

UNIVERSITY OF CAPE COAST

THE USE OF CORPORATE ENVIRONMENTAL MANAGEMENT
TOOLS BY MANUFACTURING FIRMS IN SEKONDI-TAKORADI
METROPOLIS

BY

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UNIVERSITY OF CAPE COAST

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2008

DECLARATION

Candidate's Declaration

I hereby declare that this dissertation is the result of my own original work and that no part of it has been presented for another degree in this University or elsewhere.

Signature:..... Date:.....

Name:.....

Supervisor's Declaration

I hereby declare that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by the University of Cape Coast.

Signature:..... Date:.....

Name:.....

ABSTRACT

Issues about the environment are no longer just the air we breathe, or the world we live in, it has become a requirement for businesses to address in an ever more critical global economy. This study assessed the corporate environmental management tools used by manufacturing firms in the Sekondi-Takoradi Metropolis to manage the environmental problems associated with their production.

Structured Questionnaire was used to obtain data for this study. The lottery method of sampling was used to select the firms from a total of 24 firms. The data obtained were analyzed with Excel computer application and Statistical Product and Service Solutions (SPSS Version 12). A five point likert scale was also used in analyzing some data.

This research found out that the current state of firms' environmental performance in the Sekondi-Takoradi Metropolis is very bad. Firms are also not using modern trends in the area of environmental management. There is a problem of cost to deal with, as well as, bureaucracy and unwillingness on the part of management. The motivation of firms in the Sekondi-Takoradi Metropolis to pursue good environmental practices is to comply with environmental standards only. Since the majority of the firms are interested in achieving environmental standards, government must use these standards to put more pressure on the firms to manage their impact on the environment properly. Very weak and old regulations should be replaced with new and stiffer ones that meet the current environmental demands.

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LIST OF ACRONYMS

CDU	Communicable Diseases Unit
CEMT	Corporate Environmental Management Tools
CER	Corporate Environmental Reporting
CFCs	Chlorofluorocarbons
EA	Environmental Auditing
EMS	Environmental Management Systems
EPA	Environmental Protection Agency
EPC	Export Processing Zone
GHACEM	Ghana Cement Company Limited
GWCL	Ghana Water Company Limited
ISO	International Standards Organization
LCA	Life Cycle Analysis
NGOs	Non-Governmental Organizations
OAU	Organisation of African Unity
OECD	Organisation for Economic Co-operation and Development
SPSS	Statistical Package for Service Solution
STMA	Sekondi-Takoradi Metropolitan Assembly
UNDESA	United Nations Department of Economic and Social Affairs
WHO	World Health Organisation
WSSD	World Summit on Sustainable Development

CHAPTER ONE

INTRODUCTION

Background

The environment is a large complex system. Managing and protecting it contributes to improving human health conditions, sustaining agricultural and other primary production, and reducing risks of disastrous floods as well as wildfires, mudslides and other natural disasters. The environment and its resources are two sides of the same coin that is required for development. It is impossible, over the long term, to manage one without the other (Agyepong, 1987).

Issues about the environment are no longer just the air we breathe, or the world we live in, it has become a requirement for businesses to address the environment in order to maintain customers, and exist and thrive in an ever more critical global economy. There has been significant awareness of global environmental problems, in particular relating to global warming, ozone depletion, biodiversity, pollution, and population growth (Chavan, 2005).

The 2002 World Summit on Sustainable Development (WSSD) held in South Africa brought to the discussion the economic and environmental policy debates surrounding issues related to development. The discussion explored critical challenges of the 21st century related to balancing quality of life with

environmental and economic security while meeting demands for food, water, shelter, sanitation, energy, and health services. The Summit provided a forum for the expression of continued concern about climate change, loss of biodiversity, fish stock depletion and desertification, with particular attention to the urgency of these matters in developing countries (White & Hunter, 2005).

An enduring society must be based on a system of commerce and production that is sustainable and restorative. This implies that countries and businesses need to integrate economic, biological, and human systems to create a sustainable system of commerce that rewards proactive environmental management. As we begin the twenty-first century it appears that for a growing number of firms, environmental issues are emerging with increasing frequency as strategic problems. There is a worldwide debate on the issue of environmental management, stemming from a flow of evidence about ecological degradation caused by economic development. In recent times, a growing number of corporate executives have integrated environmental issues in their corporate strategies. These changing trends towards achieving responsible environmental behaviour in firms have been influenced by various factors (Taylor, Sulajman & Sheahan, 2001).

Sweatman and Simon (1996) note that government regulation on product end-of-life and production processes have emphasized the need to address environmental concerns during the product design process to ensure environmental compliance. The impact of environmental legislation on the operation of firms has been profound and is set to become even tougher. As a

result, in all of its operations, firms must plan ahead to meet the demands of current and forthcoming environmental legislation. They concluded that by developing proactive responses to legislative pressure, industry will reduce its costs and exposure to risk. While in the short term, legal obligations undoubtedly increase the cost of production that fall upon the firm, it is up to each firm to comply with legislation in the most cost-effective way. The development of proactive strategic responses to the demands of legislation will reduce those costs.

In a report by Metcalf, Williams, Minter, and Hobson (1995) customers and stakeholders demand for environmental excellence. Seventy eight percent of consumers in the United Kingdom are avoiding specific businesses due to their corporate environmental attitudes. Another 70 percent would still avoid a firm even if discounts were offered. The report also discovered that 16 percent of consumers seek information regarding a firm's environmental practices prior to patronizing the establishment and that a reputation as a polluting or "dirty" firm costs firms real money and customers. Pressures from consumers have influenced firms like DuPont, for example, to incorporate environmental considerations into their strategic planning to assure its customers and citizens throughout the world that it is sensitive to the environment, and that it is acting in a socially responsible manner (Sadgrove, 1992).

Employees are also seeking healthy secure working conditions, and can draw on an established framework of health and safety legislation in this respect. However, employees' concern relating to the environmental performance of their employers goes beyond the impact of operations on the working and living

environment. Increasingly people wish to work for ethical and responsible firms. Firms that reflect the environmental concerns of the public will find it easier to attract, retain and motivate a quality workforce (Welford & Gouldson, 1994). Shamsuddoha, (2005) arguing about a firms' environmental performance and the calibre of staff, referred to a study conducted by McKinsey in 1996 covering 403 senior executives from around the world that revealed that 68 per cent of them agreed that organizations with a poor environmental record would find it increasingly difficult to recruit and retain high calibre staff.

Furthermore, a combination of increased public awareness of environmental issues and freedom of access to information on the environmental performance of firms will serve to magnify media and pressure groups interest in the environmental performance of industry (Levy, 1996). Under these circumstances, international institutions have been important sounding-boards for politicians in a competitive game to impress the public. Although intergovernmental organizations are almost always extremely reticent to criticize governments, Non Governmental Organizations (NGOs) do not face such constraints. Non Governmental Organizations typically play an active role using information from formal international meetings and public statements made by governmental officials to embarrass and criticize a firm's environmental policy (Levy, Keohane, & Haas, 1993).

Today, financial success is no longer the sole measure by which firms are judged by the communities in which they operate. Firms are now expected to perform well in non-financial areas such as human rights, environmental policies

and workplace issues. Firms that endorse this new way of thinking believe that being responsible citizens is ultimately good for business. As such, their focus has shifted from pollution cleanup to pollution prevention and natural resource conservation at every stage of the firm's operations. By implementing sound environmental practices, businesses create safer operations as well as a healthier work place for their employees, while minimizing costs such as waste disposal permits and fees. These have made firms to develop tools to successfully manage the environmental impacts of their operations (GreenWare Environmental Systems Inc, 2003).

As part of this proactive strategy, firms are implementing environmental management systems. The environmental management system (EMS) is an increasingly popular set of basic environmental management tools, as it can be implemented to fit the needs of an individual firm. The EMS is part of the firm's overall management system. It includes strategic planning, organizational structure and implementation of the environmental policy as an integrated part of the manufacturing process. The process of implementing an environmental management system catalyzes firms to begin thinking about the environmental impacts of production. The EMS is a useful tool to enhance the environmental performance of an organization, as well as to reduce costs through a more efficient use of resources (United Nations Department of Economic and Social Affairs, 1998).

Corporate environmental reporting, as a tool for communication, first emerged during a period of 'social accounting' which began in the early 1970s

and occurred principally in North America. Firms tied many forms of reporting: within the annual report or within a separate booklet; in financial numbers, in non financial quantities, in words and pictures; the reports were for employees or management or society at-large; some were audited, some not; they covered one or more of; plans, policies, interactions with communities, charitable giving, levels of pollution and emission, energy usage, employment data, health and safety at work (Gray, 1994).

