

**INFLUENCE OF CORPORATE ENVIRONMENTAL
MANAGEMENT ON BUSINESS COMPETITIVENESS:
A CASE OF EAST AFRICAN PORTLAND CEMENT COMPANY J**

By

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DECLARATION

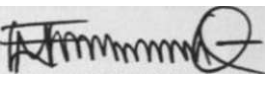
I hereby declare that this is my own original work and has not been submitted for examination at any other institution.

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ABSTRACT

Over the last few decades companies have begun to consider the environment factor in their corporate and marketing strategic decisions. Growing pressure from all stakeholders is compelling companies to take environmental responsibility of all their activities. The key to success is for organizations to understand, integrate and manage environmental concerns as an everyday part of doing business and decision-making. Proactive corporate environmental management ensures that companies achieve both environmental excellence and long-term profitability, attract green consumers or reduce costs. In other words, corporate environmentalism can provide both environmental and socioeconomic benefits to the public and the organization (the triple bottom line). East African Portland Cement Company in Kenya was chosen as a case in this study.

The main objective of this study was to establish the impact of corporate environmental performance on business competitiveness. To achieve this objective the study utilized both secondary and primary sources of data. In the field study questionnaires were administered and interview data was captured from selected respondents. Content analysis and statistical tools of analysis were used to analyze data i.e. the qualitative data was cleaned and coded and interpreted by attaching significance to the emerging themes and patterns. While analyzing quantitative data, the Yes and No responses were re-coded into dummy scores which were evaluated in terms of expected scores. The expected scores were assigned most favoured score of two while less favoured assigned the value of one. All the results were added and averaged to get an environmental score. The environmental scores were tested for difference by department using Kruskal Wallis H test and by gender using Man-Whitney U test.

Data analysis indicated that integrating environmental concerns can result to both environmental excellence and sustainable profitability e.g. the CDM project initiated by EAPCC, had the potential to reduce the overall cost of production and hence position the organization competitively in the cement industry. The study also established that environmental initiatives such as tree planting initiatives and the CDM project that the organization had initiated offer an opportunity for EAPCC to build its corporate image and promote its brand by associating the organization with

responsible business. The findings also indicated that reduction of production cost and increased operation efficiency in EAPCC are partly attributed to installation of modern environmental technology.

The study recommended to the organization to develop stronger marketing strategies by linking corporate environmental related initiatives with responsible business practices and strengthen corporate policy instruments that promote practical approach of integrating environmental innovations in business operations.

DEDICATION

I dedicate this project to my parents Mr. and Mrs. Mugi Nderitu, my brothers Steve and Gabriel Mugi

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LIST OF ACRONYMS/ABBREVIATIONS

ADB:	Asian Development Bank
ARCO:	Atlantic Richfield Company
CDM:	Clean Development Mechanism
CDP:	Carbon Disclosure Project
CO ₂	Carbon dioxide
CSR:	Corporate Social Responsibility
EAPCC:	East African Portland Cement Company
EMS:	Environmental Management System
ESTs:	Environment Sound Technologies
EU-ETS:	The European Union Emissions Trading Scheme
GDP:	Gross Domestic Product
GHG:	Greenhouse Gases
GoK:	Government of Kenya
GRI:	Global Reporting Initiative
IE:	Industrial Ecology
ISO:	International Organization for Standardization
KAM:	Kenya Association of Manufacturers
KFSSG:	Kenya Food Security Steering Group
MNC _s ;	Multinational Corporations
NCAJPD:	National Coordinating Agency for Population and Development
NEMA:	National Environment Management Authority
NO _x :	Nitrogen oxides
NSE:	Nairobi Stock Exchange
OECD:	Organisation for Economic Co-operation and Development
PES:	„ Payment for Ecosystem Services
R&D:	Research and Development
SHE:	Safety Health and Environment
S ₀₂ :	Sulphur dioxide
TQEM:	Total Environmental Quality Management
UN:	United Nations
UNEP:	United Nations Environment Programme
UNIDO:	United Nations Industrial Development Organization
WHO:	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Concerted effort by industry to respond to environmental challenges has mainly been a result of pressure made possible by modern-day pluralist societies. Pressure from governments, civil society, labour movements, consumer groups, stakeholders, investors, and other groups have played a key role in motivating industry to develop new technologies and techniques in order to address environmental sustainability of issues relating to industry operations (Welford & Gouldson, 1993). Concern about the phenomenon of climate change has also exerted enormous pressure on organizations to reconsider business strategies so as to deliberately minimize the impact of their activities on the environment. Some businesses have implemented environmental conservation measures as a way to gain advantage in an increasingly competitive market.

Design and implementation of Environmental Management Systems (EMSs) is one approach business organizations adopt to identify and manage impacts of their activities, products, and services on the environment and to increase market competitiveness. An Environmental Management System (EMS) is a set of processes and practices that enable an organization to reduce its environmental impacts and increase its operating efficiency. If proactively pursued, an EMS not only helps an organization to pay attention to its regulatory responsibilities but also to provide a means for addressing non-regulated environmental aspects such as energy efficiency and resource conservation (EPA, 2002). Agenda 21 recognizes environmental management as among the highest corporate priorities and as a key determinant to sustainable development (UN, 1993). The purpose of the EMS is to ensure systematic approaches to managing environmental issues and full implementation of environmental policy as the foundation of commitments made by a corporate organization. A corporation's recognition of its Safety Health and Environment (SHE) responsibilities is often be stated in a published policy statement. A generalized environmental policy statement is an important indicator of a corporation's environmental commitment. It sends a message from top management to the stakeholders that the corporation is committed to environmental protection (UN, 1993).

Corporate environmental management is a system of identifying, controlling and monitoring business activities that could impact on the environment through both voluntary and regulatory measures (ADB, 2005). Banerjee (2002) defines the concept of "Corporate Environmentalism" as "the organization-wide recognition of the legitimacy and importance of the biophysical environment in the formulation of organization strategy, and the integration of environmental issues into the strategic planning process". Corporate environmental management enables companies to go from reactive pollution prevention (end-of-pipe solutions) to a more proactive platform, where environmental issues are more or less integrated in all functional areas this includes the formulation of an environmental strategy, which has clear relations to other strategic issues, such as corporate goals and product positioning (Madsen & Ulhoi, 2004). The term "environmental management" refers to the administrative and operational activities such as planning, direction, control, resource allocation and others, that are carried through with the objective of obtaining positive effects on the environment, either by reducing or eliminating damage or problems caused by human actions (Barros et al, 2009). Corporate environmental management can be considered as an attempt to translate the concept of environmental sustainability into an operational tool for company managers, since it is concerned with how companies analyze, handle and solve their environmental problems (Madsen & Ulhoi, 2004).

A proactive environmental management program is a win-win-win proposition because it can help an organization save money, be recognized for environmental leadership, and preserve and protect unique destinations. In other words, it must be considered as an element that can influence a company's competitive position (ibid). Reactive pollution prevention normally implies extra production costs such as payment of environmental remediation costs, cost of civil damages arising from negative impact of company activities on the environment, legal fees, and above all, a negative corporate image. On the other hand, a proactive attitude normally indicates an innovative climate. The result could be cost savings or improvements in a product's value, which in turn makes the company more competitive (Porter and van derLinde, 1995).

The move towards environmentally responsible behaviour is a firm's recognition that environmental concerns play an integral part of business management practices. Companies have strong incentives to do so. As already stated in preceding paragraphs, companies do often adopt environmentally responsible behaviour due to a variety of external pressures (e.g. from customers, socially concerned investors, environmental interest groups and regulators) but on the other hand, a firm's own stakeholders influence 'their' company to behave in a socially responsible manner'. There are also mounting market pressures on the corporate world to exercise greater responsibility for its environmental performance (ADB, 2005) such as demonstrated by the demands of "green" consumers for products and services produced in an environmentally responsible manner. Without such pressures, stringent legislative provisions are the only other most significant motivation for corporate organizations to address the environmental concerns seriously (Hutchinson, 1997). Other reasons include the pull of "green" consumers' demand, the threat of more stringent regulations, and pressure from environmental and social activists. In order to ensure adequate environmental management, Welford and Strachan (2005) propose that organizations should design environmental policy, which would identify key performance areas and form a sound basis for setting corporate environmental management objectives. Well-designed and implemented environmental programs would guarantee achievement of stated environmental objectives while a monitoring and evaluation system would ensure that the corporate environmental management system is continuously improved using lessons learned.

1.1.1 Factors that influence organizations to integrate environmental management into corporate businesses

Legislation and regulatory demands coupled with growing political power in environmental debates have resulted in the development of vast volume of environmental legislation all over the world (Gill et al, 2007). There are a number of environmental legislation around the world that target business and industry to comply with regulatory requirements of environmental management (Madsen &

¹ See Christiansen and Garcia, [September 2003]

Ulhoi, 2004). Legal framework for environmental permits is becoming more stringent to curb and control further destruction of the environment. Several economic studies have long held the myth that environmental regulation leads to competitive disadvantage. On the contrary, good regulation can have a positive impact through stimulating dynamic responses, innovation and better practices. Other observations by the World Bank hold that regulatory requirements for higher environmental standards in industrialized countries have not tended to lower their international competitiveness (Network of Heads of European Environment Protection Agencies, 2005). Potential benefits include improved efficiency in production and waste management through the auditing process, a reduced risk of costly environmental accidents, a lower corporate liability exposure, and improved access and competitiveness in the marketplace (Magali, 2002). The development of legislation and environmental policy is one of the factors that have contributed to increased relevance of the environmental variable in managerial decisions (Gill et al, 2007).

Consumer demands have also influenced integration of environmental concerns into management of corporate organization. Initially, quality, price and customer service were once the most vital ethical concerns in business. Today consumers influence business ethics, and have been instrumental in bringing about positive change. For example, consumers expect businesses to demonstrate ethical responsibility in matters affecting employees' working conditions, the community and the environment. The possibility that corporate sales may plummet if consumer concerns are not addressed has influenced many management boards to ensure that environmental responsibility is quickly climbing up the strategy agenda of companies across many industries. Being green is becoming an important part of business strategy in industries as such retail, manufacturing, financial services, and telecom. Why? Most powerfully because their customers are demanding it. Both business and consumers are increasingly looking to do business with companies that share their values about protecting the environment and creating more sustainable economic growth (Cisco Systems, 2009). For example, when major retailers in industrialized countries place an order for products, they often impose a host of labour, environmental and other requirements on the supplier (ADB, 2005). The buyer often insists on the product quality control (Ibid). In other words, consumers are increasingly taking into account a company's environmental record when making purchasing decisions (Lash & Wellington, 2007).

Consumer action, therefore, can be very effective, in ensuring environmental responsibility by corporate organizations i.e. if enough consumers stop buying from a business then the business is be forced to change.

Good environmental management can help companies reduce their operational and liability costs. Factors such as the threat of environmental liabilities and high costs of compliance with anticipated regulations as well as market pressures on firms that produce final consumer goods and have large capital-output ratios play a statistically significant role in inducing corporate environmentalism among these firms (Khanna & Anton, 2001).

Information Revolution has also played a key role to the uptake of environmental issues by corporate organization. In a world of an overzealous mass media, internet access and ubiquitous cell phones, it is increasingly hard for any business or government to hide from public scrutiny. Firms dumping toxic waste into rivers and streams can be exposed through a photographic image of their asocial behaviour on the internet, consumer boycotts damaging corporate reputation and profitability will surely follow (ADB, 2005)

Lending institutions are continuously incorporating potential environmental liabilities as part of lending risks when determining borrowers' requests for credit. Bankers are increasingly recognizing that they might be held legally responsible for environmental mistakes of their corporate borrowers. As a result, they are beginning to include environmental considerations in their lending decisions and viewing poor environmental performers as financially risky (Hoffman, 1997). This can also be considered as another factor that has contributed to integration of environmental concerns in organizations that are out to seek loan and credit advances from financial institutions.

Corporate image and economic factors also play a hand towards adoption of environmental concerns by corporate organizations. The reputation of an organization may be enhanced by an environmentally sensitive image, which may generate good publicity and encourage customer loyalty. The economic attributes used to determine an organization's decision to implement a corporate and environmental sustainability

program can be assessed in terms of internal and external drivers for that particular organization. While both will ultimately impact the organization's bottom line, the internal drivers are about improving effectiveness and efficiency within the organization, while the external factors are about creating a competitive advantage in the marketplace.

The impact of economic activity on the sustainability of renewable resources and on the natural environment as a whole has been an often-repeated concern over many decades. However, only in recent years has there been widespread public and political resolve to take concerted action (Schnurr & Holtz, 1998). The management of natural resources has become one of the essential foundations for the development of new administrative and strategic managements. Since the development of Agenda 21, in which the managers clearly demonstrated to be conscious of sustainable development, the necessity for change has become inevitable (Barros et al, 2009). Responses to new pressures may be found in the private sector's widening interest in globally recognized environmental management certification programs such as the International Organization for Standardization (ISO) and its ISO 14001 environmental standard as well as growing acceptance of the principle and practices behind the United Nations Global Compact for Corporate Citizenship in the World Economy, the Global Reporting Initiative (GRI), and the Equator Principles applied to large private investments (ADB, 2005). Hence as customers, communities, private organizations and governments become more sensitive to environmental issues, there is increasing pressure on business societies to be more environmentally careful (Folmer & Zhang 1995).

This study draws on the factors that influence corporate organizations to use environment as a competitive edge and the environmental strategies for achieving competitiveness to determine the extent to which corporate environmental performance impacts on business competitiveness.

1.2. Statement of the Problem

The investment and innovations of industry drive economic growth and satisfy the demands of the consumer. However, environmental investment and innovation often

appears to be an attractive notion for the enhancement of business performance at the theoretical realm but its realization at practical level remains uncertain.

Corporate organization, be it because of the resources that they consume, the processes that they apply or the products that they manufacture, their activities are major contributors to environmental destruction (Welford & Gouldson, 1993). Many of these negative impacts on the environment are of such magnitude that they are of global concern. For example, air and water pollution continues to rise and solid waste management is becoming an enormous problem (ADB, 2005). For a long time, many of such environmental problems were blamed on an antagonistic relationship that existed between economic development and environmental protection. Those who spoke in favour of advanced economic development often viewed initiatives towards environmental protection as a brake on growth. For example, during the 1970s, concerns about the ever more openly discussed 'ecological crises' were met with a pragmatic legal and administrative responses in the Western industrialized countries (Berger et al, 2001).

During the past few decades, environmental disasters such as Bhopal disaster² have contributed to an increasing awareness of the effect of business activities on the biophysical environment. Such accidents demonstrated that human activities (including common activities in the business sector) influence the natural environment in one-way or the other. However, humans have duties to other humans and given the massive powers of environmental alteration that the business has recently attained, there are legal and moral imperatives to take care that there is no injustice to other humans today or tomorrow³ (Rolston, 1988).

The Environment strategy of World Bank indicates that the private sector is becoming a decisive factor in influencing environmental performance and long-term environmental sustainability (World Bank, 2002). It is also widely acknowledged that

² **The Bhopal chemical occurred on the night of December 3, 1984. The accident claimed about 3,800 human lives and billions worth loss of property. It involved a massive release of Methyl Isocyanide (MIC) gas from pesticide plant located in the Indian City of Bhopal (http://en.wikipedia.org/wiki/Bhopal_disaster assessed on 7th Jan, 2011)**

³ **This is consistent with the sustainable development Principle of Intra-generational and Intergenerational equity**

corporations play an increasing role in global environmental politics, not only as lobbyists in international negotiations or agents of implementation, but also as actors creating private institutional arrangements that perform environmental governance functions (Fulkner, 2003). These governance functions within the corporate organization are meant to complement international and national efforts towards environmental management. Further corporations are increasingly becoming aware of the financial consequences of environmental contingencies and environmental risk and hence environmental management is becoming more central to corporate governance (IFAC, 1998).

Some corporations are now beginning to see environmental protection as a value added factor in production and services (Hempel, 1996). From a risk perspective, environmental criteria can add value by, for example, ensuring that the management systems are in place to minimize costs of environmental compliance and incidents (Ganzi et al, 2004). Concepts such as Total Environmental Quality Management (TQEM) and Industrial Ecology (IE) are slowly making their mark on the management philosophies of major corporations (Hempel, 1996).

In Kenya a development programme report commissioned by Danida on Environmental mainstreaming in Kenya acknowledged, the recognition of the importance of environment by the private sector to production or profits as ever more apparent to businesses who themselves are affected. At the individual business level, safeguarding production processes requires mainstreaming the environment into core business models (Krassowska, 2009). The report also noted that Government of Kenya needs to devise and provide the necessary fiscal and financial incentives framework to make business restructuring the better financial option than business-as-usual.

The 2008 OECD's African Economic Outlook indicates that Africa has experienced a record economic growth for four consecutive years. Overall in 2007, the continent registered a 5.7% GDP growth. The improving performance of Africa's economies has led to a strong growth in the cement demand in the region (World Bank, 2009). This trend is predicted to continue due to factors such as economic reforms and debt relief which are benefiting the construction sector and consequently resulting in an

increase in the cement demand in most Sub-Saharan countries (Culverhouse, 2006). Cement manufacturing is energy intensive and account for high Greenhouse Gas emissions i.e. 5% of total global greenhouse gas emissions, is as a result of cement manufacturing process (World Bank, 2009).

