

**KENYATTA UNIVERSITY**

**SCHOOL OF ENVIRONMENTAL STUDIES**

**DEPARTMENT OF ENVIRONMENTAL PLANNING AND MANAGEMENT**

**Evaluation of Occupational Safety and Health in Construction Projects; in Nairobi County**

Submitted by

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**Research Project**

**Submitted in partial fulfillment of Bachelor's Degree course in Environmental Planning  
and Management**

April, 2014

**DECLARATION**

I confirm that this is my original work and has not been presented for award of a degree in any university

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**DECLARATION BY SUPERVISORS**

We confirm that the research project was carried out by the student and submitted for examination with our approval as University Supervisors

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## **DEDICATION**

This project is dedicated first to the Almighty God for giving me his grace, opportunity and strength to do this work.

I also dedicate this project to my mother and to my brother for their unfailing and unshakable support and prayers throughout my life. In addition, special dedication goes to my friends for their encouragement and support

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## **LIST OF ABBREVIATION**

<b>KU</b>	Kenyatta University
<b>KAA</b>	Kenya Airports Authority
<b>JKIA</b>	Jomo Kenyatta International Airport
<b>AVIC</b>	Aviation International Corporation
<b>OSHA</b>	Occupational Health and Safety Act
<b>OSH</b>	Occupational Safety and Health
<b>KURA</b>	Kenya Urban Roads Authority
<b>CRBC</b>	China Road and Bridge Company
<b>ICPAK</b>	Institute of Certified Public Accountants Kenya
<b>KPLC</b>	Kenya power and Lightning Company
<b>WIBA</b>	Work Injury Benefit Act

## **OPERATIONAL DEFINITION OF TERMS**

**Occupational Health**-Is the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations by preventing departures from health, controlling risks and the adaptation of work to people, and people to their jobs

**Occupation**-Every employment, business, calling or pursuit over which the legislature has jurisdiction

**Worker**-A person engaged in an occupation.

**Prime Contractor**- The contractor, employer or other person who enters into agreement with the owner of the work site to be the prime contractor, or the owner of the work site if no agreement exists

**Biological monitoring**-A planned programme of periodic collection and analysis of body fluid, tissues, excreta or exhaled air in order to detect and quantify the exposure to or absorption of any substance or organism by persons

**Machinery**-Any article or combination of articles assembled, arranged or connected and which is used or intended to be used for converting any form of energy to performing work, or which is used or intended to be used, whether incidental thereto or not, for developing, receiving, storing, containing, confining, transforming, transmitting, transferring or controlling any form of energy

**Medical Surveillance**-A planned programme of periodic examination, which may include clinical examinations, biological monitoring or medical tests of persons employed by a designated health practitioner or by an occupational medical practitioner

**Workplace**-Any land, premises, location, vessel or thing, at, in, upon, or near which, a worker is, in the course of employment

**Environment**-Natural and physical habitat and the relationship of people with that habitat including physical, biological, cultural, social, and economic factors in a given area

**Hazard-**A situation, condition, or behavior that has the potential to cause a danger to the health or safety of a worker

**Work Site-**A location where a worker is or is likely to be engaged in an occupation which includes any vehicle used for work purpose

**Director-**Director of Occupational Safety and Health Services

## **CHAPTER ONE**

### **1.0 INTRODUCTION OF THE STUDY**

#### **1.1 Introduction**

This chapter entails introduction to the study, statement of the problem, study questions, objectives of the study, justification of the study, significance of the study and the conceptual framework.

The construction industry is formed of establishments primarily engaged in the building of structures or engineering projects like highways and utility systems; establishments primarily engaged in the preparation of sites for new construction and establishments primarily engaged in sub-dividing land for sale as building sites are also included in this sector.

The history of OSH in Kenya dates back to 1950, with the introduction of the Factories Act.

In 1990 this Act was amended to the Factories and Other Places of Work Act, to enlarge its scope. The Occupational Safety and Health Act (OSHA) and the Work Injury Benefits Act (WIBA) were enacted in 2007, and are now the principal laws that govern OSH in the country.

There are other laws that touch on OSH, but they are managed by other government ministries and corporations (International Labour Organization, 2013).

In Kenya, OSH is managed by the Directorate of Occupational Safety and Health Services (DOSHS). DOSHS is the designated national authority for collection and maintenance of a database, and for the analysis and investigation of occupational accidents and diseases, and dangerous occurrences. The Directorate's policy and legal mandate are provided by the National Occupational Safety and Health Policy of 2012, OSHA 2007, and WIBA 2007 (International Labour Organization, 2013).

The body responsible for reviewing national OSH legislation, policies and actions is the National Council for Occupational Safety and Health (NACOSH), whose composition includes the Federation of Kenya Employers (FKE) and the Central Organization of Trade Unions (Kenya) (COTU-K) (International Labour Organization, 2013).

The National Construction Authority Act, Number 41 of 2011 was set to streamline, overhaul and regulate the construction industry in Kenya. This is because the industry has for many years suffered poor legislative framework and has been dominated by quacks and unqualified persons.

The industry has also suffered a lot of competition from foreign contractors who are seen to offer cheaper and more quality work. The new Act is a win for the public as it guarantees public safety. All contractors must be registered with the Authority meaning that shady contractors and quacks will be locked out of the industry. It is an offence to carry out any construction work without first having been registered with the Authority ([www.nca.go.ke](http://www.nca.go.ke), 04/01/2014).

The Act contains provisions on quality and safety standards of any construction work. The Authority is also charged with passing regulations from time to time on the quality of construction offered by contractors. The Act will also play a big role in streamlining the quality of construction work within the country. The Authority has wide ranging powers including accrediting training institutions that offer courses related to construction.

The new Act is also a win for local contractors as some of its provisions serve as a protective mechanism to the local industry. The local contractors face a lot of competition from foreign entrants most of whom undercut their charges. Bilateral agreements between Kenya and other governments, especially relating to construction, have opened the market to a lot of competition. The new Act has some carefully worded provisions whose net effect would be to guard local contractors from unfair competition from foreign contractor ([www.nca.go.ke](http://www.nca.go.ke), 04/01/2014).

In Kenya, Part V11 section 55 of the OSHA, 2007 requires that all plant machinery and equipment whether fixed or mobile for use either or as a workplace shall only be used for work which they are designed for and be operated by a competent person. Part V11 section 58(1) of this act provides that every dangerous part of any machinery other party prime movers and transmission shall be securely fenced provided so far as the safety of a dangerous part of any machinery cannot by a reason of any nature of the operation secured by means of a fixed guard, the requirement of this subsection shall be deemed to have been complied with if a device is provided which automatically prevents the operator from coming with the part. This applies to erection of safeguards at the edge of building while being constructed and safeguarding of saw machines used in construction.

Furthermore, the law prohibits any person in construction industry from being employed at any machine or in any process, being a machine or process liable to cause ill health or bodily injury, unless he has been fully instructed as to the dangers likely to arise in connection therewith and the precautions to be observed and; has received sufficient training in work at the machine or in the processor and is under adequate supervision by a person who has thorough knowledge and experience of the machine or process.

Construction work done may include new work, additions, alterations, or maintenance and repairs. Activities of these establishments generally are managed at a fixed place of business, but they usually perform construction activities at multiple project sites. Production responsibilities for establishments in this sector are usually specified in contracts with the owners of construction projects or contracts with other construction establishments (subcontracts).

A careful management, development and operation should be enhanced and looked into if they are to contribute positively to organizational performance, and be retained in the long-term. Bennett (1991) recognized this when he identified the need for ‘a commitment to people in construction industry’, as one of the key drivers required to promote change and improvement within the industry. He called for a wider commitment to sustainable development and resource use plan as part of his ‘Rethinking Construction’ report, (Bennett, 1991). However, the susceptibility of the industry to economic fluctuations makes the applicability of many of the established mechanisms for developing human environment questionable.

Challenges facing construction firms in Kenya include the occupational health and safety. Construction workers build our roads, houses and workplaces and repair and maintain our nation's physical infrastructure. This work includes many hazardous tasks and conditions such as work at height, excavations, noise, dust, power tools and equipment, confined spaces and electricity.

According to United States Department of Labor employers are responsible for providing a safe and healthful workplace for their employees. The government role is to assure the safety and health of workers by setting and enforcing standards, providing training, outreach and education, establishing partnerships, and encouraging continual improvement in workplace safety and health.

Indeed, best practices used may include daily safety inspections conducted at the site and any hazards identified can be corrected immediately. Inspection results can be discussed at safety committee meetings. Each employee should know that safety issue would be dealt with promptly when it came to management's attention. Additionally, an on-site incentive can encourage safe workplace practices (Choudhury, 2004)

## **1.2 Statement of the Problem**

Construction workers face a variety of hazards, particularly safety problems such as falls, slips, trips, cuts, and being hit by falling objects. There are also dangers from working high up, often without adequate safety equipment, musculoskeletal problems from lifting heavy objects, as well as the hazards associated with exposure to noisy machinery.

Despite the fact that construction industry has brought the Kenya economy to high scales, there has been concern over occupational health and safety of those working in the industry. At the law courts, there have been cases of injury of both fatal and none fatal to the employees working at the construction sites.

Safety issues have gained vital importance throughout the construction industry. Many construction companies around the world are implementing safety, health, and environmental management systems to reduce injuries, eliminate illness, and to provide a safe working environment in their construction sites.

Construction managers and professionals require careful management and development if they are to contribute positively to organization performance and effective implementation of its projects with high long-term retention of profits and workplace safety. In spite of the successful approach to expansion projects in Kenya, a myriad of challenges is facing its implementation and assuming the important factor of OSH. This involves environmental sustainability of the project where strive to achieve the set long term goals is hacked by short term economic consideration.

In a construction industry employees are involved in falls from roof tops, floors, machinery cut, exposure to dust and paint and accidents in operation of machinery. These problems that are being encountered in Environment and Safety Department have posed a challenge in occupational, health and safety in construction.