Life cycle analysis is the process of evaluating the effects that a product has over the entire period of its life cycle or "cradle- to-grave". This integrative approach avoids substituting one set of environmental problems for a different set of problems. According to the United Nations Department of Economic and Social Affairs (1998), the number of applications for life cycle analysis is growing. It is being used in the improvement of both products and processes, in setting criteria for ecolabelling, and in decision making about purchasing. Life cycle analysis is thus becoming increasingly important in the development of cleaner products.

Another management tool is environmental auditing. This is a series of activities initiated, by management, to evaluate environmental performance, to check compliance with environmental legislation and to assess whether the systems in place to manage environmental improvement are effective. Audits are undertaken at regular intervals to assess the environmental performance of the firm in relation to the firm's stated objectives and environmental policy. Like environmental reviews, audits are carried out by inter disciplinary teams which

will include lawyers, management systems experts, engineers, scientists and environmental experts. The environmental audit is therefore an integral part of the environmental management system (Welford, 1998).

Hutchinson (1996) notes that environmental issues have moved from the perceived “radical” periphery squarely into the mainstream issues facing society, and society as a whole has become more aware of their impact on, and responsibility to, the environment. This is reflected by the growth in membership of green societies and action groups and the increasing power of the “green consumer”. He continues, it was perhaps the realization of the power of the green consumer voting with their purchasing choice, demonstrated by the changes in aerosol purchases due to concerns over Chlorofluorocarbons (CFCs), that first signalled to industry the possible opportunities and threats they faced in responding to green pressures.

It is clear that a firm's adoption of more systematic approaches to environmental management can have both environmental and economic benefits. More broadly, better environmental management is being seen as a key source of competitive advantage for industrial firms. A whole range of benefits can accrue from improved environmental performance, ranging from reduced effluent charges to better community relations. Environmental management tools are supporting a needed change in government-firms relationships to one of mutual support and partnership. Environmental management tools are also providing the framework needed for continuous improvement, proactive action by industry and

creative partnerships to yield real and sustainable improvements in environmental performance (Holt, 1998).

The right to a healthy environment is universally recognized. In the Stockholm Declaration on the Human Environment, for example, 114 nations affirmed that man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well being, and he bears a solemn responsibility to protect and improve the environment for present and future generations (Kiss & Shelton, 1993). In the Rio Declaration on Environment and Development, 178 states further declared that human beings are entitled to a healthy and productive life in harmony with nature (United Nations Environment Program, 1992). The African Charter on Human and Peoples' Rights (OAU Document, 1982) recognizes that all peoples shall have the right to a general satisfactory environment favourable to their development. In addition, the United Nations General Assembly (Herz, 1998,) has noted that all individuals are entitled to live in an environment adequate for their health and well-being. Again, The Hague Declaration on the Environment recognizes the right to live in dignity in a viable global environment (Hughes, 2000).

Statement of the problem

There has been a growing interest in the environment, and more specifically in the damage done to the environment (Chavan, 2005). In its 2002 annual report, The Environmental Protection Agency of Ghana reported that there

are over 5000 manufacturing firms in the country of which half are classified as medium to large scale. The report acknowledges that these firms have had a large impact on both the economy and the environment of the place they are located in general with Tarkwa, Obuasi, Accra, Tema, Sekondi-Takoradi cited as examples. Some of the major problems include industrial liquid and solid waste, air and water pollution. The quantity of industrial wastes have increased over the years; however, there is hardly any waste recycling/treatment or proper management practices in the country. The report further said water pollution caused by firms is a “moderate” to “high” in 6 out of 21 coastal districts of Ghana. This can be attributed to the high concentration of industries in major coastal towns like Tema, Accra and Sekondi - Takoradi.

The Sekondi-Takoradi Metropolis is the third most industrialized of the metropolises in Ghana. There are a number of manufacturing firms in the metropolis and due to this large number of manufacturing firms in the metropolis, the metropolis is exposed to a lot of environmental problems basically due to either non existing environmental management tools or failure to implement what is stated in the firms’ environmental management plans. The beach near Essipon- a suburb of Sekondi has become a sewage and oily liquid waste dumping site for most firms in the metropolis.

A total of 1,616 trips of faecal matter, largely from some major industries, making 16,680 m³ of effluent was collected and disposed of at the Ngyeresia faecal waste final dumpsite in the year 2005 (Ministry of Local Government and Rural Development, 2006). The Buthia lagoon which passes through the Effia

industrial area, and also close to the Takoradi Polytechnic, into which the river Kansaworado flows, creating an extensive and a beautiful marshland, is under severe threat. The collection, transportation and disposal of solid and liquid waste are the sole responsibility of the Metropolitan Assembly which operates through the waste management departments (Environmental Protection Agency-Ghana, 1991).

The tonnage of waste generated in the metropolis has been increasing over the years as the population increases. The estimated total solid waste generation for Sekondi-Takoradi is 206 tonnes per day (representing 75,293 tonnes per year) with the manufacturing firms having contributed the largest chunk of the waste. In the years 2005, the actual collection rate was 58,690 tonnes, a collection increase rate of about 70%. The total waste collection for the year 2005 was more than the estimated generation. Classification and composition of municipal solid waste in the Sekondi-Takoradi has a high proportion of organic waste and low proportions of recyclables. These materials are readily visible in every municipal dumpsite (Ministry of Local Government and Rural Development, 2007).

Leaders of various firms all over the world, in reducing their generation of chemical waste are changing their business organization, strategy, and operations for continued improvement. Firms are improving their profits and environmental performance by adopting environmental management practices and an increasing number of organizations have been seeking to improve their environmental performance as a result of rapidly increasing market pressures and government regulations on product end-of-life and production processes. It is important,

therefore, to study whether firms in the Sekondi-Takoradi Metropolis are using environmental management tools to manage their environmental problems.

The research seeks to answer the following questions:

- What is the current state of firm's environmental performance in the metropolis?
- What management structures and corporate environmental management tools are used by firms in the Sekondi-Takoradi Metropolis?
- Are firms having enough motivation to achieve higher environmental standards?
- To what extent has firms' environmental performance been made public?
- What benefits do firms derive from using the corporate environmental management tools?
- What problems do firms face when using the corporate environmental management tools?

Objectives of the study

The general objective of this research is to assess the corporate environmental management tools which firms in the Sekondi-Takoradi Metropolis use to manage the environmental problems associated with their production.

The specific objectives are to:

- find out the current state of firms' environmental performance in the metropolis?
- describe the management structure and the use of environmental management tools.
- assess whether firms have enough motivation to achieve higher environmental standards.
- examine the extent to which firms' environmental performance has been made public.
- identify the benefits firms derive from using the corporate environmental management tools.
- discuss the problems firms face when using the corporate environmental management tools.
- make recommendations for the purpose of using the corporate environmental management tools.

Rationale of the study

Organizations have been seeking to improve their environmental performance as a result of rapidly increasing market pressures. This need has increased people's desire to research into this emerging area of environmental protection. Therefore, the findings from this research will be of an immense benefit to the government since the government can take a second look at policies and regulations that compel firms to adopt the use of the corporate environmental management tools. From the findings of the study, the government can empower

the regulatory agencies to monitor the environmental performance of firms, and enforce environmental regulations.

Policy makers can use the findings from this study to formulate strict environmental laws that are in line with the principles of sustainable development as well as controlling environmental pollution. The Environmental Protection Agency will appreciate the findings of this study; to evaluate their activities from an impartial stand-point and improve upon what they are already doing. It will also help them to review their strategies where necessary and put the agency on a level that will enable it execute its task as required by law. The reason is that once regulators have better information, and a more integrated information system, it will not be difficult for them to manage pollution more cost-effectively. The firms in the Metropolis can also use the findings from this research to evaluate themselves whether they are committed to managing the environment which receives their waste and review their operations to ensure proper environmental performance and accountability.

This study will add to existing knowledge. This is because it can become a reference material for researchers who would like to research into this area in the future. Lecturers and students can use it as a teaching and learning material. Lastly, the research will enlighten the public on the contribution to maintaining sound environmental practices by firms. This is because strong consumer pressure has forced many industries in the developed world to change their corporate management strategies so that environmental considerations have taken prominence. Since consumer awareness in this country is very low, due partly to

limited information, consumer knowledge of the results could spark off a new wave of environmental awareness.

Organization of the study

The study is organised into five chapters. Chapter One presents the background to the study, the statement of the problem, the research questions and the objectives of the research. It also presents the rationale of the research and the organization of the study.

Chapter Two presents the literature review. In the literature review is a discussion of the various drivers of responsible sound environmental behaviour. It also discusses the tools of corporate environmental management; tools for analysis and evaluation, tools for action, and tools for communication.

