INFLUENCE OF GOVERNANCE ON PROJECT ENVIRONMENTAL IMPACT ASSESSMENT IMPLEMENTATION AND FOLLOW-UP IN NYERI COUNTY, KENYA.

BY

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A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL FULFILLMENT FOR THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTER OF ARTS IN PROJECTS PLANNING AND MANAGEMENT OF THE UNIVERSITY OF NAIROBI.

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DECLARATION

This research project report is my original work and has not been presented in any other university for examination for any degree or award.

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This research project report has been submitted for examination with my approval as the University Supervisor

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DEDICATION

I dedicate this research project report to my wife, Truphosa, my daughters Shirley, Joice, Helda and Naomi and my son Lucas.

Truphosa worked with me as a steadfast partner in this project, taking care of our patient children as I worked through the day and deep into the night to give form to and complete the report.

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ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
DC	District Commissioner
DEC	District Environmental Committee
DEO	District Environmental Officer
EEAA	Egypt Environmental Affairs Agency
EIA	Environmental Impact Assessment
EIA/A	Environmental Impact Assessment and Audit
EMP	Environmental Management Plan
EMCA	Environmental Management and Coordination Act
ES	Environmental Statement
GTZ	German Technical Cooperation
IMF	International Monetary Fund
ISO 14000	Environmental Management System of International Organization For Standardization
JICA	Japan International Cooperation Agency
LPA	Local Planning Authority
MEAS	Mulilateral Environmental Agreements
MRM	Mid Term Review Meeting
NEPA	National Environmental Protection Act (US)
PDE	Provincial Director of Environment
SIDA	Swedish International Development Agency
SEA	Strategic Environmental Assessment

UK	United Kingdom
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
US	United States of America
USAID	United States Agency for International Development
WCED	World Commission on Environment and Development
WSSD	World Summit on sustainable Development

ABSTRACT

Although EIA has been accepted worldwide as an effective tool of sustainable development, environmental performance of some projects in respect of which EIA has been conducted has been found dismal. This would imply that project EIA implementation and follow-up is being neglected, making the realization of maximum environmental effects benefits of EIA difficult. Studies conducted internationally and locally and observation of the local environment led to the identification of a gap in knowledge in EIA implementation and follow-up that incited the conduct of a study to investigate the influence of governance on project EIA implementation and follow-up in Nyeri County, Kenya. Extensive literature review was conducted to gain insight into the work that other researchers had already done in the area of study and a theoretical framework to guide the study contrived. The influence of governance on project EIA implementation and follow-up was identified as the study problem.

The study employed a descriptive design and questionnaires and interview schedules for data collection from respondents selected by judgemental sampling design. Data analysis was done using SPSS tool. Correlation and regression analysis were performed to determine the relationships between variables. Only 42% of the variations in the dependent variable could be explained by the five independent variables, the remaining 58% being due to factors not considered in this study. The study identified gaps in the legal, institutional and regulatory framework; finance; monitoring and evaluation; management structures and institutional capacity which will need to be covered in order to improve EIA environmental performance in Nyeri County.

The study concluded that there was need to train all stakeholders in EIA in order for the high environmental outcome potential of EIA to be realized in Nyeri County, Kenya. The effect of institutional capacity on project EIA implementation and follow up cannot be overemphasized. Further research to cover the contribution of proponents and EIA practitioners to project EIA implementation and follow up has been recommended.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The 1972 Stockholm Conference on Human Environment singled out underdevelopment, industrialization and technological development as the causes of environmental problems in the world. The conference called for the safeguard and improvement of the environment during development undertakings and for the reduction of the gap between the rich and the poor. The World Commission on Environment and Development (WCED) reported in 1987 that many development trends at that time impoverished people and degraded the environment. Consequently, EIA, a tool for project analysis introduced in the US by NEPA in 1970, was by Principle 17 of Agenda 21 of the 1992 Rio de Jeneiro World Summit for Sustainable Development (WSSD) prescribed for proposed activities that were likely to have a significant adverse impact on the environment. Many countries from that point on started putting EIA legislation in place to operationalize this principle. Kenya domesticated EIA in section 36 of The Physical Planning Act 1996 and later in a comprehensive manner through the Environmental Management and Coordination Act (EMCA) of 1999.

According to Morrison-Saunders and Arts (2004), EIA is a process for taking account of the potential environmental consequences of a proposed action during the planning, design, decision-making and implementation stages of the action. For a proposed project or activity, the EIA process consists of the pre- decision stage and the post decision stage. The pre-decision stage consists of: screening to determine whether the project requires full EIA or not; scoping to prepare the terms of reference of the EIA; impact prediction

and analysis to establish the potential negative and positive environmental impacts of the proposed project and to propose mitigation measures and; review for decision making. The post decision stage known as follow-up is broadly defined as the collection of activities undertaken after approval of a project has been given following EIA review. The purpose for undertaking these activities is to monitor, evaluate, manage and communicate the environmental outcomes that occur in order to ensure that projects are meeting intended goals and objectives and, more importantly, to provide for feedback and learning for improving environmental management practices (Arts et al. 2001). Follow-up involves monitoring and evaluation of project activities' outputs during the implementation, operation and decommissioning of the project against a priori selected environmental performance indicators to establish the accuracy of impact prediction made during the impact analysis stage. The monitoring and evaluation results are used to check compliance with regulations in force, the effectiveness of the mitigation measures and inform environmental management actions.

According to Harmer (2005), effective EIA should reduce the environmental impacts of developments if follow-up is completed. Follow up can ensure that the expected benefits of EIA forecast during the pre-decision stages of the process are achieved during project implementation and management. Furthermore, it enables the lessons learned from experience to improve future practice of EIA. Without follow- up, EIA may be little more than a paper based exercise to obtain project approval. (Morrison- Saunders et al, 2001).

EIA follow-up may be carried out at three scales. At the micro scale, it is conducted on a project by project basis and involves monitoring and evaluation of specific components of EIA (or SEA), such as impact prediction, impact monitoring, compliance auditing, and

implementation of mitigation and environmental management actions. A key question is: Was the project and the impacted environment managed in an acceptable way? At the macro level, it is conducted on EIA systems and examines the effectiveness of an EIA system as a whole in a certain jurisdiction (for instance, the influence of the EIA process on decision-making, efficiency of EIA procedures and utility of EIA products). A key question is: How efficient and effective is a given EIA system overall? At the meta-scale, it involves the evaluation of the utility of EIA. This is closely related to the previous level, but going a step further to determine whether EIA is a worthwhile activity or concept overall. A key question is: Does EIA work? (Morrison-Saunders and Arts 2004b). This study will be confined to the micro scale of EIA follow up, which consists of the implementation of the EMP component of EIA of projects.

Increasingly, the preparation of an EMP during the pre-decision or post-decision stage of an EIA provides the blue print for carrying out EIA implementation and follow up. An EMP should include a schedule of actions for this purpose, identifying protocols for impact management in the event of unforeseen events and specifying the arrangement for the use of surveillance, monitoring, auditing and other procedures.

According to The Environmental Assessment Sourcebook World Bank, (1991), and Guidelines for the Preparation of Environmental Management Plan given by the Department of Infrastructure, Planning and Natural Resources, New South Wales Government, Australia, (2004), EMP is a site or project specific plan developed to ensure that appropriate environmental management practices are followed during a project's construction and operation.

An effective EMP is one that should ensure: Application of best practice environmental management to a project; The implementation of a project's EIA including its conditions of approval; Compliance with environmental legislation and; Proper management of the environmental risks associated with a project.

Development agencies such as AfDB, ADB, European Bank of Reconstruction and the World Bank prescribe the conducting of EIAs as a precondition for funding of certain classes of development projects.

The Environmental Assessment Sourcebook (World Bank, 1991) recommends that an EMP should have the following parts to facilitate efficient implementation and follow up of the EIA: - A brief summary of predicted adverse impacts cross referenced to the EIA report; A brief description of mitigation measures- each measure referenced to the impact to which it relates and the conditions under which it is required (e.g. continuously or in the event of contingencies) and also to project design and operating procedures which elaborate on the technical aspects of implementing the various measures; Description of monitoring programme, clearly indicating the linkages between the impacts identified in the EIA report, measurement indicators, detection limits (where appropriate) and definition of thresholds that will signal the need for corrective actions; Institutional arrangements- indicating responsibilities for mitigation and monitoring should be clearly defined, including arrangements for coordination between the various stakeholders responsible for mitigation. Implementation schedule and reporting procedures specifying the timing, frequency and duration of mitigation measures and showing links with overall project implementation and procedures to provide information on the progress and results of mitigation and monitoring measures should also be

provided. Cost estimates and Sources of funds should be specified for both the initial investment and recurring expenses for implementing all measures contained in the EMP and should be integrated into the total costs factored into loan negotiations.

In industrialized nations, guidelines for the implementation of follow up are in place, for example the UK Planning Practice Standard; Environmental Impact Assessment; The Royal Town Planning Institute (2001) provides that the LPA, in order to ensure effective monitoring of the implementation of development, should ensure that the requirements of the EMP are translated into bidding and tender documents of physical work to ensure that contractors assign costs to the necessary protective measures. Within Africa, for example, while the South African EIA system has many of the attributes of a sophisticated developed country EIA system (Wood, 2002) and EIA is becoming important in Ghana (Appiah-Opoku, 2001), as yet EIA is unimportant in Somalia.

1.2 Statement of the Problem

Many countries have made the conducting of EIA in respect of proposed projects a legal requirement. In spite of this, implementation of the EIA and follow-up are, more often than not, neglected and grossly ineffective in most countries. This is attributed to capacity constraints and the fact that resources are usually not built into projects. The format in which the EMP component of EIA is presented is an important contributing factor to whether the plan is implemented or not and as a consequence to whether EIA implementation and follow -up are successful. Certain private companies have realized the importance of implementing the EMP and have designed acceptable presentation formats as well as guidelines and procedures for implementation. (Economic Commission for Africa 2005)

EIA is reported to be mostly concerned with the prediction and identification of impacts at a pre-decision level, focusing only on the steps before and up to the planning decision but ignoring post development follow-up activities, such as monitoring and auditing (Glasson, 1995b; Petts and Eduljee, 1993 cited in Arts et al, 2001). As a result, EIA is failing to maximize its potential for continuous improvement. According to Harmer (2005), Bučionytė, (2012), EIA follow up, is very important as it makes sure that mitigation measures are implemented and impacts monitored. The monitoring and mitigation measures implementation details are included in and followed up by the environmental management plan (EMP). In Sweden, only a small fraction of projects include monitoring and follow-up once started. EMPs consolidate proposed environmental management activities and put in place a system for both the monitoring of impacts and the necessary response by project managers during subsequent project implementation (Brew & Lee 1996 cited in Morrison-Saunders and Bailey 1999).

Views of researchers who have conducted studies on EIA practice in Kenya suggest that the area of project EIA implementation and follow up needs improvement. According to Muhhamad (2003), there is need for the Kenyan public, lead agencies and NEMA to ensure full implementation of EIA and ISO 14000 as one of the measures of managing the negative environmental impacts of urbanization. Otherwise EIA will remain merely an instrument of approval of projects. According to Kodiaga (2003), one of the most important permits in Health care facility establishment in Kenya is EIA.

Nyeri County, like most parts of Kenya, has not been spared over the years as far as environmental degradation by economic activities is concerned. A 1989 government report on quarrying activity in the Nyeri Forest stated that quarrying practices had led to

the rapid destruction of indigenous forests and rapid soil erosion (Agevi and Ogero reported in David, (1999))

The problem in this study is therefore to investigate the influence of governance on project EIA implementation and follow-up in Nyeri County, Kenya.

1.3 Purpose of Study

The purpose of this study was to examine the influence of governance on project EIA implementation and follow up in Nyeri County, Kenya.

1.4 Research Objectives

Objectives were:-

1. To establish the influence of institutional, legal and regulatory framework on project EIA implementation and follow-up in Nyeri County.
2. To assess the influence of environmental management structures on project EIA implementation and follow-up in Nyeri County.
3. To examine the influence of institutional capacity on project EIA implementation and follow-up in Nyeri County.
4. To establish the influence of finance on project EIA implementation and follow-up in Nyeri County.
5. To ascertain the influence of monitoring and evaluation on project EIA implementation and follow-up in Nyeri County.

1.5 Research Questions

Research questions were formed from the objectives to guide the study.

1. To what extent does institutional, legal and Regulatory framework influence project EIA implementation and follow-up in Nyeri County?

2. To what extent do environmental management structures influence project EIA implementation and follow-up in Nyeri County?
3. To what extent does institutional capacity influence project EIA implementation and follow-up in Nyeri County?
4. To what extent does finance influence project EIA implementation and follow-up in Nyeri County?
5. To what extent does monitoring and evaluation influence project EIA implementation and follow-up in Nyeri County?

1.6 Research Hypotheses

The following null (H0) and alternative (HA) hypotheses were made in order to test for possible correlation between variables.

1. H0- There is no significant relationship between institutional, legal and regulatory framework and project EIA implementation and follow up in Nyeri County.

   HA- Unsound institutional, legal and regulatory framework affects project EIA implementation and follows up in Nyeri County.
2. H0- There is no significant relationship between environmental management structures and project EIA implementation and follow up in Nyeri County.

   HA- Bad environmental management structures affect project EIA implementation and follow up in Nyeri County.
3. H0- There is no significant relationship between institutional capacity and project EIA implementation and follow-up in Nyeri County.

   HA- A Poor institutional capacity influences project EIA implementation and follow-up in Nyeri County.

4. H0- There is no significant relationship between finance and project EIA implementation and follow-up in Nyeri County.

   HA- Adequate finance influences project EIA implementation and follow-up in Nyeri County.

5. H0- There is no significant relationship between monitoring and evaluation and project EIA implementation and follow-up in Nyeri County.

   HA- Ineffective monitoring and evaluation influences project EIA implementation and follow-up in Nyeri County.

1.7 Delimitation of the Study

This study consisted of the collection of information on project EIA implementation and follow up in Nyeri County from the office of Provincial Director of Environment, Central Province, District Environment Offices; Nyeri North and Nyeri South, members of the District Environment Committees, Local Authority Works Officers/ Engineer and Public Health Officers, and the analysis of the collected information to attempt to answer the foregoing research questions. The Central Provincial and Nyeri District NEMA offices provided information on secondary data of audit reports, inspection reports, EIA approvals and a link with the members of District Environment Committees for the purposes of serving questionnaires and administering interview schedules for gathering primary data.

1.8 Significance of Study

EIA cannot play its role as an effective tool for attainment of sustainable development if the approval conditions of EIA are not fully implemented through effective follow-up and proper drawing and execution of EMP. The need for proper drawing and implementation

of EMP as a prerequisite for the attainment of sustainable development cannot therefore be over- emphasized. Although project proponents are required by Kenyan law and EIA and EA regulations to lodge project reports and EIA study reports with NEMA for screening and decision making and NEMA is mandated to monitor the environment to ensure that proponents take remedial action promptly against any negative environmental impacts arising from operating projects and those undergoing implementation, urban and rural scenes of Nyeri County manifest degraded landscapes, polluted air and contaminated waterways as a result of weaknesses in project EIA implementation and follow-up regime. Two cases in point are a January 5th 2012 inferno that engulfed a gas depot in Giakanja and huge craters left by quarrying activities in Nyeri Municipality. It is anticipated that the findings of this study will incite project proponents, planners, designers, managers, the regulating authority, members of the public and lead agencies to re-look at project EIA implementation and follow-up with a view to improving EMP design and mechanisms of its implementation for better environmental performance. A proper EIA implementation ensures adherence to proponent commitments, license conditions, implementation of planned mitigation measures and appropriate management action on unpredicted negative impacts coming to light in the course of project implementation. The general public will as a consequence of positive action taken by the foregoing groups benefit from the resultant improved public health and safety situation.

