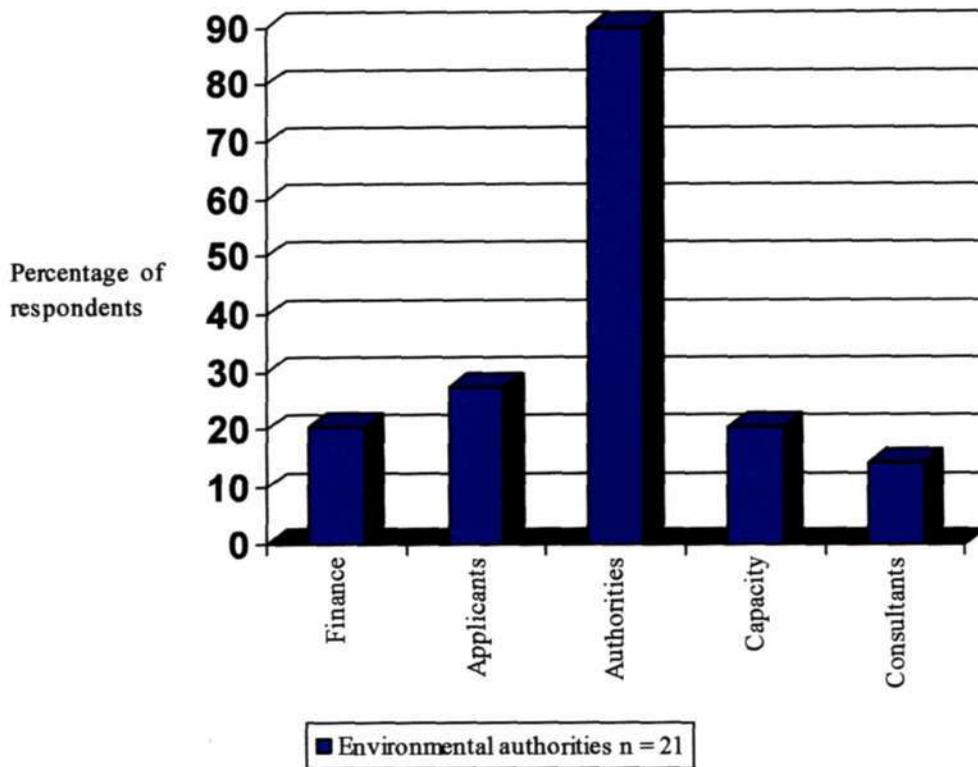


Figure 7. Problem areas, as suggested by environmental authorities, affecting submission of EMPs

Figure 7 highlights the relative importance of problem areas affecting submission of EMPs. Few respondents mentioned other problem areas such as the omission of EMPs in the legislation and the lack of guideline documents.

4.3.1.3 The need for submitting EMPs

Having indicated how EMPs are submitted and what problems are associated with their submission, it was then appropriate to question the necessity for environmental authorities to request EMPs for every application. Figure 8 shows that 62% of environmental authorities agree that it is necessary to request EMPs for each application

while 38% disagree. Respondents substantiated their views by providing reasons which are presented in Table 6.