Chapter Three of this research discusses the methodology. The methodology comprises the study design, study area, and the population and sample size. It also discusses sampling procedure, data collection, data collection procedure, instrument used, and the analysis of data. The results and discussion are presented in Chapter Four. Chapter Five contains the summary, conclusions and recommendations to the research.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter will review issues like what is meant by environmental management. It will also review the commitment to the use of environmental management tools. It will again review factors for responsible environmental behaviour. This will include the influence of government or legislation, customers, trading partners, the community, employee's pressure, investors and insurers, media and pressure groups, and firms' corporate image. The chapter will also review the tools for corporate environmental management; that is tools for analysis and evaluation, tools for action and tools for communication. Under tools for analysis and evaluation, issues like life cycle analysis will be reviewed. The environmental management systems tool will be reviewed under tools for action. Finally, the chapter will review the problem of environmental compliance and enforcement in Ghana.

What is environmental management?

Environmental management, as described by the Environmental Protection Agency – Ghana (1991), is one package in a series of Technical Information Packages to offer the community information on the key environmental and

public health issues being addressed. The packages focus on the scientific and technological aspects of different environmental problems and methods for addressing them. The purpose of environmental management is to provide information on issues to consider when establishing and managing an environmental agency. According to Welford (1998), since the 1960s, there has been a growing interest in the environment, or more specifically in the damage being done to the environment. Everything which consumers, firms and other institutions do will have some impact on the environment. The hole in the ozone layer and global warming is not the result of one country's or one firm's action but that of many. According to Welford, it is generally accepted that the world cannot go on using the resources of the planet at the present rate. He concludes that there is a role for all including firms to put in place policies which begin to rectify the situation.

Commitment to the use of environmental management tools

Kotha and Nair (1995) have indicated that both firms' strategies and the environment play significant roles in influencing profitability and growth. Some companies have taken their first step towards transforming the nature of their processes and products to be proactive in environmental management. Maxwell, Rothenberg, Briscoe, and Marcus (1997) argue that such organizations will discover that well-formulated environmental strategies can lead to a number of advantages such as better quality, reduced costs, improved image and the opening of new markets.

Kane (1994) also showed that in the business world, environmental performance and economic performance are positively linked and corporate social responsibility and business is tightly interwoven. This can be seen from the increasing number of companies that are going green. In a survey by Quazi (2001) 92 per cent of Chief Executive Officers and board members agreed that the environment should be one of their top three management priorities. Moreover, 85 per cent of them claimed that one of their major goals should be to integrate environmental considerations into business strategy and there is evidence that many firms have taken a proactive approach to the environment.

According to Dechant, Altman, Downing and Keeney (1994), authors list companies like Johnson & Johnson, the Body Shop, Procter & Gamble, Pitney Bowes, IBM, Olin, and Colgate- Palmolive which have set examples on how to integrate environmentalism into the business planning and operations in a manner that translate to bottom line profit. Efforts of these businesses demonstrate the growing shift in corporate environmental thinking from a mindset in which the environment is viewed primarily as a compliance with regulation to one that includes it as an overall part of strategic management.

Factors that influence responsible environmental behaviour

Firms often strive to minimize the costs of their operations. As the ability of the environment to supply raw materials and accept waste is diminished, the costs of these services to industry will increase. The environmental impacts on organizations are numerous and they affect organizations in many ways. These

notwithstanding, other factors force firms to be responsible in their operations (Commissioner for Environmental Sustainability, 2006).

Influence of government or legislation

The main impact of government on the environmental performance of industry has been through the development of environmental legislation. Environmental considerations have been built into the legislative framework for many years. Initially, establishing rights of ownership over natural resources led to the development of a legal system to protect those rights. Subsequently, the impact of industrial activity on the health of employees and the surrounding community led to the creation of public health and safety legislation. The impact of environmental legislation on the operation of firms has been profound and is set to become ever tougher. By developing proactive responses to legislative pressure, firms will reduce their costs and exposure to risk (Welford, 1998).

In parallel with the development of environmental legislation, governments are increasingly applying market instruments to achieve environmental objectives. Action of this nature may include the imposition of taxes on environmentally damaging goods, subsidies on environmentally friendly goods or the provision of information relating to the environmental performance of companies or products. Thus through a combination of legislations and market instruments, by encouraging certain activities and discouraging others, governments seek to accelerate the structural change which encourages improved

environmental efficiency in the economy as a whole (Welford & Gouldson, 1994).

Customers

The relationship between a firm and its customers is obviously of paramount importance. Firms which can validate and communicate the environmental performance of their products will enhance their competitive position (Welford & Gouldson, 1994). According to Sadgrove (1992), it is reported that 39 per cent of adults in the United Kingdom buy green products as far as possible and a further 20 per cent buy them whenever they see them. Out of Britain's 20.8 million households, 9.5 million of them are “very concerned” or “extremely concerned” about green issues. Nearly all the rest are “concerned”, with a mere 8 per cent expressing indifference. The report emphasizes that pressures from consumers have influenced firms like DuPont, a multi-national chemical and health care company, for example, to incorporate environmental considerations into their strategic planning to assure its customers and citizens throughout the world to prove that it is sensitive to the environment, and that it is acting in a socially responsible manner.

Trading partners

Many businesses do not sell into ‘end-consumer’ markets and may therefore perceive themselves to be remote from any consumer pressures to improve their environmental performance which emanates from trading partners

rather than the ultimate consumer. In efforts to improve overall environmental performance, many firms are exercising their own rights both as purchasers and as vendors and are demanding that all the firms within their supply chain seek to minimize their own environmental impacts. An increasing number of firms prefer to buy their resources from or sell their products to firms which meet certain standards of environmental performance (Welford & Gouldson, 1994).

The community

The industries share their surrounding environment with the local population. Increasingly this population is demanding a high level of environmental performance from its industrial neighbours, and seeks some degree of reassurance that they are not exposed to significant environmental risk due to a company's operations. In order to foster a positive working relationship, firms must improve the environmental performance and communicate their efforts to the surrounding communities. This is true both for future developments and existing operations (United Nations Department of Economic and Social Affairs, 1998).

Employees' pressure

The population in the community surrounding a firm also includes the workforce of that firm. The pressure to provide a healthy living environment is magnified within the workplace. Employees seek healthy secure working conditions, and can draw on an established framework of health and safety

legislation in this respect. Increasingly, people wish to work for ethical and responsible firms. Firms that reflect the environmental concerns of the public will find it easier to attract, retain and motivate a quality workforce (Welford & Gouldson, 1994). Division Director of Environmental Affairs for Dexter Corporation, an international organization, further validates this point suggesting that college graduates are not looking for more than just a pay check. They are looking for firms with which they can identify morally and philosophically (Dechant et al, 1994).

Investors and insurers

The pressures to improve environmental performance also emanate from the investors and shareholder of a firm. The growth of ethical investments schemes in recent years reflects the desire of many investors only to lend their financial support to firms which behave in a responsible manner (Welford & Gouldson, 1994). Some investors are making decisions based on corporate attitudes. The Walker Research survey found that 26% of investors believe that environmental business practices and ethics are extremely important to investment decisions (cited in Metcalf, et al. 1995, p. 19 - 35).

Insurance companies have a direct financial interest in reducing losses through preventing accidents and ensuring that, if one occurs, its effects on human life and the environment are minimized. An increasing number around the world are focusing significant management attention and resources in this direction. Insurance companies are committed to environmental conservation because

environmental conservation goes hand in hand with loss prevention, a core activity for innovative insurance companies and that they can improve their investment performance by incorporating environmental knowledge into their investment decisions (Jolly, 1998).

Banks also lend to firms to secure the loans on the basis of the physical assets of the firm and often on the land upon which any investment takes place. Should the firm cease to be viable, then, the banks assume ownership of those assets which are then sold to cover any outstanding debts. However, should the physical assets of the firm be contaminated, then the value of the assets is significantly reduced. Commercial lenders are therefore reluctant to lend money to any firm which may develop any environmental liabilities or to secure loans on the value of an asset which may be eroded through contamination (Welford & Gouldson, 1994).

Media and pressure groups

A combination of increased public awareness of environmental issues and freedom of access to information on the environmental performance of firms will serve to magnify media and pressure groups interest in the environmental performance of a firm. In order to manage media and pressure group attention, firms must be able to state that they have made efforts to reduce their environmental impact (United Nations Department of Economic and Social Affairs, 1998).