1.9 Limitation of Study.

The data collection method for the study required that questionnaires be served upon members of the District Environmental Committee (DEC) comprising of Government

officials, representatives of the business community, the youth, women, farmers, pastoralists, NGOs and CBOs. These people were distributed all over the 3,300 square kilometers of Nyeri County. The researcher and his assistants, as had been expected, encountered difficulties in reaching these people. The offices of PDE and DEO helped to trace the potential respondents by providing their telephone numbers.

1.10 Assumptions of Study.

It was the assumption of this study that the truthfulness of the respondents and the reliability and validity of the instruments of survey would be such as to facilitate the collection of information whose analysis would culminate in the realization of useful results.

1.11 Definition of Significant Terms

Baraza is a public meeting convened by Government administrators to address some current matter of public interest.

Environmental impact assessment (EIA) is an environmental management tool comprising of the components of; projects screening, scoping, impacts prediction and analysis, formulation of mitigation measures through public participation, environmental management plan formulation, decision taking, implementation and follow-up.

EIA implementation and follow up consists of project activities undertaken after approval of EIA to ensure implementation of approval conditions, check the accuracy of impact prediction, measure the effectiveness of mitigation measures, monitor environmental performance of the project and disseminate management decisions to stakeholders.

Environmental management structure is the mechanism put in place by a country's regulatory authority such as Kenya's NEMA to enable it coordinate effectively the activities of international and local partners to realize a synergy towards environmental performance.

Lead agency means any Government ministry, department, parastatal, state corporation or local authority, in which any law vests functions of control or management of any element of the environment or natural resource;

Monitoring and evaluation refers to the collection of data through a series of repetitive measurements of environmental parameters (or more generally to a process of systematic observation) and assessment of their impact.

1.12 Organization of Chapter One.

In this chapter, light has been shed on the origin of EIA as a tool for sustainable development. An assessment of its implementation and follow up has been made and a conclusion reached to study the effect of governance on project EIA implementation and follow up in Nyeri County, Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter has as the main objective to review literature appertaining to the research problem that has been defined in the introductory chapter. Empirical, secondary and general literature on the governance subjects of institutional, legal and regulatory frameworks, capacity building, finance, monitoring and evaluation relevant to project EIA implementation and follow-up practice in the international and local arena is explored. Particular attention is lent to the distinction between pre- decision EIA stage where the EMP plan is crafted and post decision EIA stage where the plan is implemented in the course of follow-up exercise.

The Kenya vision 2030 for the environmental sector is "a people living in a clean, secure and sustainable environment." Environmental planning and governance is one of the four strategic thrusts towards achieving this vision. In order to improve the overall management of the environment, building institutional capacity in environmental planning, and improving the impact of environmental governance are necessary. One of the goals set for period 2008-2012 is the enforcement of all environmental regulations and standards. Environmental (Impact assessment and audit) Regulations 2003 which give requirements for EIA's fall under these regulations and standards (Kenya Vision 2030).

According to Morrison-Saunders and Arts, (2004b) EIA follow-up at the proposal level can be simply defined as "The monitoring and evaluation of the impacts of a project or

plan (that has been subject to EIA) for management of, and communication about, the environmental performance of that project or plan." EIA implementation and follow up, together with screening, baseline monitoring, scoping, impact prediction and analysis, mitigation measure and environmental plan formulation and decision making together form part of the EIA concept which, according to Wathern (1988) is often characterized as a tool for mitigating the adverse consequences of development actions by ensuring environmental factors are considered during the project design cycle.

2.2 Legal, Institutional and Regulatory framework influencing project EIA Implementation and Follow-up.

According to Lawrence (2003) EIA legislation and regulations should spell out both aspirations (e.g., goals, objectives, principles, policies, and priorities) and minimum requirements (e.g., thresholds, standards, criteria, areas of application, roles and responsibilities). EIA legislation and regulations should result in a consistent and acceptable level of EIA practice. Ideally, the gap between EIA aspirations and requirements should be narrow. EIA guidelines can further diminish that gap by facilitating compliance and by contributing to the quality of EIA documents and to the effectiveness of the EIA process. EIA guidelines have the additional benefit of flexibility. They can be adapted as the state of the art and practice of EIA evolves. They also can be adjusted for different setting and proposal types and for individual applications. A delicate balancing act is required. Too general EIA legislation and regulations will contribute to a low, or at least highly inconsistent, level of EA practice. EIA legislation and requirements which micromanage every aspect of EIA practice are likely to stifle innovation and inhibit necessary adaptations.

According to Bekhechi and Mercier, (2002) an effective EIA mechanism needs to be grounded in well-defined legislation and procedural rules where the rights and obligations of all stakeholders are clearly defined, and its enforcement must be ensured through appropriate implementation and compliance monitoring procedures and other instruments. Internationally, the UN and its subsidiaries of UNDP, UNEP, and development banks such as World Bank, IMF, AfDB, ADB; development agencies such as USAID SIDA, JICA, GTZ are institutions at the forefront of administration of EIAs in projects financed by them.

MEAS inform the drafting and amendments of country laws and policies relevant to EIA as they govern the exploitation, management protection and conservation of resources and ecosystems that cross boundaries and occupy international space such as rivers, atmosphere, forests, wildlife, lakes, seas and oceans. Towards this end, Kenya has drafted and promulgated over the years, a raft of laws, regulations and policies in alignment with MEAS to which Kenya is party. Principle among these laws is EMCA 1999 under which 11 institutions have been set up to provide a basis for the administration and governance of the environment.

2.2.1 Legal Framework influencing project EIA Implementation and Follow-up.

In Kenya, sectoral laws such as The Local Government Act, The Public Health Act, The Radiation Protection Act, Petroleum Act, National Oil Corporation Act, The Maritime Zones Act, the Maritime Zones Bill 2005, the Merchant Shipping Act No 4 of 2009 and the Energy Act 2006, The Forests Act, The Physical Planning Act, The Agriculture Act; The grassfires Act, The Occupational Safety and Health Act , The Roads Act, The Mining Act, The Land Control Act, among others have a bearing upon the environment

and, as a consequence, upon EIAs. However, the main law providing for the protection, conservation and management of the environment is EMCA. This law is in tandem with the Articles of the Constitution of Kenya on environment. It operationalizes the provisions of Articles 42 and 70 which assure every person of a right to a clean and healthy environment, and article 69 which outlines the State's and every person's obligations towards the realization and maintenance of a clean and healthy environment.

2.2.2 Institutional Framework influencing project EIA Implementation and Follow-up.

NGOs, CBOs, Government Departments, faith based organizations, consultancy firms, business associations, professional associations the world over are institutions with stakes in development issues. Their appropriate involvement in EIA processes, including in the impacts identification, formulation of mitigation measures and design and implementation of EMPs, can contribute positively to project impact, the resulting environmental outcomes benefitting the present and future generations. Under EMCA 1999, the substantive environmental law in Kenya, provision has been made for institutions such as The National Environment Council; The National Environmental Management Authority; The National Environmental Tribunal; The Provincial Environmental Committee; The District Environmental Committee; National Environment Trust Fund ; National Environment Action Plan Committee; National Environment Restoration Fund; Public Complaints Committee; The Standards and Enforcement Review Committee and; The technical Advisory Committee for the effective management of environmental matters.

2.2.3 Regulatory Framework influencing project EIA Implementation and Follow-up.

According to Lawrence (2003), legislative and regulatory provisions should be made for the individual EIA activities of; - screening; scoping; proposal characteristics; baseline analysis; impact identification; alternatives analysis; mitigation and enhancements; methods; documentation; environmental management plan; auditing; public participation; review and decision making.

With regard to the implementation of the EMP, regulations should cover: Identification of potential triggers for follow-up work; Monitoring guidance (e.g., compliance, environmental changes, effects, mitigation effectiveness, public concerns); Identification of types of parameters that may require monitoring; Enforcement requirements; contingency provisions; Liability provisions; Requirements and guidance: terms and conditions; Provisions for links to joint area-wide monitoring and management.

Locally, the Environmental (Impact Assessment and Audit) Regulations, 2003 made under section 147 of EMCA 1999, provides detailed requirements for the conduct of EIAs, the registration of EIA experts to carry out the studies, the EIA review procedure, project implementation and audit. These regulations make provision for the preparation, approval, implementation and follow-up of EIAs. An inclusion in the EIA of an EMP component to guide monitoring of compliance and effectiveness of the mitigation measures prescribed, self audits and control audits is a salient feature of the regulations. These regulations clearly specify the roles of both the proponent and the regulating authority. The details of monitoring programmes provided by proponents in the majority

of EIA reports are however devoid of details such as indicators needed to guide monitoring process.

Although EMP requirements are outlined in the above- mentioned regulations, the proponent is not explicitly required to furnish in the EIA report an EMP with measurable monitoring indicators (UNEP EIA Training Resource Manual 2002).

According to Modak and Biswas (1999), it is clear that EIA has often become a mechanistic process. The 'means' that is EIA receiving almost exclusive attention and the 'end' that is implementation of EIA to improve the environment is often not getting appropriate consideration. Regular monitoring and evaluation is necessary to ensure compliance measures are properly carried out within agreed timeframe. Absence of proper monitoring and evaluation is a handicap for rational environmental management in developing countries.

According to UNEP EIA Training Manual (2002), EIA implementation consists of: Surveillance and supervision- to oversee adherence to and implementation of the terms and conditions of project approval; Effects or impacts monitoring- to measure the environmental changes that can be attributed to project construction and or operation and check the effectiveness of mitigation measures; Compliance monitoring- to ensure that applicable regulatory standards and requirements are being met e.g. for waste discharges and pollutant emissions; Environmental auditing – to verify the implementation terms and conditions, the accuracy of EIA predictions, the effectiveness of mitigation measures, and the compliance with regulatory requirements and standards; Ex post evaluation- to review the effectiveness and performance of the EIA process as applied to a specific

project; and Post project analysis- to evaluate the overall results of project development and to draw lessons for the future.

2.3 Environmental Management structures influencing project EIA Implementation and Follow-up.

According to Sadler and Tomlinson (2004), a major failing of EIA practice has been the common use of EIA to obtain a development permit, rather than as a tool to achieve sound environmental management either within the project objectives or on a broader regional and national basis. Presently, the emphasis is directed towards the approval procedure with little attention being given to the post-approval stage. This situation prevents an evaluation of the performance of various EIA activities and, therefore, inhibits the process of using and refining the existing procedures to achieve their maximum utility. As a consequence, there is a need for a feedback mechanism in EIA which involves the transfer of knowledge from the actual environmental effects of a project or action to future EIAs. According to Morrison-Saunders and Bailey (1999), perhaps the clear expectation that proponents should account for the environmental performance of their projects is sufficient to ensure that proposed management activities are implemented in practice. According to Sands (1991) most current international environmental management performance evaluation structures such as UNEP and global and regional institutions formed after UNEP were established by and after the 1972 Stockholm Conference on the Human Environment. The history of formal environmental management is therefore not old.

According to Morrison -Saunders and Arts (2004), the consequences of EIA activities will not be known without some form of follow-up. Through activities such as

monitoring and auditing, EIA follow-up provides concrete evidence of environmental outcomes. It thereby enables EIA practitioners and stakeholders to move from a mainly theoretical perspective on a proposal to actual understanding and knowing of the real situation once projects are implemented. Ultimately it is not the predicted impacts, but rather the real effects that are relevant for protecting the environment. By incorporating feedback into the EIA process, follow-up enables learning from experience to occur. The effective implementation of EMP to ensure follow- up yields reliable information is therefore of utmost importance in the EIA process. Examples from the UK (Marshall 2004) and Western Australia (Morrison-Saunders et al 2004) show how EMPs and other EMS-like mechanisms can be used as bridging tools between EIA proposals and post-decision project implementation. In such an adaptive approach to follow-up the responsibility is explicitly laid with the proponent corresponding to the 'polluter pays' principle. EMP is therefore a tested tool for follow–up exercise in a project.

According to Morrison- Saunders and Angus (2004), the three principle groups involved in follow up are:- Proponent: which may be the private company or governmental organization who develops a project. Just as project management and mitigation of impacts is normally the responsibility of proponents in EIA, they are often expected to perform most follow-up activities. Follow-up initiated and carried out by proponents may be considered as 1st party follow-up; EIA regulator which may be a competent authority or other government agency responsible for administrating an EIA system. Here the emphasis is typically on ensuring that proponents comply with EIA approval conditions as well as learning from experience to improve EIA processes in the future. Follow-up

carried out by regulators may be called 2nd party follow-up. Community: - a body comprised of the public or other independent persons. The public may have special knowledge of local areas and being independent of both proponents and regulators, they may have interest in evaluating the performance of both of these stakeholders in the EIA process. Pressure arising from public scrutiny of development projects is often a driving force for proponents and regulators alike to implement EIA follow-up programs. The extent of public involvement may range from direct community involvement in follow-up programs to simply being kept informed of follow-up activities and outcomes. Follow-up activities carried out or initiated by the community can be considered as 3rd party follow-up. Follow- up exercise which depends highly on the impact prediction and mitigation measures information contained in an EMP is therefore supposed to be a multiparty exercise requiring good management and leadership skills on the part of the regulatory Authority. This study seeks to find out how well NEMA is playing this role.

According to African Development Bank Group's Policy on the Environment, sustainable development can be achieved only where there is good governance, including transparency, accountability, a participatory approach and decentralization. Furthermore, externalities do not respect national boundaries, and may manifest themselves in countries other than where they have been generated as such externalities affect common property goods, or public goods, like oceans and air, that are shared by numerous countries. There is, thus, a need to address international environmental governance issues to ensure that one country's activities do not harm the environment of another country. According to UNEP, good environmental governance takes into account the role of all

actors that impact the environment. From governments to NGOs, the private sector and civil society, cooperation is critical to achieving effective governance that can help us move towards a more sustainable future.

EIA systems all over the world also use non- legal guidelines for the management of EIA practice. A study by Morrison- Saunders et al., (2003) found that EIA practitioners in Western Australia generally found non -legal guidance material useful in guiding the conduct of EIAs. Practitioners perceived that they allowed for better environmental protection; increased the certainty of outcome of the EIA process; enhanced the consistency of advice given to Government; permitted proposals to be designed to meet environmental objectives from the outset; and provided a clearer basis for Government decision-making. The findings of this study confirm the suggested benefits of developing EIA guidance for capacity- building purposes.

Locally, NEMA EIA guidelines, which stress the observance of the EIA principles of: the entitlement of every person to a clean and healthy environment; the duty of every person to enhance and safeguard the environment; the incorporation of environmental concerns in all development activities; Importance of public participation in the development of projects, policies, plans and programmes; Recognition of social and cultural principles traditionally used in the management of the environment and natural resources; International cooperation in the use and wise management of shared resources ; Intra-generational and inter-generational equity; Polluter-pays principle and; The precautionary principle; have been in place since 2002. They provide guidance of the application of

EIA throughout a project circle. This study will endeavour to find out the extent of applicability and effectiveness of these guidelines as a management tool.

According to Lawrence (2003), the adequacy of the knowledge base for and from EIA requirements and procedures is a crucial determinant of good regulatory EIA practice. Knowledge to support EIA requirements can come from applied EIA and environmental research, traditional knowledge, environmental monitoring, and interdisciplinary analysis. Part of the EIA knowledge base comprises the lessons and insights acquired through formulating and applying EIA requirements and procedures through the use of EMPs.

2.4 Institutional capacity as a factor of influence on project EIA Implementation and Follow-up.

According to Bekhechi and Mercier, (2002) enacting legislation is not enough, but it is an important step to foster environmental protection and sustainable development. However, where the national capacity to implement the EIA requirement is lacking, legislation is just a useless tool. By national capacity, we mean capacity at all the levels where EIA is to be performed, reviewed, discussed, implemented, and monitored. These include central and local governments, decentralized agencies, the private sector, NGOs, and local communities. Outside government, EIA increasingly mobilizes a whole range of social groups, from small national groups of technical and scientific experts to grassroots organizations and their representatives. As the role of local governments and local communities in planning and delivering development services increases, so does the involvement of the most advanced members of these local groups in the preparation,

review, and monitoring of EIAs. 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. For each country, the implication is that: (a) rules, regulations, and capacities should not be limited to capital cities, but should go as close to the field as development activities do; (b) training programs should encompass government staff, grassroots, and EIA specialists including those from the private sector, possibly through the training of trainers in a "cascade" arrangement; and (c) technical and financial resources should be put at the disposal of all these groups of EIA specialists to enable them to implement fully their mandates and responsibilities.

