



UNIVERSITY OF NAIROBI

APPLICATION OF ENVIRONMENTAL AUDITS IN INDUSTRIAL PROPERTY
MANAGEMENT IN KENYA: A CASE STUDY OF INDUSTRIAL PROPERTIES IN
NAIROBI COUNTY

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Construction Management and Quantity Surveying, in partial fulfilment of the requirements for
the award of the degree of Masters of Arts in Valuation and Property Management.

2022

DECLARATION

I, Phoebe Karimi Kariuki, do hereby declare that this research project is my original work and has not been presented for the award of a degree in any other university.

Signature:



Date: **15/08/2023**

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Dr. Raphael Kieti

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DEDICATION

To my family,

You are great team that I will always treasure for the time God will keep us together.

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ACRONYMS

DOSHS	Directorate of Occupational Safety and Health
EA	Environmental Audit
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
NEC	National Environmental Council
NEMA	National Environmental Management Authority
NEPA	National Environmental Protection Agency Act
OSHA	Occupational Safety and Health Act
SEC	Securities and Exchange Commission
SERC	Standards and Enforcement Review Committee
UNEP	United Nations Environment Programme
US	United States

ABSTRACT

This study examines the application of Environmental Auditing (EA) in industrial property management in Kenya. EA is undertaken to assess compliance with mitigation measures proposed in Environmental Impact Assessment (EIA) reports prepared during project planning. EA also aims to identify new impacts emanating from a project that had not been anticipated during the EIA study, and proposals for their mitigation. Environmental Auditing in real estate development in Kenya is a requirement of the Kenya Constitution, and various other laws and policies on environmental conservation and management. The study evaluates the impacts of Environmental Audits (EAs) on industrial real estate, and identifies strengths and weaknesses, as well as challenges that property managers do experience in enforcing compliance with environmental auditing in industrial property management in Kenya.

A descriptive survey research approach was utilized to accomplish the goals of the study. The target population comprised of all property managers in Nairobi City who are members of the Institution of Surveyors of Kenya, and National Environment Management (NEMA) County directors across the 47 counties in the country. Data was gathered from primary and secondary sources. The primary data was acquired through a questionnaire survey administered on a sample of 211 respondents (188 property managers and 23 NEMA county directors) selected through simple random sampling. The secondary data were obtained from review of relevant literature in texts, journal articles, legislations and published documents. The data were analysed using descriptive statistics including frequencies, percentages and means with the help of statistical software SPSS and Excel. The analysed data was presented in tables and charts.

The study findings revealed that there is improved performance of the industries when environmental auditing is implemented. According to the study results, environmental audits

enhances effectiveness and efficiency of the organization by identifying defects or problems, facilitates compliance to the regulatory framework, boosts competitive advantage, creates awareness of the existing environmental impacts, improves company reputation and image as a corporate citizen, and facilitates provision of data to investors and sponsors of industrial real estate. However, the situation is that there is low implementation of the same with the few who are implementing are driven by meeting the legal requirements and perceived benefits to stakeholders. The key challenges that were evident include corruption and biasness of the regulator and high costs of audits.

The study recommends that property managers should strategically formulate and efficiently implement environmental management and audit system for their organizations. This is because it allows organizations not only to be clean to the regulator but also improves the ethical and business performance. Against the popular belief that environmental auditing is costly, on other hand the expenses used could be lower than the costs of probable damage occurring as a result of payments of fines and penalties upon certain environmental impacts. Therefore, it is advisable for property managers to initiate a corporate culture where environmental auditing is applied in operation of industrial real estate and make adequate financial provision for the same to ensure smooth running of their organizations. Eventually this will immensely contribute towards achievement of sustainable development goals on ecological and societal endurance in industrial real estate development

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Industrialization since the 18th century has always been fronted as problem solving strategy to the economic problems that affects any nation's financial advancement and progress. The sole function of industrialization is converting raw materials into finished goods, commonly referred to as value addition. Value addition process in this case entails use of human labour, capital, technology and entrepreneurship. The entire process significantly contributes to economic development of a country or region evident through increased Gross Domestic Product (GDP), increased employment activities and increased standards of living. (Kiama, 1995). Benjamin et al (2003) describes an industrial estate as land set aside for purposes of industrial use (conversion of raw materials into finished goods), where owners and other actors develop structural improvements and as well install plants, machinery and equipment's for connected purposes.

Dunlap, (2018) details that investment in industrial real estate requires careful property management. The owners of industrial estates strive to realize optimal levels of income from their investments and thus cannot risk managing the properties alone. In addition, industrial real estates usually have long lease periods e.g. *99 years lease* and this would mean the owners will be exposed to risks for example penalties in instances where the tenants violate environmental policies, need of information on potential tenant's environmental standing; including environmental audit statement and the environmental compliance status as documented in their environment conservation certificate thus informing the need of environmental audit in industrial real estate management (Jayne, 2000).

As part of sale and transfer process, the industrial property manager must also do due diligence to ascertain environmental obligations of the property, the previous tenant's environmental conservation actions, as an element of effective property management process, advising the landlord concerning the potential environmental liabilities of the property, provision of property environmental records in sales and particulars records of the property, verifying if the operating company is meeting set operation standards and procedures set by the environmental impact assessment team including regulatory requirements, good management practices, or internally set company standards (Jayne, 2000).

Due to rapid evolution of industries, there is now as a clarion call to save Planet Earth from environmental overburdening. This has necessitated enactment of laws, binding treaties among nations and regulations to correct and cure any environmental violations. In Kenya, the first legislation with huge impact on the environmental audit was the Environmental Management and Coordination Act 1999 (EMCA) which acknowledged, initially, the entitlement of all individuals to a hygienic, safe, and healthful surroundings. Others followed, culminating in the enactment of the 2010 Kenyan Constitution, successfully establishing ecological entitlements and issues as constitutional principles within the Charter of freedoms. Articles 42 and 70 of the 2010 constitution, on the other hand deals with the enforcement of environmental rights. The regulations for carrying out environmental audits in Kenya are directed by the Environmental (Impact Assessments and Audit) Regulations, 2003, Occupational Safety and Health Act 2007. The provisions of the environmental laws require that an environmental audit be carried out for any ongoing or projects already in operation audited by environmental inspector registered with National Environmental Management Authority (NEMA).

While the term auditing is widely used in the field of finance, where auditors examine financial accounts and records, similarly, an Ecological Assessment as operational strategy is adopted by organizations to evaluate and monitor environmental measures and compliance. It entails a methodical, recorded, recurring, and impartial assessment of the organization's performance, its administrative structures, and the processes formulated to safeguard the environment. The aim is to streamline management oversight of activities that could influence the environment and gauge adherence to the institution's ecological directives. (Petts & Eduljee, 1994). Without Environmental Auditing, it is difficult to know whether impacts identified at the planning stage are being effectively mitigated, and also whether there are new environmental impacts that are generated by the industrial property investment. The practice of carrying out Environmental Audits (EAs) is to assess how environmental accounting of the environmental issues within a company are integrated in the internal review processes. As a result, provides a platform to evaluate and monitor the past performance and offer solutions to present and future challenges that may limit proliferation of the company goals. (Waswa, Ouma, & Mireri, 2007).

In Kenya, industries are primarily clustered in the main metropolitan centers like Nairobi, Mombasa, Kisumu, Nakuru, Thika, Eldoret etc. However, the biggest concentration is in Nairobi. The impact to the environment of these industries can be detrimental if no proper environmental property management is done and can contribute to the collapse of industrial real estate investment because of not following guidelines. As mentioned above, the growth of human population and the rapid development as well as demand for industries necessitates the need for property managers to effectively undertake their responsibilities including environmental audits of the industrial properties under their care. This way will be able to promote sustainability by implementing environmental policy under their management plan, which should ensure that their management

activities are undertaken in the best interests of the environment. In addition, this will ensure that environmental impacts are minimized, the manager is able to offer advice to property owners on best practices or opportunities to promote sustainability, improve environmental performance of a building by including environmental management clauses in leases and minimization of energy and water consumption, manage waste, and reduce air and noise pollution.

In Kenya, the National Environmental Management Authority (NEMA) provides the ecological inspection and monitoring framework for environmental safe guards in the industrial real estate operation zones where the risks of environmental violation activities are high. However, no study has addressed the application of environmental audit (EAs) on industrial property management in Kenya. This research aims to address this problem by assessing how application of environmental audit has impacted the industrial property management in Kenya, the benefits, and challenges experienced by the industrial real estate managers on the environmental audit activities.

1.2 Problem Statement

In pursuit of sustainable development, governments require industries to adhere to the standard operation procedures, laid down frameworks and principles of operation to minimize as much as possible the impact to the environment. Globally, there has been a growing concern on how industries impact the environment and thus the need for carrying out environmental audits to ensure that organizations are accountable, transparent and are promoting sustainable development (Crowther & Aras, 2014). The increased concerns have also led to formulation of management standards that organizations are supposed to adhere to; some voluntarily, however certification of an organization to meet those standards is an on and off venture for some managers/owners.

Kenya as a country has seen increased industrial growth, influenced by her willingness to embrace industrialization to transform the structure of the economy, as guided by various policy documents

including; Sessional Paper No. 9 of 2012 on National Industrialization Policy Framework for Kenya, 2012 - 2030, Kenya Vision 2030 as well as the Big Four Agenda. These policies have been developed in order to achieve a diversified, robust and competitive industrial sector meant to harness local production and to ensure establishment of Kenya's portion of the worldwide industry. Kenya's Vision 2030 strategy strives to establish a nation that is internationally viable and economically thriving with a highly sophisticated industrial development network, hence propelling Kenya's transition into a newly industrialized, middle-income nation, ensuring a high standard of living for every citizen within a hygienic and safe setting (Sessional Paper No. 9, 2012). The industry sector comprises of the manufacturing, quarrying, construction and mining activities. Manufacturing sector is the largest and the growth of the sector has gradually taken an upward development in previous years (Kenya National Bureau of Statistics, 2020) . Manufacturing was therefore identified as a pillar in the Big Four Agenda. The environmental impacts of these industries have become a growing concern especially in Nairobi which houses the largest industrial real estate in Kenya hence ensuring efficiency of these companies in terms of raw material use and management of environmental pollution is a big challenge to respective property managers.

In reference to National Environmental Management Authority (NEMA) report, there have been increased cases of environmental impacts due to the actions of the industries; illegal discharge of poisonous effluents into rivers being the main cause of concern, thus the authority is forced to close down such companies as Synresins company, Coating East Africa, Kamongo Waste Recycling, Modern Lithography and Thorlite Kenya being examples of many such situations. The results are bad company reputation, owners incurring losses as they are regularly engage in litigation cases, inefficient use of resources e.g. energy and water thus increasing operational costs

of businesses and increased greenhouse gases emissions leading to climate change risk in real estate investments.

To this effect, property managers are required to ensure that properties under their responsibility comply to the environmental quality standards and other relevant regulation on environmental management. As such they are required to embrace self-monitoring by undertaking environmental audits (*as management tools*) of the said properties. As a result, the practice of environmental accounting help property managers of industrial properties understands, evaluate and monitor their operations against the standards set for environmental management (Kelly, 2002). This way, the company is able to identify, assess and provide corrective actions towards issues identified, minimize insurance premiums, increase savings of the general performance of the property and create confidence with the relevant stakeholders.

Environmental audit programs should be a major strategy used by industrial property managers in implementing their property management plan. Despite the importance of environmental audits in industrial property management, there are no studies in Kenya that sheds light on the application of EAs in industrial property management. This study focuses on assessing the application of environmental audit in industrial property management; it evaluates the impacts that the audits have on the general functionality of industrial real estate and challenges experienced by property managers in implementing the environmental audit programs for sustainable industrial property development and management in Kenya. Upon identification and evaluation of major problem areas (challenges and gaps), the study aims at providing strategies and recommendations to the challenges hindering effective application of environmental audits by industrial property managers. This way Kenya will be able to experience an industrialized economy which has

sustainable practices and complies to the environmental regulatory laws promoting environmental management and protection.

1.3 Objectives of the Study

1.3.1 General Objective

To examine the application of Environmental Audits (EAs) in industrial property management in Kenya

1.3.2 Specific Objectives

1. To assess the current level of awareness, understanding, and adoption of environmental audits among property managers in the industrial sector in Kenya.
2. To evaluate the effectiveness of environmental audits in identifying environmental risks and ensuring compliance with environmental regulations in industrial properties
3. To examine challenges hampering the effective application of Environmental Audits (EA) by property managers in industrial real estate.
4. To provide recommendations and strategies for enhancing the application of environmental audits in industrial property management in Kenya, addressing challenges and promoting effective implementation.

1.4 Research Questions

- 1) What is the extent of application of Environmental Audits (EAs) in industrial property management in Kenya?
- 2) Which Environmental Audits (EAs) procedures, practices and standards are being employed by property managers in management of industrial real estate?
- 3) What are the impacts of Environmental Audits (EAs) on the optimal operation of the industrial real estate?

- 4) Which challenges are hampering the effective application of environmental audits as a tool for industrial property management?

1.5 Study Hypothesis

1.5.1 Null Hypothesis (H₀)

Utilizing environmental audits in the administration of industrial properties in Kenya does not lead to enhanced operational efficiency, ecological effectiveness, conformity, and sustainable methods within industrial real estate.

1.5.2 Alternative Hypothesis (H₁)

Employing environmental auditing within the management of industrial properties in Kenya leads to enhanced operational effectiveness of industrial real estate, encompassing better environmental outcomes, adherence to regulations, and the cultivation of eco-friendly practices.

1.6 Significance of the Study

This study aims to assess the application of environmental audit in industrial property management in Kenya. Focus is given to industrial zones in Nairobi, Kenya; Nairobi's industrial area, Baba Ndogo light industrial area and industries along Mombasa Road. The results of this research will educate the general public on application of ecological audit on manufacturing real estate sector. The study will also investigate the impact of environmental audit on the general functionality of industrial real estate, strengths, and the gaps in environmental auditing by the industrial property management firms in Kenya.

The policy makers, both at the conception and implementation levels, may also use the conclusions drawn from this investigation to also propose ways by which the challenges of application of

environmental audits on industrial property management can be mitigated by making improvements on the laid down environmental auditing principles and frameworks.

Further, the study will also provide an essential source of literature from which researchers and academicians can advance knowledge in the subject of relationship between application of eco-audit of administration practices in manufacturing real estate and the subsequent success in the operations, profitability, positive public image of the industrial properties among other benefits, and a general understanding of the benefits of the environmental audits in industrial real estate.

1.7 Scope and Limitation of the Study

The study aims to investigate the application of environmental audit in industrial property management in Kenya, a case study of industrial real estate properties in Nairobi County, Kenya. The researcher intends to employ a combination of non-numeric and numerical data collection approaches to ensure the study's success. The investigator aims gather primary data using structured questionnaires, interviews with knowledgeable sources, group discussions, and direct observational research.

The study population comprised of the industrial property managers managing industrial properties within Nairobi County, Kenya. The key informants consisted of National Environment Management Authority (NEMA) county coordinators, in addition to other pertinent Environmental Audit partners within Nairobi County e.g. Nairobi City County Environment enforcement department. Focus group discussions comprised of junior industrial property management officers within the industrial property management firms. It's also significant to note that this study is limited to industrial real estate management firms within Nairobi County, Kenya.

1.8 Operational Definitions and Terms

Environment: Natural surrounding within which human beings, animals and plants operates

County: Geographical units envisioned as the units of devolved government

Constitution: Basic written principles and established precedents upon which a nation or an organization is acknowledged to be governed

Industry: Economic activity concerned with the processing of raw materials to final consumable products by the use of technology

Audit: An official inspection of a phenomenon

Environmental Audit: To a managerial instrument involving a structured, recorded, regular, and unbiased assessment of the entity's accomplishment, administrative structure, and procedures aimed at safeguarding the surroundings.

Pollution: Introduction of a new substance into the environment which has harmful or poisonous effect

Property management: Oversight of a real estate property by a third party

1.9 Organization of the Study

The study is structured into five (5) chapters. Chapter one forms the beginning of the study since it gives an overview of the background of the study and continues onwards to state the problem of the study on the application of Environmental Audits (EA) in industrial property management. This leads to the research objectives both main and specific objectives and the research questions. The hypothesis of the study follows both the status quo and the alternative hypothesis which forms the motivation of the research. Finally, the research significance, scope and definition of

operational terms are contained in this chapter as well as the organization. Chapter two sets in a continuation of chapter one by discussing in details the existing literature on property management, management of industrial property, the concept of environmental auditing practice, processes, standards (in terms of laws and regulations) and types. It also looks into the third and fourth objectives in a detailed way. Finally discusses the conceptual framework of the study. The chapter will largely be utilized in the creation of data collection tool (questionnaire).