Corporate image

Corporate image is an important aspect of a firm’s marketing strategies and can be a significant driving factor for improving environmental performance, particularly in high-visibility issues where public concerns are greatest. It is also becoming a key to the marketplace, where consumers are becoming more selective in their purchasing decisions. The role of the public is in fact becoming stronger with regard to promoting corporate responsibility on various fronts, including boycotts that affect the image of companies while reducing sales (United Nations Department of Economic and Social Affairs, 1998). A survey of 25, 000 consumers in 23 countries by Business in the Environment (1994) found that 23% of the consumers had “punished” a firm in the past year for behaviour that was deemed to be socially and environmentally unacceptable.

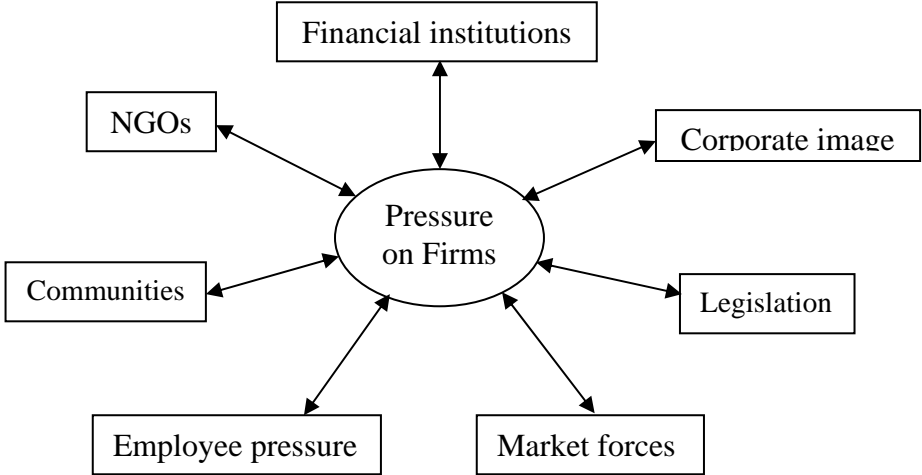


Figure 1: Factors that influence responsible environmental behaviour

Source: Seetharaman *et al*, (2007)

Tools for corporate environmental management

Many organizations have adopted environmental policies and carried out environmental audits or reviews in response to the increasing pressures in corporate bodies to ensure environmental management. Even though it may seem somehow arbitrary, environmental management tools can roughly be divided into three groups: tools for analysis and evaluation, tools for action, and tools for communication (United Nations Department of Economic and Social Affairs, 1998)

Tools for analysis and evaluation

These tools can contribute to Sustainability in industry. Some of these tools are the life cycle analysis and environmental auditing (United Nations Department of Economic and Social Affairs, 1998).

Life cycle analysis

Life cycle analysis (LCA) allows a firm to track the environmental impacts of its products services throughout the products life cycle (from cradle to grave) and identify areas of environmental damage. In so doing, a company is able to redesign products and distribution methods which will reduce environmental damage. This methodology represents a very powerful tool in the strategies available to businesses to improve their environmental performance. Fundamentally it is a tool to be used to shed light on the product's environmental impacts at every stage from extraction to disposal. Starting from the acquisition of

the raw material and the effects of the manufacturing processes, and working throughout the product life cycle from manufacture to disposal the sum of net effect can be evaluated, compared and a decision taken about the option which causes least damage (Srinivas, 2004).

The process and stages in the methodology

It is an analysis covering every stage and every significant environmental impact of a product from the extraction and the use of raw materials through to the eventual disposal of the components of the product and their decomposition back to the elements. It is about design to recycling. The aim of life cycle analysis is to highlight those particular areas in the environmental profile of a product where producers or vendors should focus their response in order to minimize their environmental impacts. Alternatively, if the major area of environmental impact occurs as a result of the use of non-renewable resources then alternative sources should be sought and again, the product might well undergo some redesign to reduce or eliminate the dependence on scarce resources (Welford & Gouldson, 1994).

According to the International Standards for Organization 14040 (2006), strength of the life cycle analysis lies in the systematic collection and collation of quantitative data which should establish the extent of any environmental impact and its scope for improvement. The process will confirm or challenge any assumptions and preconceptions made and it will facilitate a greater understanding of ecological impacts involved. The potential scope of a life cycle

analysis is enormous. It is necessary to set the boundaries of the life cycle analysis to manageable limits; taking into consideration what constitutes a significant environmental impact. Current methodology selects those facets of the process which are likely to provide the most relevant information. life cycle analysis may be very selective or partial depending on the objectives to be achieved (Srinivas, 2004).

Life cycle analysis involves inventory taking. The definition of inventory involves gathering quantifiable data relating to the material and energy inputs into a product across its whole life cycle and any associated emissions, discharges and wastes. This should relate to all stages of the product life cycle from extraction and cultivation, procurement, processing, manufacture, packaging, distribution, use, disposal and decomposition. There should be impact analysis, that is, how the inventory may affect the environment and it is much less straightforward. It involves establishing the environmental impact of each of the areas documented under the inventory. The analysis should cover ecological damage, human and animal health, habitat modification and lifestyle changes as a minimum.

The final stage of life cycle analysis represents feedback for improving the environmental profile of the product. In effect, the improvement stage demonstrates where the environmental profile of the products ought to be altered through redesign of the product and its manufacturing process. A formal and systematic appraisal of the product's environmental impact will often reveal areas where relatively simple fine tuning will reduce environmental impact. This improvement stage will assess the technically and economically feasible options

available at all stages of the product's life to improve the environmental impact of the good (Welford, 1998).

Problems with Life cycle analysis

A fundamental problem occurs at the outset of the environmental inventory which is related to deciding how far reaching the assessment should be. Boundaries set the cut off points for analysts and must be agreed before any inventory is finally compiled. A problem arises when the environmental impact of the different measures are to be compared in terms of their impact on the environment. Data for energy can be expressed in joules; mass of physical waste can be measured in kilograms and air pollution in terms of parts per million. For example, is one extra part per million of an air pollutant more or less damaging than an extra kilogram of a water borne waste, given the same toxic level? Any such comparison would seem to depend on a significant degree of subjectivity because it is impossible to combine all the inventory data into a single number that gives a weighting to all the possible unknowns. The same sorts of issues are relevant to the comparison to the end products.

The combination of issues is another problem. The idea that disposal to ground may or may not be more damaging than disposal to air or sea makes it difficult for one to really tell without a thorough investigation of the impacts on ecosystem in the short and long term. Moreover, one kilogram of waste may not cause much damage alone but when combined with other wastes and discharges it may react to cause a significant problem into the culture. Thus any comparison of

different effects must consider the direct and indirect impacts of the pollutant and might involve some scenario planning and analysis.

According to Guinée (2002), the whole process of life cycle analysis and the quantification of environmental damage assume that impact occurring as a result of the product belongs to that product and should be assessed and cost assigned accordingly. This assumes that there are clearly identifiable and assignable property rights. However, since property rights do not exist for much of the environment then exact quantification of environmental damage is subjective and quantitative assessment must be based on judgments. Where pollution is caused by a combination of impacts from two or more different producers, which pollution should be assigned that damage?

Environmental auditing

In general, environmental auditing is a series of activities initiated to evaluate environmental performance, to check compliance with environmental legislation and to assess whether the systems in place to manage environmental improvement are effective. Audits are undertaken at regular intervals to assess the environmental performance of a firm in relation to the company's stated objectives and environmental policy (Welford, 1998).

Once the environmental review has been completed and the management system is in place, there will be a need to regularly assess that system, and to further measure the environmental performance of the firm. The overall aim of environmental auditing is therefore to provide an on-going status check which

will enable environmental improvement within the organization to continue, and in so doing will help to safeguard the environment and minimize the risks to human health. It is the aim of an audit to detect any leakage, spills or other such problems with the operations and processes at an early stage, thus reducing the risk of a future problem. An environmental audit should measure the environmental impact of each and every process and operation on the air, water, soil, worker health and safety and society at large. Providing a data base for corrective action and future plans, an environmental audit identifies areas where steps have been taken or can be taken to reduce wastes, raw material and energy consumption and adverse impact on the environment, and improve the environmental performance of the company (Welford, 1998).

Implementing the audit and problems associated with the audit

There is the need to report the results of the audit to senior management with recommendation and possible strategies for the implementation of the findings. Much stress needs to be placed on the idea that audits should be seen by management as a positive help rather than a threatening or hostile exercise. The company must create a culture led by its main board directors which recognizes the positive benefits of the audit and sees it as good day to day management practice. Management must feel that they owe the audit and even though some external expertise may be used it is an activity which is promoted and driven internally rather than externally.

There are some potential disadvantages of the audit. These include the initial costs of the audit and the cost of compliance with it and the temporary disruption of plant operations. There is also often a natural reluctance on the part of management and workers to see outsiders entering the organization and assessing their own performance. In particular, management can become unhappy about its line of responsibility being invaded. In these respects therefore, it is vital that senior management are seen to be supportive of both audit team and the process (Welford, 1998).