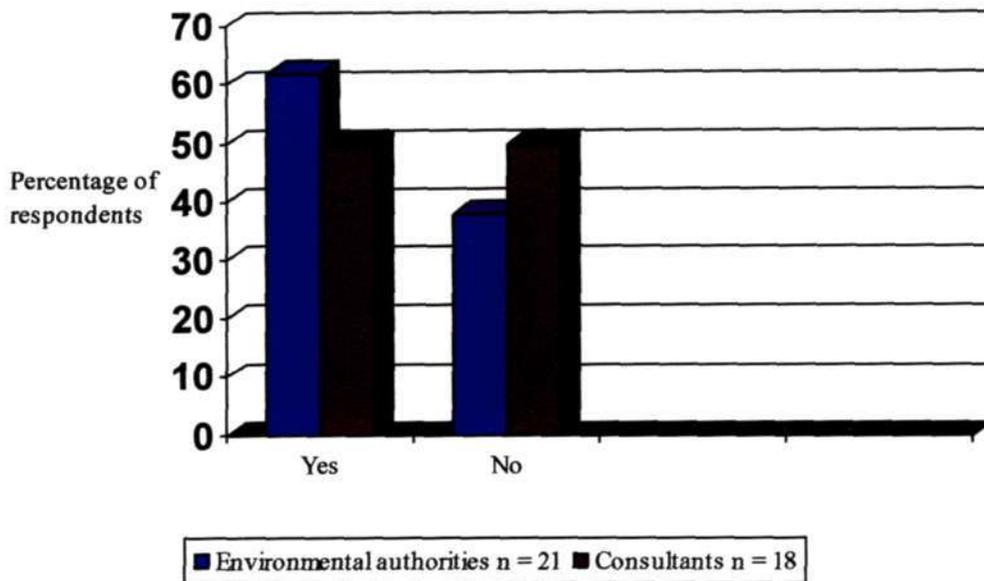


Figure 8. Respondents’ views with respect to a need to request EMPs for each application

Table 6. Issues raised by respondents with respect to a need for authorities to request an EMP for each application

Response	Issues	It is necessary for environmental authorities to requests an EMP for every application
Supporting	Sustainability	It is important to ensure that the project is planned in a sustainable manner. In order to maximize project benefits, suitable measures must be provided in an EMP.

	Management of impacts	Every activity has impacts on the environment. Therefore in almost every case it is possible to mitigate impacts. To ensure that mitigation measures mentioned in the Scoping Report are addressed, EIAs without follow-ups are worthless.
	Enforcement of environmental management	An EMP forces developers to consider management of impacts associated with a proposed activity. An EMP provides a clear set of enforceable environmental protection actions.
	Monitoring and auditing	An EMP makes monitoring and auditing by relevant authorities easier. It can improve the standard of environmental controls and auditing and provide a measure against which contractor performance can be assessed. It is also important for relevant authorities to know about impacts that are associated with that particular activity.
Depending	Dependence on circumstances	The need for an EMP depends on the nature of an activity and the receiving environment. Not all developments need such a document, if they have reasonable chances of receiving a favourable ROD.
Not supporting	ROD conditions	Conditions of authorization can cover mitigation measures adequately.
	Capacity constraints	Relevant authorities will not be able to cope with a such a large number of EMPs
	Financial implications	Some activities are too limited to warrant necessity of such an expense.

4.3.2 Public participation in EMPs

IEM promotes open and participatory approaches to environmental management. Hence the research investigated whether or not public participation is practised in the EMP phase. The questionnaire included questions regarding the inclusion or participatory role

of I&APs in reviewing and monitoring of EMPs. Issues raised by respondents with respect to circulating an EMP for review to I&APs before submission to environmental authorities in the case of consultants and before approval in the case of authorities are presented in table 7.

Table 7. Respondents' responses to involvement of I&APs in an EMP before its approval

Responses	Reasons	Circulation of an EMP to I&APs before approval
Supporting	It is a legislative requirement	Consultation is a constitutional requirement. The NEMA requires consultation. There is also the Access to Information Act.
	IEM requirement	I&APs input is vital and it is a requirement of IEM principles and process. An EMP should be developed in consultation with environmental authorities. Everybody involved in an EIA has a right to comment, for transparency reasons.
	To obtain relevant information or specialist input	Local knowledge can inform an EMP and ensure best practice. Environmental issues are cross-cutting thus to be on the safe side it is important to obtain adequate specialist input and obtain a different perspective and allow for additional comments and objections. Public input is vital to obtain relevant information about a project. I&APs could add value to an EMP by raising issues that were missed by a consultant.
	Promotes co-operative governance	Involvement of I&APs promotes co-operation and good governance. It forms an integral part of good environmental practice.