Chapter three simply elucidates the research design that the study will adopt in achieving the objectives and meeting the needs of each objective. It begins with an overview of the research location, which is the targeted industrial zones in Nairobi. Further it explains the research methodology, the sampling methods and frame, varieties of information gathered, sources and techniques of data gathering, data needs in addition to methods of data analysis. The chapter goal is to provide suitable way to address the research inquiries by carefully integrating the contents of the above chapters. Under chapter four this the findings from the research survey are documented and explained. Simply it discusses the outcomes of data scrutiny and provides answers to the research objectives and questions and hypothesis testing. The last chapter entails synopsis of the findings, suppositions derived from the findings, commendations and potential avenues for additional study.

1.10 Summary

Industrial real estate investment requires meticulous property management. An industrialized economy is one that uses labour, money, technology, and other resources to create value from raw materials extracted through mining and agriculture. There are certain leases that might last up to 99 years, exposing the owners to fines. Companies use environmental auditing as a management tool to assess and track environmental policies and practices. The Environmental Management and

Coordination Act of 1999 (EMCA) was the first major element of ecological audit law in Kenya, and it acknowledged for the first time that everyone has the entitlement to an unpolluted, secure, and well-being-promoting surroundings

Nairobi, for example, is a significant metropolitan centre where much of Kenya's manufacturing occurs. These industries have the capacity to exert an adverse impact on the environment if they are not properly managed in terms of environmental property. Investigating the influence of environmental auditing on Kenya's industrial property management is the goal of this research. As a result of her openness to industrialization, Kenya has experienced a rise in industrial activity in her nation. Among the several operations that make up the sector are manufacturing, quarrying, building, and mining. As part of its Vision 2030 plan, Kenya hopes to build an industrial development network that is both internationally competitive and wealthy. Industrial property managers should employ environmental audit programs as a primary approach in executing their property management strategy. As a result, there are no studies in Kenya that examine the use of environmentally friendly strategies in real estate management, despite their relevance.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a comprehensive exploration of search and evaluation of the available theoretical body of work on application of environmental audits in industrial property management. It documents the state of the art with respect to the subject in regard to property management, industrial property management and environmental audit application in industrial property management, documenting benefits, challenges and gaps as well as trends in industrial property management.

2.2 Environmental Auditing

The concept of EA as earlier identified in the introduction is derived from the field of financial examination, evaluation and reporting of the results relating to financial statements for example profit and loss statements and tax returns. The objective is to ensure that financial performance as well as the records are accurate and represent transactions that are honest (Yashin, Borisov, & Sukhanov, 2019). Kelly, (2002) concurs with (Yashin et al, 2019) and (DEAT, 2004) by emphasizing that auditing of environmental performance of an activity borrows heavily on the concept of financial auditing. EA is a process which employs an orderly approach in the investigation, examination and reporting of the environmental implications of an activity. (Pain, 2010) expounds further on the definition of EA as a process of systematic assessment with an intention of establishing to which extent an activity has conformed to the laid down standards. The standards (measure or requirement) are developed to guide good practice, promote worker well-being and security, as well as identify potential areas of improvements to avoid litigation, closure of premises among other penalties.

Pain, (2010) explains that as a system for checking safety, health and environmental performance of an enterprise, ecological inspection rests upon a management system. The management system is simply the way of doing things as guided by the standards and conditions set in it and the policies in the environmental policy of such an organization. Moreover, the system is meant to benefit all stakeholder for example the owner of the industrial properties, investors, tenants, regulators (government), the public and any other relevant or interested party for example the international community could be concerned on the level of emissions by a country e.g. the United Nations Environment Programme (UNEP) among others. (Pain, 2010) continues to expound that an environmental audit as a management system should be a logical, those to operate it should be trained and during its development should include the contributions of those to operate it to create a sense of ownership. If possible the system be an all-time checker rather than being utilized only when an accident occurs, the regulator pays a visit or a major financial loss out of failure to audit the premise occurs. Records of the system must be kept, updated and results communicated to relevant stakeholders. To ensure that the system survives beyond the six-nine months period whereby most system upon launch fail the property manager is supposed to ensure that the system is a top priority same way as other important matters of the company (Pain, 2010).

Of emphasis is that managers have a duty of care to the property and the occupants and hence the system should not be used as a reactive tool for emergencies only e.g. accidents but rather a tool to check safety, health and environmental performance of the enterprise. The regulator will not only focus on the compliance during their inspections but will also want to know what strategies the management took in ensuring effectiveness of their internal safety measures (Pain, 2010). In addition, in the world today managers, owners, investors and workers can be responsible for non-compliance to be compliant to the various clauses within the regulations. Henceforth the

management of various industrial estates should consider EAs as a crucial component of their business process. The management should also set down its environmental policy in line with management requirements in order to clearly set the structure, define responsibilities and set an able team for its implementation. This way the enterprise will have a policy which will influence the way of doing business in it incorporating the mission, vision and aim of the management system, people responsible for it and sources of expertise to run its implementation.

The history of EAs can be traced back to the developed countries especially the United States where the practice started in the early 1970s. This was as a result of several industrial estates voluntarily and independently formulated environmental auditing policies to form part of their in-house management tools and the legislation of the United States (US) National Environmental Protection Agency Act (NEPA) of 1969. The Statute majorly provided for the realm of ecological impact evaluation however the field of environmental auditing formed later as a requirement for reporting for the Securities and Exchange Commission (SEC) explains (Kelly, 2002).

The initiative was meant to help analyze and monitor the organization's operational performance. Additionally, the mode of operation was adopted by managers as a response mechanism to maintain a clean sheet in regard to environmental management since the impacts of their activities immensely affected their survival in terms of financial stability of their economic activities. Moreover, the underlying reason was also to respond to their local liability laws (SOAS, 2020). Welford & Strachan, (2005) and (Goswami & Pati, 2008) emphasizes that the concept of environmental auditing is meant to meet the provisions of specific local and national laws. Furthermore, the motivation behind organizations showing commitment to good management and sustainability in the creation of commodities and offerings was to ensure that they were responsible for their actions and this had to be substantiated International Chamber of Commerce clarifies this

to entail voluntarily commitment in measuring performance of the industries as well as auditing their impacts on the environment and most importantly providing reports of the same to relevant stakeholders including the public who are consumers of their products (Kelly, 2002).

In Kenya according to Waswa, Ouma, & Mireri, (2007) the enactment of EMCA 1999 paved way for organizations to undertake environmental auditing in the country by meeting the constitutional requirement of promoting sustainable development meant to preserve our legacy to enrich the well-being of descendants to come. This regulatory framework requires that organizations to remain being environmentally sound. As such this will promote commitment to good and effective administration of limited environmental assets which sustains the survival of all the economic activities undertaken in the country especially by the industrial sector. The legislation facilitates the creation of NEMA a principal body – NEMA to oversee the management of the environment in the country by acknowledging the constitutional entitlement of every Kenyan to an unpolluted and secure environment. EMCA 1999 also requires that organizations to carryout ecological assessments as stipulated in the June 2003 NEMA regulations for Environmental Impact Assessment and Audit, specifically Regulation 31 (Government of Kenya, 2003). Further the Act also establishes numerous ancillary regulations and guidelines designed to oversee environmental stewardship of organizations established in the country- on such environmental quality standards on pollution standards, air quality, water pollution, noise levels, sewerage discharges contents, radiation levels among others (Okul, 2019).

Industrialization in Kenya is influenced by her willingness to embrace industrialization to transform the structure of the economy, as guided by various policy documents including; Sessional Paper No. 9 of 2012 on National Industrialization Policy Framework for Kenya, 2012 - 2030, Kenya Vision 2030 and the Big Four Agenda, hence the need to undertake environmental

management cannot to be underrated. When industries derive their inputs from the natural environment such impacts as depletion of the limited resources, pollution emanating from the industrial development and increased cases of occupational health and safety hazards are unavoidable. (Augustine, Chijioke, Uyioghosa, & Otivbo, 2013) reviews that as countries experience industrial development and eventually economic growth the toll on the environment is significant. It is noteworthy that the damage being caused negatively impacts the progress of the entire economy and thus integration of environmental concerns in the management of the industrial estates is instrumental in showing company's commitment in reversing the damage caused. As a result, EAs have to be implemented by industrial property managers as a management tool to check their level of compliance to environmental quality standards and to advance the cause of enduring progress as recognized by the Constitution of Kenya 2010.

2.3 Procedures, Process and Practice of Environmental Auditing

Environmental Auditing entails a successive step by step process however for different projects an approach specific to that project is required so as to achieve the required results. (DEAT, 2004), (Waswa, Ouma, & Mireri, 2007) and (Government of Kenya , 2003) provide a simplified model for undertaking an audit as follows.

- a) **Defining the scope of the audits**- here the property manager as the lead auditor sets out the objectives of the audit process for example to audit the production process, financial activities and the environmental compliance of the industrial property,
- b) **Planning of Audits** – any audit requires planning in terms of assembling the necessary team and ensuring that all logistics of the audit laid down. This gives to 3 main approaches that is pre-assessment tasks, on-location tasks and post-assessment tasks.

- c) **Pre-audit meeting** – this step provides opportunity to the lead auditor (property manager) and the entire team scrutinize any relevant documents to collect any baseline information on the physical location of the industry, products manufactured, types of raw materials used, number of tenants and the administrative structure of the enterprise.

Under this process the audit team is set up to include experts from various fields e.g. engineering, finance department, safety and occupation department, regulators e.g. NEMA representatives etc. lastly, other aspects to constitute the process such as the time frame of the exercise, training of the team and preparation of the questionnaire is performed at this stage.

- d) **On-site Activities** – the actual audit process is undertaken during this phase whereby the team evaluates the documents kept and maintained by the company in respect to waste generation, raw materials used, safety measures, areas of environmental pollution etc. The team also interviews the relevant target groups including employees at site and the property managers. A draft report is then prepared ready for validation by relevant stakeholders before submission to the regulators during the exit meeting. The exit meeting forms a platform for the team to share, compare and compile preliminary finding before they leave the site.

- e) **Post- Auditing Activities-** this stage opens up for detailed discussions on the status of the industry being audited and includes preparation of the final audit report with appropriate recommendations to enhance environmental management in the industry. The step also includes a monitoring and evaluation strategy to guarantee the intended implementation plans are fully adopted and corrective actions provided. For example (Waswa, Ouma, & Mireri,

2007) explains that a management plans should entail the following as depicted in the following table.

Table 1: Sample Environmental Management Plan

Activity	Identified impacts	Mitigation measure	Responsibility
Workplace safety	Accidents and fire outbreaks	Installation and regular checks of the firefighting equipment	Proponent/ property managers who acts on behalf of the proponent.

Source: Author's Construct, 2022

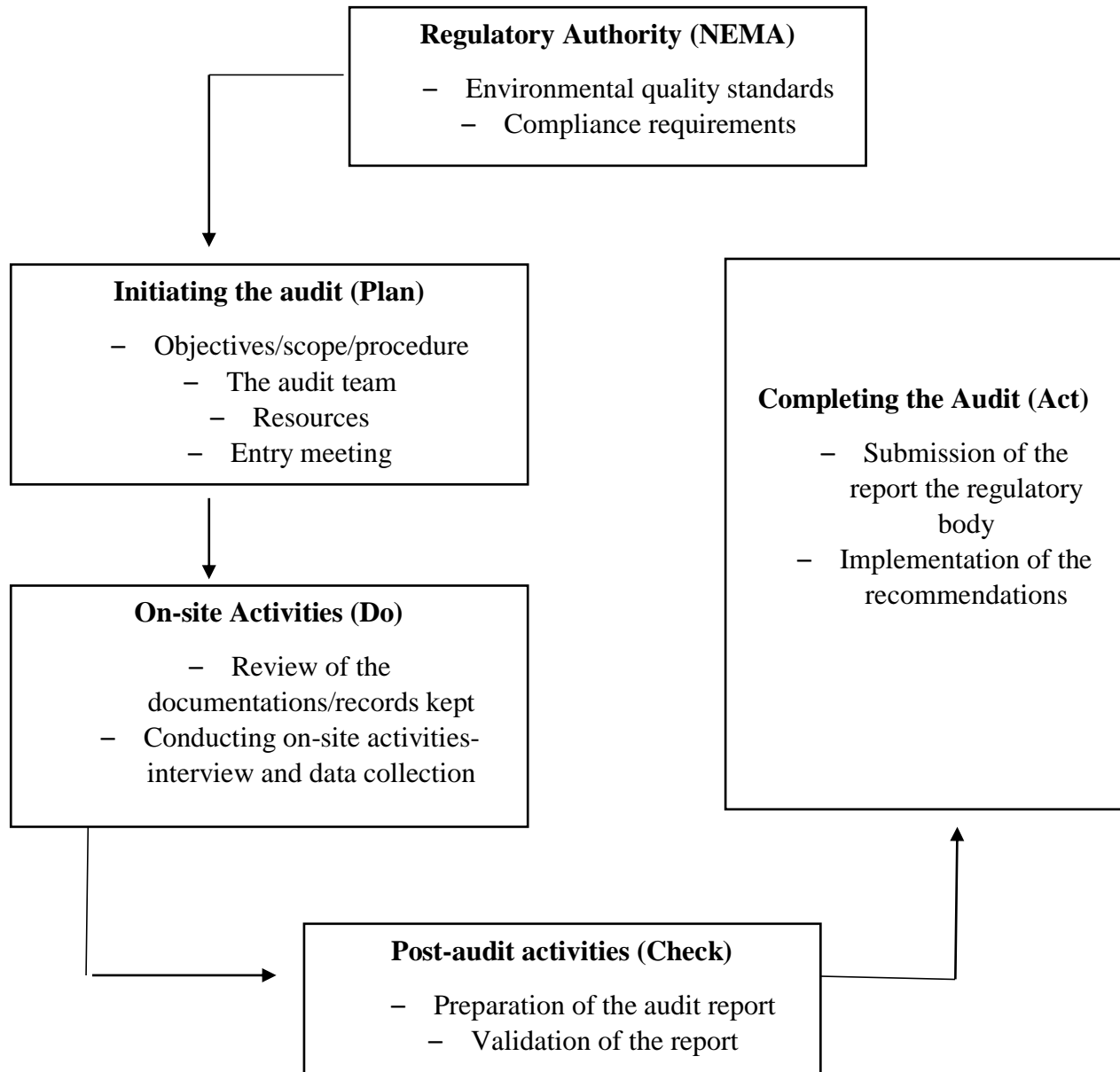
According to Kelly, (2002) during the appraisal procedure the manager as the principal auditor ought to ensure the following is done so as to have a successful procedure.

- During actual auditing the manager is supposed to effectively communicate to relevant parties for example owners, tenants, employees etc., schedule all the planned activities, train the team, ensure records are maintained and make sure that reports are distributed to all relevant parties
- Records are critical for the audit's achievement process and thus the manager should ensure that all records are kept for example records on reports, reviews and plans, corrective and preventive strategy plans and personal reports on training of the team, expertise of the team etc.
- Monitoring and review of the entire process so as to measure its effectiveness in the management of the industrial property. Kelly, (2002) emphasizes that the programme should be monitored from time to time in relation to the objectives set, resources set aside for the program and the needs of the associated parties. The success indicators of the audit

process may include feedback from the regulators, tenants and customers, sound implementation of the recommendations, costs saved and general environmental performance.

Kelly, (2002) summarizes the process of a typical audit to entail six major steps that is initiating the audit process, encompassing paperwork assessment, on-site audit operations, preparation, approval, distribution of the examination report, and finalizing the audit, as illustrated in the diagram below:

Figure 1: Simple Audit Process



Source: (Kelly, 2002).

The general approach of an Environmental Audit is as discussed above whereby we can categorise it into three main phases, the design stage which comprises of a decision to carry out an audit. Then follows conducting the audit exercise and finally evaluation of findings and documentation into a written report. According to Michael, (1996) the ideal structure of successful Environmental Audits which is characterized by such features as having support from top management, effective communication, commitment of the parties to achieve goals of environmental management in their area of operation, ability of the responsible team to conduct the exercise independently especially in decision making in order to achieve objectivity.

Support of the top management support is very critical for the success of environmental auditing. It is likely for the audit exercise to reveal areas of poor environmental management thus non-compliance against the set environmental standards and regulations including health and safety laws. Therefore, the top management must through commitment endeavor to provide measures that will minimize, avoid and compensate for environmental damage. In reference ICC, (1986) as cited in Michael, (1996) gives a list of necessities that include interest of the management to conduct environmental audits, provision of adequate resources in terms of personnel and resources as well as dedication to effectively implement the details of the audit report. Of emphasis is that this kind of support is usually engraved in the organizations environmental management policy especially in becoming a responsible corporate citizen in safeguarding the interest of all stakeholders.