Tools for action

The most important overarching tool for action is probably the development of an environmental management system. The investigations into many accidents and disasters have concluded that the events could have been avoided had there been an effective system in place which could adequately deal with the event or alternatively, that although there was a system in place, there were gaps in it which allowed the event to happen. Environmental management systems aim to pull a potentially desperate system into an integrated and organized one (United Nations Department of Economic and Social Affairs, 1998).

The concept and building of an environmental management system

Environmental management system is that part of the management system which includes organizational structure, planning activities, responsibilities,

practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy (Tibor, & Feldman 1996). What is needed for an existing system to become an environmental management system is the integration of the system capabilities with environmental metrics and goals. Utilization of this system should allow people from all functions within the firm to understand and carry out environmental “waste reduction goals (Sroufe, Melynk, & Vastag, 1998).

The environmental management system should possess certain characteristics. The system needs to be comprehensive, covering all the activities of the organization. Every part of the organization must be involved in the implementation of the system and every person must recognize his or her responsibility for putting the system into practice. The system and procedures within that system therefore need to be understandable to everybody involved. Again the system must be open to review and there must be a commitment to a continuous cycle of improvement in the operations of the firm and in the quality of products or services it will provide. Everybody has a role in the system and therefore participatory styles of management are usually superior to hierarchical ones (Welford & Gouldson, 1994).

Structure of the environmental management system

There are common structures developed by organizations with environmental management systems which help to facilitate the coordination and communication among those involved in the environmental management process.

At the top of the structure is a 'green manager'. A green manager is a person appointed by top management to take responsibilities for the environmental performance of an organization. A green manager can help in the following ways, co-ordinate and consolidate efforts from staff of different operations into environmental programmes, communicate the objectives of the environmental programmes to staff, and solicit their suggestions and support, oversee the progress of environmental programmes, ensure that good business results are achieved through the environmental programmes, and provide a contact point for sharing environmental information with external parties.

A green management committee is then appointed. This committee comprises representatives from different functional or regional divisions of an organization. It takes the responsibility for managing the environmental issues of the organization under the chairmanship of the green manager. Depending on the structure and size of the organization, there are a number of alternatives to form the green management committee. Members of the green management committee are safety, health and environmental officers, and other representatives from concerned departments.

Green effort teams are often developed. Each led by a green management committee member, the green effort teams are formed on a functional basis to work on different environmental issues of the organization for example environmental audit team, waste management effort team and environmental education team (Hong Kong Environmental Protection Department, 2006).

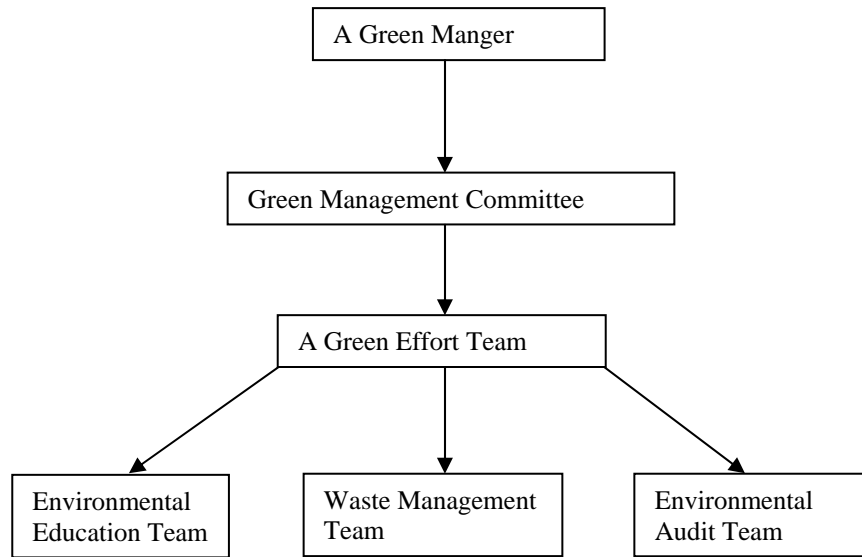


Figure 2: The structure of the environmental management system

Source: Hong Kong Environmental Protection Department (2006)

Developing the environmental policy

The environmental policy is the driver for implementing and improving an organization's environmental management system so that it can maintain and potentially improve its environmental performance. This policy should therefore reflect the commitment of top management to comply with applicable legal requirements and other requirements, to prevent pollution and to continually improve. The environmental policy forms the basis upon which the organization sets its objectives and targets. The environmental policy should be sufficiently clear to be able to be understood by internal and external interested parties, and should be periodically reviewed and revised to reflect changing conditions and information.

Its area of application should be clearly identifiable and should reflect the unique nature, scale and environmental impacts of the activities, products and services within the defined scope of the environmental management system. The environmental policy should be communicated to all persons who work for, or on behalf of, the organization, including contractors working at an organization's facility. Communication to contractors can be in alternative forms to the policy statement itself, such as rules, directives and procedures, and may therefore only include pertinent sections of the policy. Developed by the International Standards for Organization (2004) an organization's environmental policy should be defined and documented by its top management within the context of the environmental policy of any broader corporate body of which it is a part, and with the endorsement of that body.

For example the environmental policy of Ghacem, reviewed in June, 2008, states that Ghacem, is committed to managing Health, Safety and Environmental matters as an integral part of our business. Ghacem will demonstrate its commitment to operate all activities according to current Health, Safety and Environmental laws and regulations in Ghana and recognized International Standards applicable to our operations. Ghacem is further committed to implement an environmental management system, which complies with the ISO 14001 standard.

Ghacem will employ management systems and procedures specifically designed to prevent and /or minimize risks in activities and conditions that pose a threat to Health, Safety and the Environment. Ghacem is committed to

continuously improve the Health, Safety and Environmental impact of its operations. Health, Safety and Environmental programs will be conducted in close co-operation with employees, concerned authorities and other interested parties. Employees will be encouraged to take an active role in the implementation and maintenance of the policy through education and training (Ghacem, 2008).

Implementing the management system and problems associated with it

Putting on effective environmental management system in place in an organization is not easy; it is time consuming as the process itself will never end. Having a clear target to aim for will often help to focus efforts and therefore the ultimate aim of attaining accreditation with standards that can act as a very positive impetus. These principles can, but will not necessarily, lead to a successful environmental management system. Neither do they imply a mechanistic or narrow technologically based approach which looks at only one issue at a time. Such an approach will be hampered by the limitations of current scientific knowledge, competing demands on capital expenditure and management time, conflicts between competing organizational objectives and the power of technical expertise in decision-making (Welford, 1998).

There are a number of internal and external factors which limit the effectiveness and development of the Environmental Management. One of the main constraints on a successful environmental management strategy is the misjudging or mishandling of the process of organizational change. When it becomes apparent that the environment will cost money within an organization,

commitment can be swiftly withdrawn, policies can remain unfulfilled and promising environmental management initiatives can be curtailed (Roome, 1992).

Both internal and external economic influences can have negative effects upon the initiation, developing and resourcing of an Environmental Management System. At a corporate level, the commitment made in an environmental policy may be the first to be sacrificed if there is an increased pressure on limited resources. The Environmental Management System can very often be based upon ad hoc financial and staffing arrangements, especially in organizations which see the environment as a short-term trend (Netherwood, 1995).

Many of the larger organizations, which have a considerable number of departments, staff, sites and functions, may have a great deal of difficulty in coordinating an environmental management system. The environmental management system may also suffer as a result of organizational restructuring or the promotion of other 'higher priority' programs such as customer care initiatives, so that the environment gets pushed down the management. Some staff may feel threatened by the environmental management system either because they feel that they do not have the necessary knowledge or because they may feel that they are being personally investigated during the review and audit stages of the environmental management. There can be a great deal of entrenched cynicism towards environmental issues within organizations which even effective management and mandatory training will not affect (Welford, 1998).

Tools for communication

This is a tool by which firms can provide information on the environmental impact of their products. An example of this tool is corporate environmental reporting. Corporate environment reports have quickly become the key channel for firms to communicate their environmental performance and, just as important, have become an effective tool to demonstrate firm-wide integrated environmental management systems, corporate responsibility and the implementation of industry voluntary codes of conduct (UNEP, 1994).

Corporate environmental reporting is the interplay between three core themes of corporate environmental management: responsibility, accountability and sustainability. It is closely tied to basic environmental issues such as regulatory compliance and pollution control as well as to emerging concerns such as liability and product stewardship. As a result, it appears highly likely that such reporting will play a key role in driving the transition of companies and industries towards the goal of sustainable production and consumption (United Nations Department of Economic and Social Affairs, 1998).