	For compliance and monitoring purposes	Different Departments are responsible for certain actions. It is important for I&APs to see how issues are addressed in the practical manual (EMP) and to obtain buy-in especially for monitoring.
	To obtain consensus and to protect the developer	It is important to obtain stakeholder buy-in, in order to avoid problems at a later stage and to protect the applicant from the risk of legal action if something wrong happens during implementation of a project.
	Watchdogs	It is useful to have additional watchdogs who are aware of what should be done.
Depending	Dependence on circumstances	Involvement of I&APs depends on the circumstances such as nature of an activity and its sensitivity, surrounding environment, and responses received during assessment process. It also depends on the need for other I&APs to be involved as well as on their level of interest. If they had concerns during Scoping/EIA phase then they should review an EMP to be satisfied that their comments are included in an EMP. The opportunity for public participation must be allowed only for controversial applications.
Not supporting	Legislation	It is not a legislative requirement. Only authorities have a legal mandate to review EMPs.
	Requirements are already included in the Scoping Report	Other I&APs usually state their requirements during the drafting of a Scoping Report.

	Delays	The concept of involving I&APs is good but people can use it to delay developments. Circulating an EMP is not usually specified in a ROD. The EIA process is already too long. Other Departments' concerns should have been addressed during Scoping and incorporated into the conditions of a ROD. There is already considerable backlog of applications against authorities. Illegal developments provide enough evidence of the backlog. An EMP must be circulated only on request because circulating an EMP causes delays. Consultants and environmental authorities should be able to determine contents of an EMP
	Cost	Different Departments should not be monitoring the same development over and over again. It is costly for the developer and the small rules different Departments create are less likely to be complied with.

4.3.3 Monitoring of EMPs

Both environmental authorities and consultants were asked to indicate how many approved EMPs they are currently monitoring. Seventy one percent of the DAEA's respondents indicated that they are not monitoring any EMPs because this is a function for the CME component. Table 8 indicates percentages of environmental authorities and consultants monitoring EMPs.

Table 8. Indication of monitoring of EMPs by respondents

No. of EMPs monitored	Environmental authorities	Consultants
0	71%	33%
1	10%	-
2 – 5	5%	50%
6 – 10	-	17%
11 – 20	14%	-

Furthermore, respondents were asked to indicate if they involve I&APs in monitoring EMPs. Table 9 shows that some respondents are in favour of involving I&APs in monitoring EMPs while others are not for a variety of reasons.

Table 9. Responses from respondents regarding involvement of I&APs in monitoring EMPs

Responses	Issues	Involvement of I&APs in monitoring
Supporting	Legislation	It would guide policy formulation and development of regulatory instrument.
	Obtaining information and specialist input	Local people almost always have better knowledge. Involving I&APs assists in obtaining specialist input.
	Promotion of co-operative governance	It is part of good governance. Feedback obviates problems during and after project implementation.
	Compliance and monitoring	It is I&APs' responsibility to be involved in compliance and monitoring. They enforce environmental law. They act as watchdogs. They provide back-up support to consultants if a developer or applicant does not conform to the EMP requirements. Some form of final inspection once proposal is implemented should be undertaken.

Depending	Dependence on circumstances	I&APs should be involved if there is a monitoring committee, and if there are critical issues and to avoid future problems. When I&APs are at risk it is better they play the role of watchdogs. They should be involved if they request to be informed of compliance issues or when particular issues not in an original EMP emerge and require a decision. If an ECO is appointed, then involvement of relevant authority would only be needed if compliance failure occurred. Only when I&APs have a statutory role, should they be involved.
Not supporting	Delays	There is seldom acknowledgement by authorities of receipts of monitoring reports or input into the monitoring process. The consultants are required to be more proactive in terms of flagging issues that relevant Departments need to be made aware of.
	Cost	It is costly to employ environmental monitors to monitor each approved project. It is expensive to contract consultants for small projects which have limited funds.
	Capacity constraints	Other Departments do not have the capacity to attend to monitoring and they rely on consultants' reports. There is therefore an understanding and trust built over time. Departments are too busy to cope with additional work. Co-ordinating would be problematic.
	Difficult I&APs	Sometimes I&APs are emotional.