Effective communication is as important as commitment of the top management to the practice and hence all teams (auditor, auditee and the regulator) should collaborate with each other to ensure sharing information on their experiences. This will promote teamwork and hence success of environmental auditing writes (Michael , 1996). When an organization fails to commit fully in

achieving environmental management, Environmental Audits are never effective since the reports are only kept in repositories and no implementation of the proposed measures and this may result to closure of the premises due to non-compliance among other consequences. It is therefore necessary for the entire audit team to show commitment to achieving environmental management and in this study property managers are the pioneers of environmental management.

An organization must be able to work independently in conducting environmental auditing, this way they will be able to make decisions on who to conduct the process of auditing. Michael, (1996) notes that there are 3 ways in which a company can effectively conduct their audit through self-auditing a process only undertaken solely by the firm, seeking the services of consultants who specialize in environmental auditing and lastly using trained employees. The management must be able to carefully select an appropriate way especially when choosing to use outsiders (consultants). For instance, hiring of consultants could bring new ideas to the organization and on the other hand expose business secrets as well as information on vital processes in the industry. In short the management in selecting a way to conduct their environmental audits must consider all the advantages and disadvantages of each. A successful environmental auditing program that encompass all the components discussed above will be able from time to time develop clear objectives, employ the best expertise in this field and comply to set standards and regulations, make objective judgements of the results of the program and finally implement all recommendations.

2.3.1 Practice of Environmental Auditing in Kenya

The guidelines developed by NEMA to ensure uniformity of the EA reports in the country gives in details what should be included and who should carry out EA, the methodology to carry out the exercise, which projects needs EA and who funds EA as well as the involvement of NEMA in executing EA.

In reference to the regulations the authority (NEMA) requires that the proponent to carry out initial audits and subsequent control audits which will provide baseline information for reference and monitoring. The proponent is the sole financier of the entire process where he/she can hire a firm of experts registered by NEMA or an expert licensed by NEMA as well. The expert in this case is referred to as an environmental auditor. The second schedule of the EMCA 1999 legislation affords a list of all the projects or activities that require an environmental audit to ensure that compliance to environmental requirements and laws is being observed. Any activity or project that alters the surrounding leading to major land use changes qualifies to undergo though an environmental audit. In summary any projects relating to establishment and operation of industrial, agricultural, recreational, transportation, residential, mining and urban development projects require an EA to be administered. The key methods/tools used during EAs include use of questionnaires, holding site visits and carrying out test analysis.

According to NEMA once the auditors are done with the auditing process a report has to be written and when done should be presented to the regulatory body.

The Contents of Environmental Audit Report

- 1) Indicate the aims and extent of the audit exercise
- 2) Indicate the type of activity/project being audited including its location
- 3) Provide details of raw materials used and final products
- 4) Description of relevant national/county legislative and regulatory frameworks
- 5) Highlight the historical and current effects of the projects/activities
- 6) Outline the accountability and expertise of those overseeing the project including the time line set

- 7) Description of internally established protocols designed to recognize and alleviate adverse effects.
- 8) An explanation of current internal safety measures to protect the health and well-being of workers as well as users of the project
- 9) Description of environmental awareness and sensitization measures being employed in the projects/activity/firm including environmental standards and regulations, responsible utilization of environmental assets following recognized domestic and global criteria.

Further NEMA requires that the terms of reference for any EAs be developed in conjunction with the authority and that EAs are to be conducted on an annual basis, with subsequent reports provided to NEMA for evaluation.

2.4 Property Management

As a profession property management has continued to gain recognition from property owners and investors as real estate has become highly valued investments in the world today. Property administration involves the management, supervision, and regulation of real estate, personal belongings, machinery, tools, and physical assets that are essential for constructing, fixing, and up keeping final products deliverable (Dunlap et al, 2018). In short the role of a estate administrator is to oversee the performance of the real assets in a way that meets the owners' objectives especially for absentee owners. In this field of property management there are various types of managers with different expertise in their field of best suit. Property management as an art of maintaining and improving property assets is meant to enhance the property's utility, optimize its serviceability and functionality which eventually maximizes profits and minimize losses from the operations being undertaken (Ryan, 2017).

Ariyawansa (2009) notes that administration involves the act of utilizing the assets of the entity to accomplish its goals through such activities of strategizing, arranging, guiding, and overseeing. Under strategizing, objectives, visions, missions, action plans and strategies are set where through organizing a structure is set to oversee implementation. Management through leading entails assigning responsibilities to various responsible persons as Dunlap et al (2018) notes that in management of real estate various types of managers that is site managers, portfolio managers, property managers, asset manager, leasing agent, facility manager, building engineers, construction managers, mall managers etc. This ensures that delegation of duties is done accordingly and through the maxim of specialization. Controlling ensures that evaluation and monitoring of activities within the building is done and that appropriate measures are implemented.

Real property can be characterized as the benefits, earnings, and entitlements associated with real estate proprietorship. According to Ariyawansa, (2009) real estate is a valuable investment as it comprises of several real properties which are classified in regard to law, nature of development, location and ownership. Chapter 5 of the Kenyan constitution on the basis of tenure categorizes real property into three thus having freehold, leasehold and customary property (Government of Kenya, 2010). On the basis of ownership real property is classified into private property owned by individuals, liability corporations, nonprofit entities, and government-owned properties managed by state agencies and integrated entities. The law vests private owners with the rights to use or dispose property in perpetuity. According to the nature of developments real property is broadly categorized into residential, commercial, industrial, agricultural estates, special purpose for example hospitality, educational, recreational and institutional. In terms of physical location real property can be classified as urban property and rural property (Ariyawansa, 2009). Our focus is on the management of industrial property and how the property managers apply Environmental

Audits (EA) as one of the management tools used in order to ensure smooth running of the investments.

According to Ryan, (2017) there are three key primary functions of a property manager which are to anchored on achieving the objectives of the owner as the employer, generate income for the owner in the efforts of maximizing profits and minimizing losses and lastly preserve as well as increase the value of the real property. This is only achievable by a property manager who is able to perform many roles, specialized to manage various types of real properties and certified by meeting the licensing requirements of the relevant professional body. In respect to training background, level of education and duties of the real estate manager, (Dunlap et al, 2018) notes that the duties can be categorized into four as follows, management of the physical site, leading of the on-site and off-site workers, financial management and overseeing of the leasing activities and tenant services.

Agreeing with Ryan, (2017) and Dunlap et al, (2018) management of real estate entails fiduciary responsibility for huge amounts of money invested in assets and cash flow hence requiring that the agent to possess strong virtuous or ethical qualifications. Moreover, property manager is required to create an organizational culture based in the following principles of accountability, responsibility and sustainability in undertaking assigned responsibilities whichever country they practice. This is to ensure that quality and cost effectiveness of all the services being under the control of the property manager is achieved, advice is given on any monitoring requirements and that all shortcomings of the property is brought to the attention of the owner (Royal Institute of Chartered Surveyors, 2016). Moreover, effective real estate management ensures that there is optimal utilization of limited assets with minimal expenses. The role of a property manager is discussed as follows.

Ryan, (2017) points out that a property manager's duties encompass establishing rental rates, gathering payments, and making rent adjustments without breach of the lease agreement by tenants. The property manager must set the rent level, collect and adjust rent without violation of the lease terms and the state laws. This duty also includes collection of deposits for rents as well as accounting for rent and deposits collected.

Carrying out maintenance and repair works is another responsibility tasked to property manager. It is as important as collection of rent, the property manager is responsible for the physical administration of the assets. Maintenance is the ongoing upkeep of the property for example painting and cleaning of common places while repairs include fixing of broken or leaking appliances, fixtures, equipment and machinery. The manager is therefore required to develop and implement a maintenance initiative that is developed by incorporating expertise from various maintenance professionals e.g. engineers, contractors, electricians, plant operators among others (Dunlap, et al. , 2018). Ryan, (2017) records that maintenance is classified as preventive and corrective maintenance of the building services, facility and the building appearances. Repairs also includes include an element of reactive maintenance which offers remedy to emergencies not anticipated.

In maintaining compliance in compliance with relevant state statutes and guidelines on industrial property management Dunlap et al, (2018) explains real estate managers are required to ensure that there is compliance to the dynamic and ever- changing laws, regulations as well as monitoring and reporting financial transactions of the property. Managers are also obliged to anticipate future liabilities of the property for example carry out weekly risk assessments to identify and analyze potential negative issues and effectively correct them. In reference to Ryan, (2017) a property manager is expected to be conversant with the state laws and regulations including the standards

within which the property being managed is supposed to operate. They are obliged to know and follow all relevant legislation and regulations, for example in Kenya among these is the Constitution of Kenya 2010, Estate Agents Act (Cap 533) which regulates the profession, Distress for Rent Act (Cap 293), Rent Restriction Act (Cap 296), Occupational Health and Safety Act 2007, and Environmental Management Act 1999 among others as shall be discussed later. As part of accountability and transparency as required by the ethical principles governing the profession property managers must keep up-to date records of the estates in regard to rent collection, stocks, arrears, maintenance needs, financial records, environmental audits etc. and communicate the findings to the owners and potential investors (Kiama, 1995).

In summary property managers have a big role to play in environmental management especially in their efforts to manage and promote successful investment in industrial real estate business and sustainable development. This can be tied to the ever increasing campaign of integrating environmental concerns on every proposed development plan for example considering Kenya in her quest to promote industrialization will have to factor in the effects of the proposal on the people, surrounding and the economy. The effects of industrial activities are undeniably being felt in the entire world with the environment not being spared as industries continue to draw raw material from the environment as well polluting the same environment. (Augustine, Chijioke, Uyioghosa, & Otivbo, 2013) emphasizes that not only that property managers should focus on making profits but also embrace environmental management measures such as environmental auditing systems to ensure that impacts of the industrial properties on the environment are dealt with. In this regard they will be able to enjoy competitive advantage thus instilling confidence to their customers and eventually increased profits.

Looking at the concept of balanced growth, harmonizing ecological and financial facets has largely been emphasized since the Stockholm Conference of 1972. As such environmental management have been recognized as a fundamental aspect of economic development. This has left governments with only one option of formulating new regulatory laws or amending existing regulatory laws to safeguard environmental quality and also ensure health and safety of the people, for instance the Climate Change Act 2016 was introduced to help combat the consequences of climate variations in Kenya. It is the responsibility of the property managers to formulate standards which will be evaluated against appropriate indicators to evaluate the effectiveness of their properties with regard to environmental impacts. This can only be achieved through an efficient environmental management and audit system that will not only appease the enforcers but also help improve the business image and thus becoming responsible corporate citizens (Yashin, Borisov, & Sukhanov, 2019). Failure to promote environmental management through carrying out environmental audits of the industrial properties will result to costlier damage compared to the cost of undertaking the audit itself. Consider for example an industrial firm closing down its operations, paying huge fines imposed due to non-compliance, compensating injured workers as a result of failing to maintain health and safety standards etc. Simply the property managers of industrial properties are supposed to analyze the impacts and do the necessary to avoid failing their clients and other potential investors interested in industrial real estate business as well as the community upon where the properties are established (Augustine, Chijioke, Uyioghosa, & Otivbo, 2013).

2.4.1 Industrial Property Management

Industrial property is located in an area permitted or zoned to entail industrial use as the major use in that region in reference to the spatial development plan. Kiama, (1995) through the review of

industrial real estate literature reports, due to the type of use, processes and activities involved in industrial real estates, this category is the most heterogeneous class of real estate. Industrial facilities encompass a spectrum of operations, spanning from extensive production hubs to modest standalone enterprises, each necessitating effective property administration. It is often to find a manufacturing plant in the industrial area, an assemblage plant, a distribution centre and a warehouse all operating in the zoned industrial area. As such industrial property areas are not prone to change of use and hence management of these properties always contain a high element of risk that managers must focus on. The zoned area also includes some mixed uses to complement the industrial activities thus also having offices and non-manufacturing buildings.

Since management of industrial real estate entails a long term lease, which is dealing with one tenant for long period, the property manager is still tied by the objective of creating value for the property at the end of the lease term writes (Kiama, 1995). This type of property has a high element of repair and maintenance works to enhance efficiency due to high wear and tear of plant and machinery. Therefore, an industrial property manager has must be attentive enough to ensure physical, functional and economic performance of the property under his/her care is achieved through effective application of management skills, expertise, team work, and dedication to maintain legal and regulatory compliance.

The size of an industrial estate influences the management plan, methods to be employed and relevant policies that the property manager has to consider in either a large or a small industrial estate. Obviously large industrial estates entail high level of specialization in terms of management requirements in order to meet their goals and needs (Kiama, 1995). As earlier discussed under the responsibilities of a property manager in the same way an industrial property manager undertakes numerous and diverse functions, duties and tasks which include but not limited to finding tenants

(leasing and letting of the property), determining the rent schedules and collecting rent, maintaining and repairing the property especially factoring in the high exposure to use, wear and tear. Further the property manager must ensure that the buildings are insured upon valuation in order to determine premiums payable, ensure that service charges are paid e.g. water and electricity bills and that information kept is up-to date. Lastly ensure that an industrial estate maintains compliance to state regulatory requirements for example undertaking environmental audits.

2.5 Legal and Institutional Framework of EA in Industrial Property Management

2.5.1 Legal Framework

In August 2010, Kenya welcomed in a new constitution which in an honorable way recognizes the need and her role in managing the environment. In particular Chapter 5 covers Land and Environment and in part 2 of the chapter a clear and brief definition pertaining to ecology and innate assets is provided with provisions on the obligations of the country on the environment including enforcement of the environmental rights, agreements and legislations on environment. This provides a firm foundation for property managers to ensure compliance to environmental laws and regulations set both global and national as well as county regulations. Under Section 69 every Kenyan is obliged to ensure environmental protection and conservation with an aim of maintaining environmental quality. Of emphasis to our study the section provides for the establishment of approaches involving environmental effect evaluation, ecological auditing, and ecological monitoring systems; eradication of procedures and actions posing potential harm to the ecosystem; and responsible utilization of the environment and its nature's assets for the betterment of the Kenyan population portion of which is significant to this study as it emphasizes on the need to undertake EAs and monitoring of the environment. Under subsection (2), the requirement is on a clarion call for every Kenyan to recognize their duty to cooperate with the State corporations

mandated with the management of the environment in the country. Additionally, promote development that supports responsible utilization of environmental assets - in this case targeting the industrial sector on use of raw materials and handling of by-products e.g. wastes and emissions into the environment.

The Environmental Management and Co-ordination Act, 1999 is a legislative enactment that mandated the creation of a legal and institutional framework responsible for ecological governance, along with related and ancillary matters. Of relevance to this study is Section 68 which stipulates that all entities are equipped to conduct environmental audits in accordance with the directives outlined in NEMA's 2003 regulations on Ecological Impact Evaluation and Review. This supports the study since there is a motive for industrial property managers to undertake environmental auditing of their facilities. Similarly, to the provision in the constitutional right of all Kenyans under Part II of EMCA, also agrees to the entitlement to an unpolluted and thriving environment and emphasizes the implementation of its enforcement. As such it is noteworthy to say that all industries are supposed to operate in a clean environment without contravening the right of any person to this entitlement situated within their area of operation. Part XIII of EMCA outlines various offences liable to organizations that fail to comply with the legislation, this includes violations concerning scrutiny, environmental impact assessment, and documentation, benchmarks for hazardous materials, substances, chemicals, and radioactive materials, as well as offenses linked to contamination.

EMCA 1999 has stipulated the establishment of various supplementary laws and directives and strategies that oversee the operations of industrial estates in their commitment to manage the environment as follows.

- i. **The Environmental (Impact Assessment and Audit) Regulations, 2003 Legal Notice No. 101-** In accordance with Section V of the aforementioned directives, it outlines the prerequisites for conducting an ecological audit, the ventures subject to audit (Guideline 31), the protocol for performing ecological audits (Guideline 35), details concerning an ecological audit (Guideline 36), and the provision of enhancement directives (Guideline 37). This regulation therefore on relevance to this study requires that industrial estates maintain a 'clean sheet' in adherence to the guideline, thus undertake EAs and submit reports to NEMA. As a property manager of the industrial estates hence are required to undertake the responsibility and ensure EAs are done to the satisfaction of the directive.
- ii. **The Environmental Management and Coordination (Waste Management) Regulations, 2006 Legal Notice No. 121-** These guidelines establish the standards for waste management, encompassing all forms of leftovers such as industrial, hazardous, agrochemicals and toxic substances, biomedical waste, and radiating materials. As a type of audit, waste auditing is vital for all industrial properties and thus it is the responsibility of the property manager to ensure that guideline 7, 8 and 9 as outline in the regulation on licensing of waste transporters and guideline 10 under the licensing of disposal sites and facilities are followed.
- iii. **The Environmental Management and Coordination (Water Quality) Regulations, 2006 Legal Notice No. 120 -** It requires that any party that discharges effluent into the environment upon licensing issued under EMCA to undertake daily monitoring of their discharge of discharge in terms of its standard and volume, keep clean records and submit the same to the authority. In addition, the regulations provide a guide on the criteria for releasing discharge into the ecosystem and a surveillance manual in the First, Third and Forth Schedules.