Therefore, the main goal of this study is to examine the factors behind effects on occupation health and safety, their present status, required changes and recommendation to change in order to safeguard the employees, employers, client and the government handling fatal and none fatal accidents that affect the construction industry workers.

### **1.3 Research Questions**

1. To what extent are legal requirements for building construction enforced at the construction projects in Nairobi County?
2. Do the contractors have effective safety polices for the site?
3. Is safety training conducted to the employees in the construction sites?
4. How are issues pertaining to safety and health monitored and evaluated in construction sites?

### **1.4 Objectives of the Study**

- i. To examine to what extent are legal requirements for building construction enforced at the construction projects in Nairobi County
- ii. To assess the contractors safety polices in construction sites
- iii. To find out if safety training is conducted to the employees in the construction sites
- iv. To examine how issues pertaining to safety and health are monitored and evaluated in construction sites

### **1.5 Premises of the study**

- i. Legal requirements for building construction are enforced at the construction projects in Nairobi County
- ii. Contractors do not have safety polices in construction sites
- iii. Safety training is conducted to the employees in the construction sites
- iv. Issues pertaining to safety and health are not monitored and evaluated in construction sites

## **1.6 Justification of the study**

Due to developers facing a variety of risks when they undertake a construction project, they should be concerned with potential risks to their employees, tenants, or property, but they must also be concerned about the risks that the contractor bears.

In this study there shall be consideration of construction sites in Nairobi County which will assist to carry on with data collection. They include proposed Terminal 4 construction at JKIA, Proposed ICPAK Complex along Thika Superhighway, in Nairobi, Proposed residential houses for KPLC retirement benefit scheme at Karen, Proposed Southern bypass at Nairobi, Proposed University Towers, for University of Nairobi, Kenyatta University Teaching Research and Referral Hospital.

OSH is a critical item on all construction projects for multiple reasons including protecting the welfare of employees, providing a safe work environment and controlling construction costs.

However, the importance of this study is to act as a means of reducing the risks associated with construction safety. Dedicated commitment to safety by both the owner and contractor will help to ensure project success. It will show case the clear responsibility of every employer and other stakeholders in ensuring the safety, health and welfare of everyone at workplace. This will provide safety, health and welfare of workers and all persons lawfully present at workplaces.

## **1.7 Significance of the Study**

The study's main aim is to address the issues of occupation health and safety in construction projects. This study will assist the construction stakeholders; owners and contractors, in working together in a joint venture in provision for the safety, health and well-being of the owners' clients, employees and other people who live and work in or around the construction projects.

## **1.8 Limitation of the Study**

### **1.8.1 Confidentiality**

Some employees in the organization may not be willing to open up due to the confidential nature of the company's protocol. The researcher will solve the problem by assuring the respondent that the research was strictly for academic purpose and no part of it will be open to the public.

### **1.8.2 Lack of Cooperation**

A number of workers were not willing to cooperate. The researcher will be patient to them and kindly explain to them the importance of the study and how the company will benefit from the research findings. The researcher also informed the respondents on the importance of the study and the top beneficiaries.

### **1.8.3 Fear of Victimization**

Some of the staff members may not give accurate information for fear that the study will be used against them by the management. They may think that they were putting their jobs on the line by giving even important information affecting them in the course of doing their jobs. In order to curb this, the researcher will convince them by producing a letter from Kenyatta University which indicates that the research will only be for academic purpose and will not be intended for any malpractice.

## **1.9 Scope of the Study**

The aim of the study is to evaluate occupational safety and health in construction project and siting a case study of Nairobi County.

The target population was 49 employees consisting of 6 supervisors, 12 foremen, 24 skilled/unskilled employees, 6 clients and 1 officer from the Ministry of Labour Department of occupational safety and health.

The study was conducted in Nairobi County which was to assist in carrying out the data collection. They included proposed Terminal 4 construction at JKIA, Proposed ICPAK Complex

along Thika Superhighway, in Nairobi, Proposed residential houses for KPLC retirement benefit scheme at Karen, Proposed Southern bypass at Nairobi, proposed University Towers for University of Nairobi, Kenyatta University teaching research and referral hospital at Kahawa west Nairobi. The study was conducted during the month of February, 2014

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter contains views of different authors that guides in understanding the current study. It comprises of review of theoretical, literature, review of critical literature and summary of literature review.

#### **2.2 Enforcement of legal requirements**

The law has evolved from systems, principles and customs governing conduct in relation to various aspects of people's lives. Rules are established by groups of all sizes to ensure that the rights of members are respected and responsibilities are fulfilled. Small or informal groups tend to adopt simple rules, which are not legally binding, while government develop complex and comprehensive rules which can be enforced (Morris et al, 1996)

The purpose of the law is to ensure that members of the society live and behave according to a set of acceptable rules.

In relation to OSH, the law exists to indemnify the responsibility of the parties involved in industrial or commercial activities and here construction in particular. It improves responsibilities of the employers to protect the health and safety of their employees when they are at work and protects the right of the people to participate in the paid workforce without suffering injury or ill health as a result.

An OSH officer from the government may write orders to the employer to correct any deficiencies related to the legislation and follow-up at a later date to ensure compliance. If an OSH Officer sees something at a work site that could immediately be dangerous to workers, they can write a stop work order or stop use order for a particular piece of equipment (Morris et al. 1996).

As such, the law should be of primary importance in providing a 'level playing field' and ensuring that employers do not profit from failing to provide adequate protection for their

employees. OSH law also ensures that, if people do suffer a work-related injury or illness, there are mechanisms by which they may obtain compensation and undergo rehabilitation to enable them to resume participation in the workforce and the community at large.

Thus, the aims of OSH law are to prevent occupational and ill-health, ensure compensation for those who are injured or become ill as a result of their employment and rehabilitate workers who suffer injury or ill-health as a result of their work in order that, so far as is possible, they can return to work and resume participation in the community (Quilan and Bohle, 1991).

Different legal systems have developed in different parts of the world. Many countries' legal systems are based on English common law. These include Australia, United States of America, India Israel, Hong Kong, Canada, New Zealand, Malaysia and Kenya. In each of these countries the law has developed differently to reflect local values and beliefs about justice. Other countries are civil law countries, meaning that all of their laws are contained in comprehensive legal codes.

In common law, if the employer is negligent in respect of their duty and death, injury or ill health occurs, employees and their families have rights to be paid damages by the employer.

Employees also have duties under OSH legislation in Kenya. Normally, each employee is expected to comply with all occupational safety and health standards, rules, regulations, and orders issued under the law that apply to his or her own actions and conduct on the job. Employees are typically required to co-operate with their employers in OSH, and must not willfully or recklessly interfere with any item provided in the interests of health, safety or welfare or willfully place themselves or others at risk (Chikati, 2006).

### **2.3 Effects of the contractor's safety policy on building construction sites**

A written health and safety policy is an important part of managing health and safety in workplace and an important step in demonstrating management commitment.

By OSHA, employers are obliged to plan their overall approach to managing safety and health and must commit the necessary resources to implement the plan. As an initial step, employers must develop a safety and health policy which should form part of the Safety Statement. It must

be specific to their organization and be in a written format. The content of the safety and health policy of an organization should be based on the hazards and risks present in the organization and should reflect the fact that systematic hazard identification and risk assessment have been undertaken (Dorsey, 1997).

The company should be committed to providing a safe and healthy work environment that meets or exceeds the standards of the Provincial Occupational Health and Safety Act, Regulation and Code with a purpose of protecting employees, visitors, sub-contractors, clients, company property and the environment.

An OSH program requires a statement of the employer's aims and the responsibilities of the employer, supervisors, and workers. This statement—called a policy—typically states: the employer's commitment to the OSH program, the employer's commitment to protect the health and safety of workers, the aims and priorities of the OSH program, the responsibilities of the employer, supervisors, and workers.

Company's level practices influence safety performance. Safety performances are better on projects of companies that have strict and standardized OSH policies and also employ a fulltime company safety officer; those with stronger top management support for safety; those who conduct safety meetings for supervisors; and those who monitor the safety performances of their supervisors. Lower injury rates may be noted on projects that employ a project safety officer. Better safety performances may occur on projects which employ more sophisticated scheduling method (Jimmie, 2001).

The contractor is required to monitor activities at the work site to ensure that the health and safety system is functioning properly. This is intended to be high level oversight or auditing. The employer is responsible for the details of their workers' health and safety

Improvements to contracting organizations' safety standards could inevitably be helped by continuous monitoring and review of their safety performance. To achieve this, an objective OSH framework is a prerequisite. Although various policies of OSH have been proposed and formulated, a more comprehensive OSH framework which takes into account factors pertinent to an organization and its project has to be realized (Thomas, 2006).

It is company policy that accident prevention be a prime concern of all employees. This includes the safety and well-being of employees, subcontractors, and customers, as well as the prevention of wasteful, inefficient operations, and damage to property and equipment.

It is the responsibility of the contractor to ensure that health and safety in the workplace is adequate and abides to legal requirements. Protecting the health and safety of employees and the public is an essential part of risk management.

Planning the health and safety policy is fundamental. It should be integrated into a business's culture, values and performance standards. It is required that businesses have strong systems of internal control which covers health and safety, environment, financial risks and business reputation (Gloier, 2000)

It will decide what methods will be taken to address these risks and also how health and safety duties and benefits will be communicated throughout the business. It is important to remember that a health and safety policy will evolve over time.

#### **2.4 Safety Training Effects in Safety at Building Construction Sites**

If employees are to make the maximum contribution to safety and health, adequate arrangements must be in place to ensure that they have the necessary skills to do their work safely. This means more than simply training. Experience of applying skills and knowledge is an important ingredient and needs to be gained under adequate supervision. Managers should know the relevant legislation and be able to manage safety and health effectively. All employees need to be able to work in a safe and healthy manner. It is also necessary to check the abilities of contractors where they work close to, or in collaboration with, direct employees (Thomas 2006).