The current wave of environmental reporting began in 1989 when Norsk Hydro, Norway's largest industrial group, published its first report. The results were not good and in 1989, as part of a strategy to restore its reputation, it published a relatively comprehensive report on its Norwegian activities. In 1990, Norsk Hydro further published a report covering all the group's activities worldwide and in the same year Norsk Hydro in the United Kingdom became the first of its overseas subsidiaries to follow suit (Gray, 1994).

Relatively few organizations have compiled environmental reports, although amongst the largest firms in the western world reporting is more common (Welford, 1998). Isenmann and Welter (2007) have observed that most organizations have preferred to disclose information on a world-wide or company-wide basis, rather than by process-specific, product-specific or site-by-site reporting. The identified in environmental reports commonly refer to: air emissions, effluent discharges, waste management, energy conservation, legislative compliance and employee involvement (KPMG, 1993).

Firms need to be 'up-front' in their environmental disclosures if they are to win the confidence of stakeholders. The credibility of reports will be significantly enhanced if such a proactive approach were to become more widespread (Isenmann, & Welter, 2007).

Relationships between the environmental management tools

There are interrelationships between the various environmental management tools that need to be acknowledged in strategic environmental management, even though they have all not yet been clearly identified. In many cases firms have launched projects involving environmental management systems, environmental auditing, environmental accounting, life cycle assessment, environmental reporting, development of environmental performance indicators (EPis) and environmental benchmarking etc., without reflecting on the interrelationships between them and the potential synergetic or counteractive effects they could have on each other. Some of the interrelationships are quite

self-evident in the light of the saying “you manage what you measure”. Environmental reporting promotes improved environmental performance by forcing firms to measure their impacts and communicating them to the stakeholders (Skillius & Wennberg, 1998).

In the UNEP/SustainAbility (1996) report, initial efforts must be focused on developing appropriate environmental accounting methodologies for measuring performance and then installing full management structures and systems for auditing against these, before a firm starts to report externally on their environmental performance. Unless this ideal chronology is followed, verification and environmental benchmarking activities are next to impossible or at least very difficult. Only by implementing this entire framework will the continuity, comparability and credibility of corporate environmental reporting and performance ranking be able to be substantially improved. This holistic approach is the only practicable one for the future in light of the international standards for environmental management systems and auditing; the current initiatives to standardise environmental performance evaluation, environmental reporting and verification; as well as the rising awareness in the financial sector and subsequent need for environmental performance benchmarking tools.

Environmental compliance and enforcement in Ghana

Ghana has a long history of attempting to safeguard the environment from being abused by enacting and including environmental protection in appropriate legislation. The best result from all of these attempts is the establishment of an

organization solely responsible for the environment – the Environmental Protection Agency. The Ghana Environmental Protection Agency, since its establishment in 1994 as an agency with powers to regulate the activities within the environment, has been using the Environmental Assessment Administration procedures as its major tool for achieving compliance with its legislation. In order to implement the National Environmental Action Plan, the Agency created an Environmental Compliance and Enforcement Network (Ahorttor & Asiamah, 1998).

The main functions of the network have been establishing complaints and investigation procedures; public awareness creation; capacity building of member bodies for effective compliance and enforcement monitoring; authorization of criteria pollutant(s) measurement and taking decision on appropriate measures; joint field monitoring, inspections, and verifications; collaborative actions to ensure compliance and enforcement of decisions by the network or other regulatory bodies (Allotey, 2002).

According to Benneh (1993), the successful management of environmental resources in any country depends to a large extent on the effectiveness of the institutional arrangements put in place by government for their management. Because the management of environmental resources cuts across all sectors of government, it also requires the active coordination and participation of virtually all segments of government. There are a whole number of laws and regulations governing the environment in Ghana that are not properly coordinated making them very weak, and also the regulatory agency lacks almost

everything, including the political will to punish offenders, and discharge its duties effectively and efficiently.

CHAPTER THREE

METHODOLOGY

Introduction

The chapter seeks to assess the use of corporate environmental management tools by manufacturing firms in the Sekondi-Takoradi Metropolis. This chapter deals with the way in which the study was carried out to accomplish this objective. The chapter details the study design, the study area, population and sample selection. The sampling procedure, data collection, data collection procedure, instrument used to collect data, and data analysis were also discussed. Every effort was made to prevent bias and scientific misconduct.

Study design

The design is a plan, structure, and strategy of the investigation to obtain answers to a research question. The purpose of the design is to achieve a greater control of variables, thus improving the validity of the study in examination of the research questions. The study follows a phenomenological model of research, which acknowledges and studies experience and concepts to uncover the meaning and significance of actions and events. Phenomenological research is based on an understanding of consciousness as being active and bestowing meaning. Phenomenological research describes something that exists as part of the world in

which we live. It may be an event, situation, experience or concepts (Hancock, 1998). Because the study is qualitative in nature using descriptive statistics, it attempts to describe the phenomenon in details. This study provides a deeper understanding into the world as perceived by those who participate in a study (Patton, 2002).

Study area

The Sekondi-Takoradi Metropolitan Area, with Sekondi as the administrative capital, occupies the south-eastern part of Western Region. It shares boundaries with Ahanta West, Mpohor Wassa East and Shama District Assembly. It is located on the coast, about 200km west of the Capital of Ghana, Accra. It is one of the smallest, but the most highly developed of the 13 districts of the Western Region. The population of Sekondi-Takoradi is 335,000. It lies on the main railway lines from Accra to Kumasi. Sekondi-Takoradi prospered from a railroad built in 1903 to transport timber, mineral ores, cocoa and food stuffs from the hinterland to the harbor.

The Assembly has a vast revenue base and well established expenditure management system. Sekondi - Takoradi is one of the hubs of industrial activities in Ghana. The metropolis can boast of some of the big manufacturing firms in the country. The chief industries are timber, plywood, shipbuilding and railroad repair. However commerce continues to be the dominant sector of the economy. Another important area is the development of the export processing zone to promote processing and manufacturing of goods and to encourage the

development of commercial activities. For this reason, most of the firms in the metropolis are located in the free zone enclave. The export processing zone (EPZ) is still waiting to be exploited but the nature of investment involved requires private capital.

Fish is mostly smoked at areas like New Takoradi, Nkotompo, Aboadze, Aboasi and Shama. This is done by mainly women under poor working conditions. Crude methods are used and these expose the women to excessive health hazards. Cassava is also processed into gari at Awuna beach and places such as Assakae and Nkroful under equally bad environment. Palm nut, coconut and sugar cane are processed into palm oil, coconut oil and alcohol (akpeteshie) respectively but these activities are all crudely done and hence contribute very little to the growth of the local economy and employment. The main non-traditional export product produced in the metropolis is furniture pieces. This product is exported mainly to La Cote d'Ivoire. Other emerging products in the metropolis are Batik and Tie and Dye. These products are exported across the West African sub-region and few places in Europe and America.

The Takoradi Port completed in 1928 has made the business of both local and foreign investors thrive. Ship and labor productivity have seen continuous increase since the completion of the port. The Takoradi Port is regarded today as one of the most efficient in Africa. Close to Takoradi Polytechnic, the Kansaworodo flows towards the Buthia lagoon, creating an extensive, beautiful marshland. The Essei lagoon lies between Ekuase and Sekondi. Ghana Water Company Limited (GWCL) is responsible for the development conservation of

potable water in the metropolis. The daily demand for industrial, commercial, institutional, domestic, fire control as well as losses stands at 13million gallons a day.

The population and sample size

The population is the total possible membership of the group being studied. The study was restricted to the manufacturing firms in the Sekondi-Takoradi metropolis. A list of the industrial and service sector in the Western Region were obtained from the Western Regional branch of the Environmental Protection Agency of Ghana. From the list, 25 were manufacturing. That is the number of manufacturing firms that form the population in the study area is 25. These range from chemical, timber through to energy firms. All the 25 manufacturing firms were located in the Sekondi-Takoradi Metropolis.

Sampling procedure

The method of sampling was the census method of sampling. One approach is to use the entire population as the sample. Therefore, "Census" means 100% sampling. Although cost considerations make this impossible for large populations, a census is attractive for small populations (for example, 100 or less). A census eliminates sampling error and provides data on all the individuals in the population. In addition, some costs such as questionnaire design and developing the sampling frame are "fixed," that is, they will be the same for samples of say

20 or 100. Finally, virtually the entire population would have to be sampled in small populations to achieve a desirable level of precision.