This study therefore set out to investigate measures employed by East African Portland Cement Company (EAPCC) to strengthen sound environmental management and how effective they are in enhancing business competitiveness.

1.3 Project Objectives

The main objective of the study was to establish the impact of corporate environmental performance on business competitiveness. The study sought to find the link between corporate environmental practices and initiatives and business competitiveness.

1.3.1 Specific Objectives

The specific objectives of the proposed study include:

- To establish if environmental related corporate social responsibility (CSR) initiatives can enhance business competitiveness.
- To identify the extent to which modern environmental technology influence business competitiveness.
- To establish the impact of an environmental policy towards achieving business competitiveness.

1.4 Research Questions

- i. How do environmental related corporate social responsibility (CSR) initiatives enhance business competitiveness?
- ii. How does modern environmental technology contribute to organizations' competitive advantage?
- iii. What role does a corporate environmental policy play towards achieving competitive advantage?

1.5 Hypotheses

Ho There is no relationship between increase in Corporate Environmental Performance and business competitive advantage in East African Portland Cement Company

1.6 Justification of the Study

Economists and business managers have tended to view profitability and environmental protection as being in conflict, the predominant economic paradigm being that the purpose of a firm is to maximize profits for its shareholders and for some this is the only moral imperative for corporations (Bakan, 2004). However, for organizations to be truly sustainable, they must achieve success using multiple measures beyond the domains of financial performance. The triple bottom line approach suggests organizations become accountable from an economic, environmental and social perspective. Environmental protection is an essential task of company management and an integrated system of environmental management in a company would enable the company to meet its ecological responsibilities and secure business success (Hai and Abraham, 1995).

The multinational corporations (MNCs) are coming from an era where they have had a reputation of having created an enormous integrated market for goods and services that has had the effect of greatly accelerating the extraction and consumption of natural resources and the pollution output of industrial manufacturing and agriculture. This method has not been sustainable and new approaches that promote resource efficiency and sustainable consumption and production ought to be institutionalized (Hempel, 1996). Ethically enlightened executives have nearly agreed to anything; they agree that profit making cannot be the sole business of business, and environment and other social concerns should get at least as much as corporate attention as production, sales and finance (Rolston, 1988). There is widespread evidence of modern corporations radically adjusting their environmental behaviour (ADB, 2005).

Many business now have environmental policies, environmental management systems and undertake environmental audits (Welford, 1997). This could be as a result of the

realization that there exists a physical, symbiotic relationship between business and the natural environment, the fate of one is intimately tied to the fate of the other.

Over the past two decades the question of environmental responsibility has become an increasingly popular area of study within the field of business ethics. Private sector operations are increasingly realizing that social and environmental responsibility can provide both short and long-term rewards and that ignoring the triple bottom line of sustainable development will ultimately be detrimental to their own business (UNEP, 2008). In Nairobi Stock Exchange (NSE), companies listed in Industrial and Allied sector are considered to have adverse effects on the environment and for this reason they are closely monitored by the public, the government, environmental activists and potential investors (Ponnu & Okoth, 2009).

The cement industry faces a unique challenge in reducing greenhouse gas emissions owing to the large amounts emitted i.e. 5% of total global greenhouse gas emissions; originate from the calcination of limestone (World Bank, 2009). Cement companies are also categorized under the industrial and allied sector in the Nairobi Stock Exchange which represents a group of companies that are essentially energy intensive and account for high GHG emissions. EAPCC is an NSE listed company and the second biggest cement company in Kenya which is partly state-owned hence EAPCC provided an excellent choice as a case study for this research. Additionally cement companies are increasingly responding to environmental matters arising from their operations and developing new business opportunities in order to remain competitive. Hence the need to, evaluate the influence of corporate environmental management on business competitiveness.

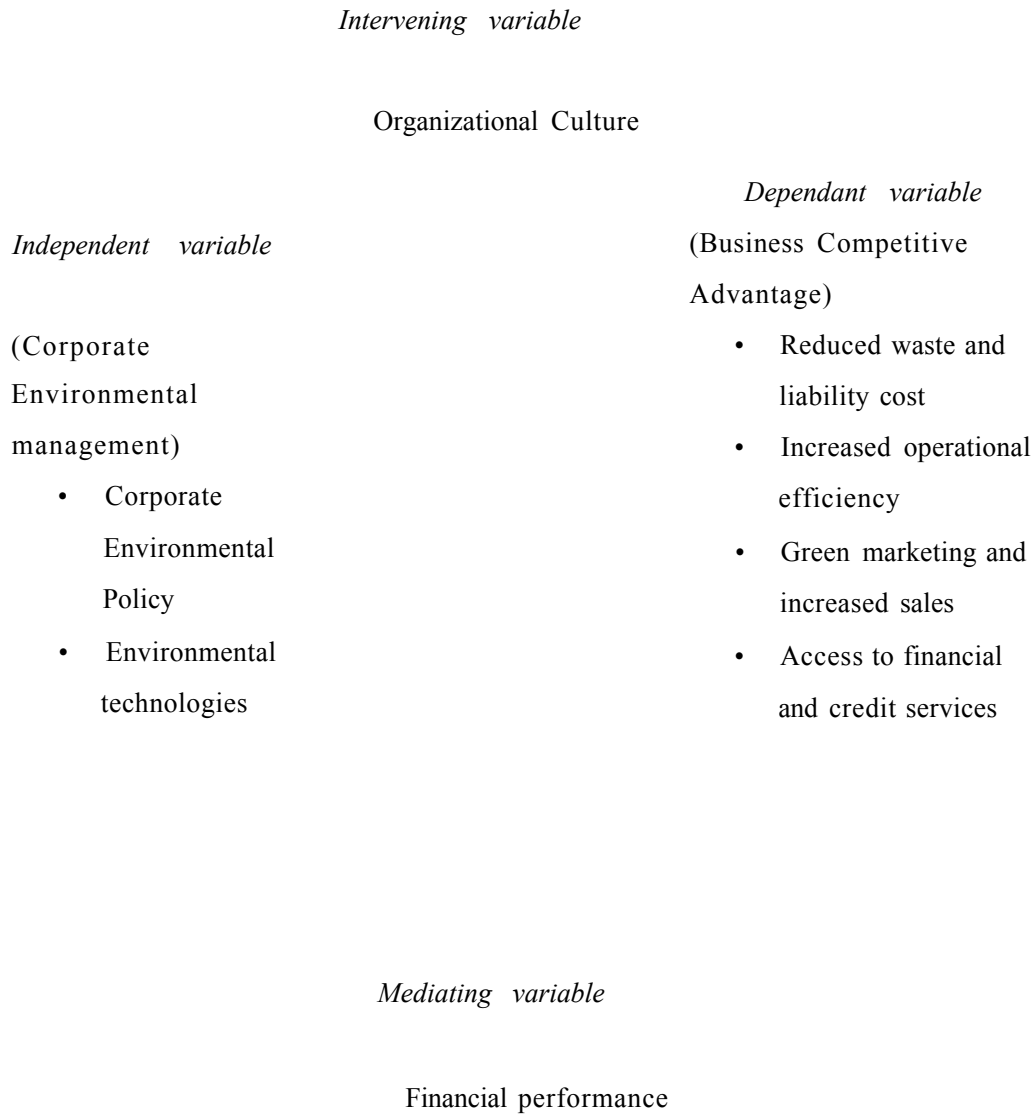
1.7 Conceptual Framework

A corporate environmental policy and modern environmental technologies are indicators of corporate environmental management which is the independent variable in this study. A corporate environmental policy reflects a company's commitment to sustainable business practices. A well designed environmental policy would identify key performance areas and form a sound basis for setting corporate environmental management objectives (Welford and Strachan, 2005). Russo & Fouts (1997) also

noted that as a proactive environmental policy takes hold in a firm, it is expected to redesign its production or service delivery processes. Such a redesign would likely involve the acquisition and installation of new technologies. Modern environment sound technology⁴ is required to achieve enhanced environmental performance, in cement industry technology is continually being improved to reduce waste and increase efficiency. Modern environmental technology and corporate environmental policy are used as tools to realize good environmental management. Good environmental management consequently helps companies to reduce their operational wastes and liability cost or better still develop innovative products targeting new green markets for example cement manufacturing involves uses of natural resources as raw material and some of its production processes have significant impacts on the environment and attempts to mitigate negative impacts can be used to gain competitive edge. Reduced waste and liability cost, green marketing and increased efficiency in energy use and production process are indicator variables for business competitiveness (dependent variable). These indicator variables are examples of factors used to gain competitive edge over other businesses in the same industry (see Figure 1.1).

⁴ EAPCC has installed state of the art closed circuit mill (*mill number J*) which has the capacity to improve efficiency and reduce energy use

Figure 1.1: Conceptual Framework



Source: Adapted after Porter and Linde, 1995

To implement superior environmental performance an organization requires a change in organization's culture, human resources and the organizational capabilities required to manage these proposed superior environmental performance. An organization's culture influences how business competitive edge is achieved through corporate environmental management hence the entire workforce must be involved and committed if a firm is to implement a policy that promotes sound environment

management and sustainable development strategies. Developing an environmental policy thus builds within a firm the resources of organizational commitment, increased employee skills and participation, which, are emerging as prime resources in the modern competitive environment. Use of clean technologies also adds complexity to production or delivery processes and requires increased skills from workers at all levels of the firm (Groenewegen & Vergragt, 1991). Therefore, an organization's culture influences the interaction between corporate environmental management and business competitiveness.

Mediating variables are affected by the independent variable i.e. (corporate environment management) and consequently influence the outcome of the dependent variable i.e. (business competitiveness). For example Lack of appropriate environmental technology impedes on the financial performance of an organization which would prevent an organization from attaining increased operational efficiency.

1.8 Scope of the Study

The study focused on corporate environmental management activities of East African Portland Cement Company in Athi River town, Machakos County. The study identified and evaluated corporate environmental initiatives by the cement Company which gave the company a competitive edge over others in the industry. All environmental activities undertaken by the company that extend beyond the company's premises were also considered.

1.9 Limitations of the Study

The study did not capture corporate environmental management activities of other players in the cement industry in Kenya. The findings of the study do not therefore offer industry-wide comparisons.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The management of natural resources has become one of the essential foundations for the development of new administrative and strategic managements (Barros et al, 2009). Contemporary corporate environmental and resource management theory is inspired by the concept of environmental sustainability, which is basically concerned with how the quality and quantity of raw materials can be indefinitely maintained without degrading the soil, disrupting natural habitats, polluting watercourses, deteriorating" the absorptive capacity of the environment and so on (Madsen & Ulhoi, 2004).

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2.1 Theoretical Framework

All views on corporate responsibility are based on the same premise: that there is a corporate *strategic* approach to environmental and social issues (Banerjee et al, 2003; Lyon, 2004). Hence, it contains both corporate environmentalism and corporate social responsibility (Dyllick and Hockerts, 2002), leading to the current construct that corporate environmental management includes any initiative and strategic management decisions that reduces the environmental impact and/or contributes to the improvement of the social conditions beyond the firm's legal obligations. Environmental corporate responsibilities integrate environmental sustainability goals and objectives in organizational operations.

The Point of departure is the stakeholders' theory approach combined with ecological modernization theory. Therefore, two theoretical approaches that were dealt with in this study include stakeholders and ecological modernization theory. A core belief of ecological modernization is that economic growth can be disengaged from environmental degradation and Ecological Modernization is achieved through environmental policies, innovation, and new technologies (Baker, 2007). Ecological modernization theory holds that capitalist economic structures can be transformed to avoid long-term environmental damage, through the introduction of modern environmental technologies and reforming modern institutions. Empirical evidence,

drawing on ecological modernization practices in some European and North American contexts, lends support to this view (Jay & Morad, 2006). As both theory and practice, ecological modernization theory is concerned with relations between economic development and environment. As a practice, ecological modernization, seeks to develop methods and models for reducing environmental impacts, through such means as emissions and waste reduction, resource substitution and minimization of resource consumption. Examples of representative practices associated with ecological modernization include "strategic environmental management", "cleaner production", "industrial life cycle analysis", and "environmental quality assessment" systems such as ISO 14001 (ibid).

'A fundamental premise of the stakeholder concept is that effective corporate management involves achieving and maintaining a balance between the interests of multiple parties that have a stake in business operations' (Mitroff 1983). The business entity is a social organism and must be of benefit to the society if it is taking inputs from the same. Since it is a business entity, it must exist for that specific societal segment for whose service it chose to come into being (Fatima, 2008). Studies show that every company has different stakeholders and that they influence organizational decisions in many different ways, stakeholders satisfaction can be achieved only if the organization enters into a mutually beneficial relationship of exchange with each one of its stakeholders including the employees, shareholders, creditors, suppliers, government, and the natural environment to name a few. This theory acknowledges the rapid-changes and intricate relationships between organisations and their stakeholders and that these relationships involve responsibility and accountability. Stakeholders' interest and concerns about environmental issues has meant that stakeholder involvement has become a fundamental aspect of corporate environmental management (Starik, 1996). Large and medium-sized Dutch industrial firms experience environmental influence mainly from political (government) and internal stakeholders (Boons, De Groene and Batenburg, 1998). In recent years, corporate organizations have become more proactive applying stakeholder engagement approach in Corporate Social Responsibility, in the belief that trust and cooperation could give firms a competitive advantage which is the development and popularity of the stakeholder engagement approach (Andriof & Waddock, 2002).

2.1.1 Theoretical Gaps

As noted earlier in the preceding paragraphs the foundation of stakeholder theory is that effective corporate management involves achieving and maintaining a balance between the interests of multiple parties that have a stake in business operations. Scholars Fontaine, Haarman & Schmid, (2006) have found this premise to be ambiguous because stakeholders fall in a hierarchy and hold different spheres of influence on an organization and it is therefore an illusion to envisage an exhaustive consideration of all the potential stakeholders.

Some of the theoretical gaps advanced against ecological modernization theory is its overemphasis on efficiency and pollution control over greater distress about overall resource consumption and associated environmental impacts. Another concern is the potentially uncritical stance of ecological modernization theory toward the transformative potentials of modern capitalism (Buttel, 2000). According to Mol and Spaargaren (2003), "Ecological Modernization studies concentrate on 'environmental radicalism' rather than on 'social radicalism'. That is, in their assessments of existing patterns of change in-the making Ecological Modernization perspectives tend to focus on the contributions to environmental reform, and not primarily on the effects of these changes in terms of various other criteria".

'The Resource-based theory view of competitive advantage is founded in a firm's assets that are valuable and inimitable. A firm's abilities to marshal these assets (valuable and inimitable) to produce superior performance determine competitive advantage' (Grant, 1991). Theorists however, have noted that the theory is weak in its lack of mention on role of a firm's links to its external environment. Barney's (1996) noted that for a firm to achieve competitive advantage it has to nurture both its internal and external environments.

2.2 Business Firms and Environmental Management

Sound environmental management is an important contribution to sustainable development, and it is increasingly seen as both a business responsibility and a business opportunity. Business enterprises have a role to play in both respects. Some companies have achieved a great deal by devising and implementing environmental policies. The petrochemical industry led this initiative because of their considerable

impact on the environment and the unfavourable public image of the industry. Their actions have resulted in remarkable reduction in environmental damage (Hutchingson, 1997). Some companies are already taking their environmental policies beyond the first four Cs - (compliance, cost savings, care and credibility) and are reaching towards the fifth C customers (or Competitive advantage). Companies that invest in environmental initiatives tend to be more successful because they keep their staff healthy and better motivated, reduce energy, water, raw material and disposal costs, develop new customers and reduce liability risk (Hai & Abraham, 1996). Naturally, business managers have a direct economic incentive to make environmental investments where they deliver positive returns or reduce significant risks (ADB, 2005). There are many circumstances in which addressing environmental problems can result in profitable outcomes. For instance, by being the first to certify its environmental management system, a firm may differentiate itself from competitors within the same sector (Orsato, 2006).

For many business people, environmental management means risk management. Their primary objective is to avoid the costs that are associated with an industrial accident, a consumer boycott, or an environmental lawsuit. Fortunately, effective management of business risk stemming from environmental problems can itself be a source of competitive advantage (Reinhardt, 2007). Environmental economists like Wicke, Potier and Kneese have repeatedly shown that reasonable environmental measures reduce environmental damage than they cost (Shrader-Frechette, 1993).

Competitiveness, which originates from the strategic management perspective argues that individual companies focus on improving innovation, resource productivity and efficiency thus offsetting cost, making companies more competitive and profitable (Porter and van der Linde, 1995). By the end of the 1990s, Amory Lovins, Hmtfer Lovins, and Paul Hawken in their review of natural capitalism: creating the new industrial revolution (1999), readdressed resource productivity issues from a more technical perspective. They demonstrated that by using eco-design and eco-efficiency measures, has the potential of a new set of business practices to enhance resource productivity which is so considerable that a new economic system may emerge from its application. The authors substantiate their argument by presenting, examples of corporations that are increasing the productivity of natural resources, shifting to

biologically inspired production models, moving to a solutions-based business model, and reinvesting in natural capital. Such practices would promote what the authors call "Natural Capitalism," where regulatory and market mechanisms eventually succeed in making organizations internalize environmental costs (Orsato, 2006).