Company's program must include a system for communicating with employees - in a form readily understandable by all affected employees - on matters relating to occupational safety and health, including provisions designed to encourage employees to inform the employees of hazards at the worksite without fear of reprisal.

The protection of the health and safety of all employees through training is vital to the success of all organizations. Poor performance in occupational health and safety (OSH) can take a heavy

financial toll on any business, not to mention the human cost of work-related illness, injury, and fatality.

As an employer, one should take every possible opportunity to show workers that you are committed to health and safety practices by becoming actively involved. Employees should be talked to and informed about health and safety practices. Employer should offer suggestions for improvements, and solicit employees also. Employees should be made to feel comfortable coming to the employer/management to discuss their concerns. At meetings, health and safety issues and concerns should be discussed and also take an active role (Dorsey, 1997).

Under the OSH Act, employers are responsible for ensuring the health and safety of all workers at the work site by training them at all times. There are also specific requirements of employers depending on the hazards and the work that is to be done.

Employers are required by the Kenya's OSH legislation to ensure, as far as reasonably practicable/reasonably achievable, the health and safety of both the workers engaged in the work of that employer and those workers not engaged in the work of that employer, but present at the employer's work site at which that work is being carried out. This is achievable by having OSH committee with members who are trained on OSH matters to oversee that there is safety at the site (Morris et al, 1996).

Every employee (management, employees, contractors, and sub-contractors) is responsible for maintaining the safety management system by setting a good example as well as understanding their assigned responsibilities and the legislative requirements as they apply to their work site and job tasks.

One of the most important ways to ensure the health and safety of your workplace is to regularly train work site employees in order to identify hazards, and then eliminate or control the hazards. Training and inspection is an ongoing task as the workplace may be constantly changing.

Systems of training that are both scheduled and unscheduled make identifying and controlling hazards a normal part of everyday work. Formal training should be conducted by supervisors and OSH officers whenever possible.

The general requirements for worker training are included in the OSH regulation. Specific requirements for different types of worker training are identified throughout the OSH Code. Training is only part of becoming competent at a particular task. A worker must demonstrate competency whenever undertaking a new task, or whenever a task which was performed in the past has changed to include new hazards(Dorsey, 1997).

Effective workplace health and safety programmes can help to save the lives of workers by reducing hazards and their consequences. Health and safety programmes also have positive effects on both worker morale and productivity, which are important benefits.

## **2.5 Monitoring and evaluation of Safety and Health**

Safety and health principles are universal, but how much action is needed will depend on the size of the organization, the hazards presented by its activities, the physical characteristics of the organization, products or services, and the adequacy of its existing arrangements.

Many of the features of effective safety and health management are comparable to the sound management practices advocated by proponents of quality management, environmental protection, and business excellence. Commercially successful companies often excel at safety and health management as well, precisely because they apply the same efficient business expertise to safety and health as to all other aspects of their operations (Thomas, 2006).

The organization should measure, monitor and evaluate its safety and health performance. Monitoring and evaluation can be measured against agreed standards to reveal when and where improvement is needed. Active self-monitoring reveals how effectively the health and safety management system is functioning.

Management should develop and incorporate into the Safety Statement a safety and health policy that recognizes that safety and health is an integral part of the organization's business performance. They should ensure that this safety and health policy is appropriate to the hazards and risks of the organization's work activities and includes a commitment to protect, so far as is reasonably practicable, its employees and others, such as contractors and members of the public, from safety and health risks associated with its activities (Johnson, 2006).

Monitoring and evaluation have the basis of planning and measuring safety and health achievement. If the organization is to be efficient and effective in controlling risks, it needs to co-ordinate its activities to ensure that everyone is clear about what they are expected to achieve. Both the direction of the organization as a whole and specific risks have to be controlled. Setting performance standards is essential if policies are to be translated from good intentions into a series of co-ordinated activities and tasks (Buttrick, 2005).

## **2.6 Theoretical literature**

The theoretical literature of the past studies discusses major theoretical issues that have been raised by various past studies as an effort to examine challenges encountered in occupation, health and safety in construction projects in relevant to the study variables. These variables include enforcement of legal requirements, contractor's safety policy and safety training.

They are independent in this study and shall be examined in relation to occupational, health and safety in construction projects in Nairobi County.

According to Johnson (2006), enforcement of legal requirements under the OSH Act, employers are responsible for providing a safe and healthful workplace. OSHA's mission is to assure safe and healthful workplaces by setting and enforcing standards, and by providing training, outreach, education and assistance. Employers must comply with all applicable OSHA standards. Employers must also comply with the employer's duties clause of the OSH Act, which requires employers to keep their workplace free of serious recognized hazards.

OSHA Act 2007 states that the occupier of a workplace shall cause a thorough safety and health audit of his workplace to be carried out at least once in every period of twelve months by a safety and health advisor, who shall issue a report of such an audit containing the prescribed particulars to the occupier on payment of a prescribed fee and shall send a copy of the report to the Director of OSHA.

In relation to OSHA Act 2007, on contractor's safety policy the employer's obligations under OSHA don't stop with maintaining a safe work environment. Employer must also meet reporting requirements, posting requirements, and recordkeeping requirements, and must submit to OSHA inspections. For example, report of fatal accidents to OSHA within eight hours of their

occurrence. There should be posts on OSHA informing workers of their rights and obligations under the law. Employer must also keep records of efforts to comply with the law and to prevent injuries and illnesses.

It is the responsibility of each contractor working on a project to implement, enforce and modify when necessary the safety policies and procedures identified here-in. Communication and training is an integral part of the program, and should be emphasized over the duration of the job. In order to facilitate the above, every employee on site should follow the established policies and procedures, report hazardous conditions and mitigate areas of concern before an illness, injury, near miss or other incident is realized. Contractors as well as other persons on this site are obligated to follow the same rules and regulations that have been implemented for the contractors in accordance with the requirements (Ghosh, 2000).

Buttrick (2005) notes that working in the construction industry can sometimes be dangerous. Work-related accidents can cause serious injuries, while most of these accidents are preventable. He says that a company should use resources to learn more about construction safety, from OSHA compliance and safety training to fall protection and hazard communication. In addition, OSHA Committees should be formed to coordinate the company's regulatory activities in the areas of jobsite safety, OSHA regulations and workers' compensation.

(Dorsey, 1997) says that construction jobsite safety remains a collective concern. In light of the OSHA regulations and decision, all construction contractors need to consider how to meet the collective goal of jobsite safety without assuming the liabilities of others.

## **2.7 Summary**

There should be consistency in developing employer/labor/government strategic partnership approaches to further occupational safety and health. It allows for effective use of OSHA resources, innovation in safety management, and encourages participation in the safety process by industry members, employees, and other interested parties.

OSHA will provide resources appropriate to assist the industry partners in achieving the goal of reducing the number of fatalities, injuries, and illnesses in the industry. In executing this

agreement, OSHA does not forfeit any of its responsibilities or obligations to administer and enforce the OSHA, 2007.

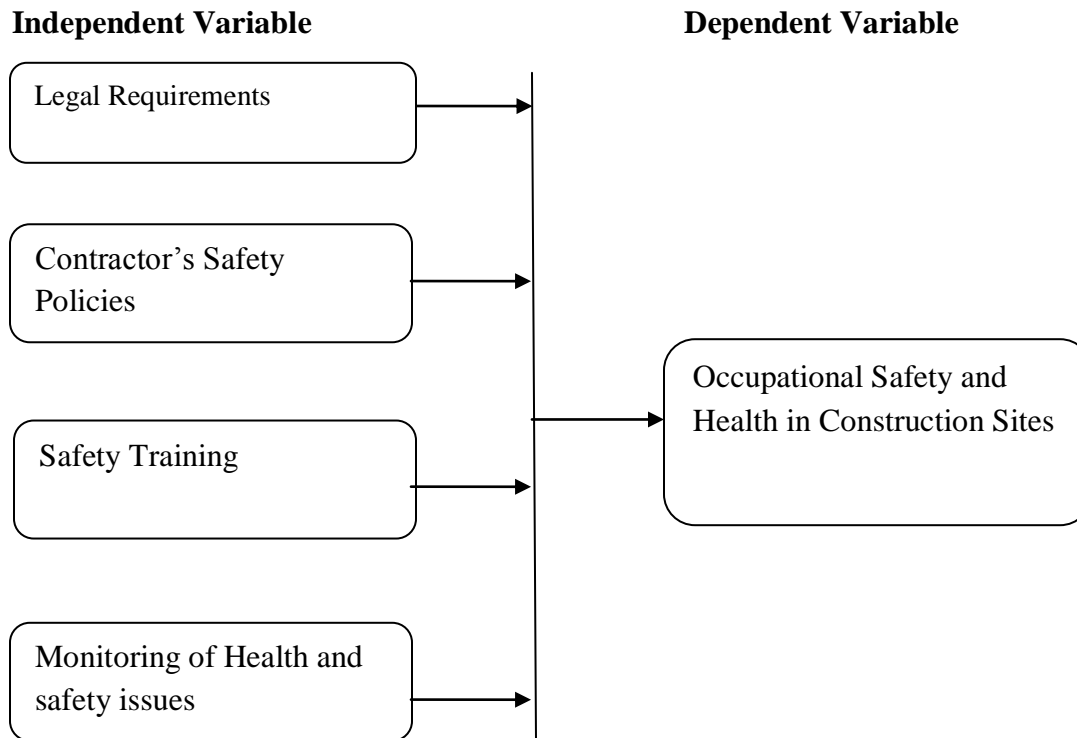
As a result, there exists legislation to ensuring that the workplace is a safe place of work. Kenya OSHA, 2007 is an important piece of legislation which seeks to promote and encourage occupational safety and health awareness among workers and to create organizations along with effective safety and health measures.