4.4 Capacity building of stakeholders with respect to EMPs

Having established differences of opinions regarding submission, review, public participation and monitoring of EMPs, the research then investigated and established the

level of capacity of government officials and consultants with respect to EMPs. Table 10 shows government officials' awareness levels of specified methods of reviewing and approving EMPs.

Table 10. Indication of environmental authorities' awareness levels of specified methods of reviewing and approving EMPs

Aware	Review method	Approval format
Yes	14%	10%
No	62%	62%
Not sure	24%	28%

Sixty two percent of environmental authorities indicated that they are not aware of approval formats. In contrast, 10% to 14% are aware of such formats. Other officials (24% to 28%) are not sure of the availability of such formats.

Further regarding awareness issues, environmental authorities were asked to indicate their level of awareness of any published EMP guidelines (refer to Table 11).

Table 11. Indication of awareness level by environmental authorities of EMP guidelines

Awareness	Percentage
Aware	43%
Not aware	57%

These figures reflect the fact that there are more environmental authorities who are not aware of EMP guidelines. Table 12 indicates frequency of use of guidelines by environmental authorities.

Table 12. Indication of use of EMP guidelines by environmental authorities

Use	Frequency
Never	57%
Sometimes	9.5%
Often	19%
Almost always	9.5%
Always	5%

Furthermore, respondents were asked if they had ever heard of courses focusing particularly on EMPs. Table 13 shows that 90% of environmental authorities and 61% of consultants indicated that they had never heard of such courses.

Table 13. Respondents' awareness levels of EMP courses

Awareness	Environmental authorities	Consultants
Heard	10%	39%
Not Heard	90%	61%

Those environmental authorities who have heard about such courses have never been able to attend one and only 17% of consultants have been able to attend one.

4.5 Improvement strategies

Having identified problems with the current use of EMPs, the questionnaire survey continued by investigating possible strategies that can be implemented in order to resolve some of the above mentioned challenges. Table 14 highlights possible areas of improvement in the implementation of EMPs.

Table 14. Strategies for improvement suggested by respondents

Areas of improvement	Strategy
Legislation	EMPs must be legislated for. An EMP should be a minimum requirement in the IEM process. Compliance needs to be required by legislation.
Environmental authorities	The DAEA must create an appropriate database managed by trained personnel to track EMPs. Department/s must clearly explain the need for EMPs. An EMP requirement must be stipulated in the conditions of a ROD. This would make applicants legally bound. EMPs must be requested before approval: no EMP no authorisation. Submitting EMPs before approval can enable the DAEA to manage impacts through monitoring, auditing and compliance. There should be strict enforcement of conditions. The DAEA must give consultants some power. The DAEA must make follow-ups by sending reminders to applicants and consultants to submit EMPs. Applicants and consultants must be given deadlines. An EMP must be submitted within a specified time, otherwise a ROD must be withdrawn. Local authorities, especially Planning Departments must be made aware of conditions of approval since they are close to local situations.

Consultants / applicants / developers	Consultants must make follow-ups. It must be understood that EMPs are part of the duty of care as per the NEMA principles.
Capacity development	There is a need to create greater awareness of the importance and need for an EMP. It is the DAEA's responsibility to create awareness.
Fines	Applicants who do not submit EMPs must be fined or prosecuted.

Table 15 presents views of respondents with respect to supporting the idea that EMPs must be submitted as part of a Scoping or EIA report.