Firms design low-impact products that reduce the ecological footprint e.g. minimize pollution, waste, resource usage, and energy (Stubbs & Cocklin, 2008). The East Africa Portland Cement Company (EAPCC) for example has put in place measures to ensure that the manufacturing of cement is done in an environmentally friendly manner, paying particular attention to GHG emission reduction. In 2007 EAPCC started working in a project involving blending of cement. This project reduces carbon dioxide emission by 105,000 tonnes per year.

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Responsible business conduct may further place companies in a more favourable legal and political environment, improve their public image, give them a strategic advantage over competitors in the long-term and help them to make their management systems more effective (ICC, 2002).

2.3 Corporate Environmental Policy

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An environmental policy statement is an important indicator of a corporation's environmental commitment. It sends a message from top management to the stakeholders that the corporation is committed to environmental protection (UN, 1993). An environmental policy reflects a company's commitment to sustainable business practices which include: compliance with environmental regulations, advancement of environmental awareness, minimization of environmental risks, reduction of emissions and waste and conservation of energy and water consumption. It is therefore imperative for the policy to stress a commitment to continuous improvement.

Environmental policies seem to be formulated, not only with respect to shareholders, but additionally, with regard to their potential impact upon customers, suppliers, employees, management, the community, regulators, and other stakeholders. This requires that the policy is fully supported by senior management, the staff and also the general public and other stakeholders.

For companies to be competitive, they must be able to build and operate systems to convert inputs to value-added outputs. A number of factors play a role in a company's success, with respect to environmental performance, effective policies must take these factors into account and allow companies to innovate to take advantage of each of these benefits (Mario et al, 2002).

Environmental policy is most needed to achieve the environmental objectives, however in situations where the policy provides for economic gains, these opportunities should be identified and exploited by firms; more emphasis can be put on voluntary approaches by industry (OECD, 2010). It is necessary for an effective environmental policy to have impacts that enhance competitive edge in the sense that sustainable production is more competitive and unsustainable production is less competitive. In their work Russo & Fouts, (1997) also noted that 'as a firm develops an environmental policy, it must also develop a reputation for that policy since such a reputation is in itself a source of market advantages'. They observed such "reputation-profit links in the business world i.e. firms from ARCO to Procter & Gamble generally credit part of their profits to a reputation for pro-environment corporate behavior". For corporate environmental leaders, the challenge is therefore to identify the potential competitive advantages of their environmental positioning and effectively communicate the value, both tangible and intangible, of their environmental performance to investors, customers and stakeholders. Successful communication along these lines is seen by many as a fundamental building block for advancing the business value case (Ganzi et al, 2004).

2.4 Environmental Management System

Emphasis has been placed on policy as this provides the direction for the remainder of the Management System (Herczeg, 2002). An Environmental Management System (EMS) is a framework that helps management assign responsibilities, motivate staff, implement best practices, and monitor performance. An EMS typically involves a set of activities, led by a core group of staff that includes meetings, planning, training, incentive programs, utility monitoring, and reporting progress (EPA, 2002). An EMS enhances, corporate organizations to achieve their corporate objective and at the same time enhance their environmental management practices (ibid). Environmental

management systems are intended to lead companies to continuous improvements in the company's protection of the environment (while continuously improving the EMS **itself**), and to publicly implement environmental policies and activities that enhance environmental protection' (N6meřek & Kocmanova, 2007).

By implementing an EMS, it means proactive planning which prevents problems from going unnoticed, and helps you get to the root causes that create them in the first place. By looking at all aspects of performance, you can find improvement opportunities that might otherwise go unnoticed.

An environmental management system (EMS) provides a more systematic approach to environmental management; it can reveal many opportunities for improving efficiency. This can help firms to cut waste, prevent pollution, conserve resources, and save money. For example, an organization could benefit from improved operating practices as well as lower operating costs by switching to newer, cleaner technology. An EMS can show where upgrades and other environmental improvements best fit into the overall business strategy, and help firms to weigh the costs and benefits of changes so they can make well-informed decisions (EPA, 2002). At an even more basic level, an EMS can help you secure access to certain markets. Today, some industries, such as automobile manufacturing, are requiring suppliers to meet codes of environmental conduct or to be certified under the international EMS standard, ISO 14001 (ibid). Having an EMS not only helps the environment but also, directly corresponds to a better triple bottom line.

2.5. Modern Environmental Technologies

Corporate investments in environmental technologies have traditionally been considered a drain on a firm's resources, creating an inherent conflict between environmental and financial performance (Vanden and Thorburn, ^008). More efficient production process however, means better cost saving and this benefit is able to offset the compliance cost for environmental regulation and the innovative investment thereby influencing business entities to adopt modern environmental technologies. Firms applying technological changes and cleaner production systems are therefore improving their production efficiency and subsequently economic competitiveness (Porter and van de Linde 1995: b). Other than gaining production efficiency and economic competitiveness by adopting environment sound

technologies (ESTs) other factors that influence adoption of ESTs include need to access foreign markets and national environmental regulations and standards. 'While Current regulation might not exert much pressure on firms in certain countries, an anticipated increase in the stringency of such regulations might nevertheless motivate firms to start improving environmental performance by adopting environmental sound technologies' (UNIDO, 2002).

To access foreign markets, firms in developing countries often need to comply with stricter environmental regulatory requirements than at home. Environmental standards of foreign countries therefore can effectively stimulate firms to adopt environmental sound technologies. Good environmental performance by competitors may also stimulate firms to adopt environmental sound technologies and improve their environmental reputation (ibid).

'The realization that technology and not just environmental goods and services are intimately bound together has had broad implications for the moulding of technology in environmental and economic policies' (Heaton, Repetto & Sobin, 1992). 'Environmental performance remains one of a number of factors that engineers and managers consider in production technology choice and product design. This mostly invisible environmental factor can sometimes lead to improvements in productivity, efficiency, and product quality. And even when cleaner production and pollution prevention are net costs to business; they are usually less expensive than end-of-pipe pollution control'(Testoretal, 1991). i|k.,

The multinational corporations (MNCs) have been innovating and improving efficiency for many years and many firms have made major advances in their environmental performance (Welford & Gouldson, 1993). The MNCs tend to be more advanced or sophisticated in their environmental management than even most national environmental agencies. They can transfer environmental technology quickly, draw on large research and development (R&D) programs for developing waste management and pollution control programs and they can even compare notes on the most promising environmental innovations developed by countries in which they operate (Hempel, 1996). Market mechanisms can be used to harness and the transfer

MNCs advanced environmental technologies, which are so vital if the environment is to be protected (Welford & Gouldson, 1993).

2.6 Environmental Strategies by Business Companies to achieve competitive advantage

Competitive advantage is normally defined as the ability to earn returns on investment consistently above the average for the industry (Porter, 1985). Barney (1991) indicates that a firm is said to have a competitive advantage when it implements a value creating strategy not simultaneously being implemented by any current or potential competitors. For most companies, environmental investments can generate some gains, even if marginal. However, because the levels of economic benefits depend on a wide array of variables, ranging from internal capabilities to the structure of the industry, managers need to identify the areas in which firms can focus their environmental efforts in the pursuit of competitive advantage. Companies in different sectors and industry have adopted different strategies to create competitive advantages for themselves through environmental investment. The subsections below briefly discuss some of these strategies.

2.6.1 Eco-Efficiency

Firms that need to concomitantly reduce the cost and the environmental impact of organizational processes should focus on eco-efficiency strategy. Since cost reduction is crucial, however, most companies working on eco-efficiency strategies do so without much fanfare. For instance, most small and medium enterprises may simply not have enough resources to pay for EMS certification. However, financial constraints may not deter them from implementing a much simpler and less

bureaucratic EMS than the ones using the guidelines of ISO 14001. Firms supplying a relatively small number of other firms may choose to avoid the costs of EMS certification and instead invite their clients to audit their systems. Overall, firms focusing on eco-efficiency strategy develop capabilities to continuously increase the productivity of their organizational processes while decreasing the environmental impact and the costs associated with them (Orsato, 2006). In general eco-efficiency practices can generate some level of savings in virtually every firm. Particular circumstances result in some being rewarded more than others. Preliminary empirical evidence suggest that eco-efficiency strategies have greater potential to generate

competitive advantage in firms that supply industrial markets, face relatively high levels of processing costs, and generate wastes and/or by-products. In circumstances where the final consumers may not pay for environmental protection, the focus on an eco-efficiency strategy simply makes business sense (ibid).

2.6.2 Eco-Branding

Marketing differentiation based on the environmental attributes of products constitutes the most straightforward strategy of competitive advantage. Eco-products and services represent a defined market niche explored by firms worldwide; firms that intend to generate competitive advantage from strategies based on eco-branding need to observe three basic pre-requisites: consumers must be willing to pay for the costs of ecological differentiation; reliable information about product's environmental performance must be available to the consumer and the differentiation should be difficult to be imitated by competitors (Reinhardt, 1999). Consumers need to perceive a clear benefit for their purchase. Proto and Supino (1999) argue that the quality of the environmental information offered by firms about their activity may be their main source of competitive advantage when attempting to gain their customers' loyalty. Customers' loyalty comes with customer satisfaction. To achieve customer satisfaction the product should be competitive quality-wise and price-wise. Product quality necessitates process and resource quality that in turn necessitates quality decision-making made in a quality organizational climate.

2.6.3 Corporate Environmental Leadership

Some companies not only want to increase the efficiency of their organizational processes, but they also want customers and the general public to acknowledge their efforts. They are willing, for instance, to spend money in the certification of their EMS, subscribe to business codes of environmental management, and invest in unprofitable environmental improvements. They are also willing to pay to publicize these efforts. The adoption of schemes such as the Global Compact, or the Global Reporting Initiative can eventually differentiate corporations from competitors as well as produce some positive outcomes for the firm. Corporate image, for instance, might be enhanced, influencing a positive public opinion about organizational practices (Orsato, 2006). According to Farai (2010), evidence from the Carbon Disclosure Project (CDP) in South Africa (2009) tends to show that there is a trend in Africa in

which only the energy intensive companies and those facing direct physical and economic risks from climate change (i.e. mining, construction, industrial & allied and retail) are showing leadership in responding to climate change and other environmental matters.

2.7 Corporate Environmental Responsibility in Business Organizations

World business organization defines corporate social responsibility from a business perspective as "the voluntary commitment by business to manage its activities in a responsible way". A growing number of companies approach corporate responsibility as a comprehensive set of values and principles, which are integrated in business operations through management policies and practices and decision-making processes. Environment-related CSR describes the measures a company can take to mitigate its negative impact on the environment, for example, energy efficiency measures or less use of pollutants. It can also refer to goods and services that actively help to improve the environment (European Communities, 2009). Asian development bank defines corporate environmental responsibility as corporate initiatives that reduce the negative impact made by the company on the environment (ADB, 2005).

The corporate environmental orientation concept refers to the firm's responsibility towards the environment, the recognition of the impact of their economic activity on nature and the need to minimize such impact. It is a new philosophy reflected in the firm's internal and external areas. On the one hand, the focus is on values, ethical behaviour and the commitment to environmental protection. On the other hand, there is a need to meet the stakeholders' goals through environmental protection, sustainable development and the projection of a positive public image to maintain the firm's reputation. In this respect, the number of firms that follow the principles of Corporate Social Responsibility is growing steadily, and one of the reasons is that the customers' perception is different if the firms develop their activity with or without a commitment to those principles (Gill *et al.*, 2007). As ecological and social responsibility become increasingly important issues for society, consumers value the way organizations manage their production processes and supporting activities hence consumers are increasingly expressing the value they attribute to environmental protection through shopping behaviour (Orsato, 2006).

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2.7.1 Moral argument of Corporate Social Responsibility

While recognizing that profits are necessary for any business entity to exist, all groups in society should strive to add value and make life better. Businesses rely on the society within which they operate and could not exist or prosper in isolation. They need the infrastructure that society provides, its source of employees, not to mention its consumer base. CSR is recognition of that inter-dependence and a means of delivering on that obligation, to the mutual benefit of businesses and the societies within which they are based. Advocates of CSR believe that, in general, the goal of any economic system should be to further the general social welfare. In advanced economies, the purpose of business should extend beyond the maximization of efficiency and profit. Increasingly, society expects businesses to have an obligation to the society in which they are located, to the people they employ, and their customers, beyond their traditional bottom-line and narrow shareholder concerns. ,>_p

CSR is a fast developing and increasingly competitive field. Its importance continues to grow, while increasing numbers of companies are taking it on board and developing prowess. The majority of Britain's leading business and financial journalists and institutional investors, as well as a significant proportion of investment analysts, say that knowing about a company's environmental and social responsibility would improve their opinion of it (Hines & Worcester, 1998). To put sustainability into practice, companies are beginning to transform their core business processes and develop environmentally and socially responsible products and services, corporate sustainability requires understanding the "triple bottom line", which includes economic, societal and ecological performance (Fiksel, 2001). Corporate Social Responsibility has become increasingly important to businesses over the last few years. The case for demonstrating corporate responsibility is getting stronger. Expectations among key opinion formers, customers and the public are increasing, staying on top of and in front of this strengthening tide of opinion for company involvement is a challenge for all companies (Mines & Worcester, 1998). Donating a portion of your profits to a good cause is one to the most cost effective ways; ito associate your business objectives with an environmental goal. Those simple words " a portion of proceeds go to" can be a powerful influence when the usual core purchasing criteria i.e. price, quality, appearance, taste, availability and convenience

are less compelling (McKay et al, 2007). There is tremendous untapped potential of environmental protection that has a cost-reducing and thus profit-increasing effect. Besides measures for energy, water and raw material savings that simultaneously promote environmental protection and profitability, there are new market opportunities for goods and services (Hai & Abraham, 1996).

The reputation of a business can be damaged or enhanced by the way in which environmental matters are tackled; there is no doubt that public opinion can be a powerful force for change. As ethical issues, the pressure for environmentally responsible behaviour and disclosure of information gain strength the more resources need to be allocated to reducing risks, avoiding damage and finding solutions that make business sense (Hutchinson, 1997). Many companies began environmental management certification efforts in the mid-1990s due to increased global competition, customer awareness, and the potential benefits both in terms of bottom-line performance and operational efficiency. Businesses have been able to achieve cost-savings by fundamentally examining the design and production of existing and new products. Such a program provides businesses with information about more environmentally preferable processes or technologies that have the potential to result in big cost savings through waste reduction, energy efficient operations and reduced water usage. Businesses need to start to manage their environmental affairs, reduce the potential health and environmental impacts of their business, and comply with regulations, all of which serve to increase competitiveness and improve the bottom line.

2.8 Business and Sustainable Development

In 1987, the World Commission on Environment and Development issued its landmark report that introduced the concept of sustainable development and recognized a need for business to make radical changes in the way it operated (ADB, 2005). Emerging changes in the structure of the increasingly globalized economy are leading to enhanced environmental awareness and a shift in expectations regarding both public and private environmental management (ibid). Businesses are at the core of the environmental debate and are central both to the problem and to the solution (Weiford & Gouldson, 1993).

Sustainable development is one of the pressing issues of today, posing significant challenges to society and global business. Business has a central role to play in bringing a more sustainable future therefore, as a starting point any environmental strategy must demonstrate a real commitment on the part of the whole organization (Welford, 1997). The concept of sustainable development has received growing recognition, but it is a new idea for many business executives. Protecting an organization's capital base is a well accepted business principle. Yet organizations do not generally recognize the possibility of extending this notion to the world's natural and human resources. If sustainable development is to achieve its potential, it must be integrated into the planning and measurement systems of business enterprises (Deloitte & Touche 1992). Deloitte & Touche (1992) further suggest that the concept of sustainable development must be articulated in terms that are familiar to business leaders and the following sustainable development definition is offered "For the business enterprise, sustainable development means adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future". This definition captures the spirit of the concept as originally proposed by the World Commission on Environment and Development.

Natural ecosystems provide valuable environmental services which unfortunately are often viewed as public goods and as such are often taken for granted until degradation such as deforestation results in floods, loss of water quality, or threatened livelihoods. A new approach called "Payment for Environmental/ecosystem services" (PES) attempts to address this problem. The core of PES schemes is that those who pay should be aware that they do so to secure the provision of valuable environmental services (Mindbranch, 2004). As a major beneficiary of ecosystem services, the private sector can and should play a critical role in expanding the concept of PES (ADB, 2005).

2.9 Responses of Kenyan Corporate firms on Environmental management

Evidence from the Carbon Disclosure Project (CDP) in South Africa (2009) points to a trend in Africa in which only the energy intensive companies and those facing direct physical and economic risks from climate change (i.e. mining, construction, industrial & allied and retail) are showing leadership in responding to climate change (parai,

2010). In Kenya this is no different, companies listed in the allied and industrial sector of Nairobi Stock Exchange have made great strides towards promoting environmental sustainability for example BOC Kenya and Athi River Mining. In an effort to reduce its GHG emissions from non renewable sources, BOC Kenya has been innovating solar energy using large thin film modules. From this initiative BOC Kenya has developed a climate friendly product by introducing climate neutral fluorine for gases used for thin film-cell production. This has greatly provided BOC with a competitive advantage because it is the only gas supplier to master this technology in the world. While Athi River Mining with the assistance of the Kenya Association of Manufacturers (KAM), has been conducting annual energy audits which proved to be helpful in reducing their energy bill by 20% from 2007-2009 as they have been able to enhance their energy efficiency by identifying areas within their production cycle where they could reduce energy usage (ibid). mucin

Other corporate companies in Kenya which have made substantial efforts in their environmental management include Mumias Sugar Company which is set to produce clean electricity from the baggasse, a clean fuel. This project estimates an annual displacement of 100 000 tons of carbon from the environment.