According to Shah, (2008), Kenya's NEMA has proved to be inefficient by, for example, taking two years to make available to a school the results of an environmental audit report a school had submitted in 2005. What could be the reason behind this inefficiency? Could it be due to lack of adequate expertise within the Authority? We therefore need to find out how capacity problems affect EIA implementation and follow-up.

According to Wahaab et al., (2003) environmental impact assessment in Egypt has become a management tool for achieving acceptable forms of environmentally sound development and sustainability; at its best it is proving to be nothing more than a permit to move a project ahead. EEAA lacks the resources and technical skills to follow up and conduct inspections during and following construction to verify that the investor has implemented the recommended mitigation measures and has followed the EEAA recommendations and/or plan described in EIA study.

For the environment, aims and principles of capacity building are to promote sound environmental considerations and criteria in the development process and strengthen institutional pluralism in civil society. Capacity building is a multi-faceted, systematic process owned and driven by the society in which it is based. It should integrate environment and development concerns, take gender issues fully into account in all levels and aspects of development, seek to develop appropriate approaches to include all disadvantaged groups in society, use a variety of management techniques, analytical tools, incentives and organizational structures in order to achieve a given policy objective, involve the affected and interested public in all aspects of the process and enhance coordination among government agencies and with civil society (EIA Training Resource Manual Second Edition 2001).

Kenya's NEMA is fortunate to have many highly qualified professionals in various areas of disciplines. The staff compliment in 2009 stood at 253 in post against an authorized establishment of 360 needed to implement the Strategic Plan. (NEMA 2009-2013 Strategic Plan) Although critical skills for the successful fulfillment of the NEMA's mandate are available (NEMA 2009-2013 Strategic Plan), emphasis should be placed on training and human resource development for both the NEMA's staff and its stakeholders. This is done through NEMA Environment Training Institute which undertakes to improve capacity for developers and lead agencies through training workshops lasting between 2 days and 3 weeks, to assist them to make informed investment and environmental protection decisions. In its 2010-2013 strategic plan, NEMA has specifically committed itself to build capacity of Provincial and District

Environment Committees (PECs and DECs) to enable them fulfill their roles in environmental management.

According to World Bank, the EMP draws on the EIA's assessment of the existence, role and capability of environmental units on site or at the agency and ministry level to support timely and effective implementation of environmental project components and mitigation measures. If necessary, the EMP recommends the establishment or expansion of such units, and the training of staff, to allow implementation of EIA recommendations. Specifically, the EMP provides a specific description of institutional arrangements which is responsible for carrying out the mitigatory and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training). To strengthen environmental management capability in the agencies responsible for implementation, most EMPs cover one or more of the following additional topics: (a) technical assistance programs, (b) procurement of equipment and supplies, and (c) organizational changes. (The World Bank Operations Manual 1999).

In line with Kenya Vision 2030, Human Resource Development initiative of creating a globally competitive and adoptive human resource base, NEMA will coordinate training programmes for its staff in all areas. According to a 2005 report of the Economic Commission for Africa on Impact Assessment in Selected African Countries, many countries have made the implementation of the EMP, or an appropriate permit, a legal requirement. In spite of this, implementation of the EMP and follow-up are, more often

than not, neglected and grossly ineffective in most countries. This is attributed to capacity constraints and the fact that resources are usually not built into projects. The format in which the mitigation measures / plan is presented is an important contributing factor to whether the plan is implemented or not. Certain private companies have realized the importance of implementing the EMP and have designed acceptable presentation formats as well as guidelines and procedures for implementation.

2.5 Finance as a factor influencing project EIA Implementation and Follow-up.

According to Morrison Saunders and Arts, (2004), EIA follow-up requires considerable resources in terms of time and money as well as staffing in both proponent and regulatory agencies. Until the benefits of EIA follow-up are more widely recognized in terms of long-term cost savings and improved environmental management, the demands on financial and staff resources are likely to impede progress in this area. For example, environmental effects monitoring is generally costly, especially over the time and scale boundaries which are often needed to determine the extent and level of environmental change caused by a project. Additionally, when multiple projects with similar impacts occur together, it can be problematic determining which proponent(s) should be held financially responsible for area-wide and cumulative effects monitoring. Staffing continuity is another important issue. Personnel changes in both proponent and regulatory agencies may disrupt follow-up programs and impede learning from experience.

Project EIA implementation and follow up is, therefore, a task that requires financial commitment on the part of all implementation parties. Given that in Kenya, NEMA is the

main implementing and coordinating agency for the Government's environmental programs, its financial disposition is critical to the implementation of EIA and follow –up in Nyeri County. The DEO in Nyeri County prepares an annual work plan with a budget which is forwarded to NEMA Headquarters through the office of the PDE for consideration. This study will endeavour to establish whether budgetary allocation for DEC in 2010/2011 financial year was adequate and also whether the other EIA management institutions allocated adequate financial resources to the EIA process.

According to NEMA's strategic plan 2009-2013, the authority draws the bulk of its funding from the exchequer; processing and issuing of licenses as provided in EMCA; private sector in line with PPP principle; publicity; educational initiatives and advertising in its quarterly newsletter. Interest earned from the environmental funds e.g., Deposit Bonds and the Restoration Fund, is an additional source of income to the authority.

Many donors have an active interest in funding environmental initiatives as part of their strategic objectives and therefore it was anticipated that they would fund the activities outlined in the strategic plan 2010-2013. In this regard NEMA would engage in positive dialogue with development partners with a view to seeking support for the implementation of the plan. In order to achieve its goals and objectives, the authority would require a total of Kshs 5,944.4m, 5,113.3m and 5,062.0m for recurrent and development expenditure for the financial years 2010/11, 2011/12 and 2012/13 respectively. The cost includes enhancing and strengthening institutional capacity to undertake its mandate and implementing different programs e.g. education for sustainable

development, climate change and development and enforcement of air and water quality regulations among others, construction of NEMA laboratories among other activities.

NEMA will continue strengthening its internal administrative and monitoring systems in order to meet donor funding requirements. The authority will continue identifying more donors and establish working relations to support implementation of the plan. Lead Agencies form part of the partnership envisaged under EMCA. They provide support "in kind" (in terms of human, technical and logistical resources as well as facilities) and bear the cost of implementation within their jurisdiction. NEMA will work proactively with all lead agencies to optimize support for environmental management activities within their respective areas of responsibility. NEMA budget for Compliance and Enforcement Department which is pertinent to the implementation of EIA over the strategic plan period 2010-2013 is given in Table 2.1 below.

Table 2.1: NEMA Compliance and Enforcement Department budget

Goal	Annual Budget projections (Kshs Millions)				
	2009/10	2010/11	2011/12	2012/13	Total
Enhanced supervision of environmental management and quality standards through development and enforcement of EMCA and environmental regulations.		1,876.33	358.7	356	2525.6
Others Total		4,068.07 5,944.4m	4,754.6 5,113.3m	4,703 5,062.0	13,525.67 16,119.7

2.6 Monitoring and evaluation influence on project EIA Implementation and Follow-up.

According to McCallum (1987), EIA cannot be expected to endure in society without the introduction of impact monitoring. Although monitoring and auditing are two important components of the EIA process, their implementation in the EIA process is being neglected globally. However, Carpenter (1997) notes that the issue of monitoring and auditing in EIA is becoming more prominent.

The annual conference of the International association for Impact Assessment (IAIA'00) held in Hong Kong in 2000 specially focused on various issues of monitoring and auditing in EIA and suggested future directions for good practice. EIA is reported to be mostly concerned with the prediction and identification of impacts at pre-decision level focusing only on the steps before and up to the planning decision but ignoring post development follow-up activities, such as monitoring and auditing (Arts et al., 2001). As a result, EIA is failing to maximize its potential for continuous improvement (Wood, 1999b). Moreover, it would seem that the procedural emphasis of EIA upon the pre-decision analysis keeps it distant from its goal, i.e., environmental protection.

In a major study on international EIA effectiveness by Sadler (1996), it was found that there was a lack or poor performance of follow-up activities in EIA. This is considered to be a major weakness of EIA globally (Arts et al., 2001; Bisset and Tomlinson, 1988). According to Sadler, (1998), and Anjaneyulu et al, (2007), monitoring is required to evaluate the success or failure (and consequent benefits or losses) of environmental

management measures and subsequently to reorient the EMP. Regardless of the quality of EIA and consequent environmental management measures, they are of limited value unless implemented. Even with the authority to delay a project until approval of an EIA is obtained, there is frequently no assurance that the environmental management measures in the EMP will be implemented. It is essential that detailed EMPs be designed for appropriate projects. This design should be prepared as a part of the EIA study and should be presented as a major component of the report including the detailed monitoring work plan, reporting procedure and manpower and cost budgets and with a requirement that regular monitoring reports be submitted to environmental agencies. In many cases the environmental agency will have to rely on its own monitoring to monitor the monitoring as well as to monitor the implementation of management measures.

Monitoring refers to the collection of data through a series of repetitive measurements of environmental parameters (or more generally to a process of systematic observation). The main types of monitoring activities are; Baseline monitoring- the measurement of environmental parameters during a pre- project period for the purpose of determining the range of variation of the system and establishing reference points against which changes can be measured; Effects monitoring- the measurement of environmental parameters during project construction and implementation to detect changes which are attributable to the project; Compliance monitoring- the periodic sampling or continuous measurement of environmental parameters to ensure that regulatory requirements and standards are being met. Regular monitoring and evaluation is necessary to ensure compliance measures are properly carried out within agreed timeframe. Absence of proper

monitoring and evaluation is a handicap for rational environmental management in developing countries. According to Morrison- Saunders et al (2001) EIA follow-up, through monitoring, auditing and evaluation, can ensure that the expected benefits of EIA forecast during the pre-decision stages of the process are achieved during project implementation and management.

Hong Kong has in place an environmental monitoring and audit (EM&A) system to improve accountability in EIA and environmental performance. This system has a requirement for proponents to employ an independent environmental checker (IEC) to check the works carried out and data collected by the environmental team responsible for the actual monitoring and audit of works carried out on site (Hui, 2000 in Arts et al., 2001). The IEC also verifies and certifies that mitigation measures are fully and properly implemented as recommend in the EIA report. (Arts et al., 2001)

2.7 Theoretical Framework

According to Sosovele, (2011) numerous studies on the effectiveness of EIA have explored governance issues such as stakeholder participation, legislating EIA process, capacity building and institutional arrangement. Marshall et al, (2005), have identified monitoring and evaluation and environment management as elements of EIA implementation and follow-up. This study will consequently look into the extent of influence of governance issues on project EIA implementation and follow-up. The influence of the independent variables:- Legal, regulatory and institutional framework; environmental management structures; institutional capacity; finance and monitoring and evaluation; on the dependent variable of project EIA implementation and follow-up in

Nyeri County will be studied by collecting data from appropriate respondents and analyzing it. Each of the independent variables has been found by literature review to have an effect on the dependent variable. Project EIA implementation and follow-up has been found to depend on the above independent variables. Further, the variable of finance may have an influence on institutional capacity and monitoring and evaluation while that of environmental management structure may be influenced by legal, institutional and regulatory framework.

2.8 Conceptual Framework

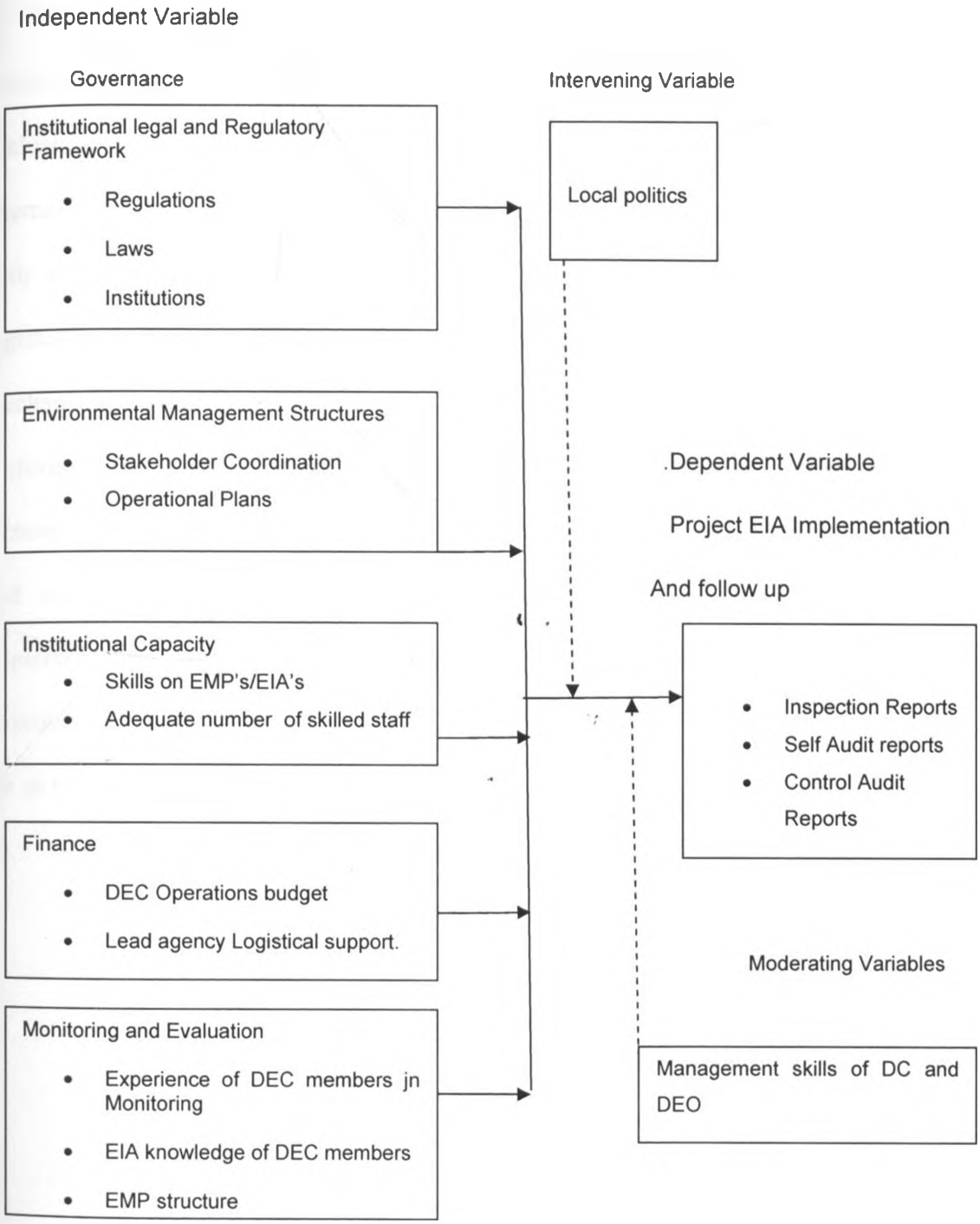

Figure 2.1: Conceptual framework

2.9 Summary and Research Gap

In this chapter, literature relevant to legal, institutional, regulatory framework; environmental management structures; capacity building; finance and; monitoring and evaluation in the context of project EIA implementation and follow-up in the international and local scenes, has been reviewed with an aim of establishing connectivity with the environmental situation in Nyeri County. A number of researches have registered their observations to the effect that EIA could easily pass as merely a mechanism for seeking clearance for a project to be implemented and may not be performing its cherished function of ensuring that environmental considerations are factored into project planning and execution. Ensuring a clean and healthy environment and sustainable development may remain a dream unless the process of EIA implementation and follow-up is critically looked at and recommendations for improvement made and implemented. A need arises, as a consequence of the foregoing, for us to examine the influence of governance on project EIA implementation and follow-up.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The details of the approach that was taken in executing this study are given in this chapter. The descriptions of the universal population, the sampling design, the target population, the research instruments, the validity and reliability of the instruments, data gathering, data processing and data analysis procedures, data presentation and data dissemination procedures that were employed are explained here.