## **2.8 Theoretical Framework**

Construction companies need to be responsive to the dynamic market in which they operate, and so by inference must retain flexibility in managing their human resources and concentrating in human environment.

Accidents, ill-health, and incidents are seldom random events. They generally arise from failures of control and involve multiple contributory elements. The immediate cause may be a human or technical failure, but such events usually arise from organizational failings which are the responsibility of management. Successful safety and health management systems aim to utilize the strengths of managers and other employees. The organization needs to understand how human factors affect safety and health performance (Dorsey, 1997).

## 2.9 Conceptual Framework



**Figure 2.9 Conceptual Framework**

**Source: Field study, 2014.**

### 2.9.1 Enforcing of Legal Requirements

Construction remains a disproportionately dangerous industry where improvements in health and safety are needed. The improvements require significant and permanent changes in duty holder attitudes and behavior. Since the Regulations were introduced in Kenya, concerns were raised that their complexity and the bureaucratic approach frustrated the Regulations' underlying health and safety objectives. These views were supported by an industry-wide consultation in 2007 which resulted in the decision to revise the regulations (Morris.P, 1990).

### 2.9.2 Contractor' Safety Policy

While the impetus for ensuring a safe jobsite comes in part from the contractor's internal desire for an efficient and accident-free project, there are external forces at work as well, such as

federal, state and local regulations. Often it is these external factors that prompt or even require the contractor to adopt safety policies and incorporate them into their contractual relationships. Perhaps the most prominent of these federal regulations are those enforced by the Occupational Safety and Health (OSH).

### **2.9.3 Safety Training**

Working in the construction industry can be very dangerous. The nature of the work itself carries risks, and accidents can result in serious injuries or even fatality. The Occupational Safety and Health Administration (OSHA) law requires employers to offer a workplace that is safe and free from hazards. Everyday construction workers face dangers that threaten their health and lives. While construction sites are always filled with danger, proper knowledge on safety rules and regulations can be the only thing protecting an individual from certain serious injuries (Klir, 1995).

### **2.9.4 Monitoring and evaluation of safety and health**

The organization's executive board of directors or other senior management team, client, government officials, contractors, needs to ensure that it is kept informed of, and alerted to, relevant safety and health risk management issues. It is recommended that boards and other controlling bodies appoint one of their numbers to be the safety and health director who will ensure other directors are kept informed and that safety and health is actively managed on a daily basis monitoring and evaluation of safety and health (Dorsey, 1997).

## CHAPTER THREE

### 3.0 AREA OF STUDY



**Figure 3.0 : Map of Study area**

Nairobi is the capital and largest city of Kenya. The city and its surrounding area also form the Nairobi County. The name "Nairobi" comes from the Maasai phrase Enkare Nyirobi, which translates to "the place of cool waters". However, it is popularly known as the "Green City in the Sun" and is surrounded by several expanding villa suburbs.

During Kenya's colonial period, the city became a centre for the colony's coffee, tea and sisal industry. Nairobi is also the capital of the Nairobi Province and of the Nairobi District (wikipedia.org, 04/01/2014).

According to the 2009 Census, in the administrative area of Nairobi, 3,138,295 inhabitants lived within 696 km<sup>2</sup> (269 sq. mi). Nairobi is currently the 12th largest city in Africa.

#### **3.1 Construction Projects in Nairobi**

To accommodate the growing middle class, many new apartments and housing developments are being built in and around the city. Over 5,000 houses, villas and apartments are being, including leisure, retail and commercial facilities. The development is being marketed to families, as are

most others within the city. Eastlands also houses most of the city's middle class and includes South C, South B, Embakasi, Buru Buru, Komarock, Donholm, and various others.

In this study there shall be consideration of construction sites in Nairobi County which will assist to carry on with data collection. They include proposed Terminal 4 construction at JKIA, Proposed ICPAK Complex along Thika Superhighway, in Nairobi, Proposed residential houses for KPLC retirement benefit scheme at Karen, Proposed Southern bypass at Nairobi, proposed University Towers for University of Nairobi, Kenyatta University teaching research and referral hospital at Kahawa west Nairobi.

Proposed Terminal 4 building is at JKIA is an expansion and upgrading of Kenya's largest airport and is divided into 2 major works. One is the addition of a 4th passenger terminal - Terminal 4 and the second involves the addition of a second runway. Once complete, Terminal 4 will handle 2.5 million passengers and 37,500 square meters of floor space and parking space for 1,500 cars. This new Kshs. 9.3 billion terminal will also house 32 check-in counters along with 7 boarding bridges and a fully automated baggage handling system.

The Kenya Airports Authority (KAA) is a state corporation that provides facilitative infrastructure for aviation services between Kenya and the outside world. Its main functions are Administer, control and manage aerodromes, Provide and maintain facilities necessary for efficient operations of air-crafts, Provide rescue and fire fighting equipment and services, Construct, operate and maintain aerodromes and other related activities ( megaprojects.co.ke, 04/01/2014 )

The other project is proposed ICPAK Complex along Thika Superhighway, in Nairobi Ruaraka .The development by the Institute of Certified Public Accountants of Kenya (ICPAK) will comprise an ultra-modern 12-storey office block, shopping mall, conference facility, hotel and furnished apartments.

The project that sits on a 2.1-acre piece of land is being developed in two phases at a cost of Sh1.07 billion. Half of the amount (Sh568 million) will be provided by ICPAK while the remainder will be sourced externally (Construction Kenya, 2013).

The Proposed Southern bypass at Nairobi Project is a Ksh.41.3Billion road project which will see the construction of 3 roads around the Nairobi city to aid in the easing traffic snarl-up within Nairobi and its environs.

The project is under the responsibility of Kenya Urban Roads Authority. The 39km highway was contracted to China Roads & Bridge Corp who by all standards has done a good job according to KURA officials. Way before the flyover on the bypass itself, there is a turnoff to the airport.

The University of Nairobi is constructing a 22-storey complex University Towers valued at Sh2.3 billion to meet increased demand for academic and administrative facilities at the main campus. The contractor of the project is China Wu Yi.

According to University of Nairobi, the site for the proposed University Towers is located at the northern corner of the Great Court of the University of Nairobi. The University aims to develop a visionary state-of-the-art tower block leading the way in ecologically sustainable design.

Kenyatta University, through a loan from the Chinese Government is building a teaching and referral hospital at Kahawa West Nairobi that will offer most advanced medical treatment and the finest amenities. The hospital will have among others units for cancer, gerontology and oncology ([kenyattauniversityfoundation.org](http://kenyattauniversityfoundation.org), 04/01/2014).

Proposed residential houses for KPLC retirement benefit scheme located along Bogani Road, Karen-Nairobi. It is 45unit housing scheme with a club house on a 9.86ha plot of land, located at Karengata Zone 3. The permitted use in this area is only residential.

### **3.2 Profile of employment opportunities in construction projects in Kenya**

There are numerous occupations within the informal construction industry, ranging from unskilled labourers to highly-skilled craft workers. Typically, they form a hierarchy, with gang leaders having the highest status. In developing countries like Kenya, construction provides much needed work opportunities for some of the poorest and most marginalized sections of society. Construction activity takes place everywhere there is human settlement. But the amount that a country spends on construction is closely related to its income.

The Kenyan construction industry comprises a large number of enterprises of various sizes, owned by different ethnic groups. Kenyans of foreign, mostly Asian and Chinese origin, still dominate the industry. Kinyanjui and Mitullah (1999) have argued that although Asian-owned firms may be regarded as local, they have preferential access to finance with Chinese contractors outside the official bank system, and bank loans at fair interest rates and remission, which enables their businesses to thrive and operate in the formal system (Kinyanjui and Mitullah 1999). By comparison, most indigenous Kenyans own small firms, which largely operate within the informal system. These firms handle small jobs (Oludhe, 1990).

**Table 3.2.1: Contribution of the Informal Construction Sector**

YEAR	Construction Contribution to GDP	Employment in Informal Construction
1995	1.7%	31,600
1996	1.6%	36,000
1997	1.6%	40,700
1998	1.6%	51,200
1999	1.6%	58,900

**Source: Government of Kenya, Economic Surveys 1996 to 2000**

### **3.3 Economic analysis of Nairobi**

Nairobi is now one of the most prominent cities in Africa politically and financially. Home to thousands of Kenyan businesses and over 100 major international companies and organizations, including the United Nations Environment Programme (UNEP) and the main coordinating and headquarters for the UN in Africa & Middle East, the United Nations Office in Nairobi (UNON), Nairobi is an established hub for business and culture. The Nairobi Stock Exchange (NSE) is one

of the largest in Africa and the second oldest exchange on the continent. It is ranked 4th in terms of trading volume and capable of making 10 million trades a day. The Globalization and World Cities Study Group and Network (GaWC) defines Nairobi as a prominent social centre (wikipedia.org, 04/04/2014).

Several of Africa's largest companies are headquartered in Nairobi. KenGen, which is the largest African stock outside South Africa, is based in the city. Kenya Airways, Africa's fourth largest airline, uses Nairobi's Jomo Kenyatta International Airport as a hub.

Goods manufactured in Nairobi include clothing, textiles, building materials, processed foods, beverages, and cigarettes. Several foreign companies have factories based in and around the city (wikipedia.org, 04/01/2014).

### **3.4 Climate of Nairobi**

Under the Koppen climate classification, Nairobi has a subtropical highland climate at 1,795 metres (5,889 ft.) above sea level, evenings may be cool, especially in the June/July season, when the temperature can drop to 10 °C (50 °F). The sunniest and warmest part of the year is from December to March, when temperatures average the mid-twenties during the day. The mean maximum temperature for this period is 24 °C (75 °F). (United Nations. "Travel and Visa Information", 2014)

Nairobi's main drainage follows the regional slope of the volcanic rocks towards the east, while subsidiary internal drainage into the Rift region is confined to the western part. The lava plain easts to the line Ruiru Nairobi Ngong are underlain by a succession of lava flow salt with lake beds streams deposit stuff sand volcanic ash.