KenGen the main electricity generating utility in Kenya went into an agreement with World Bank to develop six Clean Development Mechanism (CDM) projects in Kenya which has initiated a Clean Development Mechanism (CDM) project which intends to reduce 200 000 tonnes of CO₂ per year. The projects have a potential to displace off approximately 0.66 million tonnes of CO₂ equivalent annually which will generate annual cash flow revenue to KenGen in the range of Kshs million 500 per annum.

British America Tobacco (BAT) Kenya is part of a Biodiversity Partnership to map areas which are going to be seriously affected by climate change.

Kenya Airway received an approval from the United Kingdom Environment Agency to participate in the European Union Environmental Management Program, through a legally binding initiative known as European Union Environment Trading Scheme (EU-ETS). Through the initiative, the airline will measure, manage and reduce its carbon emissions which have been identified as a major contributor to climate change.

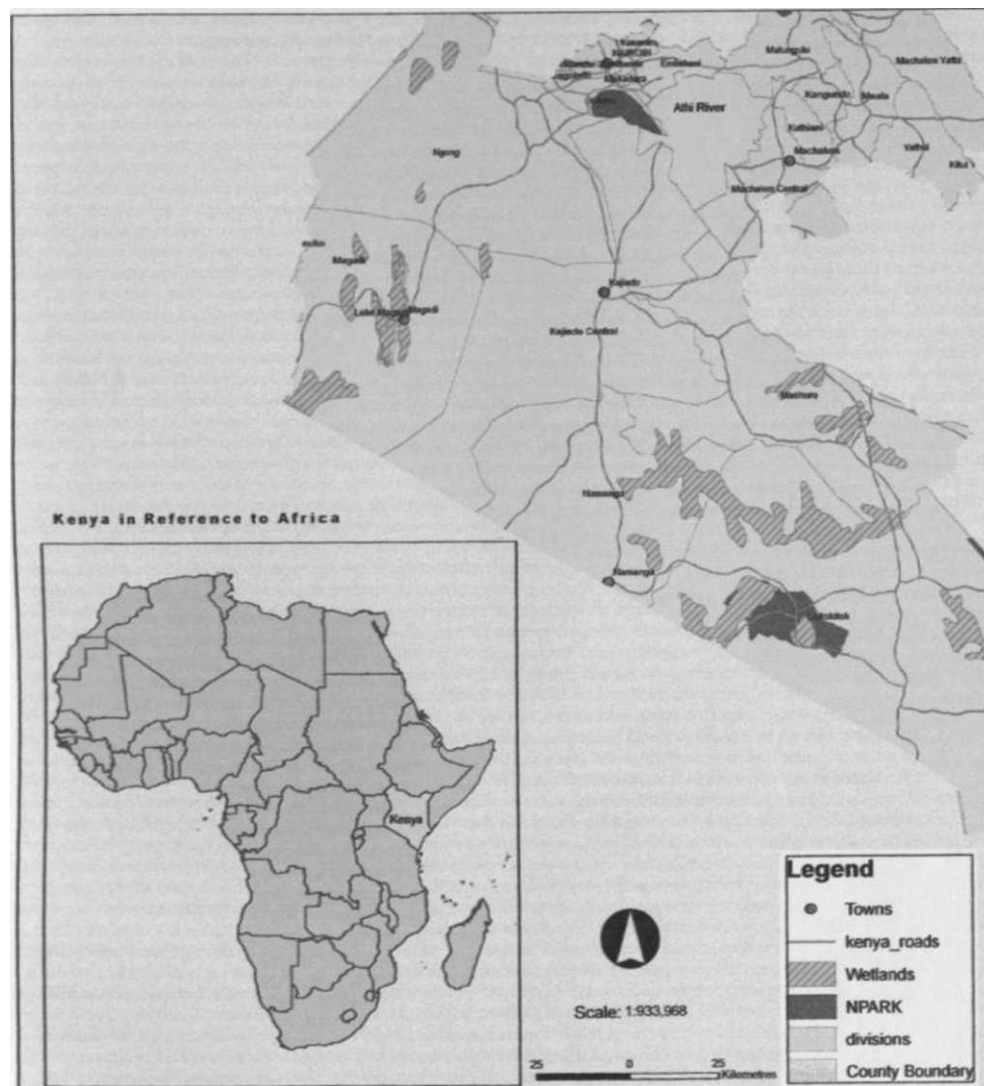
CHAPTER THREE

AREA OF STUDY

3.1 Introduction

The study was carried at East Africa Portland Cement Company. The cement company is located in Athi river town of Machakos district in Eastern Province, Kenya. Athi river town is located along Nairobi-Mombasa road approximately 30 Kilometers southeast of Nairobi

Figure 3.1: Map highlighting area of study

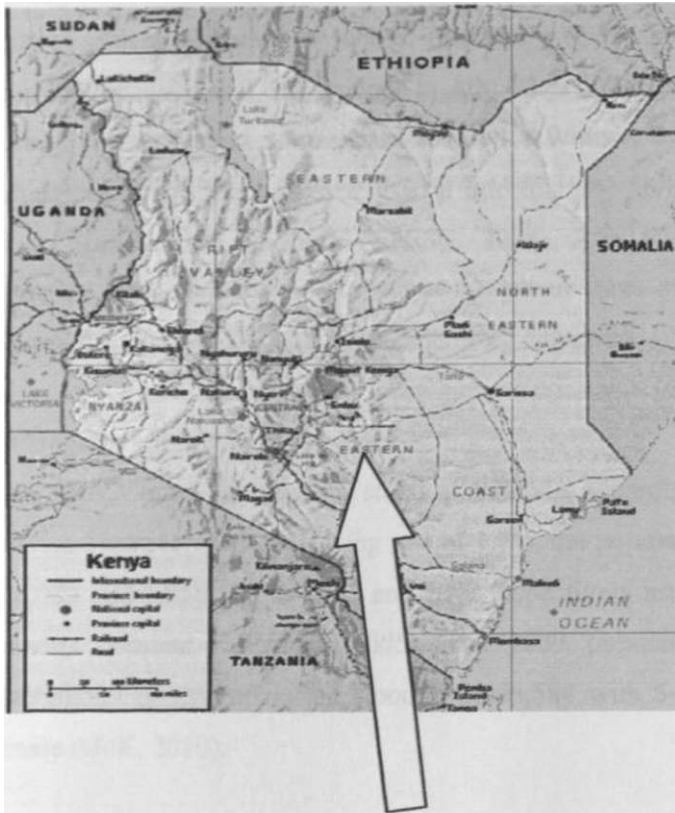


Source: NEMAGIS lab

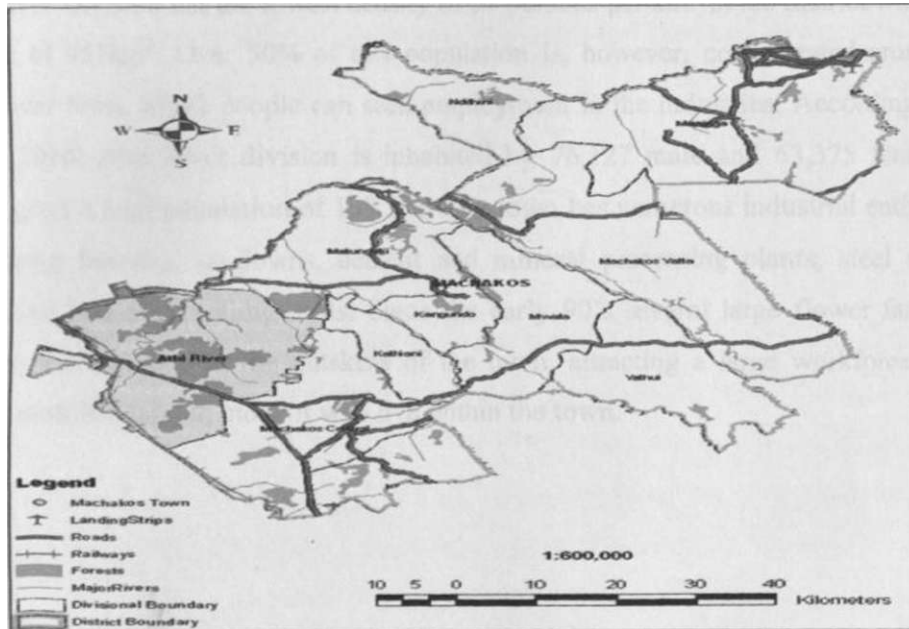
3.2 Location of East African Portland Cement Company

Machakos is one of the districts found in Eastern province and it covers an area of 6,281.4kms. It borders Nairobi and Thika District to the northwest, Kitui and Mwingi District to the east, Kajiado District to the west, Makueni District to the south, Maragwa District to the north and Mbeere District to the northeast. It stretches from latitudes $0^{\circ} 45'$ south to $1^{\circ} 31'$ south and longitudes $36^{\circ} 45'$ east to $37^{\circ} 45'$ east (NCAPD, 2005). The exact physical location of East Africa Portland Cement factory is $02^{\circ} 59'$ Latitude South and $038^{\circ} 31'$ Longitude East

Figure 3.2: Map of Kenya showing Machakos district



MACHAKOS DISTRICT



Source: NEMA GIS lab

Athi River town lies in the heart of the low-lying Kapiti plains to the southeast of Nairobi with an elevation of 1600m. This area is under the jurisdiction of the Mavoko Municipal council and corresponds to Athi River Division, a political administrative unit of the provincial administration (Koti & Weiner, 2006) in Machakos County. Administratively, Machakos is divided into four (4) divisions namely Central, Athi River, Kalama and Kathiani (KFSSG, 2008). Athi River Township grew as an industrial town, initially as a result of the labour force attracted by the Kenya Meat Commission processing plant and supporting industries

3.3 Demographic Characteristics

Machakos County population stood at 906,644 according to the 1999 Population Census. However with a growing rate of 1.7%, the population was expected to rise to 954,082 and 1,056,535 in 2002 and 2008 respectively assuming that the growth rate remains constant (NCAPD, 2005). The 2009 population census indicated that Machakos County population stood at 1,098,584 with 543,139 male and 555,445 female (GoK, 2010).

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Athi River Division has the lowest density of 51 persons per km² in the district within an area of 957km². Over 50% of this population is, however, concentrated around Athi River town, where people can seek employment in the industries. According to (GoK, 2010) Athi River division is inhabited by 76,127 male and 63,375 female which gives a total population of 139,502. The town has numerous industrial entities comprising factories, go-downs, cement and mineral processing plants, steel and galvanized iron sheet rolling mills. Since the early 90's several large flower farms have been established in the outskirts of the town, attracting a large workforce of mainly unskilled labour, most of who live within the town.

Table 3.1: Population by Administrative Division Units

DIVISION	AREA (KM¹)	DENSITY	LOCATION
Central	49.5	307	9
Kalama	330.2	130	4
Kangundo	178.2	539	5
Kathiani	205.8	486	4
Masinga	1,094.1	72	6
Matungulu	634.3	165	7
Athi River	957	54	3
Mwala	481.5	195	7
Ndithini	316.8	107	3
Yathui	533	129	6
Yatta	491	90	4
Katangi	568	164	4
TOTAL	6,281.4	152	62

Source: District Survey Office, Machakos, 2001 adapted from (NCAPD, 2005)

3.4 Socioeconomic Characteristics

The population within the Athi River town area is varied due to the industrial nature of the town,¹ but the rural population predominantly comprises of semi-nomadic pastoralists of the Maasai and the Akamba of Eastern province.

Pastoralism has until recently been the dominant economic activity in the study area as opportunities for settled agriculture are limited due to the nature of the land. The establishment of Kenya Meat Commission in Athi River town is the highlight of Pastoralism in the area. Traditional pastoralism is however, being pushed further south towards Namanga as land price rise radiates out of Nairobi. The economic make up of the study area is therefore changing quickly and the changes become more marked closer to Nairobi.

Significant commercial farming developments have taken place within the study area in recent years. Horticulture and floriculture are now important economic activities

employing relatively large numbers of people. Athi river town is also home to an Export processing zone which occupies a 399 hectare site. Four cement producers are situated in close proximity at Athi River town; they include East African Portland cement company, Athi River mining company, Bamburi Cement and Mombasa cement. Other industries include Devki Steel Mills Ltd and Davis Steel Industry.

3.5 Climate and rainfall

Machakos County receives a bimodal type of rainfall generally occurring in the months of March to May and October to December while the mean annual rainfall is 600mm. Temperatures in Athi River town vary with altitude between 30° C maximum and 16° C minimum. The coolest period is between July and August while the hottest months are from November to April. (Gibb Africa, 2008).

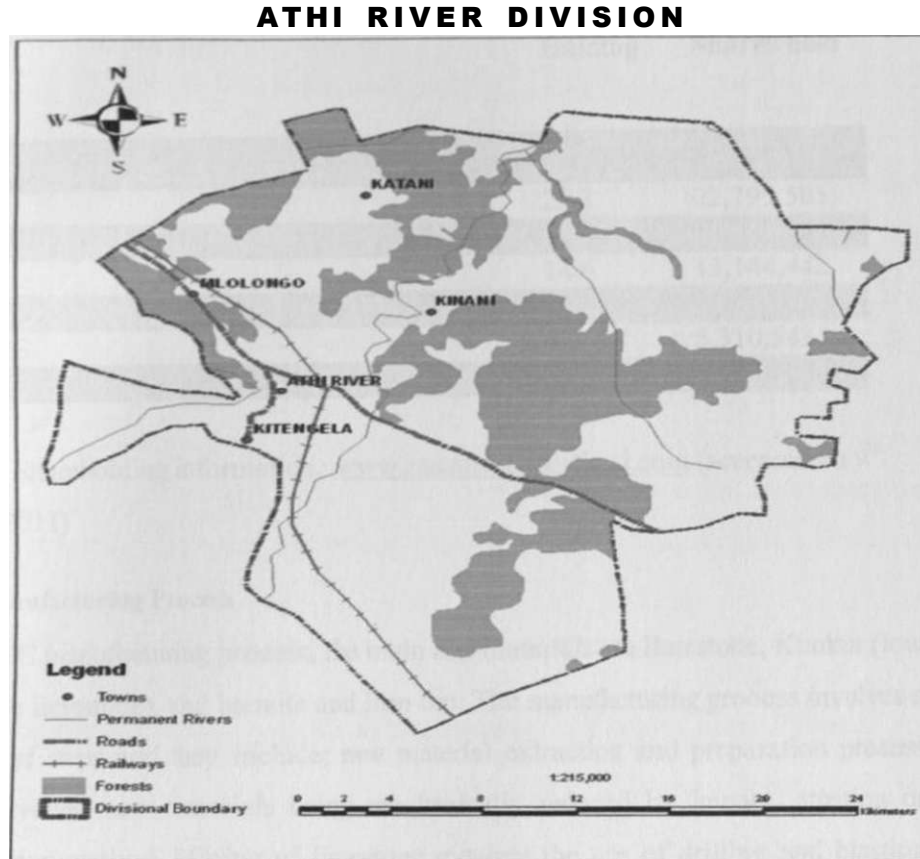
3.6 Geology

The area is in the central plateau of East Africa, which lies between the Great Rift Valley to the West and the Indian Ocean to the East. The rocks of the study area consist of a series of metamorphic rocks.

3.7 Topography

The study area falls within the Athi plains, a plateau that rises from 700m in the east to 1700m above sea level in the west and is interrupted by an escarpment and series of hill masses. The topography of the area is mainly defined by the Lukenya Hills and Athi River.

Figure 3J: Map of Athi River Division



Source: NEMA GIS LAB

3.8 East African Portland Cement Company

The company was incorporated in Kenya in February 1933, with its first factory being set up in Nairobi's Industrial Area before moving to the current Athi River factory which is located at is 02° 59' Utitude South and 038° 3T Longitude East. The Athi River factory was commissioned in 1958 with a production capacity of 120,000 tonnes per annum. At present the company produces over 1.3 million tonnes of cement per annum with Blue Triangle Cement, as the flagship brand for the Cement Company. EAPCC has seven board of directors headed by a Chairman and nine executives headed by the Managing Director. East African Portland Cement Company is a publicly listed company with Nairobi Stock Exchange in the Industrial and Allied category.

Table 3.2 Shareholding Structure as at 30/06/2009

Shareholder	% Holding	No. of Shares held
Wam	27.0	24,300,000
CTMKNTIA (I. p. GMMBH)	25.3	22,750,505
BCI	14.6	13,144,442
BWilli KLiNO (mixtes)	12.5	11,265,068
OTHERS	6.0	5,310,543
	100	

Source: Shareholding information, www.eastafricanportland.com (accessed on 9th March, 2011)

3.8.1 Manufacturing Process

In EAPCC manufacturing process, the main raw materials are limestone, Kunkur (low carbonate limestone), and bauxite and iron ore. The manufacturing process involves a number of steps and they include; raw material extraction and preparation process which involves raw materials being mechanically reduced by impact, attrition or compression method. Mining of limestone requires the use of drilling and blasting techniques. The environmental concerns associated with mining of Kunkur include habitat destruction, air and noise pollution. These impacts occur at the quarry site and during transportation from the quarry to the cement plant.