3.2 Research Design.

This kind of study necessitates the use of descriptive design. The researcher in a descriptive study must be able to define clearly what he wants to measure and must find adequate methods of measuring it along with clear cut definition of the population he wants to study. The design must ensure protection against bias and maximize reliability within the budget according to Kotari, (2004). Descriptive design was used as there was need to get detailed narratives from the members of the District Environment Committees in Nyeri County and from the Provincial Director of Environment, Central Province. These parties coordinate environmental matters in Nyeri County.

3.3 Target Population

The population targeted for interview at the conception of the study consisted of The provincial Director of Environment and all members of the District Environmental

Committee, constituted under section 29 of EMCA as follows;- District Commissioners of Tetu, Mathira East, Nyeri Central, , District Environment Officer- Nyeri South, District Environment Officer- Nyeri North; one representative for each of the ministries for the time being responsible for Agriculture, Economic Planning and Development, Environment, Finance, Health, Local Government, Natural Resources, Public Administration,. Public Works, Research and Technology, Tourism and Water Resources in all the eight districts of Nyeri County, a representative of every local authority whose area of jurisdiction falls wholly or partially within the district; two representatives of farmers or pastoralists within the district to be appointed by the Minister; two representatives of the business community in the district to be appointed by the Minister; two representatives of the non-governmental organizations engaged in environmental management programmes, operating in the district, to be appointed by the Minister in consultation with the National Council of Non-Governmental Organization; and two representatives of the community-based organizations engaged in environmental programmes operating in the district, to be appointed by the Minister. Works Officers of County Council of Nyeri, Nyeri Municipal Council, Karatina Municipal Council and Othaya Town Council will also be interviewed as they have a supervisory role over all the construction projects in their respective local Authorities. (See Table 3.1 below)

Table 3.1: Sampling Frame

Category	Source	Target Population
Provincial Director of Environment	Provincial Environment Office	1
District Environment Officer	Nyeri South and Nyeri North Districts	2
District Comissioner	Nyeri County	8
Engineer/ Works Officer	County Council of Nyeri, Nyeri Municipal	4

	Council Karatina Municipal Council Othaya Town Council	
District Agricultural Officer	District Agriculture Office	8
District Development Officer	District Development Office	8
District Education Officer	District Education Office	8
District Tourism Officer	District Tourism Office	1
District Water Resources Officer	District Water Office	1
District Research and Technology Officer	District Research and Technology Office	1
District Works Officer	District Works Office	3
Representative of CBOs	Nyeri County	2
District Energy Officer	District Energy Office	1
District Medical Officer of Health	District Hospital	1
District Public Health Officer	District Public Health Office	2
District Industrial Officer	District Industrial Office	1
District Natural Resources Officer	District Natural Resources Department Office	1
Officer Commanding Nyeri District	Police Department	1
Representative of farmers, youth, pastoralists and women	Nyeri County	4
Representatives of business community	Nyeri County	2
Representatives of NGOs	Nyeri County	2
	Total	62

3.4 Sampling Design

According to Sekaran, (2006), judgment sampling design, a non probabilistic sampling design, is suitable when data sought can only be obtained from certain groups. Since the information needed for this study could only be obtained from the members of the District Environmental

Committee as constituted under section 29 of EMCA, and from local authority works officers and public health officers, judgment sampling was found most appropriate.

3.5 Data Collection Methods

A questionnaire with both closed ended and open ended questions and an interview schedule were used as tools for the collection of primary data. The questionnaire was hand delivered to respondents and a time for collection agreed upon. The use of an interview schedule required administration by an enumerator, who helped the respondent fill the schedule. The enumerator explained the aims and objectives of the study and also helped remove the difficulties which any respondent may have in understanding the implications of a particular question or the definition or a concept of a difficult term. Kotari (2004) considers this method as being very useful in extensive inquiries and can lead to fairly reliable results, despite being very expensive. The questionnaire was preferred over other instruments as the respondents were able to record the responses themselves, a fact which ensured no distortion of information as it was recorded. The schedule was chosen to supplement the questionnaire as there would be need to gather certain additional environmental information from the local authority works officers and Engineers, Public Health Officers, DEO and PEO through close interaction. Although the PDE was neither able to return the questionnaire left at his office nor able to take an interview, adequate information was furnished to the study by the two District Environmental Officers serving Nyeri County.

3.6 Ethical Issues

Informed consent of respondents was obtained before they were presented with the survey instruments of data collection. Towards this end, they were given an explanation

as to the purpose and significance of the research. All due arrangements had been made to obtain all necessary legal requirements. According to Sekaran, (2006) the confidentiality of the data collected for the study should be assured, self esteem of the respondents should never be violated, participation of respondents should be voluntary and the data collected during the study should never be distorted or misrepresented. This study was made with the foregoing idea in mind.

3.7 Pilot Study

According to Kotari, (2004) it is advisable for a researcher to immerse himself or herself in a subject matter of study in order to clearly define the problem. This is best done through the carrying out of a pilot study. This method can be employed in the task of ensuring instrument validity and reliability as hereafter set out.

3.8 Instrument validity

Mugenda and Mugenda (2003) define validity as the accuracy and meaningfulness of inferences which are based on the research results. Validity in this research design was assured by careful choice of indicators which informed the construction of the questionnaire and interview schedules. Validity was further enhanced by undertaking a pilot survey prior to collecting the final data from the respondents. The part of the population engaged in the validity test was not involved in the final data collection exercise in order to avoid bias.

3.9 Instrument Reliability

Reliability is the tendency of an instrument to yield consistent results when applied on several occasions. The questionnaire and the interview schedules were subjected to a test- retest technique, data being collected with the instruments from a few selected subjects of the population at the first instance and again one week later. Spearman's rank correlation coefficient was computed and a value of 0.7 obtained was found acceptable.

3.10 Methods of Data Analysis

Data collected from respondents was processed and analyzed. According to Kothari, (2004) this is essential for a scientific study and for ensuring that all relevant data for making contemplated comparisons and analysis are available. The process consisted of; editing which involved examination of raw data to detect errors and omissions in questionnaires and interview schedules and to make corrections where possible; coding which involved assigning numerals to answers so that responses could be classified into a limited number of categories or classes appropriate to the research problem under consideration; classification which involved reducing the data into homogenous groups according to attributes or in class intervals; tabulation which was essentially displaying the data in compact form.

A descriptive analysis of the data after processing involved multiple regression analysis. Measures of central tendency of mean, mode and median were made with the help of Statistical Package of Social Sciences Software (SPSS) and Microsoft Excel and presented in frequency tables.

3.11 Deterministic Component of the Regression Model

The following multiple regression model was used to determine the extent to which independent variables affect the dependent variable.

$$Y=ß_0+ß_1X_1+ß_2X_2+ß_3X_3+ß_4X_4+ß_5X_5+\epsilon$$

Where Y is the independent variable

$ß_0$- is the Y intercept, occurring when $X_1= X_2 =X_3 =X_4= X_5=0$

X_{1-5} - are the independent variable

X_1 – is the Institutional, legal Regulatory and policy Framework

X_2 – is management

X_3 . is Institutional capacity

X_4 _ is Finance

X_5 -is Monitoring and evaluation

$ß_0$ -is the constant

$ß_{1-5}$ -is the regression coefficient or change induced in Y by each X

ϵ - is the error which represents the factors affecting the dependent variable not taken into account in the model.

3.12 Operationalization Table of Variables

Table 3.2: Operationalization table of variables

	Research Objective	Independent Variable	Indicator	Measurement scale	Data Collection Method	Data analysis Method
1	Influence of legal, Regulatory and Institutional framework on Project EIA Implementation and follow-up in Nyeri County	Existence of appropriate laws, institutions and regulations	Suitability of legal, Regulatory and Institutional framework	Ordinal	Self administered Questionnaire and researcher administered schedule interviews	Correlational analysis Linear regression
2	Influence of environmental management structures on Project EIA Implementation and follow-up in Nyeri County.	Operational Plans Coordination of partners	Frequency of DEC meetings Logistics Level of involvement of DEC members and stakeholders in EIA implementation	Ratio Ratio Ordinal	Self administered Questionnaire and researcher administered schedule interviews	Correlational analysis Linear regression
3	Influence of Institutional capacity on Project EIA Implementation and follow-up in Nyeri County	Skills on EIA Number of skilled stakeholders	Number of members trained in EIA Number of staff trained in EIA Holding of sensitization barazas. Number of EIA consultants in Nyeri County	Ratio Ratio Nominal Ratio	Self administered Questionnaire and researcher administered schedule interviews	Correlational analysis Linear regression

	Research Objective	Independent Variable	Indicator	Measurement scale	Data Collection Method	Data analysis Method
4	Influence of Finance on Project EIA Implementation and follow-up in Nyeri County	DEC Operational Budget Operational budgets of lead agencies Lead agency DEC logistical support	Adequacy of DEC operational budget Adequacy of lead agency operational budgets Transport provision for DEC activities	Ordinal Ordinal Ordinal	Self administered Questionnaire and researcher administered schedule interviews	Correlational analysis Linear regression
5	Influence of Monitoring and evaluation on Project EIA Implementation and follow-up in Nyeri County	Experience of DEC members jn Monitoring EIA knowledge of DEC members EMP structure <u>Dependent Variable</u> Project EIA Implementation and follow up	Previous membership of monitoring team Knowledge of EIA structure Suitability of EMP Inspection reports Self Audit Reports Control Audit Reports	Nominal Nominal Ordinal ordinal	Self administered Questionnaire and researcher administered schedule interviews	Correlational analysis Linear regression

3.13 Summary

This chapter has in the foregoing paragraphs given an account of how a descriptive survey design was conceptualized and defined for implementation. An elaborate plan was put in place to ensure the success of the study which entailed investigating the effects of five independent variables on project implementation and follow up in Nyeri County. Primary data collected with the help of questionnaires and interview schedules and secondary data acquired from literature and scrutiny of official documents were analyzed to shed light in the area of study.

CHAPTER FOUR

DATA ANALYSIS PRESENTATION AND INTERPRETATION OF RESULTS

4.1 Introduction

This chapter presents analyses of the data collected and offers the interpretation of results from the findings made from the sampled respondents. The purpose of the study was to examine how components of governance namely; institutional, legal and regulatory framework, environmental management structures, institutional capacity, finance and monitoring and evaluation influenced project EIA implementation and follow-up in Nyeri County and to make recommendations on ways of instituting improvements and enhancements in procedures in order to realize better environmental outcomes.

4.2 Data Analysis

While descriptive statistics were used in the analysis and presentation of the data, inferential statistics were used to establish whether there was any significant correlation between the variables. Data was presented in the form of frequency and percentage tables and bar charts.

4.2.1 Response Rate

Table 4.1: Questionnaire Response Rate

Category	Targeted Sample Size	Respondents	% Response Rate
Respondents	62	31	50%
Total	62	31	50%

Table 4.1 shows that although the targeted population was 62, only 31 or 50% of the questionnaires given out were actually filled and returned. This number was found

adequate to proceed with analysis of study as according to Mugenda, (2003), thirty respondents or more are required for correlational analysis which was contemplated in this study.

Table 4.2: Interview Schedule Response Rate

Category	Targeted Sample Size	Response Rate	% Response Rate
Respondents	12	5	41.7%
Total	12	5	41.7%

Table 4.2 above illustrates that only 5 or 41.7% of the 12 interviews expected were conducted. According to Serakan, (2006), the judgmental sampling design used in this study is preferable when information needed can only be obtained from a specific group of people. This proved to be a great challenge in the study as 50% of the 62 DEC members, chairmen and secretaries targeted to provide information for the study were unable to respond to questionnaires.

4.2 2 Demographic Variables of Respondents

This section addresses itself to the demographic variables of respondents. The distributions of respondents by gender, experience, type of membership and organization represented are considered.

Table 4.3: Gender composition

Gender	Frequency	Percent
Female	6	19.4
Male	25	81.6
Total	31	100.0

From Table 4.3 above, one observes that of the 31 respondents, 25 or 81.6% were male while 6 or 19.4% were female; reflecting the fact that most of the representatives of government departments and special groups holding membership of DEC are men. This gender imbalance in representation could be as a result of an education system that has for a long time favoured the boy child while discriminating against the girl child. As a result, most government officers serving in Ministries at District level are male District. The probability, therefore that an officer seconded to represent a Ministry in the DEC is female is much lower than the probability that such an officer is male.

Table 4. 4: Length of time respondents have held position

Duration	Frequency	Percent
Less than 1 year	4	12.9
1 to 2 years	7	22.6
3 to 5 years	9	29.0
Over 5 years	11	35.5
Total	31	100.0

As illustrated in Table 4. 4 above, 20 or 64.5% of the 31 respondents had been members of DEC for three years and above a situation depicting the DECs as consisting of fairly experienced membership.

Respondents were asked to indicate the type of membership they held. This would indicate whether data had been collected from all types of membership.

Table 4.5: DEC membership distribution by type

Class	Frequency	Percent
Chairman	4	12.9
Secretary	2	6.5
Member	25	80.6
Total	31	100.0

Table 4.5 shows DEC membership type distribution of the 31 respondents. 12.9% were DEC chairpersons, 6.5% were secretaries and 80.6% were DEC members. In accordance with section 29 of EMCA, the chairman of each DEC is supposed to be the District Commissioner and the secretary is supposed to be the District Environmental Officer, but there are only two environmental officers in the whole Nyeri of county. The county has, therefore, been for purposes of the operation of DECs, subdivided into Nyeri North region consisting of the districts of Kieni East, Kieni West, Mathira East and Mathira West and Nyeri South consisting of the districts of Nyeri Central, Tetu, Othaya and Mukurweini. This arrangement enables each of the two Environmental Officers in Nyeri County, to serve as secretary for the 4 DECs in Nyeri South and Nyeri North respectively. As depicted on Table 4.6 below, the study managed to involve respondents from a diverse range of Ministries so as to help ensure that information received came

from a mix of ministries conforming to the distribution prescribed by section 29 and first schedule of EMCA as much as possible.

Table 4.6 DEC Distribution of respondents by organization

Organization	Frequency	Percent
Ministry of planning	6	19.4
Ministry of Agriculture	6	19.4
Ministry of water and irrigation	2	6.5
Natural Resources	3	9.6
Office of the president	4	12.8
NEMA	2	6.5
Public Health	2	6.5
Local authority	4	12.9
Water Resource User Association	1	3.2
Community Based Organization	1	3.2
Total	31	100.0

Considering that the membership of a DEC is supposed to be composed of two representatives of farmers, two representatives of NGOs, two representatives of CBOs, two representatives of business community and one representative of each of the ministries of: Agriculture, Economic Planning and Development, Education, Energy, Environment. Finance, Fisheries, Foreign Affairs, Health, Industry, Law or Law Enforcement, Local Government, Natural Resources, Public Administration, Public Works, Research and Technology, Tourism, and Water Resources at the district level; the researcher considered the distribution of the 50% respondents who filled questionnaires as representative of the population of 62 that had been targeted for study.

Respondents were asked to state the role of DEC in Nyeri County.