Table 15. Respondents' responses to the idea of submitting EMPs as part of a Scoping or EIA report

Responses	Environmental authorities	Consultants
Support	77%	33%
No support	23%	44%
No response	-	33%

5. Discussion

5.1 Legislation

One of the fundamental problems affecting the effective use of EMPs is the lack of legislative requirement for an EMP. This lack is noted in developed countries (Donnelly, Dalal-Clayton and Hughes, 1998; Gilpin, 1995) and in developing countries (Wood, 1999; Lee and George, 2000; Puymbroeck, 2002). The findings of this research confirm what has already been found in the literature review. Respondents stated clearly that the absence of legislative requirements for EMPs seriously affects submission of EMPs. As a result the attention which EMPs deserve is undermined.

A review of literature (Lee and George, 2000; Puymbroeck, 2002) reveals that although different countries require EMPs, they are not explicit on its content. The findings of the survey confirm this. Respondents raised different issues, which should form part of the contents of an EMP. Responses provided proof that there is no 'complete understanding' of the content of an EMP. None of the responses provided were cited from any legislation. They were all based on the experience of respondents.

5.2 Use of EMPs

5.2.1 Submission of EMPs

Figures 3 and 4 indicate that the number of EMPs submitted is significantly lower than the number of RODs approved. Respondents also indicated that a large number of EMPs are submitted only after being requested. Respondents pointed to a number of reasons hindering the submission of EMPs. Even though a number of respondents, citing various reasons in practice, indicated the need for the submission of EMPs, these are not submitted in great numbers (refer to section 4.3.1.3). This indicates a low use of EMPs despite their significance in the IEM process.

5.2.2 Public participation

IEM and the concept of sustainable development stress the need for public participation throughout all stages of project development. Literature review reveals that although public participation is part of an EMP, other countries do not incorporate it fully (Gilpin, 1995). The findings of this research indicate that there is no full participation of all stakeholders in the EMP phase. This indicates that, currently, the use of EMPs does not meet all IEM objectives.

5.2.3 Monitoring

A crucial factor in the IEM process is the monitoring of development projects through an EMP. This is a phase where mitigatory measures and conditions of approval are actually put to the test. A review of literature reveals that, as several authors (Biswas and Agarwal, 1992; Modak and Biswas, 1999; Lee and George, 2000; Puymbroeck, 2002) have discovered that monitoring of environmental impacts in most developing countries

is not afforded high priority. The findings of this research reveal a similar scenario. Information, obtained from the archives, presented in figures 3 and 4 reveals that the number of EMPs requested, submitted, approved, already included in Scoping reports and monitoring is much lower compared to the number of RODs approved. Furthermore, very few respondents indicated that they were monitoring EMPs. This clearly shows a lack of implementation of what has been stipulated in the ECA of 1989 and in the NEMA of 1998 with respect to project implementation. Both of these acts mention the need for the monitoring of environmental impacts. Lack of monitoring also denotes that use of EMPs currently, does not fulfil the IEM requirements. It is only recently that the South African Government has moved towards regulating EMPs.

5.3 Capacity building and awareness

There is a need for financial and technical resources to be made available to all stakeholders in order to fulfil their mandates and responsibilities (Puymbroeck, 2000). In the survey, few consultants indicated that they were aware of EMP courses. If that is the case, one poses the following serious question: How are consultants expected to produce EMPs of good quality, if they have not been capacitated? The same applies to environmental authorities. A large number of environmental authorities are not aware of EMP courses, review methods, approval formats and guidelines. Therefore, it is not surprising that they do not always approve EMPs. Added to this, is the fact that there is no law prescribing what the content of an EMP should be. Lack of good training regarding EMPs has negative ramifications on other issues such as the involvement of I&APs in reviewing and monitoring EMPs. The lack of capacity building and awareness of EMPs is a strong indicator of the lack of understanding of, as well as the whole rationale behind, an EMP.

6. Conclusions and recommendations

6.1 Conclusions

The aim of this paper was to review the role and use of EMPs in KZN with the aim of developing strategies for improvement. This study concludes that an EMP makes a

significant contribution to achieving IEM objectives. Despite the significance of an EMP, the survey indicates that EMPs are not used effectively in KZN.