Water draining eastward from the hill area accumulates on the low-lying ground between Parklands in the north and Nairobi South estate, forming a perched water table above the Nairobi phonolite. The Kerichwa Valley Tuffs lying to the east of the highway function like a sponge and the contact between them and the underlying impermeable phonolite thus forms a perfect aquifer, so much so that a number of channels containing water occur beneath Nairobi.

The rocks in the Nairobi area mainly comprise a succession of lavas and Pyroclastics of the Cainozoic age and overlying the foundation of folded Precambrian schist's and gneisses of the Mozambique belt. The soils of the Nairobi area are products of weathering of mainly volcanic rocks. (United Nations, "Travel and Visa Information", 2014)

## **CHAPTER FOUR**

### **4.0 RESEARCH DESIGN AND METHODOLOGY**

#### **4.1 Introduction**

This chapter deals with study design, target population, sampling design, data collection methods and instruments and data analysis method and procedures.

#### **4.2 Research Design**

The researcher used descriptive research design in carrying out the study. The design will be preferred because it will be concerned with answering questions such as who how, what, which, when and how much. Descriptive study are not only restricted to fact findings but may often result in the formulation of important principles of knowledge and solution to significant problem. A descriptive study is a carefully designed to ensure complete description of the situation, making sure that there is minimum bias in the collection in data and to reduce errors in interpreting the data that will be collected (Kothari, 2004).

#### **4.3 Methodology**

The study covered construction sites in several zones located within low, medium and high income areas in the city of Nairobi (Commercial Business District, Embakasi, Kahawa West, Lang'ata, Thika Road Superhighway and Karen).

The projects under construction included both commercial and residential, covering many types of development (flats, bungalow, maisonettes and high rise commercial buildings).

The researcher administered questioners to supervisors, foremen, unskilled/skilled employees, government OSHA officers, and site developers who were in charge of the various purposively sampled sites.

According to Nachmias (1996), population is a group of individuals, objects or items from which samples are taken for measurement or it is an entire group of persons. The target population will be from proposed Terminal 4 construction at JKIA, Proposed ICPAK Complex along Thika

Superhighway, in Nairobi, Proposed residential houses for KPLC retirement benefit scheme at Karen, Proposed Southern bypass at Nairobi, proposed University Towers for University of Nairobi, Kenyatta University teaching research and referral hospital at Kahawa West Nairobi, staff, KURA, KAA, Kenyatta University and ministry of labour officials. The researcher will target a population of 192 employees from the different organizations and departments.

There was consideration of six projects identified through purposive sampling due to convenience and limited time. In each project there was a target of 10 supervisors, 10 foremen, and 10 unskilled or skilled employees. The questioner will also be administered to 6 clients owning the projects through their project managers and also 6 questioners will be administered to 6 ministries of labour government occupation health and safety officers.

**Table 4.3 Target Population**

<b>Administration Department</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Supervisors</b>	6	12
<b>Foremen</b>	12	25
<b>Skilled/unskilled employees</b>	24	49
<b>Ministry of Labour occupation health and safety officer</b>	1	2
<b>Client/Developer</b>	6	12
<b>Total</b>	49	100

**Table 4.3: Source field data, 2014**

#### **4.4 Sampling Design**

The researcher will use purposive sampling procedures to select a sample that represented the entire population. The researcher went to 6 construction sites in Nairobi. From each site, questionnaires were administered to 1 supervisor from each site, 2 foremen, 4 skilled/unskilled staff, and a representative from the client in each construction site. One of OSH officer from ministry of labour who is in charge of Nairobi County was also interviewed.

#### **4.5 Data Collection Methods and Instruments**

Kothari (2004) describes primary data as first-hand information collected, compiled and published for some purpose. This data will be collected from the respondents by the researcher in form of questionnaires that they will be required to fill. Since it is collected from original sources for specified purposes it will involve collection of data by the researcher from own observations and experiences.

Kothari (2004) refers to secondary data as information already collected by someone and for some purpose and are available for the present study. This is data which is originally collected for different purpose and at different time. Secondary data will be relevant for the study since its source will come from academic journals, text books, policy briefs and magazines.

The researcher will obtain authority from relevant departmental sections of the organization to circulate questionnaires. These respondents will not be included in the final research study. The questionnaires will be corrected before the final circulation to ensure that they are able to elicit the kind of information needed. It will also make it possible for a similar study to be reciprocated with consistent outcomes.

#### **4.6 Data collection process**

Questionnaires will be used in the study. Due to time, questionnaires will be delivered and collected within two days. The types of questions will include both open and closed ended. Closed ended questions will be used to ensure that the given answers are relevant. The researcher will phrase the questions clearly in order to make clear dimensions along which respondents will be analyzed. In open ended questions, space will be provided for relevant explanation by the

respondents, thus giving them freedom to express their views. This method will be considered effective because it will enhance confidentiality of the respondents. The presence of the researcher will not be required as the questionnaires will be self-administered.

#### **4.7 Data Analysis and Presentation**

According to Sekaran (2003), data analysis procedure includes the process of packaging the collected information putting it in order and structuring its main components in a way that the findings can be easily and effectively communicated. In data analysis, the assessment of words and phrases as well as quantitative techniques was used by statistical operations such as percentages.

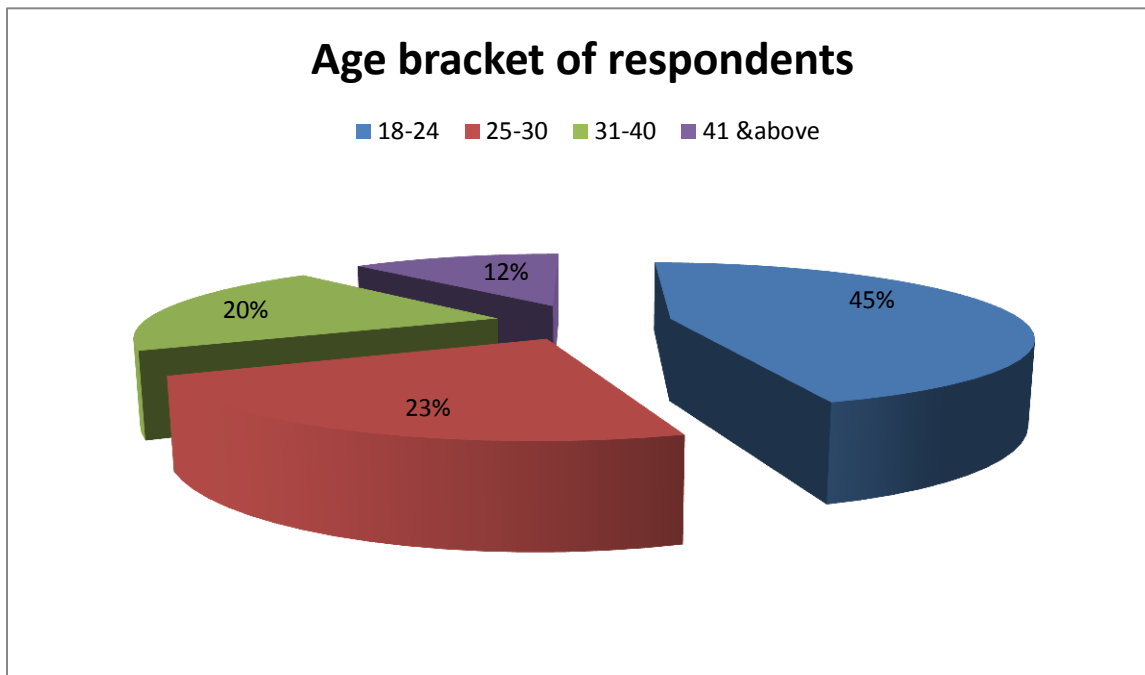
Quantitative analysis will be used to analyze closed ended questions and qualitative analysis will be used to analyze open ended questions. The data was presented in the form of percentages and graphs as well as tables especially in indicating quantitative values of responses.

## CHAPTER FIVE

### 5.1 DATA ANALYSIS AND DISCUSSIONS

This chapter presents the analysis of data collected from the research conducted around the Nairobi County. The main purpose of the study as per the objectives was to examine to what extent are legal requirements for building and construction are enforced at the construction projects in Nairobi County. It sorts to assess the contractors safety polices in construction sites. Furthermore, the research is aimed to find out if safety training is conducted to the employees in the construction sites. Finally, the research targets to examine how issues pertaining to safety and health are monitored and evaluated in construction sites.