Table 1: List of firms in the Sekondi-Takoradi Metropolis used for the study

Firms	Location	Main product
GHUMCO	Effia Industrial Area	Household Utensils
Western Castings	Effia Industrial Area	Metal Castings
Ghana Primewood	Effia Industrial Area	Wood
Ghana Cement	Harbor Industrial Area	Cement
Takoradi Flour Mills	Harbor Industrial Area	Flour
Takoradi Gas Limited	CDU Road	Industrial Gas
Carmeuse Lime Products	Kojokrom	Lime
Pas Timbers	Takoradi	Wood
Pioneer Conversion Company	Effia Industrial Area	Paper
West African Mills	Effia Industrial Area	Cocoa Products
John Bitar Company Limited	Essikado	Wood
Multipaper Sacks	Takoradi	Paper Sacks
British American Tobacco	Takoradi	Cigarette
Ghana Oils Company	Takoradi	Fuel
Western Hardwood Limited	Apowa	Wood
Dupaul Wood Treatment Lt d	Apowa	Wood
Intex Company Limited	Apowa	Wood
Norpalm Limited	Takoradi	Palm Oil

Table 1 (cont.): List of firms in the Sekondi-Takoradi Metropolis used for the study

Company	Location	Main product
Cream Timber Moulding	Apremdo	Wood
Justmac Ventures	Ngyiresia	Quarry Chippings
General Development company	Ngyiresia	Quarry Chippings
Sicol Quarry	Essipon	Quarry Chippings
Western Venier and Lumber	Effia Industrial Area	Wood
Wienco Comapny Limited	Effia Industrial Area	Agro chemicals
Ayiem Oil Company	Takoradi	Cooking Oil

Source: Field Work, 2007

Data Collection

The data came from both primary and secondary sources. Institutions, internet, and library sources constituted the secondary sources of data. On the other hand the responses from the questionnaires constituted the primary data sources. With the primary sources of data, the data was obtained directly from the interaction with the respondents; who offered the needed information which were used in the research.

Data collection procedure

This study dealt with both qualitative and quantitative data. This is because the data comprises both numeric and non-numeric values. The

questionnaires were delivered to the persons responsible for environmental management in the various firms and a period of two weeks was given for the respondent to complete the questionnaire. After the two weeks, the questionnaires were collected, coded and analysed. The research gathered data on the use of environmental management tools, the firm's environmental risk and the calibre of workers it attracts, what firms are doing to deal with environmental impact from their activities. It also came out from the questionnaire the types of waste generated, methods of disposal and so on. This type of data collected helped to deal with the topic effectively and impartially.

Instrument used

Structured questionnaire was used to obtain data for this research. The questionnaire was preferred to the other instruments for the purpose of this research because the identity of the respondent was not known. It also elicited more candid and more objective replies. The questionnaire permitted more considered answers from the respondents. It was adequate in situations in which the respondent had to check for information. The questionnaire sought information about the firms' profile, structure of management, energy situation, and waste management plan. The rest are public concerns, legal issues, and corporate environmental management tools.

Analysis of data

The data obtained was grouped into themes and categories. An independent coder was used to ensure trustworthiness. The same data were analyzed with the use of Statistical Package for Service Solution (version 12) and the results presented in frequency tables. A five point likert scale was also used in analyzing some data. The likert scale state that: very low (V/L) =1, low (L) = 2, undecided (U) = 3, strong (S) = 4 and very strong (V/S) =5. The evaluation criteria were then used to make value judgment about the quality of each quality indicator and the component. In the evaluation phase, evaluation criteria were used to make judgment about the information gathered at the assessment phase.

If 40% or more of the respondents averagely rated very low/low, it means that the response to that parameter is not acceptable. If 40% or more of the respondents averagely rated undecided, it means that the response to that parameter is just acceptable. If less than 50% of the respondents averagely rate very strong/strong, it means that the response to that parameter is weak. If 50 - 59% of the respondents averagely rated very strong/strong, it means that the response to that parameter is satisfactory. If 60 - 69% of the respondents averagely rated very strong/strong, it means that the response to that parameter is good. If 70 - 79% of the respondents averagely rated very strong/strong, it means that the response to that parameter is very good. If 80 - 100% of the respondents averagely rated very strong/strong, it means that the response to that parameter is excellent.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

The objectives of the study are to find out the current state of firms' environmental performance in the metropolis, to describe the management structure and the use of environmental management tools, to assess whether firms have enough motivation to achieve higher environmental standards. It is also to examine the extent to which firms' environmental performance has been made public, to identify the benefits firms derive from using the corporate environmental management tools, and to discuss the problems firms face when using the corporate environmental management tools. This chapter also contains findings obtained from the field in respect to the above objectives. It also includes discussions with regards to the use of corporate environmental management tools. As mentioned earlier, the questionnaires were administered on twenty five firms.

Background of firms used in the study

The study was carried out on production firms in the Sekondi-Takoradi Metropolis of Ghana. Table 2 shows that three of the firms were owned by government, 10 were owned by Ghanaians and 12 by multinationals.

Table 2: Ownership of firms in the metropolis

Ownership of firms	Number of firms	Percentage
Multinational	12	48.0
Ghanaian	10	40.0
Government	3	12.0
Total	25	100.0

Source: Field work, 2007.

Business firms are classified as small, medium or large scale. Ten firms of the sampled firms were medium scale while the remaining 15 firms were large scale. None of the firms were small scale firms. Five firms (20 percent) were sited at a place where there were no human settlements. Fifteen firms (60 percent) were sited in a populated area and 5 firms (20 percent) were sited at more populated areas (Table 3).

Twenty eight percent of the firms surveyed fall within the wood processing firms. The consumables (cocoa products, flour, cooking oil, and cigarette) form 20 percent 16 percent being quarry. Paper producing industry represents 8 percent. The petroleum, metal, household utensils, cement, gas, agro chemicals and lime stone firms represented 4 percent each. Nine of the firms were located in Effia industrial area, six firms were located in Takoradi, three were also located in Apowa, two were located at Ngyiresia and one firm each was located in Kojokrom, CDU road, Aprembo, Essipon, and Essikado. Industrialist finds it easier establishing their firms in the metropolis as it is accessible both by sea, air, land, and some years ago by rail.

Table 3: Human settlement situation at areas where firms are sited

Where firms are sited	Number of firms	Percentage
Populated area	15	60.0
No human settlement	5	20.0
Highly populated area	5	20.0
Total	25	100.0

Source: Field work, 2007.

Current state of firms' environmental performance in the metropolis

Managing firms' waste and energy are at least two very basic and key factors needed to study the state of firms' environmental performance. It is a stated in life cycle analysis, as management tool, that the life cycle of every product covers every stage and every significant environmental impact of a product from the extraction, the use of raw materials through to the eventual disposal of the components of the product as well as their decomposition back to the elements. The environmental management systems also states that organizations shall establish, implement and maintain procedure(s) to identify the environmental aspects of its activities, products and services within the defined scope of the environmental management system that it can control and those that it can influence; taking into account planned or new developments, or new or modified activities, products and services.

These arguments bring out the issue of waste management before, during and after the product design. All the firms used in this study generated liquid

waste (hot water or effluent), gaseous waste (dust or products of fuel combustion) and solid waste. The solid waste featured prominently in the type of wastes generated. The solid wastes generated were in various forms. The prominent wastes included wastes of consumable products, metal and paint wastes, paper waste, sludge/Oil waste, chemical waste and wood waste. Despite the prominent solid wastes the firms generated, there were other solid wastes generated.

Generally, firms in the Sekondi-Takoradi Metropolis have a very poor waste management plan. First of all, firms did not monitor the effect of their wastes on the environment in accordance with accepted international and national environmental principles. For the past 10 years only 5 of the firms (20 percent) measured the volume of waste they generated. Twenty of the firms (80 percent) did not measure the volume of waste they generated in the past 10 years at all. The implication is that for the past 10 years, 80 percent of the firms in the metropolis have just been dumping their waste into the environment without knowing how much waste is being put there in the environment They did not also monitor the impact of their waste on the environment.

This obviously has very negative impact on the environment. A behavior which can be compared to the “Tragedy of the Commons”; equating existing and seemingly open or "unused" spaces with the kind of resources and ecologically productive land and water needed to support human life under modern conditions. Putting sewage, chemical waste, radioactive waste, noxious and dangerous fumes into the air, water, or land by firms generates tragedy. Situations exemplifying the “tragedy of the commons” cause many negative externalities. Since this is true

for every firm, humanity will be locked into a system of "fouling its own nest," so long as firms behave only as independent, rational, free-enterprisers.

In their paper, Plan B Management Solution Ltd (2007) notes that measuring a firm's waste helps partners to distinguish between efforts that work and those that don't. It allows firms to replicate successes, set realistic goals for further projects and invest efforts in initiatives that work. Measuring the amount of waste also helps firms to determine how much money is needed to manage the firm's waste and the quantity of waste dumped into the environment. It also helps to identify high-impact waste prevention actions from which others can benefit. Since most firms did not measure and analysed their waste, it is likely that the parameters that should have been analysed and measured were far higher than limits recommended by the World Health Organisation (WHO) for safe disposal. Many firms do not recognise the importance of monitoring and measuring their waste as well as the benefits it can bring.