Table 4.7: Role of DECs in Nyeri County

Role of DEC	Frequency	Percent
Deliberates on environmental issues, issuance of permit to cut trees	2	6.5
EMCA implementation oversight	1	3.2
Implementation of formulated environmental policies and acts and recommendation of the environmental reports	5	16.1
Increasing forest covers by planting more trees.	3	9.6
Managing environmental issues to ensure sustainable use of resources and protection of the environment	5	16.1
To ensure that the projects being implemented do not have adverse effects on the environment and to ensure that mitigation measures are undertaken	6	19.4
To supervise and co-ordinate all environmental matters	9	29.0
Total	31	100.0

From Table 4.7 above, it is apparent all respondents were aware that the role of DEC was to manage the environment in the county as provided for in section 30 of EMCA.

4.3 Relationships among Study Variables

This section presents the results of the analysis of data collected from respondents in order to investigate the influence the five independent variables indicated in the study objectives have on the dependent variable.

4.3.1 Legal, institutional, and regulatory framework

Respondents were asked to comment on the suitability of EMCA 1999 in environmental management.

Table 4.8 suitability of EMCA, in environmental management

Response	Frequency	Percent
Neutral	5	16.1
It is suitable	26	83.9
Total	31	100.0

According to Table 4.8 above, 83.9% of the 31 respondents were of the opinion that EMCA was suitable for governing the protection, conservation and management of the environment while 16.1% were of a neutral opinion. The provisions of EMCA on conservation, protection and management of the environment as a whole are extensive and if implemented would lead to good environmental performance of projects through effective project EIA implementation and follow up.

Respondents were asked for their opinion on the extent to which DEC was performing its function.

Table 4.9: The extent to which DEC is performing its function

Response	Frequency	Percent
To a large extent	7	22.6
To some extent	18	58.0
To a small extent	6	19.4
Total	31	100.

According to Table 4.9 above, 80.6% of the respondents were of the opinion that to some extent and to a large extent, DEC was discharging its functions.

Respondents were asked to record to what extent, in their opinion, the Environmental (Impact Assessment and Audit) Regulations 2003 was suitable for governing the various stages of EIA. This was done to establish the depth of their knowledge of EIA regulations.

Table 4.10: Suitability of EIA and Audit Regulations 2003 for EIA stages

Response	Screening of projects	Preparation of terms of reference	Public Participation	Impact Identification and analysis	Formulation of mitigation measures	Preparation of EMP	EIA approval	Project Implementation and Follow up
	Freq/%	Freq/%	Freq/%	Freq/%	Freq/%	Freq/%	Freq/%	Freq/%
Large extent	20/64.5	22/71.0	23/74.2	19/61.3	20/64.5	19/61.3	20/64.5	20/64.5
Some extent	11/35.5	9/29.0	8/25.8	12/38.7	11/35.5	12/38.7	11/35.5	11/35.5
Total	31/100	31/100	31/100	31/100	31/100	31/100	31/100	31/100

From Tables 4.10 above, it is evident that all the 31 respondents were of the opinion that Environmental Impact Assessment and Audit Regulations 2003 was generally suitable for governing the various stages of EIA namely: Screening of projects to identify those to undergo EIA; Preparation of Terms of Reference for EIA; Public Participation in EIA; Impact identification and analysis; Formulation of mitigation measures; Preparation of Environmental Management Plan; EIA approval and; Project EIA implementation and follow-up.

Respondents were asked to give their opinion on the statement that as was evident from the inspection reports, self audit and control audit reports, a legal, institutional and regulatory framework affected project EIA implementation and follow up.

Table 4.11: Legal, regulatory and institutional framework influences project EIA implementation

Response	Frequency	Percent
Agree	8	25.8
Strongly agree	23	74.2
Total	31	100.0

Table 4.11 shows that 100% of the respondents agreed that a legal, regulatory and institutional framework influenced project EIA implementation and follow up as was evident from inspection, self audit and control audit reports found at the District and Provincial Environment Offices.

4.3.2 Environmental Management Structures

The respondents' opinions on the ease of collection of environmental information in Nyeri County by DEC were sought.

Table 4.12: Ease of gathering project environmental information by DEC in Nyeri County

Response	Frequency	Percent
Easily	11	35.5
Neutral	4	12.9
With difficulty	11	35.5
With great difficulty	5	16.1
Total	31	100

From Table 4:12 above, whereas 51.6% of the 31 respondents were of the opinion that DEC gathered environmental information over the 3300 square kilometers of Nyeri

County with difficulty, 35.5% contended that the information was gathered easily while 12.9% were neutral. This was reflective of the differences in challenges faced by different DECs due to their peculiar requirements.

Table 4.13: DEC environmental information gathering methods

Method	Frequency	Percent
Conduct of impromptu inspections and surveillance.	5	16.2
Delegation of some duties to locals through DO's and chiefs.	3	9.6
DEC has line Ministry, NGO, CBO, SHGs farmers, and business community membership with varied expertise in specific areas.	10	32.3
Holds meetings to deliberate on issues concerning the district	3	9.6
Only seeks information on the applied for project or reacting to public complaints	2	6.5
Submits EIA reports to lead agencies for their comments.	2	6.5
Involvement of strategic stakeholders, opinion leaders, secondary and indigenous data/information	3	9.6
Maintenance of a hot-line for public to communicate environmental information to NEMA	3	9.6
Total	31	100.0

Table 4.12 displays the methods employed by DECs in collecting environmental monitoring information. These included collecting information from; the local

communities through the local sub chiefs, chiefs and DO; the lead agency members; the NGO, CBO and various special groups representatives; stakeholders and opinion leaders; the general public via hotlines; site visits and; briefing reports made by Provincial Environmental Committee.

Respondents were asked to indicate the frequency of DEC meetings.

Table 4.14: Frequency of DEC meetings

Response	Frequency	Percent
On need	4	12.9
Rarely	7	22.6
Quarterly	16	51.6
Thrice per year	1	3.2
Twice a year	3	9.7
Total	31	100.0

Table 4.14 above shows that frequency of DEC meetings varies for the different DECs in the County. Fifty one point six percent of the 31 respondents stated the meetings were held quarterly, 22.6% rarely, 12.9% on need, 9.7% twice a year and 3.2% thrice a year. This variability in the frequency of meetings is indicative of the differences in needs of the different DECs. Information collected through the interview schedule reveals that budget allocation for activities of the four Nyeri South DECs has been far inadequate, with only 27000 Kenya shillings having been the allocation for the 2010/2011 financial year.

Respondents were asked to indicate the number of lead agencies represented in DEC.

Table 4.15: Number of Lead Agencies in Nyeri County

No. of Lead Agencies	Frequency	Percent
4	4	12.9
6	3	9.7
8	4	12.9
12	3	9.7
15	6	19.3
16	3	9.7
18	3	9.7
20	5	16.1
Total	31	100.0

In Table 4.15, the number of lead agencies as indicated by the respondents ranges from 4 to 20. Because there is a DEC for each of the 8 districts in Nyeri County, the number of lead agencies represented in any DEC is dependent on the number of government Departments already established in the district. This means that some districts are unable to fill all DEC membership slots provided for under schedule one of EMCA 1999 where some departments have not yet been established.

Respondents were asked to indicate the level of effectiveness of communication channels between DECs and lead agencies.

Table 4. 16: Effectiveness of channels of communication

Response	Frequency	Percent
Very effective	2	6.5
Effective	20	64.6
Neutral	5	16.1
Ineffective	3	9.6
Highly ineffective	1	3.2
Total	31	100

Table 4.16 indicates that 71.1% of the 31 respondents were of the opinion that the channels of communication between DEC and lead agencies were effective, 16.1% were neutral on the matter, 9.6% thought they were ineffective and 3.2% thought they were highly ineffective. This implies that the level of coordination of lead agencies by NEMA was good but could be better.

Prior to the decision making on an EIA by NEMA, EIA regulations provide that a copy of the report be submitted to lead agencies for their comments so that their input may be taken into account in decision making. Respondents were therefore asked to indicate the average rate of prompt filing of comments on EIA reports that had been referred to them by NEMA.

Table 4.17: Average rate of prompt filing of comments on EIA's by lead agencies

Rate	Frequency	Percent
0 - 24%	6	19.4
25 - 49%	9	29.0
50 - 74%	10	32.3
75 - 99%	5	16.1
100%	1	3.2
Total	31	100

According to Table 4.17 , prompt filing of EIA reports by lead agencies in Nyeri County was between 0% and 74% in the opinion of 80.6% of the 31 respondents, 19.4% reckoning that it is between 75 % and 100%. It would appear that on the whole, lead agencies are not prompt in sending their comments to NEMA on EIA reports submitted

to them for comments. There is need to step up the education of all DEC members on EIA so that lead agencies can usefully and promptly file comments on EIA reports for NEMA's use. The depth of awareness of DEC members on the goals of project EIA implementation and follow up was studied by seeking the level of their agreement with the Identity of EIA goals.

Table 4.18: EIA implementation and follow up goals

	Goals					
	Ensure that EIA approval conditions are implemented	Check on the accuracy of impact prediction	Monitor the performance of mitigation measures	Monitor environmental performance of the project	Formulation of corrective measures to environmental performance shortcomings	Communicate management decisions to stakeholders
Response	Freq/%	Freq/%	Freq/%	Freq/%	Freq/%	Freq/%
Neutral	1/3.2	10/32.3	8/25.8	7/22.6	5/16.1	1/3.2
Agree	16/51.6	15/48.4	12/38.7	12/38.7	17/54.8	16/51.6
Strongly agree	14/45.2	6/19.4	11/35.5	12/38.7	9/29	14/45.2
Total Freq/Percent	31/100	31/100	31/100	31/100	31/100	31/100

From Table 4.18 above, one may infer that 82.8% of the 31 respondents agreed that the goals of project EIA implementation and follow-up were: Ensuring that EIA approval conditions are implemented; checking on the accuracy of impact prediction; checking on

the performance of mitigation measures; monitoring environmental performance of the project; formulating corrective measures to environmental performance shortcomings and; communicating management decisions to stakeholders. The remaining 17.2% were neutral in this matter, possibly because not all DEC members have been trained in EIA.

The study sought to establish the frequency of involvement of each DEC member on project EIA implementation assignments by posing a question to that effect.

Table 4.19 Frequency of involvement in EIA implementation

Response	Frequency	Percent
very often	3	9.7
often	9	29.0
Neutral	2	6.5
rarely	13	41.9
not at all	4	12.9
Total	31	100.0

From Table 4.19 above, it was evident that only 38.7% of the 31 proponents were involved often or very often in EIA implementation and follow up as opposed to 61.3% who were neutral, rarely or not at all involved. This gave a picture of only some DEC members being involved in project EIA implementation and follow up activities. It is important that all members be involved for greater effectiveness of the committees as postulated by total quality management principles.

Information as to the number of EIA reviews held in 2010/2011 financial year was sought from the respondents to gauge how active the DECs had been in EIA activities in that financial year.

Table 4.20: Number of EIA reviews held in 2010/2011

Number	Frequency	Percent
0	10	32.3
1	5	16.1
2	4	12.9
3	4	12.9
4	6	19.4
22	1	3.2
72	1	3.2
Total	31	100.0

From Table 4.20 above, it is apparent that 67.7% of the respondents involved in the study were aware that EIA reviews had been held in 2010/2011 financial year. The remaining 32.3% of the respondents stated no EIA reviews had been held. Reviews are important as they bring up issues overlooked earlier in the EIA process and in this way help fine- tune EMPs.

To have an idea of how involved in EIA reviews the public was, respondents were asked to indicate the number of people who had attended the reviews conducted in 2010/2011 financial year.

Table 4.21: Number of people who attended EIA reviews in 2010/2011

Number of People	Frequency	Percent
0	5	16.1
About 50 - 70 each	3	9.7
Average 5 per review	1	3.2
250	1	3.2
432	1	3.2
22	4	12.9
Over 30	3	9.7
4 people	4	12.9
13	1	3.2
6	2	6.5
11	3	9.7
20	3	9.7
Total	31	100.0

From Table 4.21, the range of the number of people who attended EIA reviews as given by the 31 respondents is very large due to the fact that while the two secretaries gave this information respecting Nyeri South and Nyeri North Districts, the chairmen and the rest of the members provided the figures in respect of their specific committees.

Respondents were asked to state the ease with which they were able to collect EIA information from the public.

Table 4.22: Ease of collecting information from public

Response	Frequency	Percent
Very easily	2	6.5
Easily	12	38.7
Neutral	5	16.1
With difficulty	11	35.5
With great difficulty	1	3.2
Total	31	100.0

According To table 4.22 above, 45.2% of the 31 respondents recorded that they were able to collect information from members of the public easily, while 38.7% recorded that they were able to collect information with difficulty and great difficulty and 16.1% were neutral in the matter. This can be attributed to the geographical, cultural and economic variations in the areas of jurisdiction of the various DECs.

Respondents were asked if they encountered any difficulties at all in collecting environmental information.

Table 4.23: Difficulties in information collection

Response	Frequency	Percent
No	8	25.8
Yes	23	74.2
Total	31	100.0

According to Table 4.23 seventy four point two percent of the 31 respondents recorded that DEC encountered some difficulties in collecting environmental information from the public while 25.8% stated DEC encountered no difficulties in collecting environmental information.

Asked to explain their respective responses, they mentioned weaknesses and strengths in thematic areas whose distribution depicted in table 4.24 below is as follows: 22.6% of the

31 respondents mentioned difficulties/ strengths associated with administrative structures, 25.8% of the respondents recorded comments associated with public awareness and another 8 comments associated with facilitation; 12.9% of the respondents commented in areas of capacity and another 4 made comments related to vested interests. (Appendix 5 for details of explanations)

Table 4.24: Thematic distribution of difficulties.

Thematic Area	Frequency	Percent
Administrative structures	7	22.6
Public Awareness Issues	8	25.8
Facilitation Issues	8	25.8
Capacity	4	12.9
Vested interests	4	12.9
Total	31	100.0

From the data displayed on Table 4.24 above, the difficulties faced by DEC in gathering environmental information for the purposes of project EIA implementation and follow up are mainly due to inadequate administrative structures, low level of public awareness and lack of adequate facilitation of DEC activities.

Level of agreement of respondents with the statement that an environmental management structure influenced project EIA implementation and follow up was sought.

Table 4.25: Influence of Management Structure in project EIA implementation

Response	Frequency	Percent
Agree	5	16.1
Strongly agree	26	83.9
Total	31	100.0

According to Table 4.25 above, 83.9% and 16.1% of the 31 respondents were strongly in agreement and in agreement respectively with the observation that from inspection, self audit and control audit reports, it was evident that project EIA implementation and follow up was influenced by environmental management structures.

4.3.3 Institutional Capacity

Respondents were asked whether they had ever attended a baraza or workshop on EIA in order to determine DECs efforts at EIA capacity building.

Table 4.26: Attendance of training in EIA

Response	Frequency	Percent
No	11	35.5
Yes	20	64.5
Total	31	100.0

According to Table 4.26 above, 64.5% of the 31 respondents reported to have attended training workshop or baraza on EIA while 35.5% reported having not done so. There is need to train all DEC members on EIA.

Respondents who had attended workshop or training in EIA were asked to indicate what time had transpired since they had last attended such training.

Table 4.27: Duration since last training in EIA attended

Response	Frequency	Percent
Less than 3 months	13	65
3 to 6 months	2	10
Over 9 months	5	25
Total	20	100.0

Of the 20 respondents who had attended training workshop or baraza on EIA, 65% had done so less than 3 months earlier, 10% had done so 3 to 6 months earlier and 25% over 9 months earlier according to Table 4.27 above. This is indicative of the fact that DEC members in Nyeri County have been undergoing training in the recent past.

Table 4.28: Usefulness of the knowledge gained in the EIA training

Response	Frequency	Percent
Very useful	13	65
Useful	7	35
Total	20	100.0

Table 4.28 indicates that 65% of the 20 respondents who had attended EIA training found knowledge derived from the training very useful and the remaining 35% found it useful in the discharge of their DEC related work.