- iv. **The Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 Legal Notice No. 61-** These principles impose limitations on any individual to prevent or produce any excessive, unreasonable, needless, or extraordinary sound that irritates, disrupts, harms, or jeopardizes the well-being, tranquility, wellbeing, and security of both others and the surroundings. It gives a guide which help premises determine whether noise they produce is loud, unreasonable and unnecessary by considering what timeframe, distance from residential areas, frequency of noise occurrence, sporadic or continuous nature of noise, the intensity of noise level, any enhancement of noise by machines and equipment being used and whether noise can be controlled. There numerous activities undertaken by industrial estates that could generate loud, unreasonable an unnecessary noise for example metal works and hence the need for periodic audits, under the supervisor of the property manager.

The Occupational Safety and Health Act, (OSHA) 2007 is a parliamentary enactment designed to ensure the well-being, health, and safety of all employees and individuals lawfully present in workplaces. It also facilitates the establishment of the National Council for Occupational Safety and Health, along with its related objectives. All industrial estates temporarily or permanently have workplaces that house workers as such require registration of such workplaces in collaboration with the Directorate of Occupational Security and Well-being. It is necessary for industrial property managers to uphold health and safety standards to avoid hefty compensations to injured victims as a result of negligence and lack of auditing.

2.5.2 Institutional Framework

In quest to fully enforce the provisions of EMCA, several administrative structures were established as follows.

Table 2: Relevant Administrative Bodies for Environmental Management

National Environmental Management Authority (NEMA)	The authority tasked with general management and oversight of all concerns pertaining to the ecosystem and implementation of environmental policies in the country.
Standards and Enforcement Review Committee (SERC)	It ensures enforcement of environmental quality standards. This way property managers are to work in collaboration with these institutions in ensuring quality standards in their industrial properties are observed.
National and County Environmental Committees	Ensures environmental management in the counties and have representatives from ministries, farmers and pastoralists, non-profit groups engaged in environmental management and regional and local authorities.
Public Complaints Committee	It is platform for the public to air their complaints relating to environmental damage and pollution and entails has members from the non-profit groups, the business community and the Law Society of Kenya

Source: Author’s Construct, 2022

2.6 Types of Environmental Audits

The field of environmental auditing has prospered and its relevance to industries increased as they prove their commitment to mitigate their environmental impacts. (Kelly, 2002) considers environmental auditing of organizations as revealing the contents of a “Pandora’s Box” covering a wide scope of key areas relating to compliance of the state laws and regulations. To assess the

appropriateness of ecological review in industrial property management it is important to discuss the activities in relation to the responsibilities of the property manager and the activities that industries undertake actively impacting the environment.

Pain, (2010) highlights those enterprises in developing their internal management system need to consider developing standards applicable to environmental pollution controls, regulatory compliance, product safety, waste disposal, storage and warehousing, premises and workplace safety, capacity building, health assessments, energy and water conservation, repairs and maintenance, effluents discharge and assets design, transfer and procurement.

Waswa, Ouma, & Mireri, (2007) and classifies environmental audits into two main categories in relation to why, when and by whom auditing is done.

2.6.1 Compliance/ Control Audit

These are inspections guided by the establishment of particular Acts of parliament and subsequent regulations in this case by EMCA 1999, OSHA 2007 and the Environmental Impact Assessment and Audit regulations 2003. Under this type of audits, the regulatory authorities' carry out inspections whenever they deem it fit, for example in our case the authority's key interest will be to assess the management of industrial properties against the environmental parameters set for a industrial land uses.

The objectives of a control audit according to (Government of Kenya, 2003) is to ensure conformity in accordance with the project's ecological administration strategy and to certify its sufficiency to enable an effective management of the environmental impacts. Control Audit reports are submitted to NEMA annually or as the authority may prescribe to the property managers. Hence in industrial property management control audits are unavoidable since the industrial estates

are situated and operate in an environmentally significant environment and that their activities immensely affect the environment.

According to the EA regulations in Kenya, NEMA can carry out a control audit whenever it finds it essential to evaluate firms' adherence to the designated ecological criteria for a specific operation.

2.6.2 Self or System Audit

Waswa, Ouma, & Mireri, (2007) describes self-audits as a voluntarily inspired activity whose rationale is anchored in the companies' commitment to achieve compliance as mandated by relevant Acts of parliament. The practice followed is internally conducted by organizations with an aim of enhancing their environmental management practices and activities. (Wanyoyi, 2020) emphasizes that the overall purpose of audit should be aimed at enhancing effectiveness and efficiency of the organization. Normally audits have been used to assess defects or problems before the government learns of the non-compliance.

2.6.3 Nature of Environmental Audits

Goswami & Pati, (2008), Waswa, Ouma, & Mireri, (2007) and Kelly, (2002) explain that environmental audits can be categorised based on their nature thus creating a wide scope of different forms. (Kelly, 2002) strongly believes in the application of environmental audits as management tools in industrial property management. This is because as the managers become an expert of the field the easier it is for the team to develop a vast range environmental related audit.

The table below presents various types of environmental audits based on their nature .

Table 3: Types of Environmental Audits base on their Nature

Nature of Environmental Audit	Rationale
Material Audit	Provides for evaluation of material usage (raw materials) in an industrial enterprise by collecting and analyzing data on quantity and cost of materials used per unit, wastage etc. Information gathered is usually for a specific period of time say for the last 3 years. Industries also considered collecting and analyzing data on recycled materials, storage of materials and conservation. This audit allows industries to compare their findings and develop appropriate management practices.
Activity audits	they are normally oriented towards assessing the performance of particular activities running in an organization. The audits target to minimize waste as well as energy used to run the activities and in return enhance cost saving tradition and protection of the environment.
Management Audits:	they are carried out to assess the entire management system including its policies and standards and its performance of the governing environmental objectives. Further it evaluates the

Nature of Environmental Audit	Rationale
	effectiveness and efficiency of the set management plans and strategies to attain the set goals of the organization.
Property transfer/ Due Diligence Audit	It identifies any potential liabilities which may affect the monetary worth of the industrial asset to be transferred. The manager of an industrial estate must undertake environmental due diligence of the property or company.
Energy audit	It focuses on the analysis of energy consumption in the industrial processes being undertaken. It targets to introduce areas for energy saving strategies, thus saving money by reducing the operational costs and eventually reducing the environmental impacts of the industry.
Occupational, Health and Safety Audit	As a duty to care the property manager often is obliged to undertake health and safety audit of the workplaces in the industrial premises, thus taking cognizance of potential areas of health hazards and accident occurrence information. Others important aspects considered are fire prevention mechanisms, radioactive substance and toxic substances.

Nature of Environmental Audit	Rationale
Waste Audit	The target here is to ensure efficient management of wastes generated by the industrial property and thus the property manager strives to devise ways of minimizing wastes, recycling wastes or entirely eliminating the wastes. Alternatively, turning wastes produced into raw materials for other industrial processes.
Water Audit	Similar to energy audit, the goal is to assess water consumption rates at different sources for example at raw water intake, cost involved in water treatment, waste water consumption and recycling of water. Normally data for specific period of time should be collected and analyzed.
Engineering Audit	The engineering components contributing to the efficiency of the plants and machineries in the industrial properties are time to time inspected and areas of potential maintenance and repairs noted.
Associate Audit	This is conducted to evaluate and monitor environmental management of business partners to the industrial company for example suppliers, investors, marketing agents etc. the partnership arises

Nature of Environmental Audit	Rationale
	from either supplying raw materials to the industries, selling goods manufactured or in handling of by-products including wastes.
Product Audit	The intention of this audit is to examine the ecological effects of products produced by an industrial enterprise. It also entails evaluation of the production processes which (Kelly, 2002) refers to as “Life-Cycle Analysis” audits. The premise of this audit is to ensure that the production process is environmentally sound from the beginning to the end.
Liability Audits	These types of environmental audits aim at evaluating possible impacts caused by an organization arising from its projects relating to land and buildings acquisition.

Source: Author’s Construct, 2022

2.6.4 Motivating Factors for Environmental Auditing

As above mentioned, any state requires that industrial firms comply to the enacted laws and regulations for environmental management both globally and nationally. The entire world continues to experience an ever-growing industrial sector in the respective countries' economies and this poses a threat to the environment. As earlier said the impacts of industrial activities are irrefutably being felt in the entire world with the environment not being spared as industries continue to draw raw material from the environment as well polluting the same environment. On this note the key factor guiding and promoting environmental management is for compliance purposes.

Secondly the call to promote sustainable developments across all sectors of economic development which emphasizes on a master plan on developments that support and meet the needs of the current generations while also guaranteeing that the same environment will have the capacity to fulfill the desires of the future generations comfortably, (Real Property and Materiel Policy Directorate, 2011). Additionally, it is the responsibility of property managers in this case that they ensure in their everyday activities they promote environmental management for example by ensuring that waste quantities are reduced, process efficiency is improved (energy and water use), improve resource utilization, preserving special environmental spaces and improving working conditions among others.

Further to promoting sustainable development, there is a driving force to a socially responsible firm thus maintain a good public image (Ethical and business performance purposes). This is where the industries upon promoting the various aspects of environmental management, the stakeholders view them as good corporates that meet their needs. There's increased need for firms to uphold their business ethics and responsibilities to their stakeholders hence recognizing the ethical issues and dilemmas in their line of production and strategically handling them. Simply the force driving

the property managers here is the need to promote accountability in its compliance with ethical and legal considerations.

Property managers as their duty will ensure that investors' confidence is earned at all cost, and thus being accountable and transparent by publishing their audit reports will encourage investors to gain trust in their companies. It has become the norm nowadays for investors to use environmental performance as a standard guiding their investment decisions. Notably they are concerned on the corporate social responsibility of firms they are interested in, (Owusu & Frimpong, 2012).

Lastly, risk management and mitigation purposes influence the need for environmental auditing. In order to remove the opportunity of continually making losses through penalties charged, closing of the industries and high costs of operations, the property managers being the caretakers, develop a corporate culture of undertaking environmental auditing thus bring in control and oversight over the general operations of the industries. Additionally, individual elements like the academic attainment degree and age will influence the application of environmental auditing. For property managers who are better qualified, less biased, and more knowledgeable about their field of operation will never allow scandals in their firms and will ensure such are prevented, (Ferrell, et al, 2011)

2.7 The Benefits of Environmental Audits in Industrial Property Management

Environmental audits have the potential to greatly add value to the management approaches adopted by property managers of industrial property. As a systematic process of identifying, analyzing and monitoring environmental impacts and risks it has become a key support to business decision making and especially to industrial real business, (Kelly, 2002) and Owusu &Frimpong,

2012) The benefits of environmental auditing that an industrial enterprise can enjoy are numerous and includes.

2.7.1 Enhances Compliance with the Environmental Regulatory Framework

Maintain compliance with the relevant regulatory requirements by industrial estates is one of the benefits arising from environmental auditing process. This enables the companies avoid huge penalties and other actions against them by the regulators for example litigation cases.

2.7.2 Minimization of Operational Costs

The process of auditing enables the property manager identify areas of cost recovery and saving by implementing such strategies as energy and water saving, reduced insurance premiums, recycling of wastes and better use of raw materials thus improving environmental performance of the industrial estates.

2.7.3 Competitive Advantage

Upon implementation of the recommended environmental management measures the companies are able to enjoy a competitive advantage compared to those that do not undertake environmental auditing. This is because environmental auditing indirectly provides managers with opportunities to minimize costs of the manufacturing process, increases savings accrued from wastes management and hence promote sustainable development.

2.7.4 Creates Awareness of the Environmental Impacts

Environmental audits are able to reveal potential negative impacts of the manufacturing process hence creating awareness to the management. As such the management is able to implement appropriate quality standards and measures to minimize, avoid and abate adverse effects. Additionally, as the management become experts in environmental auditing, the process is able to keep track of environmental progress, provide comparative analysis and benchmarks for the same.

After a while say for a period of 10 years the management will be able to analyze and monitor the strengths of environmental controls being implemented in the industry.

2.7.5 Improves Company Profile and Reputation

When companies maintain a good environmental performance the corporate attains a good reputation and in return attracts investor as well as employees who are looking for organizations promoting sustainable development by being responsible corporates. This generally increases stakeholders' trust in the organization's ecological track record as the organization's operations directly affects the needs of each and every stakeholder. For example, they include suppliers, employees, owners, investors, the government relevant agencies, customers and the community living around the industrial estates. Strengths and weaknesses established during the auditing process provides a platform for every stakeholder to take action in regard to the management of environmental issues in the company and remaining compliant.

2.7.6 Provides Data to Relevant Lead Agencies

Environmental audits reports are important sources of data for regulatory authorities e.g. NEMA and additional governing bodies on environmental performance of respective companies. This information when evaluated provides crucial information that can inform the environmental policy of the country, county or region.

2.7.7 Provides Information during Transfer of Transactions

Before letting, sale and acquisition of an industrial property the property manager must undertake an assessment of the site through environmental auditing. The process is able to provide vital information to the vendor and the lessor enabling them avoid taking responsibility of an environmental liability when purchasing, leasing or disposing the property.

2.8 Challenges of Application of Environmental Audits in Industrial Property Management

According to Stanwick & Stanwick, (2001) the structure and the different types of audits presents several challenges associated with the formulation of auditing policy guidelines by the regulators, as well as the organizations' management in developing appropriate strategies to implement in their industries. As such there are two primary challenges that is difficulty in integration of environmental audits, its standards and extent in the management of the industrial estates and secondly the aftermath of the self-audits which creates tension between interested parties for example could present areas liable to prosecution and maintaining accountability when clarion calls on sustainability are made.

Integration also creates complex nature of undertaking environmental audits this is because as the property manager strives to accommodate various types of audits, interested parties may on other hand create preference on one or two types of audit over others. For example, tenants may require that the manager carry out a safety audit while on the other hand the owner may prefer to undertake a management audit for the purpose of acquiring a loan. This way the manager will be faced with difficulties trying to meet the needs of both parties, especially when the organization lacks the capacity and manpower to do so.

Undertaking an environmental auditing process requires great capacity in terms to costs, personnel and other requirements of the programme and hence smaller organizations are normally faced with the challenge of fully integrating environmental audits in their way of doing business compared to larger organizations (Stanwick & Stanwick, 2001).

Accountability calls for organizations maintaining a 'clean sheet' of environmental performance and thus auditors may alter the results of the audits taken resulting to unreliable and invalid reports, hence failing to being accountable to all the relevant stakeholders. Auditors are supposed to be

independent free of any influence by any stakeholder so as to produce objective audit reports. In addition, they are supposed to be knowledgeable enough in their field of engagement this way they will be able to identify and systematically quantify various environmental issues and risks under their examination, since the reports should also entail high levels of validity (Stanwick & Stanwick, 2001).

Questions such as how transparent audit information is? Whether or not costs and other constraints affect the results? Are the tools and procedures taken adequate and objective? And to what extent should the regulators expect industries to be accountable sustainably? Presents several challenges in the application of environmental auditing, (Stanwick & Stanwick, 2001). In summary the challenges are as highlighted below.

2.8.1 Resistance by Corporates to Voluntary Disclose Environmental aspects

With the increased awareness of environmental audits auditors have shown concern for assessing potential environmental impacts however some of the firms resist to voluntarily disclose the environmental aspects in their financial reports stating that some elements of the environment are unimportant. In crisis period as Rodgers & Housel, (2004) put it, the decision makers will often downplay environmental audit reports and focus on the financial report in making a judgment. This should not be the case for with the emergent demand for environmental management auditors, managers, developers, legislators and all relevant stakeholders need to develop strategies and purpose of environmental audits in detail and as well enforce them.

2.8.2 Unclear Understanding of Roles in Environmental Auditing

In reference to literature review by Wanyoyi, (2020) majority of both private and public auditors lack a clear understanding of their roles in environmental audit. The argument states that the existing regulatory framework provides a theoretical rather than a practical approach which has

standards and guidelines acceptable across the auditors and the authorities. The existing law also provides an avenue for filing paperwork to meet the legal requirements rather than a system for identifying potential environmental impacts of projects.

- 1. Site complexity** – in terms of the nature of the site in relation to the topography, soil type, vegetation, marine, air, water and other features, sites pose a challenge of examining a wide range of features whose quality is of concern to the auditors and thus increases the cost of audits in hiring the appropriate experts and analysis of tests. Other underlying aspects leading to site complexity include cultural changes, uncertainties and mindset.
- 2. High costs of environmental audit/ limited resources.**

As highlighted above environmental audits require financial support for it to be successful. Hiring auditors as well as other relevant experts, carrying out site visits, taking of test samples and analysis, writing of reports among, installation of information and communication infrastructure and other aspects all require financial allocation to run them. Limited resources at large pose a challenge to a successive environmental audit activity and hence cannot produce a reliable reports and recommendations. Wanyonyi, (2020) compares developed nations to the developing nations and cites that developing nation for instance Kenya are struggling due to financial constraints, low technological capacity and inadequate personnel. In this case therefore developing nations fail to effectively assess the environmental impacts as their counterparts.