The study involved administration of questionnaires to 49 respondents of which 25% were female and 75% were male. The age bracket of the people interviewed is as follows;



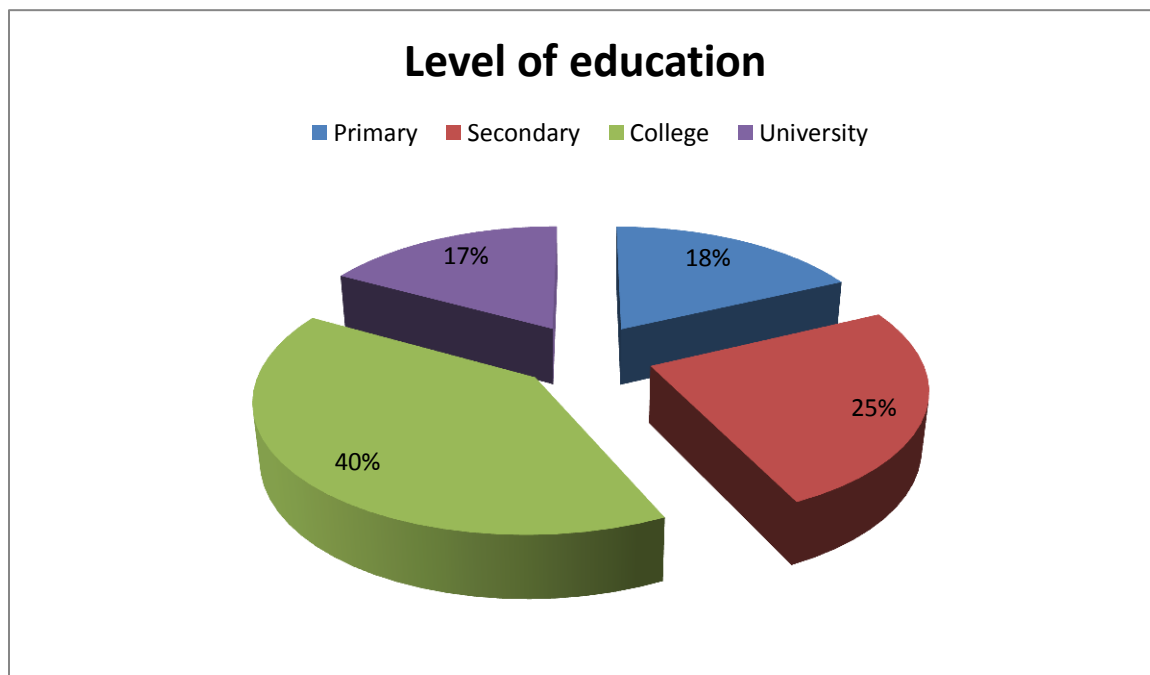
**Figure 5.1: Age bracket of respondents**

**Source field data, 2014**

### 5.1 Age bracket of the respondents

From the field study, it is clear that most of the people interviewed got the basic education i.e. passed through primary schools and secondary schools. The research was conducted in an urban setting and is composed of people who are literate. The figure below shows the level of education of the respondents;

### 5.2 Level of education



**Figure 5.2 Level of education**

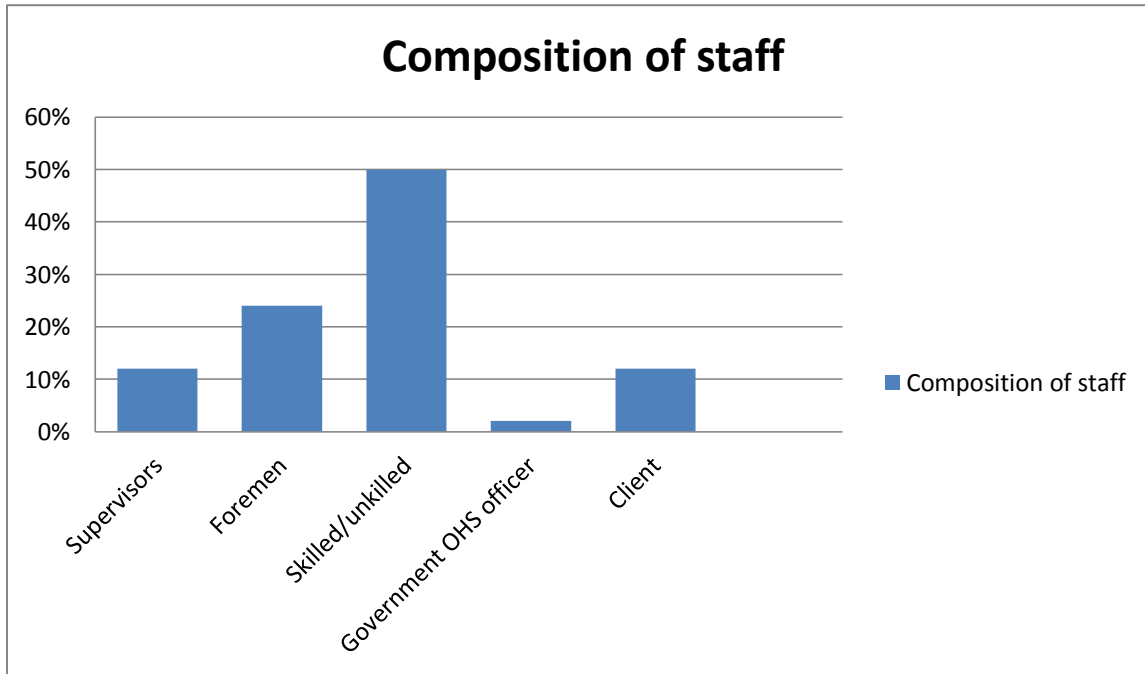
**Source: Field study, 2014.**

According to the above results 40% of the responds are either at the college or college is their highest education level. The percentage of the university graduates were 17%. Then followed by secondary level at 25% and finally 17% of the respondents, primary education level

### 5.3 Staff composition

Those interviewed include; supervisors, foremen, skilled and unskilled staff. In addition, government OSH Officer and client of construction projects were interviewed. The composition

of those interviewed is as shown below;



**Figure 5.3 Staff composition**

**Source: Field study, 2014.**

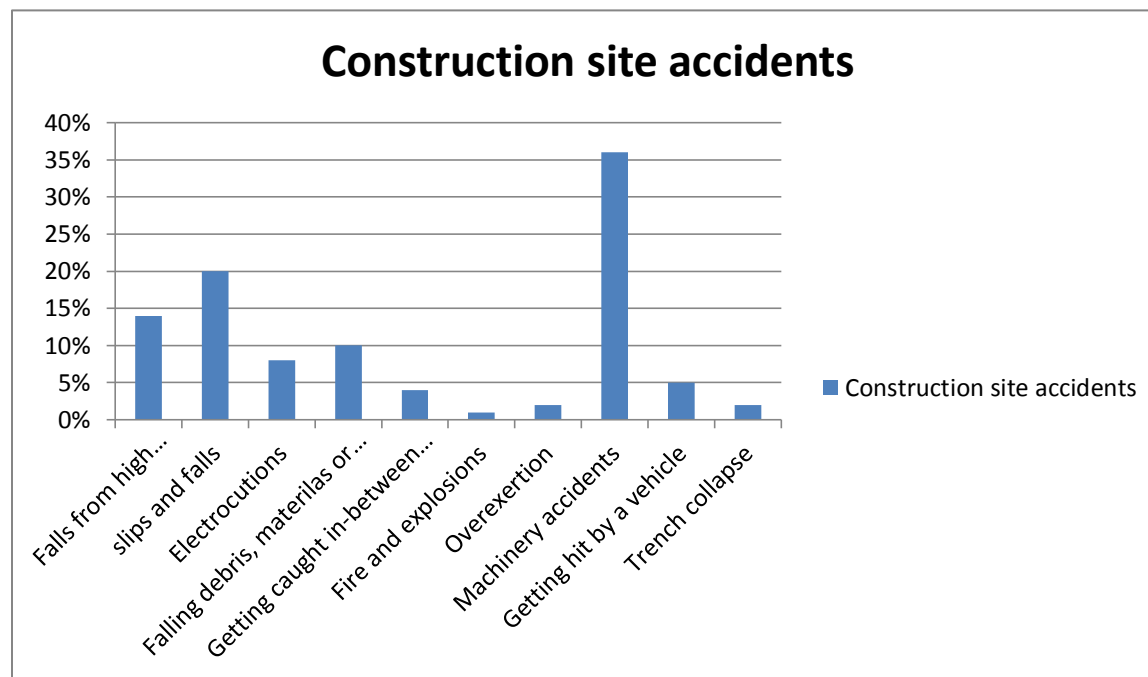
It's clear that more information was obtained from the skilled/unskilled staff, this is because a larger number of employees in the construction sector who are involved in accidents come from the lowest level of management and are the ones executing what the operational and middle management want.

## **5.4 Enforcement of legal requirements for building construction at the construction projects**

### **5.4.1 Construction site accidents**

Surrounded by building materials, tools, and machinery, construction workers can find themselves facing hazards at any given moment. There are different kinds of hazards and accidents which occur in construction sites. They include falls, slips, trips, cuts, and being hit by falling objects. There are also dangers from working high up, often without adequate safety

equipment, musculoskeletal problems from lifting heavy objects, as well as the hazards associated with exposure to noisy machinery as shown in the figure below;



**Figure 5.4 Construction site accidents**

**Source: Field study, 2014.**

From Figure 5.5 it can be noted that most accidents that occur in construction sites are from machinery. This is attributed by lack of proper knowledge in operating the machines by the employees. The list accidents are fire and explosions. This is attributed by less use of materials which can be combustible at the construction sites

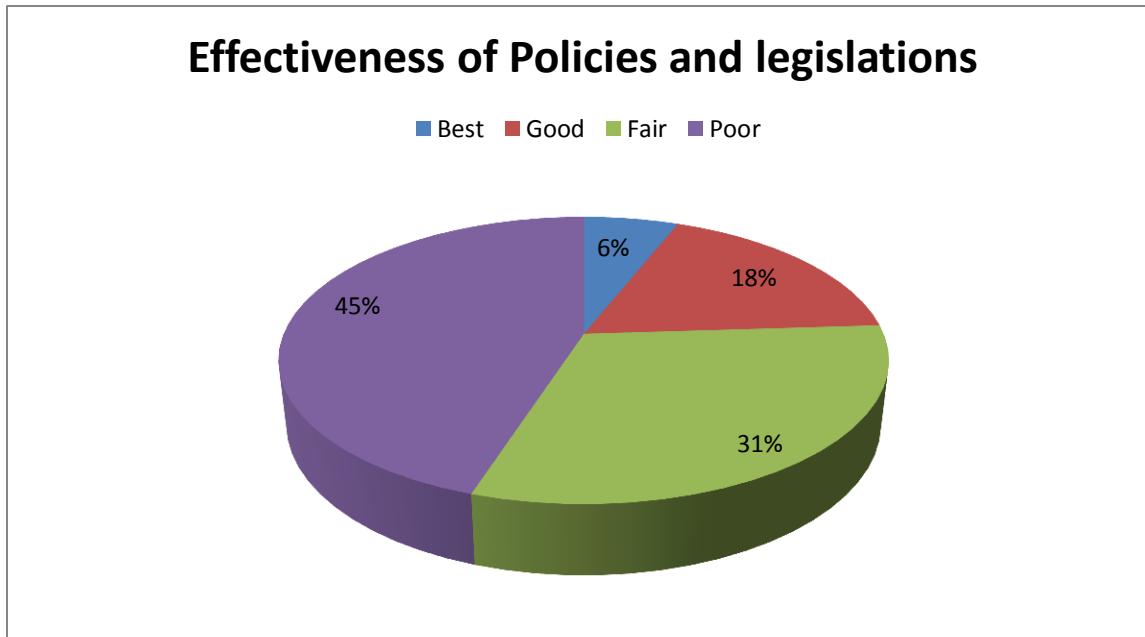
#### **5.4.2 Policies and Legislations that govern OSH in Kenya**