Table 4.29: Organization of public sensitization barazas

Response	Frequency	Percent
No	21	67.7
Yes	10	32.3
Total	31	100.0

From Table 4.29 above, 32.3% of the 31 respondents stated that DEC had held public sensitization barazas, on project EIA implementation and follow-up, while 67.7% of the respondents recorded that no meetings were held. This is due to the fact that each of the eight District Environment Committees in Nyeri County operates independently under the chairmanship of each District Commissioner and that while some committees held barazas, some did not.

Respondents were asked to comment on the extent to which sensitization barazas had affected public enthusiasm in environmental conservation and protection.

Table 4.30: Extent of positive effect of barazas on enthusiasm of public

Response	Frequency	Percent
To a large extent	6	60
To some extent	4	40
Total	10	100.0

According to Table 4.30 above, all of the 10 respondents who had stated that DEC had held public sensitization barazas also observed that the barazas had positively affected enthusiasm of the public. Although this is a good sign, increasing the number of people being trained in EIA through barazas and workshops is imperative for the realization of the economic pillar in Kenya vision 2030. The government should therefore allocate more resources for training.

In order to find out how supportive lead agencies were supportive of EIA, the respondents were asked whether their organizations catered for transport for project EIA implementation and follow up duties.

Table 4.31: Transport provision by organization

Response	Frequency	Percent
No	16	51.6
Yes	15	48.4
Total	31	100.0

According to Table 4.31 above, 51.6% of the 31 respondents stated that their organizations did not cater for their transport while they were on project EIA implementation and follow-up duties while 48.4% indicated that their organizations catered for their transport. Providing transport to DEC members complements NEMA's support for DEC related activities and should be encouraged of all organizations with representation in DEC. According to the District Environment Office, 2010/2011 budgetary allocation for DEC activities, in all the 8 districts in Nyeri County was only Kenya Shillings 27,000/=.

Table 4.32: Adequacy of transport

Response	Frequency	Percent
To a large extent	11	73.3
To a small extent	4	26.7
Total	15	100.0

. As depicted in Table 4.32 above, 73.3% of the 15 respondents whose organizations provided with transport for project EIA implementation and follow up duties observed that the transport was adequate and 26.7% stated adequate to a small extent. Project EIA implementation and follow-up requires the monitoring team to carry out surveillance for quite a while. This coupled with the fact that Nyeri County covers 3300 square kilometers means that reliability and availability of transport for the team cannot be overemphasized.

Table 4. 33: Influence of institutional capacity to project EIA

Response	Frequency	Percent
Neutral	2	6.5
Agree	5	16.1
Strongly agree	24	77.4
Total	31	100.0

According to Table 4.33, Ninety three point five per cent of the 31 respondents agreed that as evidenced from inspection, self audit and control audit reports, institutional capacity influenced project EIA implementation and follow-up, with 6.5% taking a neutral view.

4.3.4 Finance

Organizations represented in DEC hardly have adequate budgetary allocation for their core non DEC activities. All the 31 or 100% of the respondents listed among others; catchment protection, pegging of riparian reserves, control of dumping and environmental pollution, training and sensitization of community on environmental conservation, responding to public complaint on issues of environment Development control, Gazettement of wetlands and catchment areas, integration of environmental concerns in the preparation of physical development plans, mainstreaming the 10% forest cover in farming areas, Safe use of Agro Chemicals in irrigated crop areas, sensitizing farmers on need to grow bamboo for conservation along riparian areas, giving recommendations on water permit applications, conducting trainings on land use planning, soil conservation, soil fertility improvement and water harvesting among others as their non DEC activities (see appendix VI). It is therefore not surprising that DEC activities and, to a large extent, project EIA implementation and follow up activities are not budgeted for.

Respondents were asked to give their opinions on the adequacy of their organization's budgets.

Table 4.34: Adequacy of organization's annual budget for core activities

Response	Frequency	Percent
Neutral	8	25.8
Inadequate	16	51.6
Highly Inadequate	7	22.6
Total	31	100.0

According to Table 4.34 above, 74.2% of the 31 respondents reported that their organizations' budgets for core functions were inadequate to highly inadequate. Some of their explanations for the inadequacy were: Budget allocation is not commensurate with the community demand for environmental conservation activities; some organizations undertaking voluntary activities get no Government or donor funding (See Appendix 6 for further explanations given in relation to inadequate and highly inadequate budgets for organizations' core functions).

Respondents were asked to state whether their organizational 2010/2011 budgets for DEC activities were adequate.

Table 4.35: Adequacy of Operational budget for DEC activities in 2010/2011

Response	Frequency	Percent
Inadequate	20	64.5
Highly inadequate	11	35.5
Total	31	100.0

According to Table 4.35 above, 100% of the 31 respondents stated that their organizations' budgets did not adequately provide for operations of DEC activities. This is understandable given that these organizations are hardly able to provide for adequate

budgets for their core activities. In response to a request in the questionnaire to explain the responses depicted on Table 4.35, respondents gave the following explanations among others: Environmental issues including those touching on DEC, are combined together with other cross cutting issues such as HIV for purposes of budget; there are no funds allocated specifically to DEC; NEMA office for Nyeri County received only 27000 shillings for its operations in eight districts in Nyeri County.

The respondents were asked to what extent they agreed with the statement that it was evident, from inspection, self audit and control audit reports, that finance had an influence on project EIA implementation and follow up.

Table 4.36: Importance of finance is for project EIA

Response	Frequency	Percent
Agree	1	3.2
Strongly agree	30	96.8
Total	31	100

According to Table 4.36 above, 100% of the 31 respondents agreed that adequate finance had an effect on project EIA implementation and follow up.

4.3.5 Monitoring and evaluation

The EIA report acts as a road map for monitoring and evaluation as it contains, among its components, baseline information and the EMP meant to guide EIA implementation and follow up. Respondents were for this reason asked if they were familiar with the EIA report structure.

Table 4.37: Respondents knowledge of EIA Report structure

Response	Frequency	Percent
No	8	25.8
Yes	23	72.4
Total	31	100.0

Table 4.37 above indicates that 74.2% of the 31 respondents were familiar with the structure of EIA report. Considering that DEC, of which the respondents were members, is statutorily charged with the management of the environment, it would be preferable that all members are familiar with EIA report structure for a wholesome understanding of EIA and project EIA implementation and follow up.

Table 4.38: Experience in project monitoring and evaluation

Response	Frequency	Percent
No	18	58.1
Yes	13	41.9
Total	31	100.0

Table 4.38 above indicates that 41.9% of the 31 respondents had been members of a monitoring and evaluation team for a project EIA implementation and follow-up. Given that Nyeri County has many projects with a bearing on the environment ongoing, all DEC members should by now have been part of a project EIA implementation and follow up team.

Respondents were asked to indicate whether they had employed EIA report as a reference when they had been on project EIA implementation and monitoring team.

Table 4.39: Use of EIA report as a reference

Response	Frequency	Percent
Yes	13	100
Total	13	100.0

According to Table 4.39 above, all the 13 DEC members who had been part of monitoring and evaluation team for project EIA implementation and follow-up had employed EIA report as a reference document.

The respondents were asked to record the extent to which they agreed with the statement to the effect that the EMP structure as currently presented in EIA reports was inadequate for effective project EIA implementation and follow-up.

Table 4.40: Inadequacy of EMP in project EIA implementation and follow-up

Response	Frequency	Percent
Neutral	3	9.6
Agree	22	71.0
Strongly agree	6	19.4
Total	31	100.0

According to Table 4.40 above, 90.4% of the 31 respondents agreed or strongly agreed that EMP as being currently presented in EIA study reports was inadequate for effective project EIA implementation and follow-up.

Respondents were asked to state the extent to which they agreed with the statement to the effect that full implementation of EIA was necessary for its benefits to be enjoyed.

Table 4.41: EIA of limited value unless fully implemented

Response	Frequency	Percent
Agree	8	25.8
Strongly agree	23	74.2
Total	31	100.0

According to Table 4.41 above, 100% of the 31 respondents were in agreement that quality EIA and consequent environmental management measures were of limited value unless implemented.

Respondents' agreement as to the need for monitoring in the evaluation and control of environmental management measures was sought.

Table 4.42: Monitoring is required to reorient the EMP

Response	Frequency	Percent
Agree	8	25.8
Strongly agree	23	74.2
Total	31	100.0

According to Table 4.42 above, 100% of the 31 respondents were in agreement that monitoring was required to evaluate the success or failure of environmental management measures and subsequently to reorient the EMP. This implied that DEC members understood the importance of monitoring in project EIA implementation in environmental conservation, protection and management.

Respondents were asked to indicate what, in their opinion, was the contribution of monitoring and evaluation to the success of project EIA implementation and follow-up.

Table 4.43: contribution of monitoring to success of project EIA implementation

Response	Frequency	Percent
50 - 74%	2	6.5
75 - 99%	19	61.3
100%	10	32.3
Total	31	100.0

According to Table 4.43 above, 29 or 93.6% of the 31 respondents were of the opinion that the contribution of monitoring and evaluation to the success of project EIA implementation and follow up was between 75% and 100%. This is indicative of the fact that DEC members viewed monitoring and evaluation as an integral part of project EIA implementation and follow up.

Respondents were required to give their agreement with the opinion that monitoring and evaluation was important in project EIA implementation and follow up.

Table 4.44: monitoring and evaluation is important in project EIA implementation and follow up

Response	Frequency	Percent
Neutral	1	3.2
Agree	5	16.1
Strongly agree	25	80.7
Total	31	100

Table 4.44: above indicates 96.8% of the 31 respondents agree that monitoring and evaluation affects for project EIA implementation and follow up.

4.4 Multiple Regression Analysis

Table 4.45: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	648[a]	.420	.288	.27835

a. Predictors: (Constant), Monitoring and evaluation, Institutional capacity, Institutional, legal Regulatory Framework, Finance, Environmental management structures

In Table 4.45 above, R is the correlation coefficient; R square is the coefficient of determination which gives the amount of variation in the dependent variable that can be explained by the predictors listed below the table. In this case, 42% of the variations in the dependent variable can be explained by the predictors but 58% can be explained by factors not considered in this study.

Table 4.46: Anova

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.234	6	.247	3.186	.026[a]
	Residual	1.705	24	.077		
	Total	2.939	30			

A large F value implies that most of the variation in the dependent variable is explained by the regression equation and the model is useful. Vice versa is also true.

Table 4.47: Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.187	.953		1.246	.226
	Institutional, legal Regulatory and policy Framework	.421	.209	.337	2.010	.057
	management structures	.166	.109	.273	1.517	.144
	Institutional capacity	-.009	.169	-.010	-.055	.956
	Finance	.093	.101	.158	.930	.363
	Monitoring and evaluation	.312	.182	.310	1.712	.101

a. Dependent Variable: Project EIA Implementation and follow-up

In the model above, the rejection region allows us to determine whether t- statistic, f-statistic and χ- square statistic is large enough to justify the rejecting of the null hypothesis.

4.5 Descriptive Statistics

Table 4.48: Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Institutional, legal Regulatory and policy Framework	31	2.13	3.00	2.6552	.26018
management structures	31	3.33	5.00	4.1724	.53542
Institutional capacity	31	.00	1.00	.4655	.34898
Finance	31	3.00	5.00	4.1034	.57289
Monitoring and evaluation	31	4.00	5.00	4.5536	.32727
Project EIA Implementation and follow-up	31	3.50	5.00	4.8000	.32623
Valid N (list wise)	31				

Correlations

		Project EIA Implementation and follow-up	Institutional, legal Regulatory and policy Framework	management structures	Institutional capacity	Finance	Monitoring and evaluation
Project EIA Implementation and follow-up	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	31					
Institutional, legal Regulatory and policy Framework	Pearson Correlation	.368*	1				
	Sig. (2-tailed)	.049					
	N	31	31				
management structures	Pearson Correlation	.419*	.057	1			
	Sig. (2-tailed)	.024	.767				
	N	31	31	31			
Institutional capacity	Pearson Correlation	.178	.250	.150	1		
	Sig. (2-tailed)	.356	.192	.438			
	N	31	31	31	31		
Finance	Pearson Correlation	.268	.023	.076	.272	1	
	Sig. (2-tailed)	.161	.905	.697	.154		
	N	31	31	31	31	31	
Monitoring and evaluation	Pearson Correlation	.461*	.036	.395*	-.001	.199	1
	Sig. (2-tailed)	.014	.854	.038	.996	.311	
	N	31	31	31	31	31	31

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4.49: Correlations

4.6 Correlation Analysis

As depicted in Table 4.49, on one hand, appreciable correlation was established to exist between the independent variable Legal, Regulatory and Institutional Framework and the dependent variable Project EIA Implementation and follow- up; the independent variable Management structures and the dependent variable Project EIA Implementation and follow-up; the independent variables Monitoring and evaluation and the dependent variable Project EIA Implementation and follow-up; the independent variables Monitoring and evaluation and Environmental Management Structures.

On the other hand, very weak correlation was found to exist between: Institutional capacity and Project EIA Implementation and follow-up; Finance and Project EIA Implementation and follow-up.

4.7 Reliability Statistics

Table 4.50: Reliability Statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.783	.815	31

Cronbach`s alpha of 0.783 in Table 4.50 above indicates that the instruments used in the measurement of the data employed in this analysis were reliable enough.

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of major findings, discussions, conclusions and recommendations in relation to the purpose of research; which was to find ways to incite project proponents, planners, designers, managers, the regulating authority, members of the public and lead agencies to re-look at project EIA implementation and follow-up with a view to improving EMP design and mechanisms of its implementation for better environmental performance. The study specifically aimed at establishing to what extent five independent variables influenced the dependent variable of project EIA implementation and follow up in Nyeri County, through the analysis of primary data obtained from members of the District Environmental Committee and secondary data obtained from NEMA. We here below discuss and summarize findings against the research questions.

5.2 Summary of Findings

The summary of findings was discussed in relation to the study objectives which were; To establish the influence of institutional, legal and regulatory framework on project EIA implementation and follow-up in Nyeri County; To assess the influence of environmental management structures on project EIA implementation and follow-up in Nyeri County; To examine the influence of institutional capacity on project EIA implementation and follow-up in Nyeri County; To establish the influence of finance on project EIA

implementation and follow-up in Nyeri County; To ascertain the influence of monitoring and evaluation on project EIA implementation and follow-up in Nyeri County.

5.2.1 Legal, institutional, and regulatory framework

The study found out that the legal, institutional and regulatory framework in Kenya was viewed by DEC members as being adequate for environmental management and more so for project EIA implementation and follow up in Nyeri County, with 83.9% of the 31 respondents being of the opinion that EMCA was suitable for governing the protection, conservation and management of the environment, and 100% of the respondents being of the opinion that Environmental Impact Assessment and Audit Regulations 2003 was generally suitable for governing the various stages of EIA, including project EIA implementation and follow up. Further, 80.6% of the respondents were of the opinion that DEC was discharging its functions as required by law. One hundred percent of the respondents agreed that a legal, regulatory and institutional framework influenced project EIA implementation and follow up as was evident from inspection, self audit and control audit reports available at the District and Environmental offices.

5.2.2 Environmental Management Structures

For DECs to be able to discharge the task of project EIA monitoring and follow up effectively, their environmental management structures must render them able to monitor the environment constantly through surveillance and systematic gathering and analysis of data. Given that a DEC would principally have the chairman and the secretary as the most active participants, with the other members being available only when meetings are convened, it is imperative upon DEC to devise a management structure that reaches out

to stakeholders to sensitize them to work in a voluntary basis towards environmental conservation, protection and management.

The study found out that DEC, had contrived a way of collecting environmental monitoring information from stakeholders using cost effective methods. Information from local communities was collected through the local sub chiefs, chiefs and DOs while lead agency membership which had expertise in various fields delivered information directly to NEMA through official channels of communication. Other ways of information collection included; hotlines, site visits, and meetings. NGO, CBO and various special groups' representatives also delivered information to DEC directly through the secretary's office.