In some instances, developing nations are forced to adopt standards from developed countries which may not meet their requirements in terms of financial needs, and experts' capacity in their organization.

2.8.3 The Increased Demand and Complex Subject Matter

The ever increasing scope of environmental audit in the global space further poses a challenge to effectively carry out the exercise for example in the emerging issues auditors are now required to audit the supply chain of corporates which has components of environmental, social and ethics considerations. As a result, there is limited knowledge of this field and auditors are inexperienced in such areas. Ethics and social issues are complex and subjective to a nation and hence variations set in posing more challenges to auditors in making professional judgment. For example, the emergent issue of climate change is rapidly changing and is as well extensive thus need for review of laws to bring clarity on the extent of assessing such matters. Further sustainability has become a requirement of the environmental audit to achieve however in many scenarios having a promising journey between environmental management and sustainable projects is becoming a major challenge.

Moreover, there are new demands by financiers/sponsors for example World Bank requires that projects financed by the institution should ensure that they observe environmental protection as well uphold the principles of social justice. Such institutions develop regulations that the organizations/firms have to adhere to thus bring in new additional responsibilities for example preparation of separate reports.

As the scope of environmental audits broadens this calls for more specialized audit which will require more resources-experts and costs which are currently not enough.

2.8.4 Complexity of Integrating Auditing in Management Tools.

According to the United Nations Environmental Program integration of the environment can take place in four forms including integration with national and local decision making processes, integration with other environmental management principles and tools, carrying out feasibility

studies as well as integration of ecological, societal, economic and health effects. This complexity demands strategically developed planning frameworks and more technical expertise to enhance conduct of environmental audit.

Further since integration needs various experts working together, lack of enough experts' result to a poorly done exercise both within as well as outside the entity. This is because getting together individuals from diverse professional fields to meritoriously audit a firm or an industry is challenging and in some instances teams tend to be incompatible.

2.8.5 Deficiencies and lack of Consistency in the Audits

Globally there are differing standards and requirements for environmental management thus contributing to inconsistency in the audit practices among practitioners. This is exacerbated by presence of inadequate experienced practitioners with the matching skills required in the realm of ecological auditing to interpret and implement the international ecological agreements. The differences can also be attributed to cultural differences among nations. Further the existence of distinct environmental management authorities and practices in a way affects the conduct of audits. In most developing countries as highlighted by Wanyoyi, (2020), the management authorities that do exist are faced with such challenges as inadequate personnel, shortage of enough technological infrastructures and absence of a clear audit scope. Adding to this enforcement of the environmental laws is low.

2.8.6 Biasses of the Government

This is mostly towards multinational corporates in the sector thus failing to enforce laws. This affects the managing authorities to fully undertake its mandate.

2.8.7 Corruption

Commonly practised by auditors and other relevant stakeholders in the field. This leads to not charging the non-compliant firms or having them pay very low fines.

2.8.8 Difficulties in finding a Reliable Consultant

At times getting a qualified team of experts in environmental related topics and industrial property management are also a challenge affecting environmental auditing.

2.8.9 Existence of Information Gap

This occurs when there are gaps in previous environmental audits with poorly kept data thus poses a limitation to subsequent audits where one can track changes over time.

2.9 Remedies to Challenges of Application of EAs in Management of Industrial Property

In ensuring that audit process is effective and successful and that reports are objective and valid managers have to carefully handle and solve every challenge encountered. All the stakeholders need to clearly understand the process and how it contributes to environmental management thus collaboration between them is very necessary (Stanwick & Stanwick, 2001). Organizations must be ready to adequately provide resources required for undertaking environmental audits while auditors must be independent and experienced in the respective field of engagement.

The regulator must also consider offering incentives to industrial enterprises who voluntarily carry out self- audits for example they should roll out non-prosecution agreements a common practice in the United Kingdom, (Xiao, 2013) . This is a good alternative to levy penalties to industries that are found liable of environmental pollution by giving cooperation agreements where industries for example pleads guilty of non-compliance and on other hand the regulator dismisses other heavier penalties like closing of the industry.

The future of environmental auditing as a management tool for industrial properties need awareness creation and capacity building of all relevant stakeholders. In reference to (Pain, 2010) an environmental auditing system is meant to regulate organizations and should not be viewed as a hindrance to prosperity. This is because as a management tool is intended to prevent harm to people and the environment. A good environmental audit system should be based on an effective management plan/policy which is transparent, responsible and communicates to its relevant stakeholders of the reports developed. The system should be flexible rather than accommodating bureaucratic system way of handling matters. Moreover, it should entail a training program for all relevant personnel tasked with the verification process of identifying and evaluating measures, activities and standards of operation.

In order to achieve effective management of industrial properties there is need for property managers to understand how important and relevant environmental auditing to their career is. As such they should understand the history, concepts and characteristics of environmental audits in achieving sound environmental management of the properties under their care (Stanwick & Stanwick, 2001). Due to globalization and technological advancement, property managers should expect new, innovative approaches and requirements for environmental auditing and thus they need continuous capacity building.

In exercising effective enforcement of auditing requirements in the country owners and property managers of industrial enterprises should cease perceiving environmental audits as meaningless expense and a limiting factor to development. On the contrary should emphasize on monitoring and auditing of their properties thus allocate essential resources to successfully implement it (Waswa et al., 2007). Failure to this will infer that the companies applying environmental audits as their management tools for industrial properties will continue to remain low and thus leading to irresponsible corporate businesses.

In considering the gaps in our study the nature of the environment tends to be complex and as such environmental audit as management tools for industrial property needs skilled personnel from different fields who possess special knowledge. Property managers being specialists in taking care of properties, should therefore form part of the team of professionals to work in collaboration with the regulators and other lead agencies. Additionally, NEMA should consider issuing special licenses to industrial property managers to ensure implementation is done as recommended and promote voluntary auditing. A remarkable outcome of this intervention will be the potential to reduce risks and hazards associated with in industrial activities, hence saving money and avoiding closure of non-compliant industries.

In furtherance to the above there is need to bolster adherence to ecological regulations, curbing pollution, and enhancing ecological well-being. The manufacturing sector being the largest contributor of the industrial economy to Gross Domestic Product, urgently need to adopt accountability mechanisms for example introduction of scorecards to track and analyze performance of individual industries.

Environmental audits should be made mandatory and the process be transparent and accountable by making reports public that way property managers will be able to stand their ground against wrongly made claims as main contaminators of the environment. In examining the efficiency or inefficiency of various departments of an industry this can be easily done through environmental audits thus the property manager will be able to develop mechanisms that can be adopted by the inefficient departments.

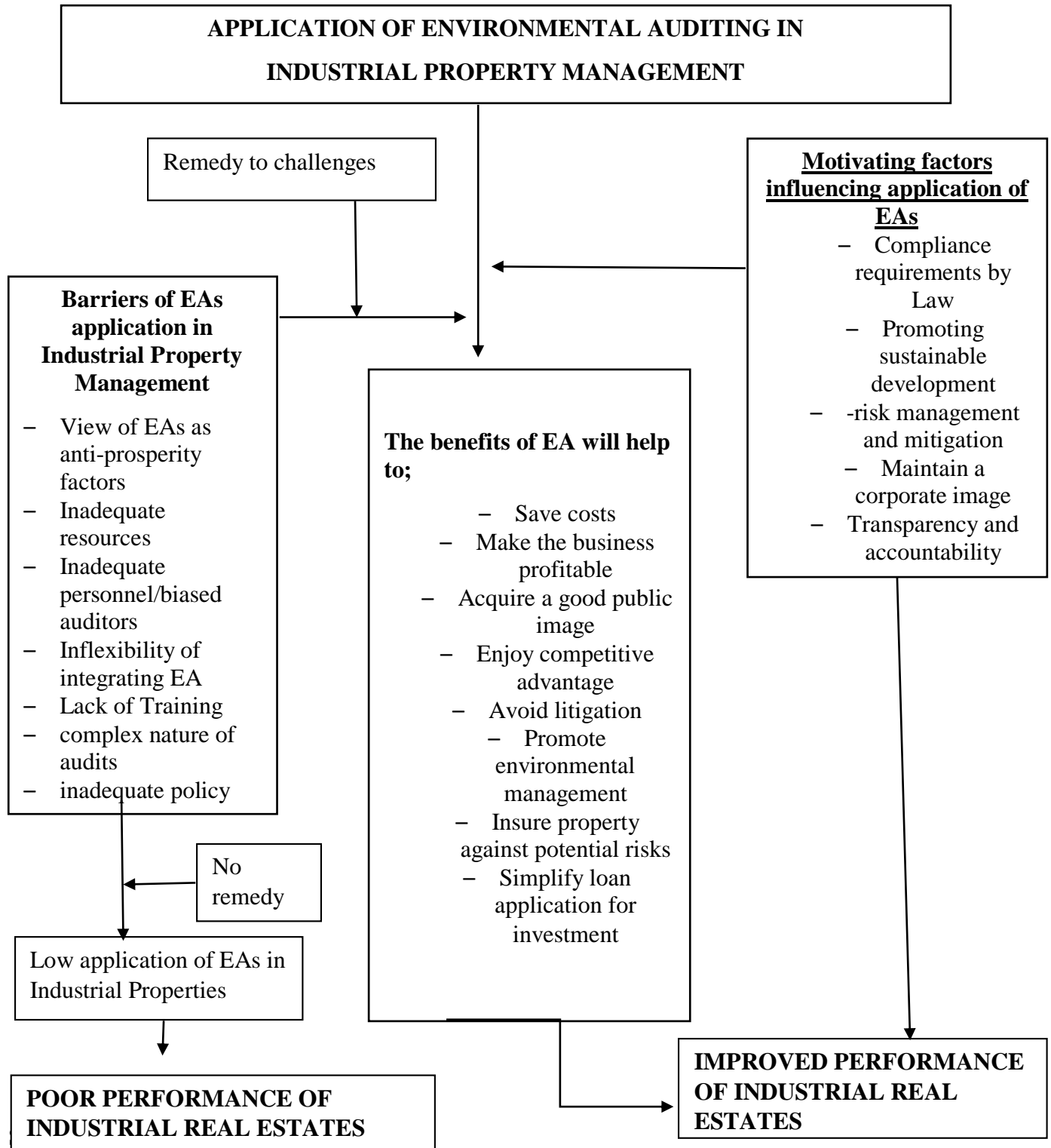
2.10 Conceptual Framework

Based on the analysis of existing research, it's evident that the environment is the source of raw materials for the survival of all types of industries which comprise of manufacturing, quarrying,

construction and mining. Property managers of these industries are therefore expected to pay close attention to the environmental impacts emanating from these industries as they convert the raw materials into finished goods ready for consumption. There are quite a number of challenges that have contributed to the low implementation of ecological audit procedures in industrial property management and as discussed they include, lack of a clear scope for self-audits due to the complex nature of audits, inadequate skilled personnel, inadequate allocation of financial resources, lack of training to keep relevant stakeholders abreast with the emerging trends in the management of industrial real estate, and conflicts in meeting the demands of each stakeholder on the type of audit they are interested in (Stanwick & Stanwick, 2001). On the other hand according to Yashin et al., (2019) implementation of environmental auditing is indeed beneficial to the management of the industrial enterprises as it gives room for the property managers to identify and analyze environmental risks, occupational hazards and health issues. Consequently, they are capable of identifying whether the properties are need more mechanisms to enhance environmental management and whether the mechanisms already implemented are adequate. Generally environmental auditing helps managers plan, do, check and act on the potential environmental impacts threatening the survival of their industries. Benefits of applying environmental auditing out way disadvantages of the non-compliant managers to the regulations as this puts their enterprises in endless litigation cases, financial losses, poor public reputation and to worse scenarios closure of their businesses. Benefits include ability of environmental audits to reveal areas of potential costs saving (optimum utilization) in terms of use of raw materials, water, energy, recycling of wastes, good public image of being responsible corporates, simplify loan applications for investments in the industry, help adequately insure the property against potential risks and help enterprises enjoy competitive advantage and provides reliable data to relevant lead agencies who help in formulation of environmental policies. Eventually the benefits of applying environmental

auditing in industrial property management contribute to improved performance of industrial real estate management.

Figure 2: Conceptual Framework



2.11 Summary

As a profession property management has continued to gain recognition from property owners and investors as real estate has become highly valued investments in the world today. Property manager of an industrial property often is tasked with ensuring that operation, control and general oversight of the property is running smoothly. In so doing, the property manager through the strategic plan employs several tools to enable achieve the goals of his/her responsibilities and thus includes Environmental Auditing (EA) which aims to promote environmental management. When applied by property managers it is an evaluation specifically outlining environmental management objectives which are set in the organizations environmental policy.

The chapter has in details discussed the procedure, processes and the practice of environmental auditing as well as the structure of a successful environmental auditing program, challenging the general approach of environmental auditing by property managers whereby there is no commitment to the exercise, insufficient backing from senior leadership, limited assets to undertake the program, poor implementation of the action plans and lack of objectivity in making decisions among others. This leads to non-compliance by the industrial properties to the set environmental laws and regulations prompting the regulators (NEMA) to take action against the industries and to some extent closing the entire premises until the standards are met. When environmental auditing is undertaken and the recommendations implemented and integrated in the property management plan industrial property management becomes a success and thus improved result of this type of real estate.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides an extensive overview of the approach commonly referred to as the approach employed for conducting the study. It also explained methods employed for gathering, quantifying, and examining data. The first element discussed in this chapter is the study area, its location, its population according to the recent census studies, the conditions of the selected industrial zones in Nairobi. These zones have experienced cases of industries being closed by NEMA, fined, having poor reputation etc. due to non-compliance to environmental regulations. Thus the need for their property managers to apply use of Environmental Audits in the management of these industries to ensure they promote environmental management despite challenges faced and in return improve the performance of industrial real estates across the country. The second and the last element covered within this section is the research design employed in the study entailing the types and sources of data to be collected, sampling as well as data interpretation.

3.2 Study Area

Within this investigation, the views, attitudes, believes and knowledge of property manager of Nairobi County were sought. Nairobi serves as the capital city in Kenya and measures approximately 695 square kilometres. The city has the largest economy in the country thus making it a major hub for transportation and communication, a financial centre, an industrial centre, a commercial centre as well as a centre for various non-profit making organizations and embassies.

Three key industrial areas in Nairobi were selected for this study because of their nature activities undertaken there were namely;

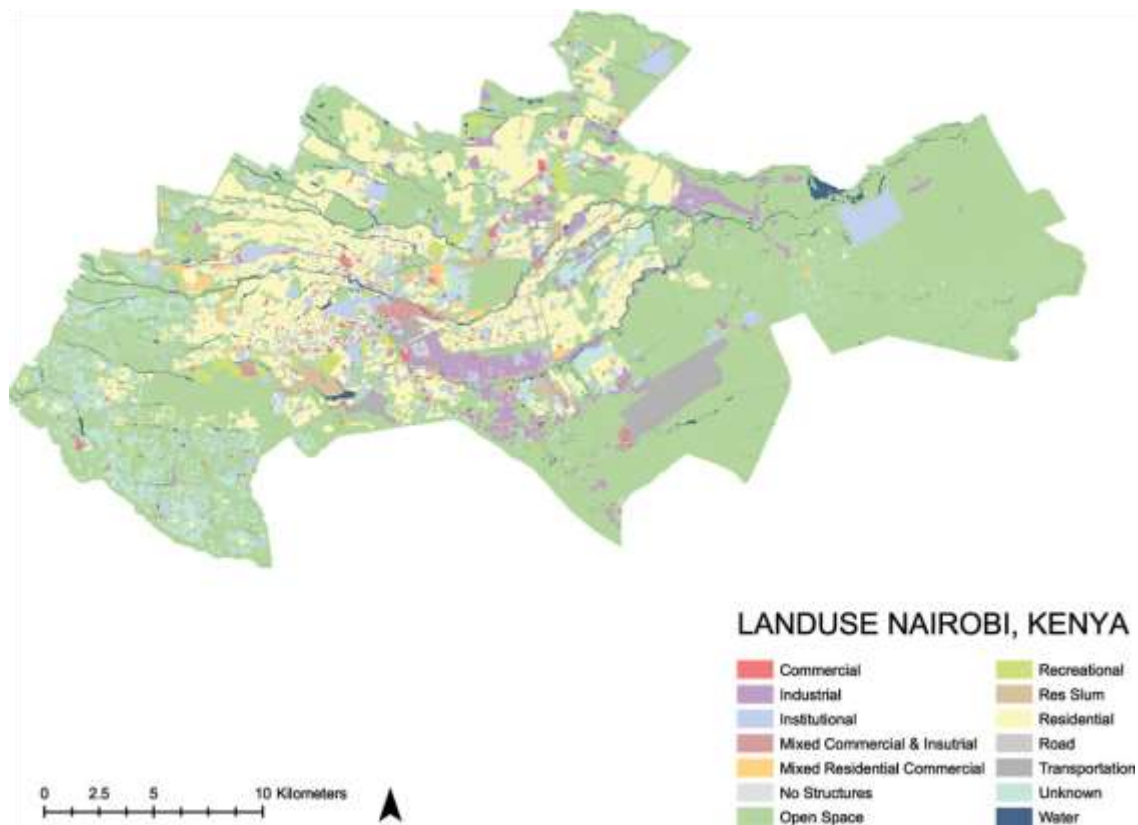
Table 4: Location of the Study Area per Sub-county

Industrial area	Sub-county
Nairobi Industrial Area	Starehe
Baba Ndogo	Ruaraka
Industries along Nairobi-Mombasa (A104) Road	Embakasi South

Source: Author’s Construct, 2022

About 4.6% of the land use and type in Nairobi is occupied by industrial/commercial/service centres with a few industries relocating into the metropolitan areas of Machakos (Athi River Export Processing Zones), Kajiado, Ruiru and Thika (Nairobi City County, 2018).