- ❖ Occupational Safety and Health Act, 2007
- ❖ Work Injury Benefits Act, 2007
- ❖ The Biosafety Act, No. 2, 2009
- ❖ The Environmental Management and Coordination Act, No. 8, 1999
- ❖ The Employment Act, No. 11, 2007
- ❖ The Public Health Act, Cap. 242

## 5.5 Contractor's safety policies in construction sites

### 5.5.1 Effectiveness of contractor's safety policies

According to the respondents, the policies and legislation that are there to govern OSH are to some extent not effective. The results of the feedback are as shown in the figure below;



**Figure 5.5 Staff composition**

**Source: Field study, 2014.**

45% of the respondents are in the view that the policies are poor, 31% are in the view that the policies are fair while as 18% are in the view that the policies are good and 6% are in the view that the policies are the best in effectiveness.

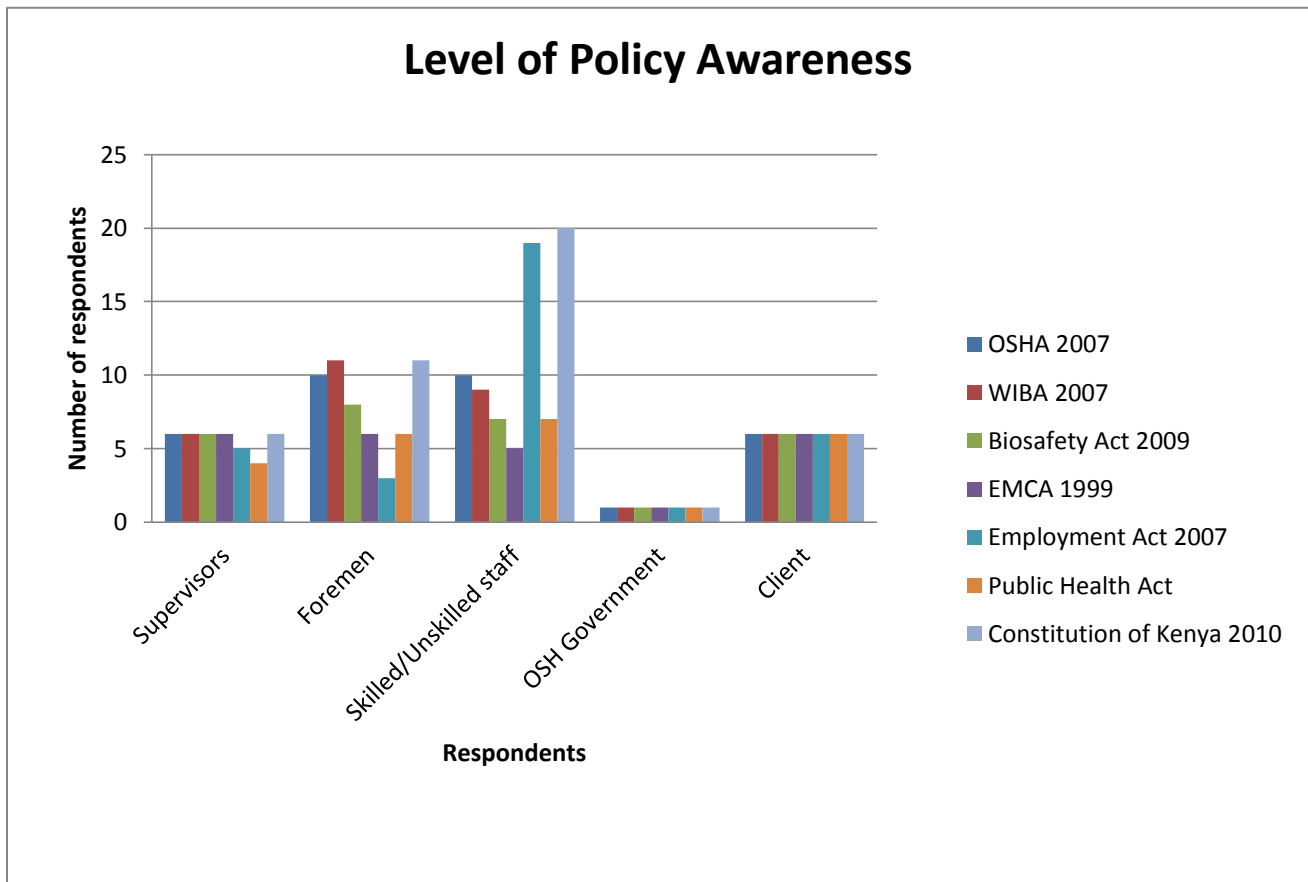
According to the data collected on employees' response, the policies and legislative framework is considered as poor because legislative frameworks are not well interpreted and informed to them often for their knowledge.

From the research most respondents considered the policies and legislations as poor due to lack of proper implementation and regulation. They were in the view that the government and

relevant authorities are not following up to tighten the laid down company and government policies to the later.

## 5.6 Contractor’s safety training to the employees in the construction site

### 5.6.1 Level of Policy Awareness



**Figure 5.6 Level of Policy Awareness**

**Source: Field study, 2014.**

According to the data collected on the level of policy awareness, the Constitution of Kenya 2010 is the popular legislation.

On the contrary, the employees interviewed listed lack of awareness and information on existing policies as a challenge to implementation of policy and legislation.

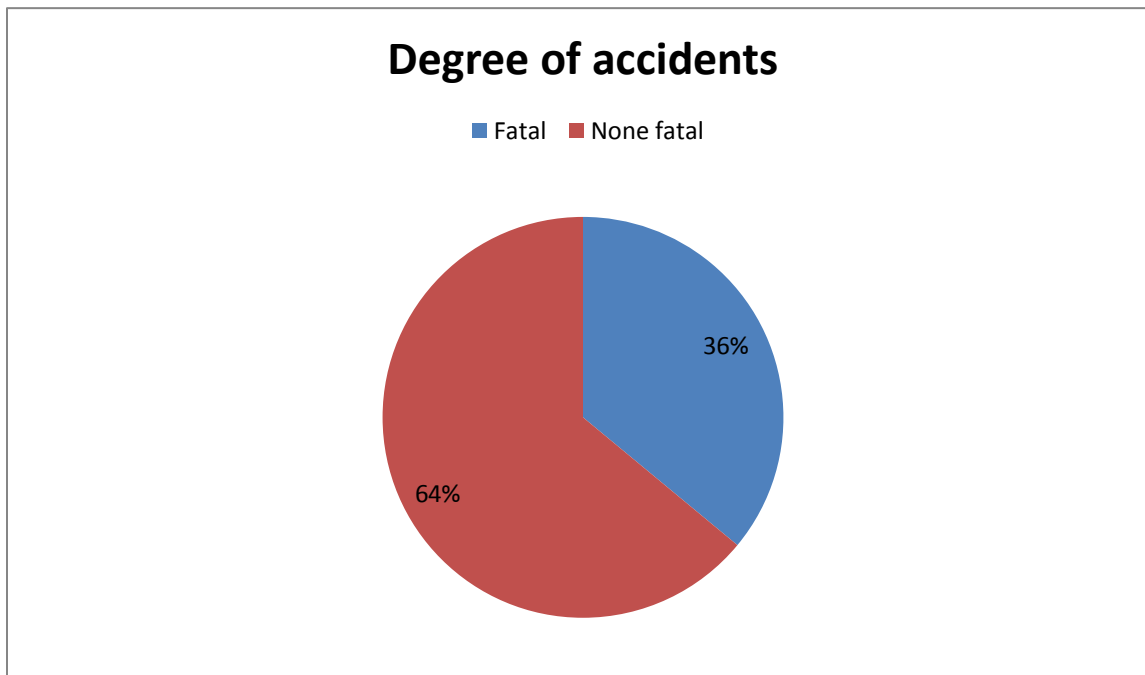
The employees especially the unskilled and skilled have a majority of those who are not aware of the existing policies. This is characterized by lack of higher education and information sharing cultivated by lack of training. This chapter should be written according to your objectives.

## 5.7 Monitoring and evaluation of safety and health in construction sites

### 5.7.1 Degree of accidents

Construction workers face a variety of hazards. There are also dangers from working high up, often without adequate safety equipment, musculoskeletal problems from lifting heavy objects, as well as the hazards associated with exposure to noisy machinery.

Out of the accidents that occur in the construction sites they are either fatal or none fatal as shown in the figure below;



**Figure 5.7 Staff composition**

**Source: Field study, 2014.**

Figure 5.4 show that 64% of the accidents that occur are none-fatal while as 36% are fatal. Most of the accidents that take place are mild and small injuries which can be treated through admission of first aid. The fatal accidents are those which lead to death.