With respect to the first objective, that is, the evaluation of the relationship between IEM and an EMP, the study has shown the significance of an EMP in managing environmental impacts throughout the life-cycle of a development. EMPs are basically an integral part of the IEM process. The whole rationale behind an EMP indicates clearly that EMPs were developed with the intention of achieving IEM objectives. Respondents although not fully complying with the requirements of IEM, acknowledged the significant contribution of EMPs to the IEM process.

With regard to the second objective, that is, to determine current national and international best practice in the formulation of EMPs and their implementation. A review of literature revealed marked differences in the formulation and implementation of EMPs in different parts of the world. Development banks and developed countries are a step ahead in their use of EMPs, whereas, some developing countries have not even legislated for the EIA process let alone for EMPs. This is not to say that development banks and developed countries have no shortcomings in their implementation of EMPs. EMPs, especially in developing countries, are still a new concept facing quite a number of challenges.

With regard to the third objective, that is, to establish the frequency of the use of EMPs as a management tool to achieve IEM objectives in KZN, a review of literature indicates that EMPs are not used effectively. Responses from the survey as well as analysis of all the files stored in archives confirm this.

The number of EMPs requested, submitted, approved, included before approval and monitored is significantly lower than the number of approved applications. This is also confirmed by the responses from questionnaires. Most respondents indicated that EMPs are sometimes submitted, approved and monitored. Few respondents indicated that they

monitor EMPs. Responses also revealed that I&APs are sometimes involved in the reviewing and monitoring of EMPs.

The last objective of the study was to consider approaches to improve the implementation of EMPs. The study identified possible strategies that could be implemented. Strategies identified through questionnaire survey are similar to those identified through a review of literature. This shows that there are solutions that need to be implemented (refer to section 6.2 below).

6.2 Recommendations

6.2.1 Legislation

EMPs must be written into legislation. Legislating for EMPs will force applicants and consultants to submit EMPs since no submission will mean a transgression of the law.

Legislation must be explicit on its requirements on issues such as content, format for review and approval. This will assist consultants in compiling EMPs. Legislation will assist government officials who are faced with the responsibilities of reviewing and writing approvals for EMPs and will assist officials to advise clients compiling EMPs.

However, it is important to understand that enacting legislation is not a complete solution. Legislation needs to be enforced. This implies that the legislation must be clear on enforcement too.

6.2.2 Monitoring

Legislating for EMPs will definitely have an impact on the capacity of environmental authorities, consultants and any other stakeholders. If monitoring is to be seriously attended to, capacity building is essential in order to fulfil this important function in environmental management⁴. In addition, judging from the review of literature and findings of this questionnaire survey, the emphasis is still on assessing environmental reports rather than on monitoring projects. This implies that over and above obtaining more staff, environmental authorities must be capacitated on issues of compliance and

monitoring. The same applies to environmental consultants and all other relevant stakeholders.

Whilst authorities are still trying to deal with capacity problems, prioritizing work is of absolute importance, as some respondents argue that not every project requires an EMP and the associated monitoring. It is the responsibility of environmental authorities to prioritize their functions so as to fulfil their responsibilities. For example, not every project will need to be monitored by every Department involved in the EIA process. It can be suggested that the monitoring might need to focus on certain aspect/s of the project requiring involvement of only certain Department/s thus releasing other Department/s to focus on other pressing matters.

6.2.3 Prioritizing the implementation strategies of EMPs

A number of improvement strategies have been considered in this study. It is not practically possible to implement all of these strategies at once, that is, legislating, developing guidelines, training, making institutional changes and implementing sanctions and bonuses. It is recommended that environmental authorities analyze their immediate situations and implement strategies in a manner that best suits their circumstances.

7. Notes

¹Section 26 (c) of ECA, 1989.

² DAEA is the relevant authority in terms of section 22 of ECA, 1989.

³ Most applications for telecommunication masts, roads and water supply schemes include generic EMPs.

⁴ DAEA employed more officials for the CME component when it was initiated in 2002.

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