Map 1: Nairobi County Land Use Map



Source: Spatial Information Design Lab, Columbia University, November 2014

Nairobi river basin which is made of Nairobi River, Ngong River and Mathare River is located within the study area. The river basin forms a major area of concern in this study since most industries discharge untreated waste effluents into these rivers which prompts NEMA to take action against the industries found liable. According to 2019 Population and Housing Census Nairobi county has a total of 4, 397,073 persons with 2,192,452 males and 2,204,376 females dwelling in 1,506,885 households. The population concentration is 6,247 persons per square kilometer. Compared to the national population the country has a total population of approximately 47,564,300 persons with 23,548,100 males and 24,014,700 females with a populace density averaging 82 individuals per square kilometer. Thus there is high human concentration in Nairobi, whilst having the highest number of industries and definitely has higher cases of environmental pollution compared to the rest of the country with industrial pollution being one of the major sources of pollution. Hence the need for environmental auditing of industrial properties in order to promote environmental management and as well enhance performance of industrial real estate investments.

3.3 Population of the Study

The population being aimed at here comprises of each and every registered and licensed property managers by Estate Agents Registration Board (EARB) and NEMA county directors across the 47 counties in Kenya tasked with over sighting on environmental management in the respective counties. The Estate and Registration Board (EARB) has the mandate to register qualified estate

agents across the country and keeps an updated register of all members engaged in estate management. According to the EARB register accessed on 17th November, 2020 via <https://estateagentsboard.or.ke/registered-gazetted-earb-estate-agents-2020/?v=be7f575c3bc>, there are a total of 440 estate agents enlisted for estate management across the entire country. In reference to NEMA register accessed on 15th September 2021 via https://www.nema.go.ke/index.php?option=com_content&view=article&id=7&Itemid=141 there are a total of 47 county directors.

In addition, key informants from any other relevant lead agencies were targeted to form part of the population. A population consists of a collection of elements or individuals sharing identical traits, and are relevant and are to be studied (Mugenda & Mugenda, 2003). Therefore, a target population has to have all the variables the researcher is looking for and this is carefully done by selecting a sample from the general population. The total population of the property managers according to the EARB is 440 individuals and the population of NEMA county directors is 48 directors.

Table 5: Target Population of the Study

Target Group	Population
Property managers	440
NEMA County Directors	47
Total	487

Source: Author's Construct, 2022

3.4 Sampling

Agreeing with Bartlett et.al, (2001) any researcher is driven by the goal of collecting data from a representative subset of the populace to influence the survey findings. This way the researcher will

be able to draw inferences from the sample and relate it to the entire population within the acceptable margin of errors and the degree of reliability. Sampling assisted the investigator to choose a subset from the intended population because it is difficult for the researcher to gather data from every case under consideration, given time and budget limitations (Taherdoost, 2016). The sample selected gave an opportunity to focus on representative cases with the most detailed information on the area of research. The study adopted simple random sampling for the population in order to define a representative sample as influenced by the margin of error (risk) that the researcher willingly accepts for the variables in the study.

3.4.1 Sampling Frame

According to Turner (2003), a sampling frame is described as a collection of materials that form the main source of the sample size to be selected for a research. In other words a sample framework can be termed as a list of all population where the researcher intends to draw the sample size from. In this study the sample framework comprises of two major groups of property managers and NEMA county directors as listed in EARB register and NEMA database.

3.4.2 Sample Size

Pandey & Pandey, (2015) refers to sample size as a proportion of the intended population, which is carefully chosen through sampling for examination and analysis. In most educational studies Bartlett et.al, (2001) notes that the criteria to determine sample size needs the degree of accuracy, confidence interval, and variability level (p). In this study use of formula to calculate sample size was used. Glenn, (2003) discusses Yamane Formula which is a simplified formula for determining a sample size at the following assumptions, a 95% degree of confidence and a $P = 0.5$. Therefore, for our 440 property managers and 47 NEMA county directors that is a total of 488 and a sample size as calculated below.

$$n = \frac{N}{1 + N(e)^2}$$

Where;

n is sample size;

N is population size;

e is the level of precision (confidence level, usually set at 0.05).

$$n = \frac{447}{1 + 448(0.05)^2}$$

The sample size n = 211

In order to ensure that all the population is well represented the sample is distributed across the sampling frame as shown below;

Table 6: Total Sample Size for the Population.

Target Group	Population	Sample
Property managers	440	188
NEMA County Directors	47	23
Total	487	211

Source: Author's Construct, 2022

3.5 Data collection

Data collection a process in research that helps the researcher to gather relevant information that he/she is interested in respect to the research questions. There are various ways of collecting both primary and secondary data which include use of observation, administering questionnaires, use of interviews and documents reviews among other methods, (Dr Karim, 2013). Data gathering for

this study predominantly involved the utilization of a structured questionnaire. This type of instrument is very simple to use and apply especially where finances are limited, it promotes privacy protection of the respondents and also enables collection of both qualitative data (*data collected in a verbal or narrative format*) and quantitative data (*type of data expressed numerically*).

The procedure followed during data collection entailed verbal introductions to the participants on the study, its objectives and the instructions to be followed in filling in the questionnaire. With the goal of preserving participant anonymity, they were advised to fill it anonymously and provide their best responses based on their familiarity with the subject to eliminate any bias. Document reviews were used mainly for secondary data sources such as books, journals, periodicals, maps and other reports e.g. population census reports.

The researcher designed a questionnaire (See Appendix I) that was used in primary data collection. The details of the questionnaire were consistent with the study's aims and the content of the questionnaire categorized in to parts.

- 1) Section "A", - personal information of the respondents;
- 2) Section "B", - management of industrial real estate properties;
- 3) Section "C", - contains questions on Environmental Auditing and perceived benefits arising from effective implementation of Environmental Auditing;
- 4) Section "D", - contains questions on the perceived challenges influencing application of Environmental Audits and possible remedies that can be adopted to improve the situation in management of industrial properties.

The questionnaire was structured in a Likert Scale with a 5- point scale spanning from disagree, slightly disagree, agree, fairly agree and strongly agree. The respondents therefore had to respond to their degree of perceived agreement with the statements as outlined in the questionnaire.

3.6 Data Analysis

Once information was gathered, the next step was to analyse it in order to acquire results (relevant information) from answers as given by the respondents. The objective of this step was to make inferences of the findings from descriptive data analysed. Richmond, (2006) describes data analysis as a process entailing various procedures and ways of transforming data collected into understandable information through coding and categorizing, which inform the next step in analysis which is to interpret, make inferences e.g. testing of the hypothesis and the documenting the results into a report. In this study descriptive statistics was applied to achieve the above thus we have measure of frequency distribution, measures of mean, median and mode, and percentages.

3.7 Summary

This chapter has comprehensively detailed the approach taken in this study in pursuit of meeting the objectives of the research. The study area chosen was Nairobi as it has the largest industrial parks in the country and thus well placed for the study. The study population characterized by licensed and registered property managers and NEMA county directors, who in totality gave a population of 448 individuals. A representative sample of 211 individuals was selected for the study. This gave an opportunity to focus on representative cases with the most detailed information on the area of research. Data collection composed drawing from both primary and secondary data acquisition approaches, including questionnaire, document review of books, journals, and reports. Finally, the chapter ends by highlighting on the data analysis process, a very critical process of any research as it provides an avenue to interrogate data collected and translating it into meaningful information for decision making and recommendations.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

4.1 Introduction

This chapter presents analysis of the data collected and findings from a sample of 211 respondents who played a part in integrating environmental auditing in management of industrial properties in Nairobi, Kenya. This chapter will first present the demographic findings followed by descriptive analysis of the research findings in accordance to the following objectives:

1. To examine the Environmental Audits (EA) procedures, practices and standards employed by property managers in management of industrial real estate.
2. To evaluate impacts of Environmental Audits (EA) on the optimal operation of the industrial real estate.
3. To examine challenges hampering the effective application of Environmental Audits (EA) by property managers in industrial real estate.

The questionnaires administered had two major parts, where section one entailed the personal data which gave the background information of the respondents and section two environmental auditing/ industrial property management part. A total of 211 questionnaires were given out to respondents in the study area both in the private and public sectors. The research assistants were able to get responses from 184 respondents representing a response rate of 87%. According to Mugenda (1999), this a very good response rate and adequate for analysis as well as reporting. The data was statically analyzed using the Statistical Package for Social Sciences (SPSS) software where descriptive statistics was performed on the data.

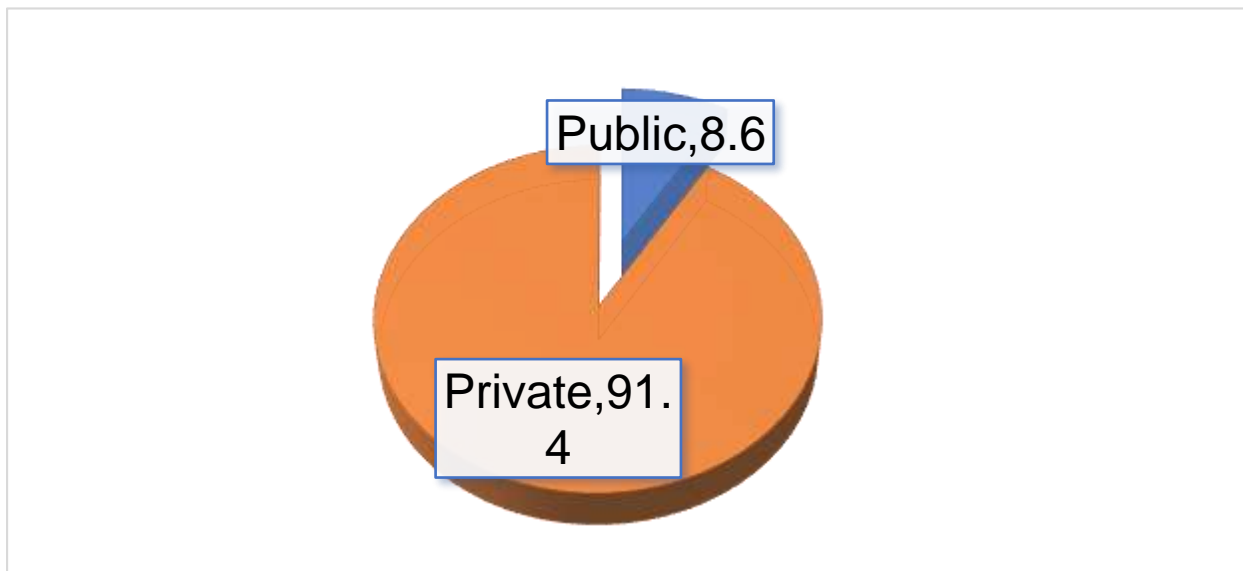
4.2 Back ground Characteristics

A total of 185 respondents participated in the study by responding to the study questionnaire. The demographic characteristics included; industrial sector, qualifications, work experience, highest educational level and age category. The demographic findings are presented in the subsections that follow.

4.2.1 Distribution of Respondents by Industrial Sector

The participants were drawn from both the public and private sector. The summary of findings is presented on figure 3.

Figure 3: Respondents by Sector



Source: Field Survey, 2022

From chart 4.1, majority of the participants (91.4%) were drawn from the private sector, while 8.6% were drawn from the public sector. The public sector was represented by the National Environmental Management Authority (NEMA) and the private sector by the property managers in Nairobi.

4.2.2 Participants Qualification

The distribution of the participants by their qualifications is presented on table 4.1.

Table 7: Participants Qualifications

Qualification	Frequency	Percent
Property management	103	55.7
Architect	4	2.2
Quantity surveyor	8	4.3
Engineering	17	9.2
Other	53	28.6
Total	185	100.0

Source: Field Survey, 2022

From table 7, 55.7% of the participants were property managers, 9.2% were engineers, while 4.3% were quantity surveyors. On the other side, 28.6% worked in other professional sectors such as accounting, valuers, project management among others. Majority of the managers were drawn from the real estate/built environment thus results of the research are reliable and acceptable to make inferences. Under the category of others with a percentage of 28.6, this is as a result of one having trainings on various real estate professionals for example a valuer who also specializes in managing property. Normally you will find when an owner hires a property manager the threshold for choosing one based on their expertise, competence and their ability to bring on board strategies to effectively manage the industry in question, hence the diverse involvements of professionals from the built environment.

4.2.3 Distribution of Participants by Work Experience

The distribution of respondents by work experience is presented on table 4.2

Table 8: Work Experience

Work Experience	Frequency	Percent
0-5 years	8	4.3
6-10 years	66	35.7
11-15 years	57	30.8
16-20 years	31	16.8
20 years and above	23	12.4
Total	185	100.0

Source: Field Survey, 2022

From the findings on table 8, 35.7% of the participants had worked for 6 to 10 years, 30.8% had worked for 11 to 15 years, while 16.8% had worked for 16 to 20 years. This formed a diverse base of work experience in property management thus able to capture the experiences of both the newly hired group and the old ones. The more years of experience, presumably the more a property is exposed to the issues of managing industrial properties and especially on environmental management. It was evident that those with more years of experience, the topic was familiar to them and at least being engaged in various audits.

4.2.4 Distribution of Participants by Highest Education Level

Findings on participants' highest education level is presented on table 9.

Table 9: Participants Highest Education Level

Education Level	Frequency	Percent
Certificate	1	0.5
Diploma	38	20.5

=

Undergraduate degree	105	56.8
Post Graduate degree	41	22.2
Total	185	100.0

Source: Field Survey, 2022

From table 9, 56.8% of the participants had attained an undergraduate degree, 22.2% had attained a post graduate degree, while 20.5% had a diploma level qualification. States that the number of years spent in acquiring academic knowledge is a significant factor in any decision making process. The more education one has coupled with more work experience the more the property manager will be able to ensure that diverse discussions on environmental management for the property will be held and implemented. Having a majority of the property managers having undergraduate and post graduate studies is a significant reflection that implementation of environmental auditing should not be a problem.

4.2.5 Distribution of Participants by Age Category

Findings on participants age category is presented on table 10.

Table 10: Participants Age Category

Age Category	Frequency	Percent
Below 30 years	26	14.1
30-40 years	80	43.2
41-50 years	48	25.9
Over 50 years	31	16.8
Total	185	100.0

Source: Field Survey, 2022

As presented on table 10, 43.2% of the participants were aged between 30 to 40 years, 25.9% were aged between 41 to 50 years, while 16.8% were aged over 50 years. Age is an individual factor and normally it is believed that the older one is the more they are able to make ethical decisions. It is therefore evident that those on the age bracket of 41 and above 50 years combined then the industrial properties in the country will be efficiently managed since they have more experience and thus have greater and a broad knowledge base to deal with the complexities of integrating environmental auditing in property management.

4.2.5 Distribution by Environmental Licensing

Findings on the licensing of property managers to undertake environmental auditing is as presented in the cross tabulation below.

Table 11: Licensing of Property Managers

Environmental Auditor * Sector Cross tabulation				
		Sector		Total
		Public	Private	
Environmental Auditor	Yes	14	7	21
	No	2	162	164
Total		16	169	185

Source: Field Survey, 2022

From the table above only 7 (3.7%) property managers are licensed by National Environmental and Management Authority (NEMA) to undertake environmental audits. This is a huge gap

existing in this area and in order to ensure that compliance to the existing legal requirements, trainings and licensing of managers is highly required.