Despite the foregoing structure, 51.6% of the 31 respondents were of the opinion that DEC gathered environmental information over the 3300 square kilometers of Nyeri County with difficulty. This can be attributed to the geographical, cultural and economic variations in the areas of jurisdiction of the various DECs, coupled with the logistical challenges that covering such a large extent demands.

The number of lead agencies in the districts as indicated by the respondents ranged from 4 to 20. Because there is a DEC for each of the 8 districts in Nyeri County, the number of lead agencies represented in any DEC is dependent on the number of government Departments already established in the district. This means that in those districts where some departments have not yet been established, DECs are unable to fill all membership slots provided for under schedule one of EMCA 1999. The study found out that some departments although accorded membership by section 29 of EMCA have never taken them up. Tourism and Education are two of the departments affected in this respect. Lead

agencies should be mobilized for the synergy that would arise from their joint efforts to benefit project EIA implementation and follow up and as a consequence environmental management in Nyeri County.

Respondents when asked to indicate the level of effectiveness of communication channels between DECs and lead agencies gave a favorable verdict, with 71.1% being of the opinion that the channel of communication between DEC and lead agencies was effective. This implies that the level of coordination of lead agencies by NEMA is good but could be better.

Although 82.8% of the 31 respondents seem to know the goals of project EIA implementation and follow-up as being: Ensuring that EIA approval conditions are implemented; checking on the accuracy of impact prediction; checking on the performance of mitigation measures; monitoring environmental performance of the project; formulating corrective measures to environmental performance shortcomings and; communicating management decisions to stakeholders, 17.2% of them displayed neutrality in this matter. A possible interpretation of this scenario is that they do not know what the goals are. This is worrying, given that DEC is mandated with the coordination and management of environmental matters in the district. Every DEC member should be knowledgeable in EIA matters.

The study sought to establish the frequency of involvement of each DEC member on project EIA implementation assignments by posing a question to that effect. It was

established that there existed low levels of DEC member involvement in project EIA implementation and follow up in Nyeri County, with 38.7% of the 31 proponents being involved often or very often in EIA implementation and follow up as 61.3% who were neutral, rarely or not at all involved. This gives a picture of only some DEC members being involved in project EIA implementation and follow up activities. It is important that all members be involved for greater effectiveness of the committees as postulated by total quality management principles.

The study established that 100% of the 31 respondents were in agreement with the observation that from inspection, self audit and control audit reports, it was evident that environmental management structures influenced the project EIA implementation and follow up in Nyeri County. The second objective of the study was based on this premise.

5.2.3 Institutional Capacity

The study established that 64.5% of the 31 respondents had attended training workshop or baraza on EIA while 35.5% had not. There is need to train all DEC members in EIA to improve DEC effectiveness. There was also an indication that DEC had recently embarked on a training exercise as 13 or 65% of the 20 respondents who had attended training workshop or baraza on EIA, had done so less than 3 months earlier; the rest having trained more than 9 months previously.

According to the study, 32.3% of DEC members recorded that public sensitization barazas on project EIA implementation and follow-up had taken place in 2010/2011 financial year while 67.7% recorded that no training had taken place. This low level of public sensitization such a crucial environmental tool is bad for the present and future

generations. More effort needs to be put in the training of the public as they are the most affected and interested parties as far as environmental issues are concerned and also, the realization of the economic pillar in Kenya vision 2030 is consequent upon sustainable development being achieved. Those DECs yet to embark on public sensitization exercise should do so sooner than later as the study further established that these barazas affected public enthusiasm on environmental matters positively.

Ninety three point five per cent of the 31 respondents agreed with the statement that from inspection, self audit and control audit reports, it was evident that institutional capacity influenced project EIA implementation and follow-up, with 6.5% taking a neutral position. The third objective of the study was based on this premise.

5.2.4 Finance

Organizations represented in DEC hardly got adequate budgetary allocation for their core non DEC activities. The respondents listed among others; catchment protection, pegging of riparian reserves, control of dumping and environmental pollution, training and sensitization of community on environmental conservation, responding to public complaints on issues of environment. Development control, Gazettement of wetlands and catchment areas, integration of environmental concerns in the preparation of physical development plans, mainstreaming the 10% forest cover in farming areas, Safe use of Agro Chemicals in irrigated crop areas, sensitizing farmers on need to grow bamboo along riparian areas for conservation purposes, giving recommendations on water permit applications, conducting trainings on land use planning, soil conservation, soil fertility improvement and water harvesting as their non DEC activities (see appendix VI). It is

therefore not surprising that DEC activities and to a large extent project EIA implementation and follow up activities are not budgeted for.

The study revealed that organizational budgets were inadequate against their requirements as 74.2% of the 31 respondents reported that their organizations' budgets for core functions were inadequate to highly inadequate. Some of their explanations for the inadequacy were: Budget allocation was not commensurate with the community demand for environmental conservation activities; some organizations undertaking voluntary activities did not receive Government or donor funding (See appendix VI for further explanations given in relation to inadequate and highly inadequate budgets for organizations' core functions.)

According to 100% of the 31 respondents, their organizational budgets did not adequately provide for operation of DEC activities. This was understandable given that these organizations are hardly able to provide for adequate budgets for their core activities. In response to a request in the questionnaire to explain the foregoing state of affairs, respondents gave the following explanations among others: Environmental issues, including those touching on DEC, are combined together with other cross cutting issues such as HIV for purposes of budget; there are no funds allocated specifically to DEC; In 2010/2011 financial year, NEMA office for Nyeri County received only 27000 Kenya shillings for its operations in eight districts in Nyeri County.

All the 31 respondents agreed with the statement that inspection, self audit and control audit reports, were evident of the fact that finance affected project EIA implementation

and follow up in Nyeri County. This is the premise upon which the fourth objective of the study was based.

5.2.5 Monitoring and Evaluation

The study revealed that not all DEC members were familiar with the structure of EIA report, a document of reference for project EIA implementation and follow up exercise. Only 74.2% of the 31 respondents were familiar with the structure of EIA report. Considering that DEC, of which the respondents were members, is statutorily charged with the management of the environment, it would be preferable that all members are familiar with EIA report structure for a wholesome understanding of EIA and project EIA implementation and follow up. The monitoring task, that is an inherent part of project EIA implementation and follow up, requires familiarity with the approved project EIA report and DEC members would be lost without a clear grasp of the issues included in the EMP part of that report.

The study also revealed that not all DEC members were actively involved in monitoring activities, only 41.9% of the 31 respondents having been members of a monitoring and evaluation team for a project EIA implementation and follow-up. Given that Nyeri County had many projects with a bearing on the environment ongoing, all DEC members should by now have been part of a project EIA implementation and monitoring team. All the 13 DEC members who had been part of a monitoring and evaluation team for project EIA implementation and follow-up had employed EIA report as a reference document, demonstrating that DEC had great potential as far as effective environmental surveillance was concerned.

According 90.4% of the 31 respondents, the EMP as was at the time presented in EIA study reports was inadequate for effective project EIA implementation and follow-up. The study revealed that all the 31 respondents were aware that effective implementation of EIA was necessary for its benefits to be enjoyed, and that monitoring was required to evaluate the success or failure of environmental management measures and subsequently to reorient the EMP.

Ninety three point six percent of the 31 respondents were of the opinion that the contribution of monitoring and evaluation to the success of project EIA implementation and follow up was between 75% and 100%.

Ninety six point eight percent of the 31 respondents were in agreement that inspection, self audit and control audit reports were evident of the fact that monitoring and evaluation affects project EIA implementation and follow up. This is the premise upon which the fifth objective of this study is based.

5.3 Discussion of Findings

This study identified project EIA implementation and follow up in Nyeri County as a challenge that all of us need to take. With the rapid economic growth taking place in the agricultural, tourism and manufacturing sector and residential and commercial buildings coming up rapidly in Nyeri County, the need to safeguard our environment against the potential adverse effects of these developments has never been more urgent. Rather than wait for the adverse effects of project activities to manifest themselves in one form or another before contriving corrective measures, we can take advantage of the tool of EIA to ensure that proactive measures are taken by way of impact prediction and formulation

of preventive measures that ensure minimal negative impacts through the planning and design, construction, operation and decommissioning stages of projects.

The possible effects of legal, institutional and regulatory framework, environmental management structures, institutional capacity, finance and monitoring and evaluation on project EIA implementation and follow up have been investigated in this study with useful results being realized. The existence of a sound legal, institutional and regulatory framework that provides for self regulation as far as EIA is concerned is in place. This framework puts the onus of identifying potential impacts, formulating and implementing mitigation measures for those impacts, monitoring the environment to assess the environmental performance, the conduct of regular self audits in respect of any project, upon the project proponent. The framework has also made provision for institutions such as NEMA, DEC, PEC that play the control role by ensuring that the proponent takes all the mitigation measures that he has proposed as well as those that have been stipulated by the authorities to ensure good environmental management.

There are a number of areas in which Kenya's environmental law has been found wanting in the course of this study. For example membership of DEC is corporate and not individual, meaning there are no technical qualifications attached to membership. A lead agency can send anyone to represent it at a DEC meeting irrespective of whether the person concerned is knowledgeable in environmental matters. This lack of expertise in the part of those charged with overseeing the post decision part of EIA, which is, the EIA implementation and follow up, is highly likely the reason why EIA has for a while remained a permit just to allow a project to proceed.

The environmental management structures in place to support project EIA implementation and follow up are centered in the provincial administration whereby the District Commissioner relies upon an overworked, underfunded, District Environment Office for advice. With inadequate transport and lack of capacity, the District Environment Office is not in a position to support the DC enough to ensure EIAs are implemented and followed up by the proponents to ensure good environmental management outcomes. The EIA regulations require proponents to include in the EIA report an EMP component whose aim is to guide EIA implementation by providing details of predicted impacts with measureable indicators and thresholds against which impacts are to be considered appreciable, a budget and an apportionment of responsibility. The EMPs in EIAs lodged with NEMA seldom meet the foregoing standards.

The foregoing scenario, where the DC is given the responsibility of chairing a DEC that has only the District Environment Officer as the technically qualified member, is a manifestation of institutional incapacity. Indeed, there is need to train all stakeholders in EIA in order for the high environmental outcomes potential of EIA to be realized. The effect of institutional capacity on project EIA implementation and follow up cannot be overemphasized.

Adequate finance, according to this study, is imperative for project EIA implementation and follow up. The proponent, DEC and all lead agencies cannot perform EIA activities without funds. Apart from the proponent who has not been part of this study, all the parties studied do not specifically budget for DEC as a distinct entity. This situation must change otherwise EIA will remain a paper permit to allow projects to go on. EIA needs to

be turned into a sustainable development tool that it is meant to be; ensuring good environmental management leading to environmental benefits for all.

Without monitoring and evaluation, there cannot be meaningful follow up of any sort. The mainstay of monitoring and evaluation is information acquisition. If we are unable to acquire environmental information and analyze it then we cannot claim to be monitoring anything. The monitoring process requires that DEC members are knowledgeable in EIA so that they can understand the contents of EIA reports and interpret the contents of EMPs in order to be able to measure the correct environmental parameters. Because an EMP is prepared based on predictions, it is subject to amendments as the project progresses. It is, for this reason a vital control tool for project EIA implementation and follow up.

5.4 Conclusions

This section draws from the analysis that has been undertaken in chapter Four.

Although Kenya has a comprehensive legal, institutional and regulatory framework to guide project EIA implementation and follow up, this study has revealed through interviews of local authority works officers and public health officers that many public servants who work with the environment and control development are not trained in EIA. The public know what a clean and healthy environment looks like but since DEC has not been able to aggressively undertake public education in environmental matters, most people are not able to distinguish environmental violations early and report to the authorities to take necessary action. For this reason, a sound regulatory framework alone is not giving good results in project EIA in Nyeri County.

Environmental management structures are very weak. The DEC chairman who happens to be the District Commissioner does not have direct supervisory responsibility over the day to day duties of the secretary or of the members representing lead agencies. Although there is an arrangement where the DEC gets environmental information from the administrative officers all over Nyeri County, these arrangements are informal without defined authority or responsibility. Gaps exist in communication and some members for this reason have observed that the channels of communication are not without impediments.

The approach of this study was to look at institutional capacity as including the skills the community needs to be able to partake of meaningfully the responsibility of project EIA implementation and follow up and the skills DEC members need to enable them participate meaningfully in discussions of environmental issues during DEC sessions. Capacity building of any institution requires corporate and individual interest and determination. Even if DEC has facilitated training in EIA, it would be upon the individuals going through the training to take the training seriously and learn something useful.

Through interviewing the District Environment Officers, the study established that project EIA implementation and follow up in Nyeri County needs adequate financing. The financing should cover operations and training. The environment officer has no staff and has to lock the district office which is situated in Nyeri town whenever visiting sites. He does not have means of transport either and has to depend on well wishers to travel to sites. If DECs have to effectively discharge their statutory functions, more funding needs to be given to every district to make possible the employment of an environment officer

and the operation of an environment office. As at the time this study was conducted, there were neither environment officers nor environment offices in six of the eight districts in Nyeri County. Project EIA implementation and follow up in Nyeri is then, just but a concept that does not have the infrastructure necessary for execution.

Monitoring and evaluation with regard to project EIA and follow up is an activity that starts early in the EIA process in order for baseline conditions to be determined and impact prediction to be undertaken. The proponent, who has not been included in this study, typically undertakes a great deal of monitoring and evaluation. As of now, DEC in Nyeri County tends to rely on members of the public for monitoring. This was established by going through inspection reports at the Nyeri North District Environment Office during the study.

5.5 Recommendations

Since 1992 when EIA was prescribed as an environmental management tool for sustainable development, Kenya has moved in one accord with the international community, domesticating EIA first in 1996 through section 36 of the Physical planning Act, giving it a prominent place by enacting EMCA in 1999 and regulating it through EIA/A Regulations of 2003. On account of findings made in this study conducted in Nyeri County, the following recommendations are made to enhance project EIA implementation and follow up and to propel Kenya to the international stage of environmental champions:

1. The Ministry of Environment and Mineral Resources should initiate the amendment of section 29 of EMCA to include EIA qualifications as a requirement for anyone representing in DEC the government Departments in Schedule One of EMCA 1999;

2. EIA/A Regulations 2003 should be amended to include a paragraph that requires EMPs in EIA reports to include clear environmental indicators to aid project EIA implementation and follow up;
3. NEMA should equip and post at least an environmental Officer to each district in order to make improvements on management structures and render project EIA implementation and follow up a success;
4. NEMA should make provision for an annual budget for quarterly public education barazas on environmental matters in every district.
5. The Ministries of Local Government and Public Health and sanitation should build capacity in environmental disciplines in local authorities to enable local authority and public health officers to contribute meaningfully to project EIA implementation and follow up. This last recommendation is informed by a finding made by interviewing local authority Works Officers and Public Health Officers that they lack capacity to supervise works in their areas of jurisdiction effectively.

5.6 Area of Further Research

The subject of EIA implementation and follow up needs to be treated seriously by all stakeholders in order for the inhabitants of Nyeri County in particular and Kenya in general to reap the benefits of sustainable development that accrue with good environmental management practices. For this reason, it is recommended following the findings in this study that: The effects of the variables of input of EIA practitioners and; the effect of the financial capacity of proponents on project EIA implementation and follow up in Nyeri, Kenya be investigated.

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APPENDICES

Appendix 1: Letter of Introduction

Oduor K'Ooko Mak'Oniare Date.....

P O BOX 21768-00100

Nairobi

Thro'

University of Nairobi

Department of Extra- Mural Studies- Nyeri Center

The Chairperson, DEC / PDE/ DEO/ Member, DEC,

Nyeri County

P. O BOX.....

Dear Madam/ Sir,

RE ACADEMIC RESEARCH

I am a Master of Arts in Project Planning and Management Degree student of the University of Nairobi conducting a research in Governance and its influence on project Environmental Impact Assessments Implementation and follow- in Nyeri County.

I would be most grateful if you would accept to fill the attached questionnaire to enable me complete the research study.