## **CHAPTER SIX**

### **6.0 CHALLENGES AND RECOMMENDATION**

#### **6.1 Conclusion**

Construction workers build, repair, maintain, renovate, modify and demolish houses, office buildings, temples, factories, hospitals, roads, bridges, tunnels, stadiums, docks, airports and more. The International Labour Organization (ILO) classifies the construction industry as government and private-sector firms erecting buildings for habitation or for commercial purposes and public works such as roads, bridges, tunnels, dams or airports (International Labour Organization, 2013).

It can be concluded that when construction workers are injured, it not only affects their health and livelihood, it poses a challenge for their family as well. On-the-job injuries can lead to expensive medical bills and treatments, as well as lost income and earning ability if the injury keeps the victim away from work. Families can find themselves in very dire financial circumstances if they're not careful.

Management of occupational safety and health in Kenya construction sites should be focused and be considered as an important department and function in order to avoid fatal and non-fatal accidents. All persons conducting a business or undertaking who are involved in high risk construction work must develop and implement arrangements to ensure the work is carried out in accordance with the safe work methods. Your study does not feature in this statement it is too general.

Enforcement of legal requirements in construction projects is done although there are numerous accidents which are experienced at the construction sites majorly on machinery accidents, slips and falls. Contractor's safety policies are available but have been termed as poor. Most of those interviewed are in the view that the available organizational policies are ineffective and cannot provide a workable platform to improve the occupational safety and health. The employees at the construction sites are annually trained on safety and health. Most of unskilled and skilled staffs are not aware of the laid down legislations. This promotes the occurrence of injuries which can be avoided through information and training on occupational safety and health.

## **6.2 Recommendation**

To improve the efficiency and management of occupational safety and health in Kenya the following recommendations have been suggested;

### **6.3 Enforcement of legal requirements for building construction at the construction projects**

Kenya promulgated a new Constitution in August 2010. This includes a chapter on the Bill of Rights, which provides for the rights and fundamental freedom of all citizens. Although the Constitution does not address OSH specifically, it provides for the rights of every person to fair labour practices, reasonable working conditions, and a clean and healthy environment. The OSH services in Kenya are governed by two pieces of legislation: the Occupational Safety and Health Act, 2007 (OSHA 2007) and the Work Injury Benefits Act, 2007 (WIBA, 2007). The Ministry Of Labour Through its Director of Occupational Safety and Health Services should be strict and make sure that the set regulations are followed and adhered to by all contractors.

### **6.4 Contractor's safety policies in construction sites**

Every contractor should have OSH policies in order to maintain the standards of safety in construction sites. In doing so, they should ensure that every person employed participates in the application and review of safety and health measures and policies to avoid tomes and also to allow the employees to own the policies and feel accommodated. This will assist in compliance as the employees and the management will be part of all formulated policies.

### **6.5 Contractor's safety training to the employees in the construction site**

Ministry of Labor together with client and contractors should provide for information, instruction, training and supervision as is necessary to ensure the safety and health at work of every person employed.

A worker should not be employed at any machine or in any process liable to cause ill health or bodily injury, unless he/she has been fully instructed as to the dangers likely to arise in connection therewith and has received sufficient training in work at the machine or in the process; or is under adequate supervision by a person who has a thorough knowledge and experience of the machine or process. This training has to be carried out on recruitment; transfer

or change of job; the introduction or change of new work equipment or materials; and the introduction of new technology. The training should be adapted to take into account new changed risks, and be repeated periodically.

#### **6.6 Monitoring and evaluation of safety and health in construction sites**

In Kenya construction sites, there should be an appropriate risk assessments in relation to the safety and health of employees and, on the basis of these results, adopt preventive and protective measures to ensure that under all conditions of their intended use, all chemicals, machinery, equipment, tools and process under the control of the employer are safe and without risk to health and comply with the requirements of safety and health provisions of OSHA, 2007 and other regulations.

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## APPENDIX I

### QUESTIONNAIRE FOR CONTRACTOR'S STAFF

**KENYATTA UNIVERSITY**  
**DEPARTMENT OF ENVIRONMENTAL PLANNING AND MANAGEMENT**  
**P.O.BOX 43844,**  
**Nairobi, Kenya.**

**TOPIC: Evaluation of Occupational Safety and Health in Construction Projects;  
in Nairobi County**

I am a Kenyatta University student undertaking a research project on the above title. The information the study is seeking to collect is totally meant for academic purposes and any information given will be kept with a lot of confidentiality

#### SECTION A: BACKGROUND INFORMATION

**1. Age Bracket (please Tick)**

- |              |     |
|--------------|-----|
| 18-24yrs     | [ ] |
| 25-30yrs     | [ ] |
| 31-40yrs     | [ ] |
| 41 and above | [ ] |

**2. Highest Level of Education**

- |            |     |
|------------|-----|
| Primary    | [ ] |
| Secondary  | [ ] |
| College    | [ ] |
| University | [ ] |

**3. Length of service in your organization (Years, please Tick)**

- |                    |     |
|--------------------|-----|
| 10 years and below | [ ] |
|--------------------|-----|

11 - 15 years [ ]

16 - 20 years [ ]

Above 20 years [ ]

**4. Respondent Category**

Supervisors [ ]

Foreman [ ]

Skilled/unskilled [ ]

**SECTION B**

1. Are you aware of policies and legislations available in Kenya on Occupational Safety and Health?

Aware [ ]

Not aware [ ]

2. How are legislations in Kenya effective?

Best [ ]

Good [ ]

Fair [ ]

Poor [ ]

3. Do you have Occupational Safety and Health in your company?

Yes [ ]

No [ ]

Explain,

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

4. Are your organizational Occupational Safety and Health policies effective?

Explain,

.....

.....

.....

5. Are you aware of policies available in Kenya on Occupational Safety and Health?

	<b>Mark as appropriate</b>	
	<b>Aware</b>	<b>Not aware</b>
Occupational Safety and Health Act, 2007		
Work Injury Benefits Act, 2007		
Work Injury Benefits Act, 2007		
The Biosafety Act, No. 2, 2009		
The Environmental Management and Coordination Act, No. 8, 1999		
The Employment Act, No. 11, 2007		
The Public Health Act, Cap. 242		
The Constitution of Kenya 2010		

6. How often are you trained on safety and health by your organization?

<b>Frequency</b>	<b>Mark as appropriate</b>
Daily	
Weekly	
Monthly	

Annually	
----------	--

7. What is the rate of construction hazards and accidents occurrence in site?

Kind of hazard/accident	Rate of occurrence		
	Often	Not often	Doesn't Occur
Falls from high heights or scaffolding			
Slips and falls			
Electrocutions			
Falling debris, materials or objects			
Getting caught in-between objects or materials			
Fires and explosions			
Overexertion			
Machinery accidents			
Getting hit by a vehicle			

8. Do you keep records of what accident occur in construction site for your own safety/personal monitoring?

Yes [ ]

No [ ]

Explain,

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

**Thank you for your splendid cooperation**

## APPENDIX II

### QUESTIONNAIRE FOR CLIENT AND GOVERNMENT OCCUPATIONAL SAFETY AND HEALTH OFFICERS

**KENYATTA UNIVERSITY**  
**DEPARTMENT OF ENVIRONMENTAL PLANNING AND MANAGEMENT**  
**P.O.BOX 43844,**  
**Nairobi, Kenya.**

**TOPIC: Evaluation of Occupational Safety and Health in Construction Projects;  
in Nairobi County**

I am a Kenyatta University student undertaking a research project on the above title. The information the study is seeking to collect is totally meant for academic purposes and any information given will be kept with a lot of confidentiality

#### **SECTION A: BACKGROUND INFORMATION**

1. Age Bracket (please Tick)

18-24yrs [ ]

25-30yrs [ ]

31-40yrs [ ]

41 and above [ ]

2. Highest Level of Education

Primary [ ]

Secondary [ ]

College [ ]

University [ ]

3. Length of service in your organization (Years, please Tick)

10 years and below [ ]

11 - 15 years [ ]

16 - 20 years [ ]

Above 20 years [ ]

4. Respondent Category

Client [ ]

Government occupational safety and health officers [ ]

**SECTION B**

1. As per the occupational safety and health regulations, do you conduct investigations on the accidents which occur in construction sites?

Yes [ ]

No [ ]

Explain,

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

2. What are the employee's role in recognition and avoidance of unsafe conditions and regulations applicable to occupational safety and health?

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

3. How do you secure the occupational safety and health and welfare of employees and other persons at work?

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

4. What do you consider while reviewing safety rules and standards with employees to confirm that the industry is meeting its goals and objectives?

.....

.....

.....

5. Do you make sure employees are occupational safety and health trained?

Yes

No

Explain,

.....

.....

.....

6. Are you aware of policies available in Kenya on Occupational Safety and Health?

	Mark as appropriate	
	Aware	Not aware
Occupational Safety and Health Act, 2007		
Work Injury Benefits Act, 2007		
Work Injury Benefits Act, 2007		
The Biosafety Act, No. 2, 2009		
The Environmental Management and Coordination Act, No. 8, 1999		
The Employment Act, No. 11, 2007		
The Public Health Act, Cap. 242		
The Constitution of Kenya 2010		

7. What is your role in creating awareness and avoidance of unsafe conditions and the regulations applicable to work environment?

.....

.....

.....

8. Do you keep records on occurrence of accidents in construction site(s) for monitoring and evaluation?

.....

.....

.....

9. How do you encourage the stakeholders to take part in reducing workplace hazards and accidents and to implement new or improve and evaluate existing safety and health programs/

.....

.....

.....

10. What is the rate of construction hazards and accidents occurrence in site?

Kind of hazard/accident	Rate of occurrence		
	Often	Not often	Doesn't Occur
Falls from high heights or scaffolding			
Slips and falls			
Electrocutions			

Falling debris, materials or objects			
Getting caught in-between objects or materials			
Fires and explosions			
Overexertion			
Machinery accidents			
Getting hit by a vehicle			

**Thank you for your splendid cooperation**