4.3 Findings on the Study Objectives

Findings from the study objectives are presented in subsections 4.3.1 to 4.3.3

4.3.1 Environmental Audits (EA) Procedures, Practices and Standards Employed in Management of Industrial Real Estate

The first objective sought to examine the environmental audit procedures, practices and standards employed in the management of industrial real estate by property managers. To answer the objective, the participants were required to indicate the appropriateness of the key components of environmental audits, awareness of the types of audit, application of the various environmental components and perceived benefits of the environmental audits. The summary of the descriptive findings is presented on the subsequent sections.

4.3.2 Components of Environmental Auditing

The participants were required to indicate the appropriateness of the four key components of environmental auditing in the Kenyan context. To determine the level of appropriateness, the respondents were required to rate them on a scale of 1 to 5 (1– Disagree 2 – Slightly disagree 3 – Agree 4 – Fairly agree and 5 – Strongly agree).

Table 12: Descriptive Statistics on Appropriateness of Components of Environmental Auditing

Components	D	SLD	A	FA	ST	Mea	Std.
					A	n	Dev

Pre- Audit	1	3	33	12	136	4.5	0.87
						1	9
Financial	0	0	17	25	143		0.63
						4.68	5
Regulatory and Compliance	0	0	15	50	120	4.57	0.640
Performance Audit	24	17	30	31	83	3.71	1.441

Source: Field Survey, 2022

From table 12, participants strongly agreed that financial audit was an appropriate component in environmental auditing as indicated by a mean of 4.68, regulatory and compliance was an appropriate component as indicated by a mean of 4.57, Pre-audit was an appropriate component as indicated by a mean of 4.51, while participants fairly agreed that performance audit was an appropriate component in environmental auditing as shown by a mean of 3.71.

To further answer the objective, the researcher sought to establish the combined level of appropriateness of the components of environmental auditing.

To determine the levels of appropriateness, the Likert scale was transformed into 3 levels. Since there were 4 statements, the highest possible score was 20 (4x5) and the lowest possible score was 1 (4x1). An individual's total score was derived from the addition of the total scores from all the statements. The scores ranging between 4 to 10 indicated low level of appropriateness, scores between 11 to 14 indicated moderate level of appropriateness and scores between 15 to 20 indicated high level of appropriateness. The findings are presented in table 4.5.

Table 13: Levels of Appropriateness of Environmental Auditing

			Min	Max	Mean	Std.
Levels of Appropriateness	Frequency	Percent				Dev
Moderate Level of appropriateness	11	5.9	12	20	17.47	2.070
High Level of appropriateness	174	94.1				
Total	185	100.0				

Source: Field Survey, 2022

From table 13, majority of the participants (94.1%) will indicate a high level of appropriateness, while 5.9% indicated a moderate level of appropriateness of the components of environmental auditing. The level of components appropriateness mean score was 17.47 (SD = 2.070), indicating that on average, the components had a high level of appropriateness in environmental auditing.

4.3.3 Application of Specific Types of Environmental Audits

Participants were further required to indicate the extent to which they applied the specific types of environmental audits on a scale of 1 to 4 (1-No extent, 2-Low extent, 3-Moderate Extent, 4-High Extent). The summary of findings is presented on table 14.

Table 14: Descriptive Statistics on application of Environmental Audits

Application of Environmental Audits	NE	LE	ME	HE	Mean	Std.
						Dev
Compliance/ Control Audit	2	6	65	112	3.55	0.616
Self or System Audit	1	16	95	73	3.30	0.645

Material Audit	6	20	80	79	3.25	0.777
Energy Audit	4	20	101	60	3.17	0.701
OSHA Audit	0	1	80	104	3.56	0.509
Waste Audit	4	19	98	64	3.20	0.706
Product Audit	15	13	42	115	3.39	0.932
Activity Audit	22	16	33	114	3.29	1.048
Management Audit	2	8	44	131	3.64	0.619
Property Transfer/Due diligence Audit	7	11	48	119	3.51	0.774
Water Audit	5	10	119	51	3.17	0.642
Engineering Audit	19	20	110	36	2.88	0.839
Associate Audit	35	24	57	69	2.86	1.117
Liability Audit	36	25	55	69	2.85	1.127

Source: Field Survey, 2022

As shown on table 15, participants indicated that management audit, occupational health and safety audit, control audit and property transfer/due diligence audit were applied to a high extent as indicated by a mean of 3.64, 3.56, 3.55 and 3.51 respectively. Risk management and mitigation as a driver for carrying out management, occupational health and safety and property transfer audits is evident. It is therefore necessary for property managers to ensure that the other types of audits are applied for example water and energy audits will enable firms save on costs spent on power and water during processing activities.

To further determine the level of application of environmental audits, the scale was transformed into 3 levels. Since there were 14 types of audits, the highest possible score was 56 (14x4) and the lowest possible score was 14 (14x1). An individual's total score was derived from the addition of the total scores from all the audit types. The scores ranging between 14 to 28 indicated low levels of application, scores between 29 to 42 indicated moderate level of application and scores between 43 to 56 indicated high level of application. The findings are presented in table 15.

Table 15: Levels of Audit Applications

Levels of Audit Applications	Frequency	Percent	Min Ma Mean Std.			
			x			Dev
Low level of Application	1	0.5	28	56	45.63	5.780
Moderate level of Application	47	25.4				
High level of Application	137	74.1				
Total	185	100.0				

Source: Field Survey, 2022

From table 15, majority of the participants (74.1%) indicated a high level of environmental audit applications, 25.4% indicated a moderate level of application, while only 0.5% indicated a low level of environmental audit application. The level of environmental audit application mean score was 45.63 (SD = 5.780), indicating that on average, the participants had a high level of environmental audit application which is on selected audits of management audit, occupational health and safety audit and property transfer audit. As above mentioned this is driven by the motivation to manage risks in the industrial properties as well as mitigate them.

4.4.4 Perceived Benefits of Environmental Audits

Participants were also required to indicate the benefits of using environmental audits in property management on a scale of 1 to 5 (1 – Disagree 2 – Slightly disagree 3 – Agree 4 – Fairly agree 5 – Strongly agree). The summary of findings is presented on table 16.

Table 16: Perceived Benefits of Environmental Audits

Benefits	D	A	FA	ST	Mea	Std.
	SLD			A	n	Dev
Enhances compliance with the environmental regulatory framework	0	0	3	1	181	4.96 0.263
Minimization of operational costs	0	0	3	1	181	4.96 0.263
Competitive advantage	0	0	12	1	172	4.86 0.498
Creates awareness of the environmental impacts	0	0	5	2	178	4.94 0.340
Improves company profile and reputation	0	0	8	1	176	4.91 0.413
Provides data to relevant lead agencies	0	0	8	1	176	4.91 0.413
Provides information during transfer of transactions	0	0	8	1	176	4.91 0.413

Source: Field Survey, 2022

From table 16, participants strongly agreed that environmental audits enhance compliance with the environmental regulatory framework, minimizes operational costs and creates awareness of the

environmental impact as indicated by a mean of 4.96, 4.96 and 4.94 respectively. Compliance purposes is a motivation for property managers to carry out environmental auditing of industrial properties and brings with it reduced conflicts with the authorities among other risks and losses that would result from non-compliance. On awareness creation as a benefit it also brings with it a lots of benefits including enhancing investors' confidence and improving the performance of the industries against ethical and business performance standards.

To further determine the level of perceived benefits of environmental audits, the scale was transformed into 3 levels. Since there were 7 statements, the highest possible score was 35 (7x5) and the lowest possible score was 7 (7x1). An individual's total score was derived from the addition of the total scores from all the statements. The scores ranging between 7 to 17 indicated low perceived benefit, scores between 18 to 24 indicated moderate perceived benefit and scores between 25 to 35 indicated high perceived benefit. The findings are presented in table 17.

Table 17: Levels of Perceived Benefit of Environmental Audits

Levels of Perceived Benefits	Frequency Percent		Min	Ma	Mean	Std.
			x		Dev	
High level of Benefit	185	100	25	35	34.45	1.716
Total	185	100.0				

Source: Field Survey, 2022

From table 17, 100% of the participants indicated a high level of perceived benefits of environmental audits. The level of environmental audit benefit mean score was 34.45 (SD = 1.716), indicating that on average, the participants indicated a high level of perceived benefits of environmental audit. The benefits can be summarized into four major categories, promoting compliance and promoting sustainable development, enhancing ethical and business performance

-thus good reputation and competitive advantage for compliant firms, improves investors' confidence and lastly helps in risks management and mitigation.

4.4.5 Impacts of Environmental Audits (EA) on the Optimal Operation of the Industrial Real Estate

The second objective sought to evaluate the impact of environmental audits on the optimal operation of industrial real estate. To answer the objective, participants were first required to indicate their level of agreed on statements relating to the operation of industrial real estate on a 5 point Likert scale (1-Strongly disagree, 2-Disagree, 3- Not sure, 4-Agree, 5-Strongly agree). The summary of the descriptive findings is presented on table 18.

Table 18: Descriptive Statistics on Operation of Industrial Real Estate

Operations	SD	D	N	SA	Mea	Std.
				A	n	Dev
Industrial property is located in an area permitted or zoned to entail industrial use	5	2	6	19	15	4.69 0.81
Industrial property management follows a predetermined management system.	0	2	1	10	17	4.90 0.40
An industrial property manager must be attentive enough to ensure physical, functional and economic performance of the property	0	2	1	10	172	4.98 0.146
The size of an industrial estate influences the management plan and methods to be	0	0	0	4	181	4.93 0.404

employed that the property manager has to consider in either a large or a small industrial estate

Property manager should ensure that an industrial estate maintains compliance to state regulatory requirements 0 0 0 1 184 4.99 0.074

Source: Field Survey, 2022

From table 18, participants strongly agreed that a property manager should ensure that an industrial estate maintains compliance to state regulatory requirements as shown by a mean of 4.99, an industrial property manager must be attentive enough to ensure physical, functional and economic performance of the property as shown by a mean of 4.98 and that the size of an industrial estate influences the management plan and methods to be employed that the property manager has to consider in either a large or a small industrial estate as shown by a mean of 4.93.

4.4.6 Challenges Hampering the Effective Application of Environmental Audits (EA) by Property Managers in Industrial Real Estate

Objective three sought to examine the challenges hampering the effective application of environmental audits by property managers in industrial real estate. To establish the challenges, the participants were required to rate statements on the various challenges facing property managers on a scale of 1 to 5 (Disagree-1, Slightly Disagree-2, Agree -3, Fairly Agree-4, strongly agree-5). The summary of the descriptive findings is presented on table 19.

Table 19: Challenges Hampering Applications of Environmental Audits

Challenges	D	SLD	A	FA	STA	Mean	Std. Dev
Resistance by corporates to voluntary disclose environmental aspects	44	11	64	18	48	3.08	1.467
Unclear understanding of roles in environmental auditing	15	14	103	16	37	3.25	1.110
Site complexity	30	21	76	16	42	3.10	1.325
High costs of environmental audit/ limited resources	6	4	36	49	90	4.15	1.021
Limited resources- experienced auditors	42	18	46	34	45	3.12	1.470
The Increased Demand and Complex Subject Matter	4	1	76	50	54	3.81	0.941
Complexity of Integrating Auditing in Management Tools	9	5	55	45	71	3.89	1.105
Deficiencies and lack of Consistency in the Audits	5	0	48	48	84	4.11	0.974
Difficulties in finding a reliable consultant in environmental related topics are also a challenge affecting environmental auditing	5	1	51	56	72	4.02	0.974

Existence of information gap in previous environmental audits with poorly kept data poses a limitation to subsequent audits where one can track changes over time	0	6	55	41	83	4.09	0.934
Biasses of the government towards multinational corporates in the sector thus failing to enforce laws. This affects the managing authorities to fully undertake its mandate	0	2	38	42	103	4.33	0.837
Corruption by auditors and other relevant stakeholders in the field. This leads to not charging the non-compliant firms or having them pay very low fines	1	3	35	50	96	4.28	0.864
Conflict of interests	1	0	38	50	96	4.30	0.830

Source: Field Survey, 2022

From table 19, participants fairly agreed that the challenges hampering application of environmental audits included; biasses of the government towards multinational corporates in the sector thus failing to enforce laws as shown by a mean of 4.33, conflict of interest as shown by a mean of 4.30, corruption by auditors and other relevant stakeholders in the field as shown by a mean of 4.28 and high costs of environmental audit as shown by a mean of 4.15. The reasons given above explain clearly why there has been low implementation of environmental auditing the country. There are increased cases of environmental impacts due to the actions of the industries; illegal discharge of poisonous effluents, increased dumping of solid wastes, poor working conditions and generally low efficiency of the processing system. This is why National

Environmental and Management Authority (NEMA) is forced to close down non-compliant industries.

To further answer the objective, the researcher sought to find out the remedies for enhancing application of environmental audits in industrial property management. The participants were required to rate their level of agreement on the provided remedies on a scale of 1 to 5 (Disagree-1, Slightly Disagree-2, Agree -3, Fairly Agree-4, strongly agree-5). The summary of the descriptive findings is presented on table 20.

Table 20: Remedies for Enhancing Application of Environmental Audits

Remedies	D	SLD	A	FA	STA	Mean	Std. Dev
All the stakeholders need to clearly understand the process and how it contributes to environmental management	0	0	6	1	178	4.93	0.362
The regulator should also consider offering incentives to industrial enterprises who voluntarily carry out self- audits	0	0	6	4	175	4.91	0.380
Awareness creation and capacity building of all relevant stakeholders	0	0	6	1	178	4.93	0.362
Property managers should understand how important and relevant environmental auditing to their career is	0	0	1	1	183	4.98	0.164

Owners and property managers of industrial enterprises should cease perceiving environmental audits as meaningless expense and a limiting factor to development	0	0	4	0	181	4.96	0.292
Property manager should form part of the team of professionals to work in collaboration with the regulators and other lead agencies	2	0	3	6	174	4.89	0.510

Source: Field Survey, 2022

As shown on table 20, participants strongly agreed that property managers should understand how important and relevant environmental auditing to their career is as shown by a mean of 4.98, owners and property managers of industrial enterprises should cease perceiving environmental audits as meaningless expense and a limiting factor to development shown by a mean of 4.96 and all the stakeholders need to clearly understand the process and how it contributes to environmental management as shown by a mean of 4.93. On this note the property managers will be able to develop environmental management strategies and systems that will in a clear way define all the environmental responsibilities and impacts of their properties, develop an environmental policy which will outline the roles and responsibilities of actors, ensure considerations of environmental issues during decision making process, offer their stakeholders a sound management of all risks and liabilities and ensure there are mechanisms for monitoring and evaluation, (Real Property and Materiel Policy Directorate, 2011).

4.4 Summary

Environmental auditing in the management of industrial properties in Kenya has been embraced by some managers however there is low implementation. The driving force for carrying out these

audits appears to be solely driven by meeting the legal obligations and selected perceived benefits to their stakeholders for example employees working in the industries that why occupational health and safety was among the audits with high extent of application. Interestingly the participants' reported that property transfer audits were also highly applied since the perceived benefits to the parties is to achieve a property transfer at market value.

Looking at the number of audits performed in the last five years, it was evident that not all carried out their audits annually and thus the regulator is biased on enforcing the law on environmental issues, with the regulator punishing a few. This is emphasized by the challenge that corruption runs deep in this field and thus discouraging those property managers who genuinely want to embrace it. The current challenges facing application of the environmental auditing as above mentioned can be strategically dealt with in collaboration with the regulator so as to improve on implementation, accountability and transparency as well as develop more policies and standards on environmental issues. The regulator must not be biased and must strive to have a concrete regulatory standards that are to be adopted by all stakeholders.

CHAPTER FIVE

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The main goal of this study was to examine the application of Environmental Audits (EA) in industrial property management in Kenya detailing how it affects the general performance and operations of the industrial real estate in Nairobi. The quest for industrialization in the country is on an upward trend and it is impacting negatively on the quality of the environment as it strives to meet the needs of the consumers. Indeed, as the economy expand and sophistication increases the more negative impacts are being felt threatening opportunities of promoting sustainable development while fronting wealth creation. The key master plan here is sustainability which promotes equitable use and distribution of opportunities between the present and future generations through implementation of the aspects of environmental management and in this case environmental auditing. The study revealed that application of environmental auditing on industrial property management improves their ethical and business performance. Environmental auditing from its definition it is a regular, independent, objective, systematic and documented evaluation of how an organization is impacting the environment. The evaluation should aim at providing ways to safeguard the environment and should not be entirely for compliance purposes but also help them manage and mitigate risks in industrial real estate, improve their investors' confidence among other benefits.

With the various policy documents in Kenya supporting and enhancing industrialization in order to transform the structure of the economy, there is an urgent call for property managers be part of this transformational plan. Their role is to ensure that they create wealth for their employers as well as safeguard the environment by fully implementing environmental auditing. These policies aim at creating a globally competitive and prosperous country with a highly sophisticated industrial

development network, hence transforming Kenya into a newly industrializing, middle-income country by providing a high quality of life to all citizens in a clean and secure environment (Sessional Paper No. 9, 2012). Providing a high quality of life to all citizens and a secure environment will come by if property managers integrate environmental management policies and systems in to their master property management plan.