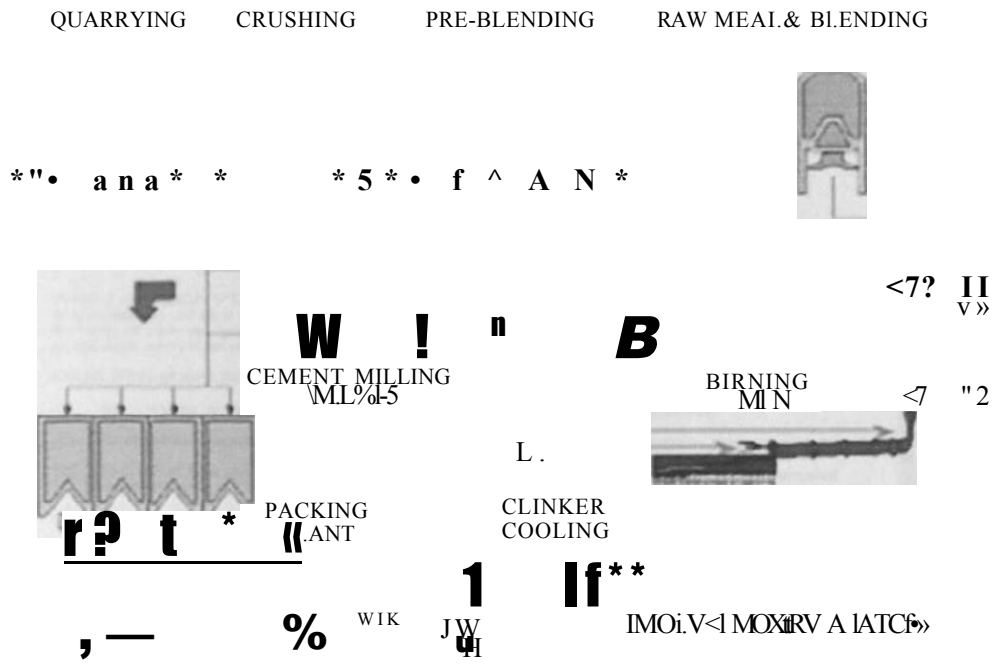
The second process proceeds into raw mill grinding here the extracted raw materials are mixed and dried with waste process gases to obtain the correct chemical configuration and ground to achieve the proper particle-size. At this stage the majority of the materials are less than 90 microns. The small particle size is important to ensure optimal fuel efficiency in the cement kiln and strength in the final concrete product.

Pyro-processing is the third process which involves subjecting the prepared raw meal into enough heat to allow the clinkering reactions. The process used by EAPCC is the dry process, where chemical reactions take place. Basic chemical reactions are: evaporating all moisture, calcining the limestone to produce free calcium oxide, and

Pyro-processing is the third process which involves subjecting the prepared raw P¹ into enough heat to allow the clinkering reactions. The process used by EAPCC is the dry process, where chemical reactions take place. Basic chemical reactions are: evaporating all moisture, calcining the limestone to produce free calcium oxide, and reacting the calcium oxide with the minor materials (kunkur, bauxite and iron ore). This process takes place at about 1450°C in the kiln and results are in a final black, nodular product known as "clinker" which has the desired hydraulic properties. The black, nodular clinker is stored on site in sheds until needed for cement production. Clinker, gypsum, and pozzolana are ground together in ball mills to form the final cement products.

The second to the last stages of cement manufacturing contain the most substantial environmental impacts which include: Air pollution i.e. (emissions of particulates and gases), oil spillage, extensive energy use and production of waste materials.

Figure 3.4 EAPCC Manufacturing Process (Process flow)



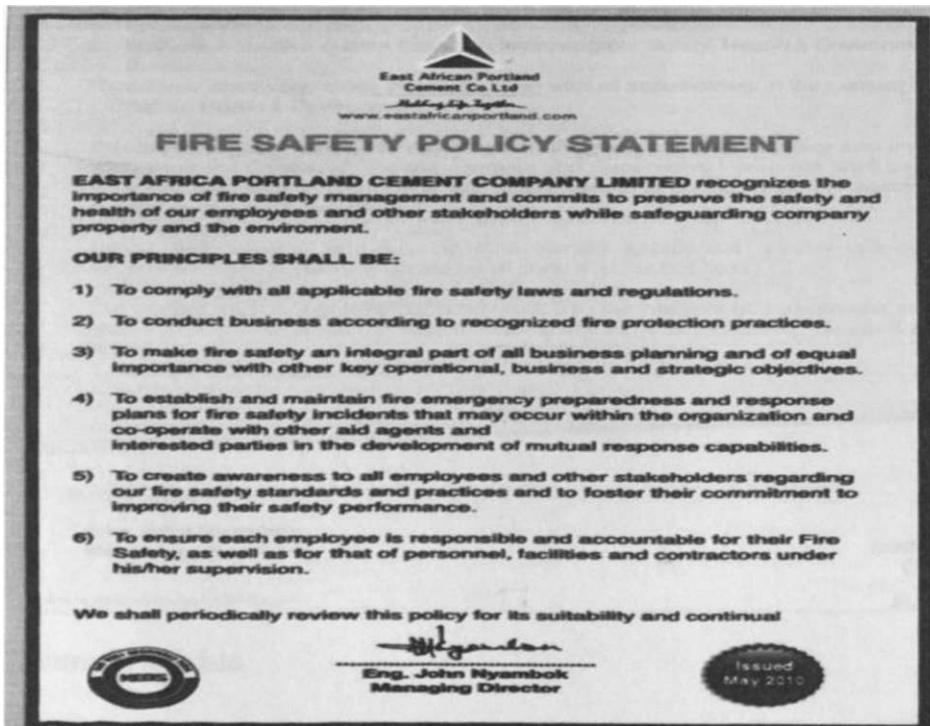
Source: www.eastafricanportland.com (accessed on 9th March, 2011)

3.8.2 Environment Related Programmes Initiated by EAPCC

As part of its environmental initiatives, EAPCC has undertaken to reduce Greenhouse Gases (GHG) emissions resulting from its operations. EAPCC has put in place measures to ensure that the manufacturing of cement is done in an environmentally friendly manner, paying particular attention to GHG emission reduction. In regard to this, EAPCC started working with JP Morgan Climate Care in 2007 in a project involving blending of cement. This project reduces carbon dioxide emission by 105,000 tonnes per year, realizing in excess of Ksh 80,000,000 per year from carbon sales. In East Africa, Lafarge owns four cement plants that are undertaking CDM projects. Three of the projects have opted for fuel substitution while the fourth is pursuing the option of increasing the pozzolona content. Athi River Mining in Kenya is also going for fuel substitution CDM project.

EAPCC also adopted an Energy policy in mid 2009 and in the subsequent months the company focused on energy conservation campaigns. These efforts saw the company scooping 1st runners up prize at the Energy Management Awards (EMA) in Fuel Saving under the Large Consumers Category held on 26th March 2010 in Nairobi. The Company was also nominated in the Best Energy Management Team Award.

Figure 3.5 Photograph of Fire Safety Policy on display at EAPCC



Source: Field data

The company also has a Safety, Health and Environment Policy (SHE) in place, Environmental issues of the organization are captured in this policy and it is reviewed every two years. The organization is also in the initial stages of setting up ISO 14001 standards which represents the core set of standards used by organizations for designing and implementing an effective environmental management system.

Figure 3.6 Photograph of Safety, Health and Environment Policy on display at EAPCC

Safety, Health & Environment (SHE) Policy

The Board of Directors of East African Portland Cement Company Limited (EAPCC) affirms its commitment to providing a safe and healthy workplace for all its employees and other persons having just cause to interact with its business activities. The Company shall ensure that its operations are carried out in a manner that protects and enhances the environment and the community in general.

Key Principles:

To implement this policy EAPCC shall

- 1 Comply With all applicable Safety, Health & Environment Legislation**
- 2 Integrate Safety, Health & Environment procedures into all operations of the Company**
- 3 Adopt relevant local and international standards and procedures in Safety, Health & Environment**
- 4 Identify, eliminate and control hazards and pollution that could cause accidents, illness or environmental harm.**
- 5. Provide a monitoring, inspection and auditing procedure to ensure the effective management of Safety, Health & Environment**
- 6 Provide training and resources for employees to maintain Safety, Health & Environment systems and best practice**
- 7 Provide adequate welfare facilities and arrangements.**
- 8 Engage contractors who aspire to adopt the same Safety, Health & Environment Performance**
- 9. Promote a positive culture based on improving our Safety, Health & Environment Performance**
- 10 Actively encourage close communication with all stakeholders in the cement industry on Safety, Health & Environment**

The Senior Management shall visibly uphold the principles of this policy and integrate them throughout the Company. The Management and Supervisory Personnel shall be responsible for implementing and maintaining the Safety, Health & Environment management systems necessary to sustain this policy.

Safety of employees and working in a healthy appropriate manner are conditions of employment, which must be upheld by all parties to the business

The Management recognizes that safety is vital to the interests of the business and actively encourages staff to make business decisions which follow this Safety, Health & Environment Policy.

This policy shall be reviewed every two years.

Eng. John Nyambok
Managing Director

www.eapcc.com

East African Portland
Cement Co. Ltd

Source: Field data

3.8.2 Benefits and Barriers of CDM projects in cement sector

There are four types of possible CDM projects in the cement industry these include; fuel substitution, waste heat recovery and use, increasing the blend of additives and energy efficiency. African participation in the CDM is very weak when compared to other regions. From the global CDM projects portfolio, only 90 (2%) were located in Africa of which 27 are registered and only 4 are at the CER issuance stage (World Bank, 2009). In Kenya cement industry only seven (7) CDM projects are in the pipeline. The benefits are dependent on the type CDM project:

Benefits

- Solve the problem of solid wastes by efficient waste management i.e. waste tyres, non hazardous industrial waste and industrial sludge.
- Reduced consumption of fossil fuels and increased energy efficiency.
- Reduced gross emission of GHG
- opportunity to earn carbon credits

Barriers

- The high initial capital cost, for acquiring clean technologies are perceived by managers to be unnecessary financial burdens on the company.
- According to World Bank report (2009), most cement lack the technical capacity and human resources dedicated to energy and environment management. It is important to note at the time this project was being conducted, EAPCC had an Energy manager as well as a Safety, Health and Environment manager in place.
- The lack of close-up demonstration cases or success stories to learn from resulting to a lot of skepticism in the cement industry on opportunities presented in the CDM Projects.
- Difficulty in ability to demonstrate the additionality of cement CDM projects i.e. failure to substantiate significant and additional technology

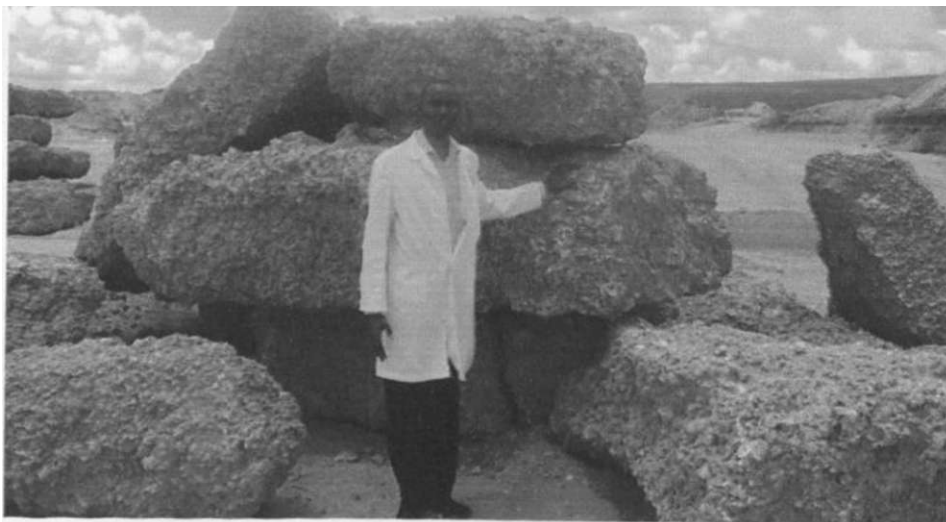
CDM Projects in cement industry are known to be capital intensive and according to a world bank report (2009)) 'it appears that the CDM projects in Sub Saharan Africa is not a priority for the cement units as they were comparatively more preoccupied with capacity expansions and other issues like quality control and cost reduction'. The lack of interest in CDM projects can be attributed to some of the barriers highlighted earlier such as the limited awareness of industry decision-makers on benefits of CDM projects, the lack of trained local CDM consultants and the limited access to finance by potential developers among other factors. However a well designed CDM project can accumulate potential benefits in the long term for example the proposed EAPCC CDM project which entails increasing the Pozzolana content of the cement to 35%, from the current level of 25%, with a corresponding decrease in clinker content and energy consumed per tonne of cement produced. "Greenhouse Gas emissions reduction will be achieved by the consequent reduction in the amount of limestone fed into the kiln and the amount of fuel burnt resulting in on site carbon dioxide emissions reductions more reductions will be realised because by increasing the Pozzolana content, less limestone is required to be crushed and milled. Limestone and clinker require more electricity per tonne for crushing and milling than a tonne of Pozzolana, therefore the CDM project will result in reduced electricity consumption per tonne of Portland Pozzolanic Cement produced at EAPCC" (PDD, 2006)

Table 3.3: Cost benefit analysis of EAPCC CDM Project

	Without the CDM project	With the CDM project
Clinker Content (% Wt)	70%	below 60%,
Pozzolana content by weight	25.11 %	35%
Energy use reduced (KWh per tonne)	0%	20% less specific energy¹
Estimated emission reduction (tonnes of CO²) per year	0 tonnes	105,593 tonnes
Cement production capacity per year	725,000 tonnes	1.2 million tonnes
Carbon sales per year	0	Ksh 80,000,000

⁵ The 20% less specific energy (KWh per tonne) will be achieved by use of the closed circuit mill system as compared to an open circuit mill

Figure 3.7 Photograph of an active Kunkar Quarry in Athi River



Source: Field data

Figure 3.8 Photograph of Loading and transportation of Kunkar in Athi River



Figure 3.9 Photograph of rehabilitated Kunkar Quarry in Athittiver



Acacia Xanthiphloea



Euphorbia candelabrum spp

Source: Field data

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Research Design

A case study research design was employed to generate both qualitative and quantitative data. A case study research design was best suited in exploring and carrying out an in-depth analysis and depicting a holistic approach to the study. According to Yin (2003) case study design are used as an empirical inquiry that investigates a contemporary phenomenon within its real-life context, when boundaries between phenomenon and context are not clearly evident. The case study research design approach assisted in clarifying the basis of corporate environmentalism and built a good foundation for this study.

4.2. Target Population and Sampling Procedure

The study population was drawn from EAPCC employees, EAPCC neighbourhood community and EAPCC cement consumers. Interviews were conducted with key informants for example the Safety Health and Environment officer of the organization and Energy Engineer to seek clarification on environmental management status of EAPCC.

EAPCC had seven independent departments⁶ which this study used as strata. A simple random sample was conducted to identify three strata groups which were mutually exclusive to administer questionnaires among the EAPCC employees. These three groups included the employees of Safety Health and Environment (SHE) department, Marketing and Sales department and Strategy and technology section. A complete list of all employees in these three departments was used as a sampling frame to select a representative sample size.

⁶ The seven departments of EAPCC include Human resource, Internal Audit, Production and Operations, Finance and administration, Sales and Marketing, Strategy and Technology, and Safety Health and Environment

Table 4.1: Sampling Frame

Departments	Nature of Employment			Total population	Percent	Sample size
	Permanent	contract	Casuals			
Sales and Marketing	45	42	3	90	71%	64
Safety Health and Environment	8	2	16	26	20%	5
Strategy and Technology	7	4	0	11	9%	1
TOTAL				127	100%	70

Source: Field data

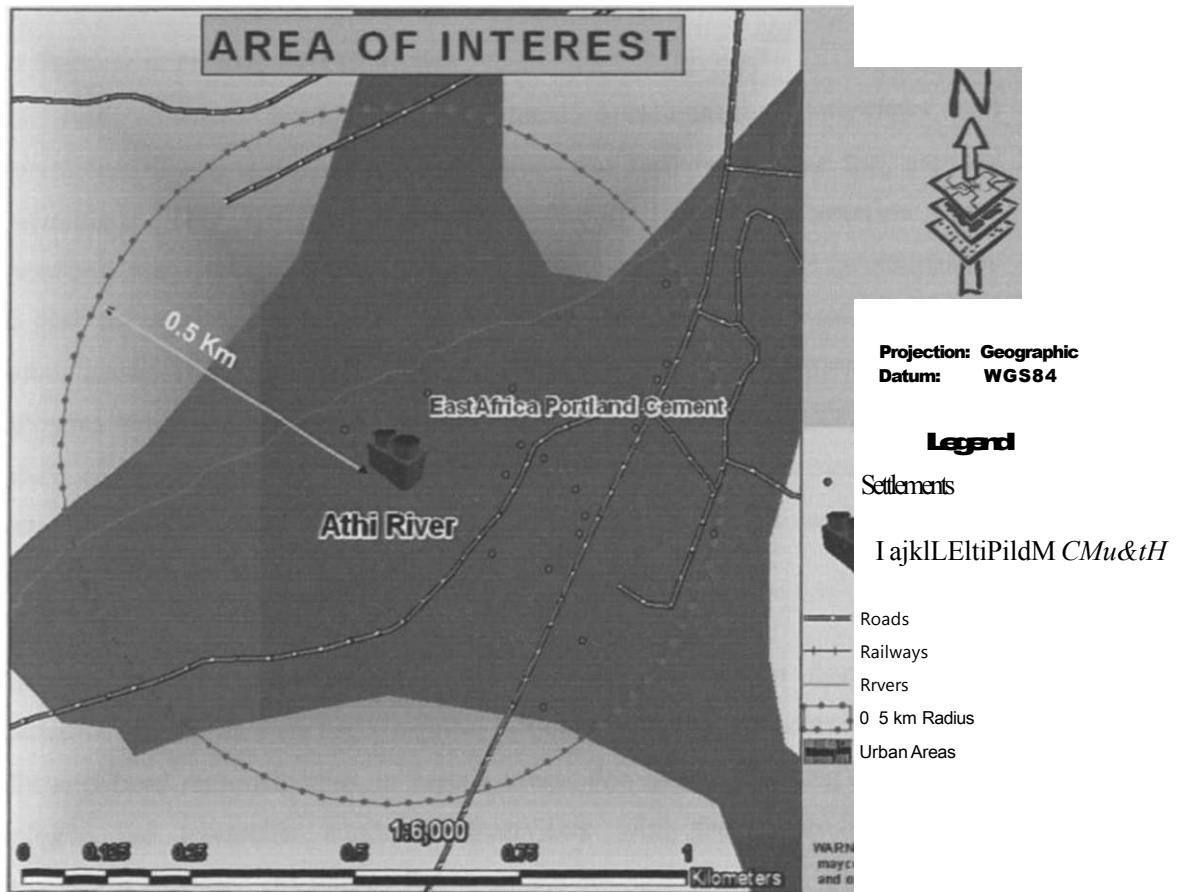
The immediate neighbourhood community of EAPCC plant is composed of other business establishments while the Kunkar quarry is located in a 12,000 acres land owned by the company with no human habitats within a 10 kilometres radius of the active quarry.