The information provided will be treated with confidentiality and will be used only for this research.

Yours faithfully,

RESEARCHER

Appendix 2: Questionnaire ;District Environment Committee (DEC)

Instructions

- Please answer these questions to the best of your knowledge
- Write your response in the space provided
- Tick where appropriate [√]

Section A; Background Information

1. Gender Male [ ] Female [ ]
2. What position do you hold in the District Environment Committee? Chairman [ ] Secretary [ ] Member [ ]
3. How long have you held that position?
   a) Less than 1 year [ ]
   b) 1 to 2 years [ ]
   c) 3 to 5 years [ ]
   d) Over 5 years [ ]
4. Which Department organization or group do you represent in the District Environment Committee? .....
   .....
5. What is the role of the District Environment Committee in Nyeri County?
   .....
   .....
   .....

Section B; Influence of Legal, Institutional and Regulatory Framework on Project EIA Implementation and Follow-up in Nyeri County.

6. (a) The Environmental Management and Coordination Act (EMCA) 1999 is the main

law governing the protection, conservation and management of the environment in Kenya. What is your opinion as to the suitability of this law in governing the protection, conservation and management of the environment?

It is suitable [ ]

Neutral [ ]

Not suitable [ ]

(b) EMCA 1999 and EIA Regulations, 2003 make provisions for the conduct of EIA for activities that are likely to have negative impacts on the environment. In your opinion, to what extent are these laws and regulations suitable for governing the various stages of EIA given below? (Tick your opinion on a scale of 1-3; Where 1= large extent, 2= low extent, 3= very low)

EIA STAGE	1	2	3
Screening of projects to identify those to undergo EIA			
Preparation of Terms of Reference for EIA			
Public participation in EIA			
Impact identification and analysis			
Formulation of mitigation measures			
Preparation of Environmental Management Plan (EMP)			
EIA approval			
Project EIA implementation and follow-up			

7. The District Environmental Committee is an institution created by section 29 of EMCA to coordinate and manage environmental matters in the District. In your opinion, to what extent is this institution performing its functions in Nyeri County?

To a large extent [ ]

To some extent [ ]

To a small extent [ ]

8. From inspection, self audit and control audit reports, it is evident that project environmental impact assessment implementation and follow -up is influenced by legal, regulatory and institutional framework. To what extent do you agree with this statement?

Strongly agree [ ]

Agree [ ]

Neutral [ ]

Disagree [ ]

Strongly Disagree [ ]

Section C: Influence of Environmental Management Structures on Project EIA Implementation and Follow-up in Nyeri County.

9. The DEC has only two officials; the chairman and the secretary. How easily is DEC able to get information on environmental performance of projects scattered all over the 3300 square kilometers of Nyeri County?

Very easily [ ]

Easily [ ]

Neutral [ ]

With difficulty [ ]

With great difficulty [ ]

10. How does DEC go about the foregoing task?

.....

.....

.....

11. How often are District Environment Committee (DEC) meetings convened? .....

12. How many lead agencies are there in Nyeri County? .....

13. How can you describe the channel of communication between DEC and the lead agencies?

Very effective [ ]

Effective [ ]

Neutral [ ]

Ineffective [ ]

Highly ineffective [ ]

14. What is the average rate of prompt filing of comments on EIA's by lead agencies in Nyeri County?

100 % [ ]

75%-99% [ ]

50%-74% [ ]

25%-49% [ ]

0%-24% [ ]

15. Project EIA implementation and follow-up consists of activities aimed at achieving the goals in the following table; Indicate your opinion by ticking in the boxes as appropriate against a scale of 1-5 (1=strongly agree; 2=agree; 3=Neutral, 4=disagree, 5=strongly disagree)

Goal	1	2	3	4	5
Ensure that EIA approval conditions are implemented					
Check on the accuracy of impact prediction					

The performance of mitigation measures					
Monitor environmental performance of the project					
Formulate corrective measures to environmental performance shortcomings					
Communicate management decisions to stakeholders.					

16. How often are you involved in EIA implementation and follow-up activities in Nyeri County?

Very often [ ]

Often [ ]

Neutral [ ]

Rarely [ ]

Not at all [ ]

17. How many EIA reviews did you hold in 2010/2011 financial year?.....

(b) How many people attended the above reviews? .....

18. As a member of DEC/ employee of a local authority, how effectively are you able to collect information from members of the public in matters pertaining to EIA implementation and follow- up in Nyeri County?

Very easily [ ]

Easily [ ]

Neutral [ ]

With difficulty [ ]

With great difficulty [ ]

19. Do you encounter any difficulties in collecting the above information?

Yes [ ] No [ ]

Explain.....

.....

.....

20. From inspection, self audit and control audit reports, it is evident that project environmental impact assessment implementation and follow-up is influenced by environmental Management Structures. To what extent do you agree with this statement?

Strongly agree [ ]

Agree [ ]

Neutral [ ]

Disagree [ ]

Strongly Disagree [ ]

Section D: Influence of Institutional Capacity on Project EIA Implementation and Follow-up in Nyeri County.

21. (a) Have you ever attended any training, workshop or baraza on EIA?

Yes [ ] No [ ]

(b). If the answer to (a) above is Yes, how long ago did you last attend a workshop or training in EIA?

Less than 3 months [ ]

3 to 6 months [ ]

7 to 9 months [ ]

Over 9 months [ ]

22. How useful do you find the knowledge gained in the foregoing EIA training, workshop or baraza in executing project EIA implementation and follow up tasks?

Very useful [ ]

Useful [ ]

Quite useful [ ]

Satisfactorily useful [ ]

Not useful [ ]

23. Has the DEC ever organized a public baraza to sensitize the members of the public on project EIA implementation and follow-up issues?

YES [ ] NO [ ]

24. If the answer to 23 above is YES, to what extent has the baraza affected enthusiasm of members of the public towards project EIA implementation and follow-up in their neighbourhoods?

To a large extent [ ]

To a some extent [ ]

To a small extent [ ]

25. (a) Does your organization carter for your transport when you are on project EIA implementation and monitoring duties in Nyeri County?

YES [ ] NO [ ]

(b). If the answer to (a) above is YES, to what extent is the transport provided adequate?

To a large extent [ ]

To a small extent [ ]

26. From inspection, self audit and control audit reports, it is evident that project environmental impact assessment implementation and follow- up is influenced by institutional capacity. To what extent do you agree with this statement?

Strongly agree [ ]

Agree [ ]

Neutral [ ]

Disagree [ ]

Strongly Disagree [ ]

Section E: Influence of Finance on Project EIA Implementation and Follow-up in Nyeri County.

27. (a) What other environmental protection, conservation and management activities does your organization undertake apart from those that are consequent upon your organization's membership of DEC?.....

.....

.....

(b) In your opinion, how adequate is your organization's annual budget for the foregoing activities?

Highly adequate [ ]

Adequate [ ]

Neutral [ ]

Inadequate [ ]

Highly inadequate [ ]

Explain your answer above.....

.....

.....

28. How adequate was the operations budget for DEC activities in your organization in 2010/2011 financial year?

Highly adequate [ ]

Adequate [ ]

Inadequate [ ]

Far inadequate [ ]

Explain your answer above.....

.....

29. From inspection, self audit and control audit reports, it is evident that project environmental impact assessment implementation and follow -up is influenced by finance. To what extent do you agree with this statement?

Strongly agree [ ]

Agree [ ]

Neutral [ ]

Disagree [ ]

Strongly Disagree [ ]

Section F : The Influence of Monitoring and evaluation on Project EIA Implementation and Follow-up in Nyeri County.

30. (a) Are you familiar with the structure of EIA report?

Yes [ ] No [ ]

(b) If the answer to the question above is Yes, please answer question 27.

31. (a) Have you ever been a member of a monitoring and evaluation team for a project EIA implementation and follow-up?

Yes [ ] No [ ]

(b) If the answer to (a) above is Yes, did you use the EIA report as a reference document for the monitoring work?

Yes [ ] No [ ]

32. Generally, the structure of Environmental Management Plan as being currently presented in EIA study Reports is inadequate for effective project EIA implementation and follow -up.

Strongly agree [ ]
Agree [ ]
Neutral [ ]
Disagree [ ]
Strongly disagree [ ]

33. Register your opinion on the statements in the table below by placing a tick in an appropriate box. (1= strongly agree; 2= agree; 3= neutral; 4= disagree; 5= strongly disagree)

STATEMENT	1	2	3	4	5

A good quality EIA and consequent environmental management measures, are of limited value unless implemented.					
Monitoring is required to evaluate the success or failure of environmental management measures and subsequently to reorient the EMP					

From your opinion above, to what extent, would you say, monitoring and evaluation contributes to the success of project EIA implementation and follow-up?

100 % [ ]

75%-99% [ ]

50%-74% [ ]

25%-49% [ ]

0%-24% [ ]

34. From inspection, self audit and control audit reports, it is evident that project environmental impact assessment implementation and follow- up is influenced by monitoring and evaluation. To what extent do you agree with this statement?

Strongly agree [ ]

Agree [ ]

Neutral [ ]

Disagree [ ]

Strongly Disagree [ ]

Appendix 3: Interview Schedule for DEO/ PDE

1. In square kilometers, approximately what is the extent of your area of jurisdiction?

2. What is your staff complement at the district level?.....

3. How many of the staff are trained in EIA/EMP?.....

4. Which international and regional environmental agencies does NEMA collaborate with in its mandate of coordinating environmental issues in Kenya?

5. How many environmental projects is NEMA currently executing in cooperation with the foregoing agencies?

.....

.....

.....

.....

(b) What direct or indirect effects do the projects above have on project EIA implementation and follow up in Nyeri County?

.....

.....

.....

6. How many EIA study reports have you received in the last three months.....

7. How many EIA study reports have you approved in the last 3 months?.....

8. How many proponents to whom licences have been granted have notified you of their intention to commence project implementation in the last 3 months?.....

9. How many experts are presently undertaking monitoring and evaluation tasks in projects in Nyeri County?.....

10. How many EIA compliance related prosecutions did you secure in 2010/2011 financial year?

11. How many consultative workshops did you hold for local consultants in the county in 2010/2011?.....

12. How many experts are presently based in Nyeri County?.....

13. Of the DEC members representing Government Departments, how many are skilled in
EIA?.....

14. How much money did you request for your operations and training needs in 2010/2011
year?.....

15. How much were you allocated? .....

16. Was it adequate?.....

17. How many projects are presently undergoing;

(a) proponent driven monitoring and evaluation.? .....

(b) NEMA driven monitoring and evaluation?.....

(c) Public pressure driven monitoring and evaluation ?.....

18. What needs to be done by NEMA to enhance EIA Implementation and follow-up?

.....

.....

.....

.....

19. How many complaints from the public regarding environmental degradation of one form or another have you received in the last three months?.....

20. On average, what is your response time to a complaint?.....

21.How many audit reports have you received in the last 3 months?.....

22. How many control audits have you conducted in the last 3 months?.....

23. In your opinion, what needs to be done to improve on the implementation and follow up of
EIA.?.....

.....

.....

.....

24. Under Section 36 Physical Planning Act, a local Authority may require that a proponent obtains an EIA licence before the local Authority can consider a development application for approval. How many such cases have you come upon in the last 3 months?.....

Appendix 4: Interview Schedule for Works / Public Health Officers

1. In square kilometers, approximately what is the extent of your area of jurisdiction?

2. How many Environmental Impact Assessment Reports have you received for comments in the last three months?.....

3. How many of the staff in your Department are trained in EIA?.....

4. Are you familiar with the EMP component of EIA?

5. How do you use EMP to follow up the implementation of development projects approved by your local authority?.....

.....

6. When you receive development applications from members of the public do you advice them to conduct EIA and secure NEMA's approval first?.....

7. Do you liaise with NEMA on matters of environmental protection and conservation?

.....

.....

8. In what ways other than with regard to commenting on EIA reports do you do you liaise with NEMA? .....

9. How many project proponents have notified you of their intention to embark on implementation of a project the local authority has approved?.....

10. How many technicians do you have on your staff?

11. Is the number above able to cope with construction supervision duties of projects approved by the local authority?.....

12.On a daily basis, how many operational vehicles do you have at your disposal?.....

13. How many development control oriented complaints have you received in the last 3 months?.....

14. How many non compliance prosecutions have you instigated in the last three months?.....

Appendix 5: Explanations of difficulties encountered by DEC members in collecting environmental information from the public.

Explanation	Frequency
Administrative Structure	7
Because we work in collaboration with WRUA's which represent the public.	
Depends on approach.	
Due to the administrative structure of the government and also public goodwill on environmental issues.	
Information from public is easy to collect but as DEC member it would be illegal until gazettment of the DEC members.	
Most officials of our local authority do not have offices to deal with environmental matters.	
There are chiefs, associate chiefs, church leaders who gives.	
Public Awareness	
The public do not understand what pertains EIA and their role.	8
Due to inadequate awareness on Environment issues.	
Members of the public are ignorant.	

Lack of community sensitization and thus are unaware of the processes. Members of the public are ready to give information because we are government officers. The community is ignorant about the environment issues. Levels of awareness among members of public are limited/low.	
Facilitation	8
The authority is not well financed by the government, in this case convening a public hearing is not possible due to lack of funds. Inadequate resources/funding to facilitate the verification and validation of information submitted. Members of public expect to be paid for meetings attendance leadership problems. No facilitation is provided. Mobility is another issue, the authority has only two vehicles in the province. People participate actively through finance is the constraint. Transport may be difficult due to wet weather and lack of appropriate means.	

Capacity	4
Never participate in collection of information, its only NEMA officer who gets involved No capacity Relevance in information required	
Vested Interests	4
Project implementers are very "cagey" with information concerning environment especially when it involves funds. Sometimes there are people with vested interests. Political interests.	
All Explanations	31 Frequency

Appendix 6: Other environmental protection, conservation and management activities undertaken by organizations

Activity	Frequency
Catchment protection, Riparian pegging, Control of dumping at dumpsite.	1
Control of environmental pollution by ensuring that the community has proper latrines and ensuring proper disposal of sewage.	1
Creating awareness in communities that initiate community projects.	1
Educating people through public barazas to plant trees and grass along river banks.	1
Enforcement of tree planting activities.	1
Hold Field days, Riverbanks protection, and representation of environmental issues in District agriculture committee.	1
Funding of groups and CBOs involved in environmental activities.	1

Holding meetings with various stakeholders during crisis or disaster management.	1
Inspection of premises carrying out business and institutions giving out services such as education/school/health.	1
Management and conservation of forests as a big boost to environmental promotion.	
Planting of trees and disposal of garbage in our markets, conservation of dams and pans, drainage and storm water.	1
Rehabilitation of degraded sites, beautification of public place and greening initiative, presidential green award process, endorsement of GEF small grants projects.	1
Rehabilitation of Southern side of Nyeri Hill Forest.	1
Soil and water conservation activities , agro forestry	1

Activity	Frequency
Soil and water conservation within the irrigated farms.	1
Soil conservation, riverbank protection and educating farmers on safe and effective use of pesticides	1
Trainings - Land use planning, soil conservation, soil fertility improvement and water harvesting	1
Use of environmental assessment /audits as land management tool.	1
Water catchment areas, garbage collection and disposal, planting of trees.	1
Follow up on projects such as kazi kwa vijana, (KKV) which includes planting of trees.	1

Attending barazas and meetings, training and sensitize community on environmental conservation.	2
Attending other stakeholder meetings and responding to public complaint on issues of environment.	2
Development control.	1
Gazettement of wetlands and catchment areas.	1
Increase of tree cover to 10% in shambas	1
Integration of environmental concerns in the preparation of physical development plans.	1
Mainstreaming the 10% forest cover in farming areas.	1
Pegging of rivers and training farmers on environmental issues.	1
Safe use of Agro Chemicals in irrigated crop.	1

Sensitizing farmers on need to grow bamboo for conservation along riparian area.	
We recommend approval and disapproval of water permits.	1
Total	31