The management plan should encompass goals geared towards rational utilization of natural resources as well as impacts mitigation, (Yashin, et al , 2019). The objectives for environmental auditing therefore should include strategies to analyze and assess all the environmental aspects in the industrial economy. Additionally, the framework set should be able to evaluate the performance of various environmental management systems employed, clearly provide estimates of economic damage from pollution, estimate resource use and provide suggestions on how to reduce wastage and also improve risk assessment and management. Property managers therefore as the professionals entrusted in managing industrial properties must embrace environmental auditing. Undoubtedly, when applied in managing industrial property, environmental auditing results to significant advantages including increasing attractiveness of manufactured goods and services both at local and international markets, improves investors' confidence, enhances risk management, improves profits due to resource-saving strategies, shield the firms from scandals supports environmental protection and eases loan application for industries.

In order to achieve the goal of the study the following objectives were formulated:

1. To examine the Environmental Audits (EA) procedures, practices and standards employed by property managers in management of industrial real estate.
2. To evaluate impacts of Environmental Audits (EA) on the optimal operation of the industrial real estate.

3. To examine challenges hampering the effective application of Environmental Audits (EA) by property managers in industrial real estate.

For data collection a questionnaire was developed to enable the researcher achieve the above set objectives and targeted 211 respondents comprising of property managers and NEMA officials. A response rate of 87% was achieved and data collected was used for analysis which informed the findings and discussions. In this chapter comprises therefore of the findings, conclusions and recommendations.

5.2 Findings

The findings of the study are summarized as follows:

1. Majority of the respondents were professionals in the field of property management represented by 55.7%.
2. Majority of the respondents had above 5 years' work experience and thus ranked to be adequately skilled in this field.
3. 56.8 % of the respondents had undergraduate degree as their highest level of education with 22.2% having post graduate studies.
4. Majority of the participants were aged between 30-40 years and those between 41-over 50yrs coming second.
5. Most of the participants strongly agreed that financial audit was an appropriate component of environmental auditing amongst regulatory and compliance audit, pre-audit and performance audit. 94.1% of the participants indicated a high level of appropriateness of the components in environmental auditing.
6. Participants indicated that management audit, occupational health and safety audit, control audit and property transfer/due diligence audit were applied to a high extent as indicated

by a mean of 3.64, 3.56, 3.55 and 3.51 respectively. This is driven by such reasons as compliance purposes and perceived benefits to different stakeholders. Additionally, it was evident that the participants had a high level of environmental audit application but on the selected audits.

7. Respondents strongly agreed that environmental audits enhance compliance with the environmental regulatory framework, minimizes operational costs and creates awareness of the environmental impact as indicated by a mean of 4.96, 4.96 and 4.94 respectively. Generally, respondents indicated that there is high level of perceived benefits upon implementing environmental audits.
8. Respondents strongly agreed that a property manager should ensure that an industrial estate maintains compliance to state regulatory requirements and an industrial property manager must be attentive enough to ensure physical, functional and economic performance of the property.
9. Participants fairly agreed that the challenges hampering application of environmental audits included; biases of the government towards multinational corporates in the sector thus failing to enforce laws, conflict of interest, corruption and high costs of environmental audits.
10. Participants strongly agreed that property managers should understand how important and relevant environmental auditing is to their career is as shown by a mean of 4.98, owners and property managers of industrial enterprises should cease perceiving environmental audits as meaningless expense and a limiting factor to development shown by a mean of 4.96 and all the stakeholders need to clearly understand the process and how it contributes to environmental management as shown by a mean of 4.93.

5.3 Conclusion

This study used a descriptive research design and did an in-depth research on application of environmental audits in industrial property management in Kenya. As guided by the objectives of the study the findings ensured that each research question was adequately answered. The study proved that industries experience improved performance when environmental audits are effectively implemented by all the relevant stakeholders. As earlier stated in literature review several factors play a key role in motivating property managers into undertaking environmental audits. The most evident motivation factor evident was to meet compliance of the legal provisions and enhance risk management. The differing motives for environmental audits significantly influence the property managers on which audits ought to be performed. Other factors on why organizations carry out environmental auditing are cost reduction, liability reduction and public relations purposes. Frisch, (1996), notes that many companies irrespective of their sector do environmental auditing to improve their compliance with the legal tenets set to regulate environmental management. Something that started as early as in the early 60's and 70's when enactment of such laws started as well as their enforcement as detailed in the literature review. By and large, it can be concluded that a property manager will be driven to do a specific environmental audit by the pressure to achieve the perceived benefits. The findings revealed this and it was evident that the respondents strongly agreed that improving compliance thus evading penalties for non-compliance, reducing operational costs to cut down unnecessary costs and enforcement of cost-effectiveness measures such as cost energy and water conservation and waste reduction among others. A commonly used ISO 14000 standards and other environmental management standards enable organizations prove that their businesses are operating within the environmentally accepted standards that the market has set. Today organizations are tied towards improving their ethical and business performance guided by the need to support sustainability by considering the

needs of present and future generations. From the finding it was evident that property transfer audit was among the most common type of audit being carried out by property managers. The explanation to this is that organizations always target to reduce liabilities associated with property ownership. Any buyer or seller will always perform property transfer audit in order to assess any potential liabilities, therefore liability reduction is also a motivation for organizations to do environmental audits. One can also conclude that the benefit of enhancing the operation of the industrial real estates through improved performance and increased quality of management is another motivating factor to do environmental audits.

The results show that four key challenges highly affect effective implementation of environmental audits in Kenya. From the analysis they include biases of the government towards multinational corporates in the sector thus failing to enforce laws, conflict of interest, corruption by auditors and other relevant stakeholders in the field and high costs of environmental audits. Other challenges significantly leading to low implementation, among them include low training and licensing of environmental auditing, audit site complexity, lack of adequate auditors/consultants, resistance by corporates to voluntarily disclose environmental negative aspects from their premises, lack of consistency in the audits and existence of information gaps thus affecting track on changes. Property managers should pay attention in each and every challenge and propose measures to handle each as discussed in the findings.

The researcher has accomplished the objective of the study. An examination into how environmental auditing in Kenya's industrial real estate is being applied taking a clear look into procedures, practices and standards has been done. Potential impacts of the environmental audits on the optimal operation of the industrial real estate has been identified and evaluated. Lastly significant challenging factors to the effective application of environmental audits have been

identified and remedies proposed. Of importance both from the literature review and findings is that application of the Environmental Audits leads improved performance of the industrial estates.

5.4 Recommendations

In order to ensure quality audits and that the industries continue to enjoy an upward trend in their performance as the country continue to industrialize, the following recommendations are hereby proposed;

- 1) The property managers in the industrial real estate could develop an annual training program in collaboration with National Environmental Management Authority and any other relevant bodies on Environmental Audits and emerging issues in the field.
- 2) The authority together with relevant bodies could review EMCA act to incorporate issuance of special licenses to property managers to act as environmental auditors who shall be supervised by lead auditors in this field.
- 3) All the stakeholders need to clearly understand the process and how it contributes to environmental management.
- 4) The regulator should consider offering incentives to industrial enterprises who voluntarily carry out self- audits, this will motivate property managers to always be compliant.
- 5) Owners and property managers of industrial enterprises should cease perceiving environmental audits as meaningless expense and a limiting factor to development and instead shall provide adequate resources required to run the audits
- 6) Property manager should form part of the team of professionals to work in collaboration with the regulators and other lead experts.
- 7) Harmonization of environmental audits in the economic development plans of the country in order to have a streamlined implementation of environmental management strategies and thus sustainable development.

5.5 Summary

From the discussion above Environmental Audits acts as an ongoing activity in management as well as monitoring of the operations being undertaken in industrial properties. However, in the country which is a developing country, priority is given to the economic development plans and activities thus leading to low implementation. Implementation is only seen only by those affected by an environmental impact or those being found to be non-compliant. From the discussion majority of the respondents agreed that Environmental Audit has a crucial role in enhancing environmental management as well as ensuring accountability, sustainability and transparency of all industrial firms operating in any environment. Of emphasis is that environmental audits are a preventive mechanism that property managers need to embrace in their management plans and risk management strategies especially in this rapidly developing industrial sector in Kenya. The property managers need to understand that once implemented environmental audits contribute towards an improved performance of the industrial estates under their care and eventually contributes to harmonization of both environmental issues with the economic development plans without prioritizing economic development only. This way sustainable development is achieved and a well-established corporate culture of adopting environmental audits in management of industrial properties is created.

5.6 Areas of Further Research

The researcher recommends that further research be undertaken in the following areas:

1. Emergence of sustainability auditing and corporate social responsibility for industrial premises.
2. Investigation of if environmental auditing is a voluntary responsibility of property managers or a regulatory requirement in Kenya

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APPENDIX I: QUESTIONNAIRE



Questionnaire for the Stakeholders in Public and Private Sectors

Application of Environmental Audits in Industrial Property Management in Kenya: A Case Study of Nairobi. A Research Project Submitted in Partial Fulfilment of the Requirements for the Award of the Degree of Master of Arts in Valuation and Property Management, Faculty of Built Environment and Design, University of Nairobi, Kenya

This questionnaire is aimed at gathering information on the application of environmental audits (EA) in industrial property management.

Please take your time to go through each question and answer it as thoroughly as you can. The information gathered will be used for academic research purposes only.

Please read the questions and answer them by either ticking or writing the responses on the space provided.

1. SECTION A: BACKGROUND INFORMATION

Sector	Public <input type="checkbox"/> Private <input type="checkbox"/>
Qualifications	Project management <input type="checkbox"/> Architect <input type="checkbox"/> Quantity surveyor <input type="checkbox"/> Engineering <input type="checkbox"/> Any Other <input type="checkbox"/>
If any other	Please Specify
Work experience	0-5yrs <input type="checkbox"/> 6-10yrs <input type="checkbox"/> 11-15yrs <input type="checkbox"/> 16-20yrs <input type="checkbox"/> 20 and above <input type="checkbox"/>
What is your highest educational qualification?	a. <input type="checkbox"/> Certificate b. <input type="checkbox"/> Diploma c. <input type="checkbox"/> Undergraduate degree d. <input type="checkbox"/> Post Graduate degree
Licencing	Are you a licensed environmental auditor ?
5. Kindly indicate your age bracket	a. <input type="checkbox"/> Below 30 years b. <input type="checkbox"/> Between 30-40 years c. <input type="checkbox"/> Between 41-50 years

	d. <input type="checkbox"/> Over 50 Years
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SECTION B: MANAGEMENT OF INDUSTRIAL REAL ESTATE BY PROPERTY MANAGERS

1. Which of the following best describes your role in the built environment?

Consultant	
Contractor	
Civil servant (County government)	
Civil servant (National government)	
Developers	

2. Kindly indicate by ticking (√) the level to which you agree or disagree with the statements regarding industrial property management. (Where **1 = Strongly Disagree**, **2 = Disagree**, **3 = Not Sure**, **4 = Agree** and **5 = Strongly Agree**.)

No	Statement	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
		1	2	3	4	5
1.	Industrial property is located in an area permitted or zoned to entail industrial use.					
2.	Industrial property management follows a predetermined management system.					
3.	An industrial property manager must be attentive enough to ensure physical, functional and economic performance of the property.					
4.	The size of an industrial estate influences the management plan and methods to be employed that the property manager has to consider in either a large or a small industrial estate.					
5.	Property manager should ensure that an industrial estate maintains compliance to state regulatory requirements.					

Self-audit -an analysis conducted internally by any official not involved in the daily transactions of the entity or by an independent third party.		
Compliance audit - an independent evaluation of a company's environmental legal requirements and an assessment of how the company complies with those requirements.		
Energy audit –the analysis of energy consumption in the industrial process being undertaken targeting energy saving strategies.		
Material audit- Provides for evaluation of material usage (raw materials) in an industrial enterprise by collecting and analysing data on quantity and cost of materials used per unit		
Occupational, Health and Safety Audit- it focuses on taking cognizance of potential areas of health hazards and accident occurrence information.		
Waste Audit- ensure efficient management of wastes generated by the industrial property and thus the property manager strives to devise ways of minimizing wastes, recycling wastes or entirely eliminating the wastes.		

<p>Water Audit- to assess water consumption rates at different sources.</p>		
<p>Property transfer/ Due Diligence Audit- identifies any potential liabilities which may affect the market value of the industrial property to be transferred</p>		
<p>Liability Audit- aim at evaluating possible impacts caused by an organization arising from its projects relating to land and buildings acquisition</p>		
<p>Associate Audit- This is conducted to evaluate and monitor environmental management of business partners to the industrial company for example suppliers, investors, marketing agents etc. the partnership arises from either supplying raw materials to the industries, selling goods manufactured or in handling of by-products including wastes.</p>		
<p>Management Audit- assess the entire management system including its policies and standards and evaluates the effectiveness and efficiency of the set management plans and strategies to attain the set goals of the organization.</p>		
<p>Compliance/ Control Audit- ensures conformity to the environmental management plan of a project and to certify its sufficiency.</p>		

3. Among the industrial properties you are managing, how many Environmental Audits have you undertaken within Nairobi County in the last 5 years?

Period (Numbers)	Tick Here
0 - 5	
5 - 10	
10 - 15	
15 - 20	
20 and Above	

4. To what extent have you applied the following types of environmental audits mentioned in 1 above?

Type of Audit	No Extent	Low extent	Moderate Extent	High extent
Compliance/ Control Audit				
Self or System Audit				
Material Audit				
Energy Audit				
Occupational, Health and Safety Audit				
Waste Audit				

Product Audit				
Activity Audits				
Management Audits				
Property transfer/ Due Diligence Audit				
Water Audit				
Engineering Audit				
Associate Audit				
Liability Audit				

5. The following are benefits of using environmental audits in the industrial property management? On a scale of 1 to 5, rate them; 1 – Disagree 2 – Slightly disagree 3 – Agree 4 – Fairly agree 5 – Strongly agree

Benefits	1	2	3	4	5
Enhances compliance with the environmental regulatory framework					
Minimization of operational costs					
Competitive advantage					
Creates awareness of the environmental impacts					

Improves company profile and reputation					
Provides data to relevant lead agencies					
Provides information during transfer of transactions					

SECTION D: CHALLENGES HAMPERING THE APPLICATION OF ENVIRONMENTAL AUDITS (EA)

6. The following are some of the challenges experienced while applying environmental audits in industrial property management? Rate them on a scale of 1 to 5; 1 – Disagree 2 – Slightly disagree 3 – Agree 4 – Fairly agree 5 – Strongly agree

Challenge	1	2	3	4	5
Resistance by corporates to voluntary disclose environmental aspects					

Unclear understanding of roles in environmental auditing					
Site complexity					
High costs of environmental audit/ limited resources					
Limited resources- experienced auditors					
The Increased Demand and Complex Subject Matter					
Complexity of Integrating Auditing in Management Tools					
Deficiencies and lack of Consistency in the Audits					
Difficulties in finding a reliable consultant in environmental related topics are also a challenge affecting environmental auditing					
Existence of information gap in previous environmental audits with poorly kept data poses a limitation to subsequent audits where one can track changes over time					
Biasses of the government towards multinational corporates in the sector thus failing to enforce laws. This affects the managing authorities to fully undertake its mandate					
Corruption by auditors and other relevant stakeholders in the field. This leads to not charging the non-compliant firms or having them pay very low fines					
Conflict of interests					

7. In your own opinion, what are some of the impacts of environmental audits on industrial property management?

a) _____

b) _____

c) _____

d) _____

e) _____

8. The following are some remedies for enhancing application of EA in industrial property management in Kenya. Rate them on the scale below. Where 1=disagree, 2=slightly disagree, 3=agree, 4=fairly agree, 5= strongly agree.

No	Statement	Disagree	Slightly Disagree	Agree	Fairly Agree	Strongly Agree
		1	2	3	4	5
1.	All the stakeholders need to clearly understand the process and how it contributes to environmental management.					
2.	The regulator should also consider offering incentives to industrial enterprises who voluntarily carry out self- audits					

3.	Awareness creation and capacity building of all relevant stakeholders.					
4.	Property managers should understand how important and relevant environmental auditing to their career is.					
5.	Owners and property managers of industrial enterprises should cease perceiving environmental audits as meaningless expense and a limiting factor to development.					
6.	Property manager should form part of the team of professionals to work in collaboration with the regulators and other lead agencies.					

9. In your own opinion, what are some of the remedies to the challenges encountered in the application of environmental audits on industrial property management?

- a) _____
- b) _____
- c) _____
- d) _____
- e) _____

Thank you for taking your time to fill in the questionnaire.