In selecting the neighbourhood community, proximity to the cement factory was considered because the neighbourhood community members who are in close proximity to cement manufacturing plants are more susceptible to negative effects of air pollutants than those who live far away from the factory. Air pollutants are the main environmental problems from cement industries that may affect adjacent communities include dust, carbon dioxide, sulphur dioxide and nitrogen oxides. Carbon dioxide (CO₂) which is the principal emission from the cement industry, emanates from the combustion of carbon-based fuels and from raw material calcinations. Other air emissions from cement plants include nitrogen oxides (NO_x), sulphur dioxide (SO₂) and dust emissions (European Commission, 2001: b). Concentrations of flue gases released from cement plant vary greatly from one area to another depending on the nature and intensity of local sources, and on other factors such as topography, general weather conditions, and liability to temperature inversions (Abdul-Wahab, 2003).

A sample of 20 households within a half kilometre radius from the factory was selected through convenient sampling to represent the immediate neighbourhood

community due to their close proximity to the EAPCC plant. Adverse effects of emission from cement plants to neighbourhood community can manifest themselves through acid rain, particulate matter, water quality deterioration and visual impairment caused by flue gases emission. People with lung diseases such as asthma and those who work or exercise outside cement plants are susceptible to damage of lung tissue and reduction in lung function as well as aggravate existing respiratory and cardiovascular disease caused by inhaling Sulphur dioxides fumes (ibid).

Figure 4.1 Map showing 0.5KM radius from EAPCC



Source: NEMA GIS lab

In selecting EAPCC cement consumers, a multi-stage sampling procedure was used, where purposive sampling was applied to get two distributors in Nairobi region. Then simple random sampling was used to select six (6) most frequent contractors (i.e. three (3) from each distributor). The most frequent contractors were obtained from the

distributors records which indicated the quantity of cement bought and frequency of purchase from July 2009 to June 2010.

4.3 Sources of Data

The study made use of both primary and secondary data sources to capture relevant data. In this study the primary data used was obtained from the EAPCC employees, EAPCC neighbourhood community, EAPCC cement consumer and also from researcher's observation. Secondary sources of data were obtained through review of various documents that provided important insights towards this study.

4.3.1 Methods of Primary Data Collection

Data was obtained through semi-structured questionnaires, interviews and observations. Use of questionnaires in this study was favoured because they are easy to administer. They are also suitable for capturing sensitive information which respondents may feel uncomfortable speaking to an interviewer. The questionnaires also give the respondents time to think critically about their responses (Evaluation Toolkit, 2006). The questionnaires distributed to the selected population of EAPCC employees were self-administered i.e. the researcher distributed the questionnaires and allowed a grace period of a week before collecting back the questionnaires. The questionnaires distributed to the selected EAPCC neighbourhood community were researcher administered with the help of a research assistant.

Interviews are also important to obtain detailed information from identified informants. Interviews were used to gather information from respondents with special skills and bore responsibilities in certain areas. For example among the EAPCC employee the researcher conducted interviews with the Safety Health and Environment Manager, the Energy Engineer, and the Sales Manager. The researcher also conducted some interviews Cement consumers.

The researcher also made use of an observation schedule to capture information during field study.

4.3.2 Methods of Secondary Data Collection

Secondary sources of data were obtained through document review of relevant publications such as the organization's Environmental and Energy policies, environmental audit reports and annual report and financial statements, these documents can be accessed on EAPCC official website and hard copies within different departments of EAPCC. Others included Machakos development plans, environmental reports of Athi River town and Environmental Management and Coordination Act of 1999 (EMCA).

4.4 Validity and Reliability

Triangulation is one of the important means of increasing construct validity and substantiating findings. Triangulation has risen as an important methodological issue in quantitative and qualitative approaches to evaluation [in order to] control bias and establishing valid propositions. Patton (2002) advocates the use of triangulation by stating triangulation strengthens a study by combining methods. This can mean using several kinds of methods or data, including using both quantitative and qualitative approaches.

Validity was achieved by use of different sources of data. The study obtained data from five different sources i.e. (a) EAPCC employees (b) neighbourhood community (c) EAPCC cement consumers (d) Documents studies and (e) Observation. Given the use of more than one data source, the researcher was able to substantiate findings and increase validity of this study. This technique provides stronger validation of the results if they converge (Yin, 1994).

Reliability: To increase reliability of the study, review of data instruments was carried with the help of supervisors and research peers while questionnaires pre-tested among selected employees drawn from Safety Health and Environmental department and a few selected members of the neighbourhood community.

4.5 Methods of Data Analysis and Interpretation and Findings

In preparation of data analysis data cleaning was carried out this entailed checking if the data instruments were complete. Data coding was done by assigning scores and

numbers for qualitative data. The coded data was used to identify the emerging themes which were interpreted by attaching significance to the themes and patterns observed and finally the researcher made a detailed report of the findings.

In Quantitative analysis of data the researcher recoded the Yes and No into dummy scores. The scores were evaluated in terms of expected results. The expected results were assigned most favoured score of 2 while the less favoured score was assigned the value of 1. All the resulting scores were added then averaged to get the environmental score. The environmental score were tested for difference by department using Kruskal Wallis II test and by gender using Man-Whitney U test. The Mann-Whitney U test is used for Test of difference between two independent groups while Kruskal-Wallis analysis is used for test of difference in a case where there exist multiple groups in the non- parametric methods. Parameters of the variables of interest in the population were not known while the field data in this study represented a rank ordering of observations (ordinal scale of measurement) hence the non-parametric method.

The environmental scores were correlated with each other using Spearman's Rho. For the non-parametric method, the study made use of Spearman Rho to express relationships between variables. The test in all cases were at * 0.05 level. Correlation techniques are used to establish the relationship between corporate environmental management and business competitiveness in East Africa Portland Cement Company (Mugenda and Mugenda, 2003).

CHAPTER FIVE

DATA ANALYSIS, PRESENTATION OF RESULTS, INTERPRETATION & DISCUSSION OF FINDINGS

5.1 Introduction

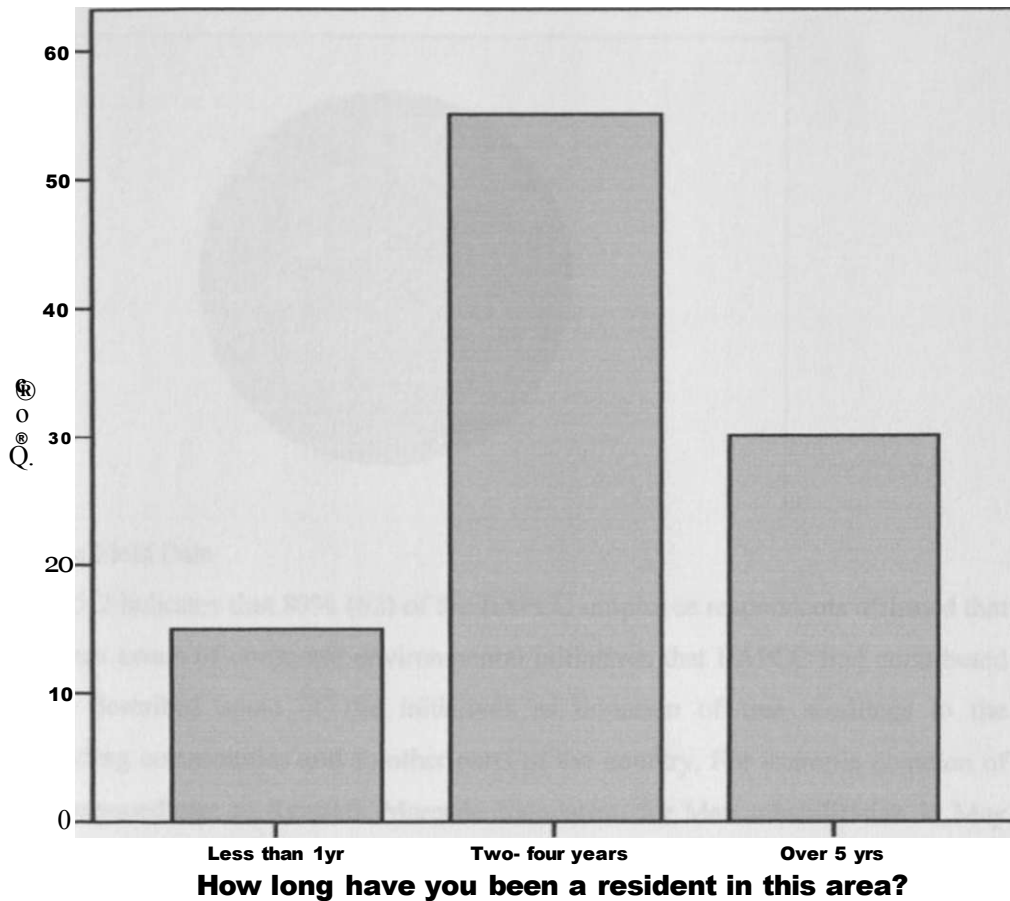
This chapter entails analyses of data, presentation of results, explains what the results mean and discusses the findings in the light of literature and field experiences. The main objective of the study was to establish the impact of corporate environmental performance -on business competitiveness. In this regard data was collected by administering questionnaires among community members around EAPCC plant and among staff members of the organization. Interviews were also conducted with key informants targeted to yield the desired responses as well as physical observation in the study area.

... : i *

5.2 Demographic Data of Samples

Among the EAPCC sample, 67.1% (47) comprised of male respondents while 32.9% (23) consisted of female respondents. Respondents from the neighbourhood community consisted of 70% (14) male and 30% (6) female respondents. 55% of the respondents from the community indicated that they have been residents in the area for a period of 2 to 4 years while 30% specified that they have been residents in Athi river town for more than 5 years, only 15 % of the respondents were less than 1 year old in Athi river town (see figure 5.1). The EAPCC cement consumers were represented by 6 contractors of which 4 (67%) were male while 2 (33%) were female.

Figure S.1: Bar graph showing period of residence in Athi River town

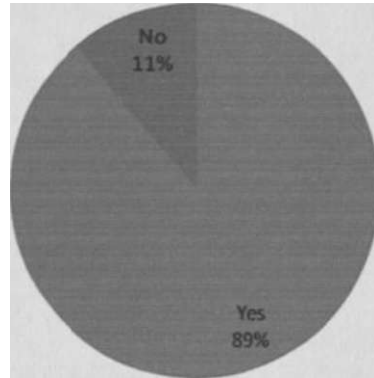


Source: field data

5.3 Corporate Environmental Initiatives and Business Competitiveness

According to Hai & Abraham (1996), companies that invest in environmental initiatives tend to be more successful because they keep their staff healthy and better motivated, reduce energy, water, raw material and disposal costs, develop new customers and reduce liability risk. One of the objectives of this study was to establish if corporate environmental initiatives can enhance business competitiveness. In this regard the study posed the question "Are you aware of any corporate environmental initiative that EAPCC has contributed to since inception?" This question was meant to establish whether EAPCC had found any need to promote environmental stewardship.

Figure 5.2: Has EAPCC initiated any Environmental initiatives since inception

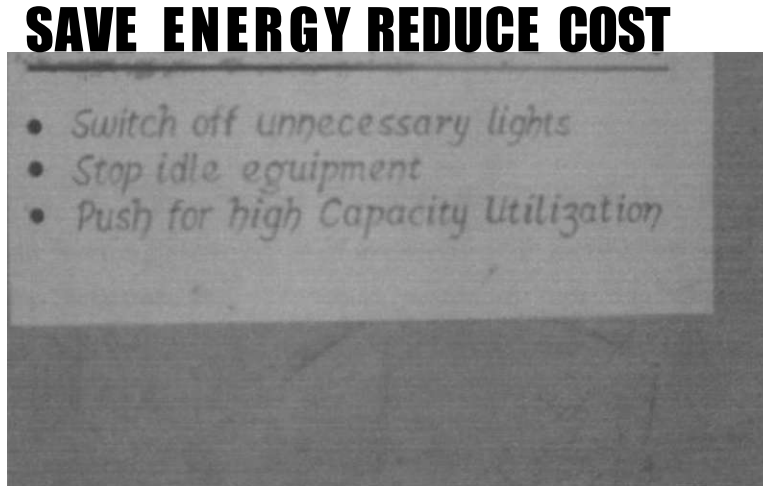


Source: Field Data

Figure 5.2 indicates that 89% (62) of the EAPCC employee respondents affirmed that they were aware of corporate environmental initiatives that EAPCC had contributed to and described some of the initiatives as donation of tree seedlings to the surrounding communities and to other parts of the country. For example donation of 1200 tree-seedlings to Kenneth Marende foundation for Mau rehabilitation in May 2010, Green house gas (GHG) emission reduction initiative by increasing the pozzolona content and limestone reduction in clinker using substitute raw materials, this is a clean development mechanism (CDM) initiative that was being undertaken in partnership with J.P Morgan climate care. Other initiatives that were captured in the data included installation of state of the art closed circuit, cement mill which had resulted to energy efficiency and reduced dust emission, Use of electrostatic filters in capturing fugitive dust; clean-up drives with community members and the green procurement initiatives.

The study also sought to know from the EAPCC employees' respondents if investing in environmental initiatives could enhance EAPCC business strategy in the cement industry and an overwhelming 94.3% (66) responded in the affirmative while only 5.7% (4) respondents disagreed. The high positive response to the question (94.3%) can be attributed to the awareness and sensitization of employees by the Safety Health and Environment department on the importance of the environment factor in their industry and also the numerous environmental messages displayed within the plant.

Figure 5.3 Photograph showing environmental related message on display at EAPCC



Source: Field Data

According to Perron et al (2005) employees who are armed with environmental knowledge, can understand how the environment can affect and be affected by their duties and decisions. It is therefore, important for members of the organization to understand the environmental impacts and policies of the organization through participation in environmental awareness and training programmes that produces enduring knowledge and commitment.

Table: 5.1 Does investing in environmental initiatives enhance business strategy

	Frequency	Percent
Yes	66	94.3%
No	4	5.7%
Total	70	100%

Source: Field Data

An interview with the sales and marketing manager further revealed that investing in environmental initiatives could lead to increased sales. *"Increased environmental related corporate social responsibility initiatives contribute to a number of things key among them is good reputation and increased corporate brand visibility in this case the blue triangle brand which consequently translates to increase in sales"*. One crucial principle is how a brand is perceived by all stakeholders; brands today are one

of the key focal points of corporate success. Companies try to establish popular brands in consumer minds because it increases leverage, which is directly reflected in sales and revenue (McComb, 2002). The Safety Health Environment manager also shared the same opinion indicating that *"investment in environmental initiatives improves EAPCC corporate image an attribute that can be exploited to market its products "*.

Responses from the EAPCC cement consumers also indicated that they would quit buying cement from a company that is associated with environmental degradation. One customer indicated that, *"I would personally not buy cement from an organization that is involved in environmental degradation and in fact the company products should be blacklisted from the market by the regulatory body."*

The analysis of the correlation indicated that there was a relationship between opinions of respondents on whether EAPCC had participated in corporate environmental initiative since its inception and if investment in environmental initiatives could enhance EAPCC business strategy in the cement industry. This is because of the positive sign on the correlation coefficient ($r=.298$) as shown in Table 5.2 which indicated that if a respondent thought EAPCC had participated in corporate environmental initiative then he/she was more likely to have responded in the affirmative that environmental initiatives could enhance EAPCC business strategy in the cement industry.

Table 5.2: Correlation on environmental policy and increased environmental performance

			Environmental score 1	Environmental score2
Spearman's rho	Environmental score I	Correlation Coefficient	1.000	.298(*)
		Sig. (2-tailed)		.012
		N	70	70
	Environmental score2	Correlation Coefficient	.298(*)	1.000
		Sig. (2-tailed)	.012	
		N	70	70

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

Source: Field Data

Environmental score denoted: Are you aware of any corporate environmental initiative that EAPCC has participated in since its inception

Environmental score 2 denoted: Do you think investment in environmental initiatives can enhance EAPCC business strategy in the cement industry

The study also posed the question "Do you know of any benefits that accrue from investing in corporate environmental initiatives?" This was aimed at establishing if the respondents could link environmental initiatives that can be utilized to advance business competitive edge. Twenty eight (28) respondents (40%) from the employees' sample identified *green marketing* as a benefit that would accrue from investing in corporate environmental initiatives i.e. the organizations appeal to environment conscious customers hence capturing new markets and contribution to enhanced quality of life for both employees and community members. Other benefits identified by the respondents revealed that investing in environmental initiatives brought about competitive returns to investors as a result of improved sustainability practices, a respondent indicated that organizations move a step closer towards achieving value to the organization's bottom line as well as enhanced corporate image through recognition in environmental stewardship awards.

Data from literature review revealed that the signing of the Carbon Credit Trading agreement between EAPCC and JP Morgan Climate Care in an initiative to reduce carbon dioxide emissions by over 105,000 tons per year, by blending of cement will see EAPCC realize in excess of Kshs. 80,000,000 per year from carbon sales (EAPCC, 2009).

The EAPCC employee respondents also put forward ideas on environmental initiatives that EAPCC could invest in to promote business competitiveness. This was in response to the question "Are there any environmental initiatives you would suggest to your organization that would promote its competitiveness in the cement industry?" some of the sampled responses included; "*increase social investments i.e. the tree planting initiatives*" which EAPCC has already started, "*reduction of resource consumption through increased use of wastes as fuel*", "*switching from use of furnace oil to green energy e.g. bio-diesel and renewable energy*", "*just-tracking*

carbon credit projects", "encouraging and promoting environmental innovations in product development and process technology" and "quarry rehabilitation". The EAPCC employee respondents also described some of the environmental initiatives by other cement companies in Kenya and they included; "Land reclamation initiative on a previously exploited quarry by Bamburi Cement Company to create a nature recreation site for foreign tourists and locals " and "planting of trees along quarry roads to contain the dust generated by material haulage ".

On responding to the question, "Do you think EAPCC is committed towards improving the environment?" As indicated in Table 5.3, 85% (17) of the respondents from the community responded in the affirmative and only 15% (3) refuted the idea.

Table 5.3: EAPCC Commitment towards improving Environment

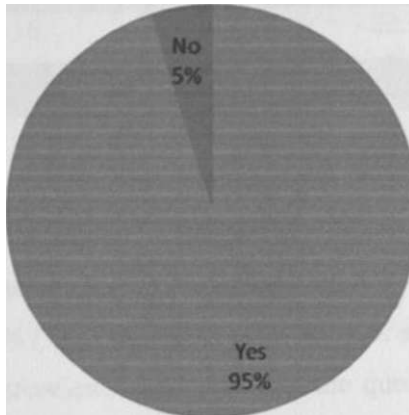
	Frequency	Percent
Yes	17	85%
No	3	15%
Total	20	100%

Source: Field Data

Members of the community also suggested ideas that EAPCC could engage in to improve the environment within their vicinity and these included; promote tree nursery establishments by the youth in Athi river to increase the tree cover in Athi river town and increase the interval at which watering down of the ground is to reduce dust emission and tarmac the dusty roads near the Kunkar quarry.

Another 95% of the respondents from the community members as shown in Figure 5.3 believe that EAPCC can influence other business establishments within Athi River to improve the environment this was in response to the question. "Do you think EAPCC can influence other business establishments within Athi River town to improve the environment?"

Figure 5.4: Can EAPCC influence other business establishments to improve the environment?



Source: Field Data

S.4. Environmental Technology and Business Competitiveness

According to Vanden and Thorburn, (2008) environmental technologies not only help to reduce energy and resource consumption, and therefore create less emissions and waste they also offer real business benefits by cutting costs and improving competitiveness. One of the three objectives of the study was to identify the extent to which modern environmental technology influence business competitive advantage. Therefore the study fronted the following question to the employees "Has EAPCC invested in any environment friendly technology?" According to 77.1% (54) of the respondents EAPCC had invested in environment friendly technology while 22.9% (16) of the respondents disagreed with this notion.

Table 5.4: Has EAPCC invested in Environmental Technology?

	Frequency	Percent
Yes; ¹	54	71.1%
No	16	22.9%
Total*	70	100%

Source: Field Data

About 65% (13) of the neighbourhood households also agreed that EAPCC had made some effort to improve its technology to safeguard against environmental pollution within their locality only 35% (7) of the respondents were of a different opinion.

Qualitative data from the interviews conducted and the questionnaires administered also revealed that most EAPCC employee respondents were positive that EAPCC had invested in environmental technology. Some of the common environment technology that the respondents referred to included the "*newly installed state of the art closed circuit mill number 5 with improved efficiency and reduced energy wastage*" another environment sound technology included "*the advanced electrostatic filters to trap fugitive dust*".

The study went further to prod the respondents to find out how the organization benefited from investing in environmental technology and posed the question "how has investments in environment friendly technology impacted on EAPCC?" The study found out that the installation of the closed circuit cement mill and the on-going installation of a coal milling facility coupled by energy conservation campaigns in; the organization would reduce energy consumption, which constituted 45% of the total production cost by the year end of 2009 to at least 30%. The CDM project that EAPCC has embarked on to reduce green house gas (GHG) requires modern environment sound technology to reduce clinker content resulting in reduced energy consumption per tonne of cement blend produced. *Emission reductions will therefore be realised from electricity savings, reducing the required supply from the Kenyan national grid* (J.P Morgan Ventures Energy Corporation, 2009).

Other EAPCC employee respondents indicated *investing in the pre-heater system had contributed to increased productivity and energy efficiency*. The core of the pyro-

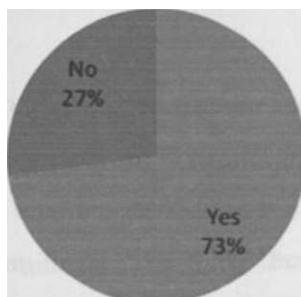
processing of each modern cement kiln is the pre-heater. A pre-heater is a form of heat exchanger technology in which raw mix for the cement is heated by the hot exhaust gases leaving the kiln. As a result, less thermal energy is needed in the kiln itself to reach the required 1450°C. Pre-heater is essential to increase the productivity and energy efficiency of a kiln (Wang Hengchen et al, 2004). Respondents also acknowledged the *advanced electrostatic filters to trap fugitive dust had impacted positively to the health of workers in the plant.*

Use of the most modern kiln technology represents an obvious choice to reduce the energy required by the cement manufacturing process. Adopting less advanced technologies increases the environmental pollution, releases more greenhouse gases and is much more energy intensive hence having implications on business competitiveness (Miiller & Harnisch, 2008). Another classic example is, a large share of the consumed heat goes to loss in cement manufacturing process, improving the heat efficiency and recovery by use of pre-heater technology is important considering cement manufacture is an energy intensive industry.

Investing in modern technology and more so in environment sound technology reflects positively on financial performance of a cement firm (Miiller & Harnisch, 2008). In this regard the study posed a question for the employees "Can investment in environment friendly technology improve EAPCC competitiveness in the cement industry?" According to 73% of the respondents investing in environment friendly technology can improve EAPCC competitiveness while 27% of the respondents were of a contrary opinion.

Figure 5.5: Environment Technology and Business Competitiveness

Environment technology and business competitiveness



Source: Field Data

To explore if there were any impacts on the organization from investing in modern environmentally sound technology the study posed the following question to the employees, "If EAPCC has invested in environment friendly technology how has it impacted your organization?" The respondents shared some common responses which included *reduced dust emission from the plant hence less environmental and health risks* and *improved energy efficiency* these benefits were attributed to the installation of the closed circuit mill, pre-heaters and electrostatic filters. Data gathered from interviews conducted with the Energy engineer and the SHE manager indicate the same results that *there has been significant reduction in cost of energy hence improved profitability through use of environment sound technology and basic house-keeping measures*. Installation of the state of the art closed circuit mill has increased productivity and energy efficiency has improved the organization's corporate image. A closed circuit mill uses up to 20% less specific energy (KWh per tonne) compared to an open circuit mill (JP Morgan Ventures Energy Corporation, 2009). This was exemplified with a 1st runners-up energy award at the Energy Management Awards on March 2010 recognizing the EAPCC efforts to improve its energy efficiency. Reduced cost of production has seen the organization rated the second best cement firm in Kenya (EAPCC, 2009).

On responding to the question, "Are you aware of any environment friendly technology that EAPCC can invest in to enhance sustainability?" The energy manager put forward suggestions such as, *integration of cement and coal power plants has a logical result since the ashes produced by coal power plants can be used as a clinker substitute, use of biomciss in cement kilns and exploring on use of carbon capture and storage technology.*

5.5: Corporate Environmental Policy and Business Competitiveness

An environmental policy reflects a company's commitment to sustainable business practices Presence of a corporate environmental policy is an important indicator of a corporation's environmental commitment. The study therefore set out to find out if EAPCC had an established environmental policy in place and posed the question "Do you have a formally established corporate environment policy in your organization?" An interview with the Safety Health and Environment Manager revealed that a Safety Health and Environment policy was in place where environmental aspects are enshrined. This corresponds with the employees' responses affirming that *there exists an environmental policy in EAPCC.* The data collected also shows that *EAPCC wo? in the process of putting in place an Environmental Management system.*

In responding to the question, "How are environmental issues mainstreamed in the organization? Data gathered reveal that *training of environmental officers, sensitization and awareness programmes for employees, compulsory induction programmes to all employees and visitors to the organization and environmental information display through posters and company profile* were some of the methods utilized to mainstream environmental issues in the day to day activities of the organization. For corporate environmental leaders, the challenge is to identify the potential competitive advantages of their environmental positioning and effectively communicate the value, both tangible and intangible, of their environmental performance to investors, customers and stakeholders. Successful communication along these lines is seen by many as a fundamental building block for advancing the business value case (Ganzi et al, 2004).

However data collected from the employees reveal that not all employees fully understand what the environmental policy demands. Table 5.5 indicate that 17.1% (12) of the respondents are not aware what the environment policy entails.

Table 5.5: Are all employees aware of what the environmental policy entails

	Frequency	Percent
Yes	58	82.9%
No	12	17.1%
Total	70	100%

Source: Field Data

The study also sought to find out the importance of having an environmental policy in EAPCC and the data gathered indicated that *an environmental policy puts forward the principles and values that EAPCC stands for and it shows that the organization is committed towards achieving a sustainable business model.* The SHE manager added that an *"environmental policy provides guidelines on how to identify and manage, operational issues, and risks with regard to environmental aspects of the organization"*.

Correlation analysis indicated that there was a relationship between opinions of respondents on whether an environmental policy could present economic gains with the opinion of respondents on if increased environmental performance could enhance EAPCC business competitiveness in Kenya's cement industry. This is because of the positive sign on the correlation coefficient ($r=.299$) as shown in Table 5.6 indicated that if a respondent thought an environmental policy can address environmental concerns then he/she was more likely to have considered that increased environmental performance could enhance EAPCC business competitiveness.

Table 5.6: Correlation on environmental policy and increased environmental performance

			Environmental score8	Environmental score 12
Spearman's rho	Environmental score8	Correlation Coefficient	1.000	.299(*)
		Sig. (2-tailed)		.012
		N	70	70
	Environmental score 12	Correlation Coefficient	.299(*)	1.000
		Sig. (2-tailed)	.012	
		N	70	70

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

Source: Field Data

Environmental score8 denoted: In your opinion do you think an environmental policy can present economic gains for your organization while

Environmental score12 denoted: Can increased environmental performance enhance EAPCC business competitiveness in Kenya's cement industry

While responding to the question, "Can corporate environmental policy address environmental concerns of the organization?" 84.3% (59) of the respondents were positive that an environmental policy could address environmental concerns of the organization as shown in Table 5.7.

Table 5.7: Corporate environmental policy and Organization's environmental concerns

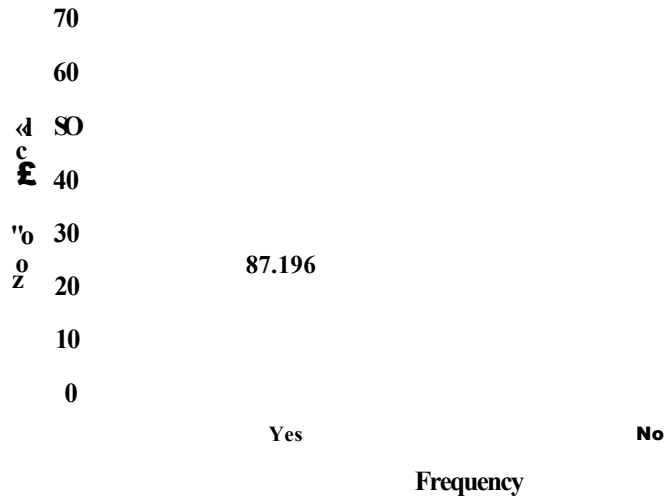
	Frequency	Percent
Yes	59	84.3%
No	11	15.7%
Total	70	100%

Source: Field Data

The respondents acknowledged that harmful environmental related incidents would negatively affect EAPCC business performance i.e. *"negative corporate image emanating from poor environmental management of the organization's operations"*

would consequently have the **EAPCC** brands perceived poorly in the **marker**. Therefore having an environmental policy in place safe-guards the organization against any unforeseen environmental incidents that can affect corporate performance.

Figure 5.6: Environmental policy and Economic gain at EAPCC



Source: Field Data

Environmental policy is most needed to achieve the environmental objectives of an organization having an environmental policy reflects a company's commitment to sustainable business practices. Despite the fact that an environmental policy is established to achieve environmental objectives where the policy provides for economic gains, these opportunities should be identified and exploited by firms Figure 5.6 shows that 87.1% (61) of the respondents acknowledge that an environmental policy can guide an organization to exploiting economic gains EAPCC. Another 84.3% of the respondents as shown in Table 5.7 confirmed that an environmental policy can enhance business competitiveness in the cement industry in Kenya.

The analysis of the correlation indicated that there was a relationship between opinions of respondents on whether an environmental policy can present economic gains and if corporate environment policy can adequately address environmental concerns. This is because of the positive sign on the correlation coefficient ($r=.303$) as shown in Table 5.8 which indicates that if a respondent thought an environmental

policy can address environmental concerns then he/she was more likely to have considered that environmental policy can present economic gains for the organization.

Table 5.8: Correlation on environmental gains and addressing environmental concern

			Environmental scoreO	Environmental score 8
Spearman's rho	Environmental scoreO	Correlation Coefficient	1.000	.303(*)
		Sig. (2-tailed)		.011
		N	70	70
	Environmental score8	Correlation Coefficient	.303(*)	1.000
		Sig. (2-tailed)	.011	
		N	70	70

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

Source: Field Data

Environmental scoreH denoted: In your opinion do you think an environmental policy can present economic gains for your organization while

Environmental scoreO denoted: Can corporate environment policy adequately address environmental concerns of your organization

The data collected also established that EAPCC had documented environmental aspects of the organization such as energy consumption, air emissions and noise emission in addition annual environmental audits are conducted which serve as monitoring and control tools and helps in continuous improvement in environmental related issues of the organization.

5.6 Hypothesis testing

H₀: There is a no relationship between increase in Corporate Environmental Performance and business competitive advantage in East African Portland Cement Company.

Parameters of the variables of interest in the population were not known while the field data in this study represented a rank ordering of observations (ordinal scale of measurement) hence the non-parametric methods of analysis were adopted for this

study. Kruskal Wallis H test Man-Whitney U test and Wilcoxon W statistic are used with non parametric methods.

Scores were evaluated in terms of expected results. The expected results were assigned most favoured score of 2 while the less favoured score was assigned the value of 1. All the resulting scores were added then averaged to get the environmental score. The environmental score was tested for difference by department using Kruskal wallis H test.

Table 5.9 Kruskal wallis II test for difference

	In which department do you work in	N	Mean Rank
Environmental score	Sales and Marketing	64	34.72
	SHE	5	40.30
	Strategy and tech	1	61.50
	Total	70	

	Environmental score
Chi-Square	2.116
Df	2
Asymp. Sig.	.347

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

Source: Field Data

If the significance level is found to be below (0.05) it would indicate a difference in the groups. In this case the data yielded a significance level of (0.347) which exceeded (0.05), thereby indicating that the environmental score did not differ among the three departments.

The environmental score was also tested for difference by gender using Man-Whitney

Utest

Table 5.10 Man-Whitney U test for difference

	What is your gender	N	Mean Rank	Sum of Ranks
Environmental score	Female	23	34.70	798.00
	Male	47	35.89	1687.00
	Total	70		

	Environmental score
Mann-Whitney U	522.000
Wilcoxon W	798.000
Z	-.238
Asymp. Sig. (2-tailed)	.812

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

Source: Field Data

The Wilcoxon W statistic is the sum of the ranks for the smaller group if for example the calculated significance value is less than (<0.05) then it indicates that the two groups differ in terms of environmental score hence there exist no sufficient evidence to reject the null hypothesis. However in this case the significance value stood at (0.812) which was way above the significance value 0.05 therefore the results from the data indicated that there was sufficient evidence to reject the null hypothesis.

CHAPTER SIX

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary of study findings

Green initiatives at the company was one the indicators for corporate environmental management in this study. According to Sarkis (2006) properly managed, green initiatives can help companies lower their overall expenses and edge out competitors. Analysis of the data established that EAPCC had initiated a number of environmental initiatives with energy efficiency and gaseous emission reduction being the key focal point of their environmental initiatives. Other environmental initiatives that were prominent included tree planting activities and quarry rehabilitation. According to Hai & Abraham, (1996) companies that invest in environmental initiatives tend to be more successful because they have in place strategies that competitively position their organizations above their competitors.

The Clean Development Mechanism (CDM) project by East African Portland Cement Company entails increasing the Pozzolana content from 26% to 35% of the Portland Pozzolanic Cement (PPC). This would result to a corresponding decrease in clinker content and energy consumed per tonne of cement produced. According to the projections, East African Portland Cement Company (EAPCC) would not have met the demand for cement after 2006/07 and EAPCC had, in the medium term, the option to increase the capacity through increased clinker production or by increased Pozzolana blend. EAPCC opted to increase the Pozzolana blend in the cement with due consideration to the latter option's environmental benefits. Increased blending of Pozzolana in the cement blend is not only more cost effective but also more environmentally friendly. As a result of this project EAPCC will increase its cement production capacity by an average of 500,000 tonnes per year. With this project, increase in cement requires 5% less clinker to make which translates to nearly 8.25 % less limestone needed. The reduction of limestone used in the process results in reduced emissions per ton of cement produced (JP Morgan, 2009). This CDM project initiative has the potential to reduce the overall cost of production and hence position the organization competitively in the cement industry.

The reputation of an organization can be enhanced by an environmentally sensitive image, which may generate good publicity and encourage customer loyalty. The study identified environmental initiatives such as tree planting initiatives and the CDM project that the organization has initiated as an opportunity that offers EAPCC to build its corporate image and promote its brand by associating the organization with responsible business. According to McComb (2002), one crucial principle in business is how a brand is perceived by all stakeholders; brands today are one of the key focal points of corporate success. Companies try to establish popular brands in consumer minds because it increases leverage, which is directly reflected in sales and revenue.

This study established that the year 2008/2009 saw EAPCC operating profits increase by 18% over the previous period (compared to Bamburi Cement Company which had an increase of 11%⁷). The chairman of the board acknowledged this in his statement of the annual report; he further stated "that internally, EAPCC focused its energies on minimizing production costs, maximizing operation efficiency, streamlining procurement processes and initiating a wide range of cost saving measures".

The reduced production cost and increased operation efficiency are partly attributed to installation of sound environmental technology e.g. the closed circuit cement mill No.5 and the energy efficiency initiatives by the organization. A modern Closed Circuit Ball Milling System is more energy-efficient and effective in achieving the required particle size fineness and distribution for increased Pozzolana blending and maintaining the same cement quality and properties (JP Morgan, 2009). This explains why from the study 73% of the respondents concurred that investing in environment friendly technology can improve EAPCC competitiveness. A competitor company, Bamburi Cement Company, which is owned by a French multinational group, Lafarge, already applies the technology in their factory in Kenya. It is worth noting that the annual cement production for the Kenyan market in the year 2006/2007 for Bamburi cement stood at 1,300,000 tonnes while that of EAPCC stood at 588,656 tonnes. It was projected EAPCC annual production capacity would increase to 600,000 tonnes with installation of the new cement mill.

⁷ Bamburi cement. *Annual report and financial statement 2008*

In addressing the research question, what role does a corporate environmental policy play towards achieving competitive advantage? The study established that an environmental policy statement is the first step towards an organization's environmental commitment. It provides guidelines and direction for achieving environmental objectives and most importantly reflects a company's commitment to sustainable business practices. EAPCC has enshrined its environmental aspects in the Safety Health and Environment policy.

The impact of economic activity on the sustainability on the natural environment as a whole has been an often-repeated concern. Cement manufacturing is energy intensive and dependant on natural resources, therefore having an environmental policy is almost inevitable for EAPCC. An environmental policy is a sure indication that the organization is fully conscious of the necessity for sustainable development. An effective environmental policy impacts on competitiveness in the sense that sustainable production is more competitive and unsustainable production less competitive.

Lending institutions for example are continuously incorporating potential environmental liabilities as part of lending risks. As a result, they are beginning to include environmental considerations in their lending decisions and viewing poor environmental performers as financially risky. Presence of an environmental policy is used by bankers as an assessment to establish an organization's environmental commitment when determining borrowers' requests for credit (Hoffman, 1997). Business organizations often require financial resources to implement new strategies meant to competitively position their products and services in the market. Financial resources may not be readily available for a business to achieve its strategy and accessing credit is fundamental to business growth. It is therefore important to ensure all conditions are met including environmental considerations before reaching out to lending institutions.

6.2 Conclusions

The study sought to find out the influence of corporate environment management on business competitiveness a case of East Africa Portland Cement Company the following are the conclusions drawn from the findings;

Summary of findings show that innovative, green initiatives can help companies lower their overall expenses and edge out competitors, for example the CDM project that EAPCC has embarked on has the potential to get in excess of Ksh 80,000,000 per year from carbon sales by reducing carbon dioxide emission by 105,000 tonnes per year.

The findings show that environmental initiatives such a tree planting initiatives and the CDM project that the organization had initiated offered EAPCC an opportunity to build its corporate image and promote its brand by associating the organization with responsible business leading to the conclusion that investing in environmental initiatives enhances the reputation and image of an organization. The good publicity generated appeals to the environment conscious customers; this is a factor that organizations are yet to exploit fully to competitively position their products and services.

The findings show that EAPCC reduced production cost and increased operation efficiency which was partly attributed to installation of sound environmental technology for example the closed circuit cement mill. Leading to the conclusion firms that apply technological changes and cleaner production systems are improve their production efficiency and subsequently economic competitiveness. Investment in environmental sound technology may however, be expensive but organization should develop strategies that help them acquire these technologies lest they are edged out by competitors.

The findings show that EAPCC has enshrined its environmental aspects in the Safety Health and Environment policy which provides guidelines and direction for achieving environmental objectives and reflect a company's commitment to sustainable business practices. An environmental policy also impacts on competitiveness in the sense that sustainable production is more competitive and unsustainable production less

competitive. Leading to the conclusion, that corporate environmental policy is the guiding principle from which organization identify the importance of the environmental factor in business operations. An effective corporate policy should identify the key strategic area and values to pursue and communicate successfully to all stakeholders. Advancing the environmental values identified in a corporate policy captures the potential competitive advantages which the organization can exploit.

6.3 Recommendations

There is need for EAPCC to engage all employees aimed at helping them understand how environment can affect and be affected by their duties and decisions.

There is need for EAPCC to develop stronger marketing strategies by linking corporate environmental related initiatives with responsible business practices

There is need for EAPCC to strengthen corporate policy strategies that promote practical approaches of integrating environmental innovations in business operations.

There is need for EAPCC to develop concrete strategies that bring out and clearly communicate the environmental achievements that the organization has attained to the public and other shareholders.

There is need for the government to offer incentives to business organizations that incorporate environmental concerns in their process

6.4 Recommendations for further research

- Further research is required on how organization can link environmental initiatives to their marketing strategy
- Extensive research of identifying environmental opportunities that promote business competitiveness across all sectors is also required
- Analytical research is required on how economic policy incentives can be applied to protect and conserve the environment

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Appendix I:

INTERVIEW SCHEDULE GUIDE FOR SAFETY HEALTH AND ENVIRONMENT OFFICER

Corporate environmental management is a system of identifying, controlling and monitoring business activities that could impact on the environment through both voluntary and regulatory measures. A proactive environmental management program is a win-win-win proposition because it can help an organization save money, be recognized for environmental leadership, and preserve and protect unique destinations. The information gathered in this data instrument will therefore only be used in a study which seeks to find out the extent to which integration of environmental concerns into an organization's business strategy and decision-making process can enhance its competitiveness.

Interview guide questions

1. In your organization do you have a formally established environmental management Policy?
2. If your company has an environmental policy, how is it communicated?
3. How does the environmental policy contribute to your organization's business strategy?
4. Have you documented the environmental aspects of your company's activities?
5. In your organization do you have a formally established environmental management system (EMS) in place?
6. If you have a formally established EMS for how long has it been in place?
Years
7. Have you established environmental objectives and targets for your organization?

8. If yes have you established programs to achieve your environmental objectives and targets?
9. Approximately, how many of your employees have received environmental training? i.e. (coursework, environmental workshops and seminars)
10. Approximately how many full time employees are working on environment, health and safety issues for your organization?
11. Over the past 5 years, how many times has your company had an internal environmental audit conducted by your corporate staff?
12. Has your organization had any reportable environmental incidents in the past 5 years?
 - a. If yes, how were they handled?
13. Are environmental incidents or accidents in your organization likely to affect business performance?
14. Do your environmental objectives and targets include a commitment to adopting environmentally friendly technology?
15. Has your organization invested in any environmentally friendly technology? if yes how has it impacted on your organization's business
 - a. If it has not invested in any, are there any environmentally friendly technologies your organization can invest in?
16. How would investment in modern environmentally friendly technology impact on your organizations business strategy in relation to your competitors?
17. Do your environmental objectives and targets consider capturing new markets?
18. Has your organization participated in any corporate environmental initiative since its inception?

- a. **If yes are** there any benefits that accrue from participating or contributing to corporate environmental initiatives? If any please name
- b. Can corporate environmental initiatives enhance EAPCC business strategy in the cement industry?

19. To what extent has corporate marketing influenced your company to improve its environmental performance?

Appendix II:
INTERVIEW SCHEDULE FOR ENERGY ENGINEER

Corporate environmental management is a system of identifying, controlling and monitoring business activities that could impact on the environment through both voluntary and regulatory measures. A proactive environmental management program is a win-win proposition because it can help an organization save money, be recognized for environmental leadership, and preserve and protect unique destinations.

This data instrument intends to gather information for a scholarly study which seeks to find out the extent to which integration of environmental concerns into an organization's business strategy and decision-making process can enhance its business competitiveness

The study is guided by the following Research Objectives:

- To identify corporate environmental initiatives which enhance business competitiveness?
- To identify the extent to which modern environment technology influences competitive advantage.
- To establish the impact of an environmental policy towards achieving business competitiveness.

Guiding questions

1. What is the source of your energy in your organization?
2. Is your current source of energy in tandem with your organization's strategic objectives to reduce energy cost?
3. Are there substitutes to the current source of energy you are using i.e. (clean energy and efficient technology)
4. Has your organization documented your energy requirements

5. Is your energy consumption measured?

6. What programmes has your organization established to improve energy efficiency and reduce wastage? if any please name

7. Are there significant benefits that arise from improved energy efficiency in your organization?

8. How do benefits that accrue from energy efficiency impact on the overall company operations?

9. What are the future plans for energy reduction in your organization?

Appendix III:
INTERVIEW SCHEDULE FOR CONSUMERS

Corporate environmental management is a system of identifying, controlling and monitoring business activities that could impact on the environment through both voluntary and regulatory measures. A proactive environmental management program is a win-win proposition because it can help an organization save money, be recognized for environmental leadership, and preserve and protect unique destinations.

This data instrument intends to gather information for a scholarly study which seeks to find out the extent to which integration of environmental concerns into an organization's business strategy and decision-making process can enhance its business competitiveness

The study is guided by the following Research Objectives:

- To identify corporate environmental initiatives which enhance business competitiveness?
- To identify the extent to which modern environment technology influences competitive advantage.
- To establish the impact of an environmental policy towards achieving business competitiveness.

Guiding questions

1. For how long have you used EAPCC cement?
2. Are you familiar with environmental concerns in cement manufacturing?
3. Are you aware of any environmental initiatives by EAPCC?
4. Would you consider buying cement from an environmental responsible company?
5. Would you quit buying cement from a company that is associated with environmental degradation?

Appendix IV:
QUESTIONNAIRE FOR EAPCC EMPLOYEES'

Corporate environmental management is a system of identifying, controlling and monitoring business activities that could impact on the environment through both voluntary and regulatory measures. A proactive environmental management program is a win-win plan because it can help an organization save money, be recognized for environmental leadership, and promote environmental sustainability. The information gathered in this data instrument will therefore only be used in a study which seeks to find out the extent to which integration of environmental concerns into an organization's business strategy and decision-making process can enhance its business competitiveness.

The researcher will use the collected information for an academic research project of a Master's degree in Environmental Planning and Management at the University of Nairobi. The information shall not be used for any other purpose without prior written consent from the source.

This study is guided by the following Research Objectives:

- To identify corporate environmental initiatives which enhance business competitiveness?
- To identify the extent to which modern environmental technology influence competitive advantage.
- To establish the impact of an environmental policy towards achieving business competitiveness.

Your participation in this research study will be highly appreciated. Thank you

Please tick where appropriate

Section A

1. Name of the
employee

2. What is your gender M F

3. How long have you been an employee of EAPCC (*tick where appropriate*)

Less than 1yr

2 - 4 yrs

Over 5yrs

Section B

4. Are you aware of any corporate environmental initiative that your organization has participated in since its inception?

Yes No

5. If Yes please describe any of the corporate environmental initiative EAPCC has invested or contributed in within or outside the organization

6. Do you think investment in environmental initiatives can enhance EAPCC business strategy in the cement industry?

Y e s Q No |

7. If Yes please name any benefits that accnie from investing or contributing to corporate environmental initiatives?

8. Is there any environmental initiative you would suggest to your organization that would promote its competitiveness in the cement industry? Please describe if any

9. Has your organization (EAPCC) invested in any environment friendly technology?

Y e s Q No ●

10. If Yes how has it impacted on your organization's business?

11. Are you aware of any environment friendly technology in the cement industry your organization can invest in?

Yes No

12. If yes please name or describe any of these environment friendly technology in the cement industry

13. Can investment in environment friendly technology improve EAPCC competitiveness in the cement industry in Kenya?

Yes No

14. In your organization do you have a formally established Corporate Environmental Policy?

Yes No

15. If yes are all employees aware of what the Corporate Environmental Policy entails?

Yes No

16. In your opinion do you think an environmental policy is important for your organization

Yes | ~j No | |

17. Can an environmental policy promote waste reduction

Yes | — | No ●

18. Do you think a Corporate Environmental Policy can adequately address environmental concerns of your organization?

Yes Q No ●

19. Do you think an Environmental Policy can enhance your organization's business competitiveness in Kenya's cement industry?

Yes

20. Please describe any **environmental** programmes you know being carried out by other cement manufacturing organization in Kenya?

Appendix V:
QUESTIONNAIRE FOR EAPCC NEIGHBOURHOOD

Corporate environmental management is a system of identifying, controlling and monitoring business activities that could impact on the environment through both voluntary and regulatory measures. Corporate environmental management is a win-win proposition because, on one hand it helps promote corporate image and reduce cost of production for business establishments while on the other hand it contributes to achievement of stakeholders' goal of environmental protection hence sustainable development.

The information gathered in this data instrument will only be used for scholarly purposes in a research study which seeks to establish the influence of corporate environment management on business competitiveness in East African Portland Cement Company.

This study is guided by the following Research Objectives:

- To identify corporate environmental initiatives which enhance business competitiveness?
- To identify the extent to which modern environmental technology influence competitive advantage.
- To establish the impact of an environmental policy towards achieving business competitiveness.

Your participation in this research study will be highly appreciated. Thank you

Instructions: *Please tick where appropriate*

Section A

1. Name of the respondent

2. Gender of the respondent

Male Female

3. How long have you been a resident in this area?

Less than 1yr

2 - 4 yrs

Over 5yrs

Section B

4. How would you rate East Africa Portland Cement Company (EAPCC) in terms of its environmental management?

Poor Manageable Q Good QJ Excellent Q

5. Are you aware of any reportable environmental incidents in the past that occurred as a result of activities caused by EAPCC?

Yes Q No

6. If yes how did EAPCC handle the matter?

7. Has EAPCC undertaken any measures to improve the environment within your vicinity

Yes Q No

8. If YES please describe what measures it has put in place

9. Are there activities or measures you would suggest to EAPCC for it to improve the environment within your vicinity?

10. How would you describe Athi river residents relationship with East Africa Portland Cement Company (EAPCC)?

11. Are you aware of any corporate social responsibility programme by East Africa Portland Cement Company (EAPCC)?

Yes No

12. If yes above are there environment related programmes among the corporate social responsibility programmes?

Yes 0 No 0

13. If yes above would you briefly describe the environment related corporate social responsibility programme

14. How would you describe the interaction between EAPCC and its environs?

15. Do you think EAPCC can influence other business establishments within Atlii River Town to improve the environment?

Yes No

16. Do you think EAPCC has made any efforts to improve its technology to safeguard against environmental pollution within your locality?

Yes No

17. Do you think EAPCC is committed towards improving the environment?

Yes No