In other areas of business, the phrase "you need to measure it to manage it" is deeply ingrained with organisations monitoring, analysing and controlling all aspects of their business with a close eye. Due to the complexities of the issues involved with many firms, even those who realised the significant benefits to be derived by introducing quality waste management practices, struggle to develop sound waste management strategies that take full account of what is being thrown away. Waste, like any other part of business needs to be monitored, measured and analysed in order to be managed (Fiehn and Ball, 2005).

Table 4: The change in the volume of firms' waste

Pattern of change	Number of firms	Percentage
Increased waste	15	60.0
Decreased waste	6	24.0
Not so sure	4	16.0
Total	25	100.0

Source: Field work, 2007.

Even though 80 percent of the firms did not measure the volume of waste they generated, interestingly 15 of the firms (60 percent) agreed that the volume of waste generated has increased. Six firms (24 percent) on the other hand, however, agreed that the volume of waste generated has decreased. The remaining 4 firms (16 percent) were not sure whether the volume of waste generated has increased or decreased (Table 4). Of the 60 percent that agreed that the volume of waste generated has increased, 60 percent gave both increase in production and obsolete equipments as reasons for the increase in the volume of waste generated. Twenty percent blamed the increase on obsolete equipment and another 20 percent said the change in the volume of waste generated was due to increased production.

Most of the firms knew that they can treat, reuse, recycle their waste or convert them to other useful products; however, they did not do so. This is seen by the percentage of firms that did not treat their waste, reuse, recycle or convert the waste to other useful products before disposal. Ninety two percent of the firms did not treat their wastes, reuse, recycle or convert them to other useful products

before the wastes were disposed off. Though the remaining 8 percent responded that they treat their waste before disposal, they admitted that not all the forms of waste generated were treated before disposal.

The method used for the disposal of their waste was also a problem. Table 5 shows that 8 percent of firms deposited their waste on site. Sixteen percent of the firms buried their waste, another 24 percent burnt their waste, 40 percent of firms released their waste into the drains or water bodies where as 12 percent of the firms burnt, buried and released their waste into drains. The Environmental Protection Agency laws and regulations require firms that create both hazardous and non hazardous waste to dispose of them according to strictly regulated methods.

When not properly managed, waste has a varied number of direct and indirect impacts on the environment, which is spurred on by the lack of planning, poor service delivery, lack of environmental consciousness by firms and by limited enforcement of statutory regulations. The effect of waste on the environment is primarily negative. Waste can affect ecosystems and could change the biomes (if species are eradicated). Streams situated close to a burying or dump site can be contaminated from leachate. Ground water can also become contaminated if leachate percolates into the ground.

Despite the fact that these firms did not have proper ways of waste disposal, 19 firms (76 percent) did not monitor the effect of their wastes on the environment at all. It is good to know that 6 firms (24 percent) monitored the effect of their wastes on the environment.

Table 5: Methods of waste disposal

Method of waste disposal	Number of firms	Percentage
Released their waste into drains or water bodies	10	40.0
Burnt their waste	6	24.0
Buried their waste	4	16.0
All mentioned methods of waste disposal	3	15.0
Deposited on site	2	8.0
Total	25	100.0

Source: Field work, 2007.

Majority of the firms used in this study did not employ environmentally accepted means of waste disposal. Fiehn and Ball (2005) argued that emissions and releases of contaminants into the air from dump site, incineration, illegal burning of waste and releases of volatile organic carbons (VOCs) such as dioxins and furans pose potentially harmful effect to health, while CH₄ and CO₂ increases greenhouse effects leading to global warming. It is known that dust, smoke and the fumes from burning waste affects residents. Wind-blown litter and odour also result in an increase in the fly population. Again waste is malodorous and can become a nuisance factor and a health hazard. Sterilisation of land occurs when large volumes of waste are disposed on the land. The future use of the land can pose significant dangers. A case in point is the love canal. Pathogens, diseases and viruses found in waste can pose a health risk. Safety risks are found in waste if an

individual comes into contact with these wastes. Nevertheless, improved operation can have a marked decrease in environmental impacts.

Table 6: Inspection of firms' waste by the EPA before disposal

Inspection of waste before disposal	Number of firms	Percentage
No inspection of waste before disposal	21	84.0
Inspection of waste sometimes before disposal	3	12.0
Inspection of waste at all times before disposal	1	4.0
Total	25	100.0

Source: Field work, 2007.

Though the firms did not treat their waste, reuse, recycle or convert them to other useful products before disposal and did not also have proper means of disposal, one would have expected that these firms would invite the Environmental Protection Agency in the region to inspect both their waste and the dumping site or obtain permit before they disposed off their waste (as prescribed by law). Nonetheless, 21 of the firms (84 percent) did not inform the Environmental Protection Agency to inspect the waste, or how their wastes were disposed. In other words they did not obtain any permit from the Environmental Protection Agency before their wastes were disposed off. Three firms (12 percent) sometimes inform the Environmental Protection Agency to inspect the wastes and how the wastes were disposed off. Only one firm at all times inform the Environmental Protection Agency to inspect the waste and how their wastes were disposed off (Table 6).

This study, in seeking the management plan put in place by firms to manage their waste, realized that 17 of the firms which represent 68 percent did not have plans to manage their firms' waste. With the remaining 8 firms that had some management plan in place to manage their waste, they only focused on one form of the waste generated. As shown in Table 7, 5 firms of the remaining 8 firms had constructed receptacles to contain spillages (for only liquid waste), and 3 firms had installed filters on their sites (only for gaseous waste). Since all the firms agreed that they generated solid, liquid and gaseous wastes, it is imperative to have a way to manage all forms of waste generated.

Table 7: The management of firms' waste

Management plan	Number of firms	Percentage
No management plan	17	68.0
Construction of receptacles	5	20.0
Installation of filters	3	12.0
Total	25	100.0

Source: Field work, 2007.

It was also clear that the energy demand of majority of the firms has increased. Fifteen of the firms (60 percent) had increased energy demand. Another 6 firms (24 percent) agreed that their energy demand has decreased. Four firms (16 percent) said their energy demand has not changed and they could not give reasons to explain why there was no change (Table 8).

Table 8: Change in energy demand by firms

Energy situation	Number of firms	Percentage
Increased energy demand	15	60.0
Decreased energy demand	6	24.0
Unchanged energy demand	4	16.0
Total	25	100.0

Source: Field work, 2007.

There were varied reasons for the changes in the energy demand. The reason for six firms out of the 15 firms which had increased energy demand was as a result of expansion and another 6 due to increased production. The remaining 3 was due to the use of obsolete equipment. Of the 6 firms which agreed that their energy demand has decreased, 4 attributed the decrease to the drop in production and 2 also attributed the decrease to regular maintenance of equipment. These two firms who attributed the drop in their energy demand to regular maintenance of equipment are confirming the fact that firms really save cost if they had proper environmental management plan. Regular environmental auditing in these two firms will reveal that their energy demand has been reducing as a result of regular maintenance of equipment and that more should be done.

When the energy demand of a firm increases, it does not only affect that firm but the energy generating agency as well as the general public. According to Fiehn and Ball (2005) increased electricity usage corresponds to paying more for energy bills. As a result of increased electricity usage, cost of power generation and the quantity of raw materials extracted from the environment to generate

power also increase. Where the agency that generate the power uses coal, nuclear or crude oil, the waste it generates increases as electricity usage increase. Producing one Kilowatt hour of electricity requires 0.5 kg of coal, 1.29 litres of water, and results in the generation of 142g of ash and 900g of carbon dioxide. In addition to the large quantities of solid or liquid waste generated, the generation of considerable volumes of CO₂ which is emitted into the atmosphere as a waste product, is a cause of concern from a climate change perspective. To reduce the amount of waste and emissions generated, firms must use electricity sparingly; switch off electrical appliances when not in use and use improved and energy efficient technology for their production.

This study has stressed the need to properly monitor industrial wastes discharge as well as environmental protection officials to enforce regulations that might require the installation of treatment plants appropriate for the type of wastes generated and encourage waste reuse and recycling. Firms must realise that waste management is a critical issue and that effective waste management will not only benefit the environment, but can also vastly improve efficiency and reduce costs. Hence, it can be concluded that the current state of firms' environmental performance in the Sekondi-Takoradi Metropolis is bad.

Management structure and the use of corporate environmental management tools

Organizations are using corporate environmental management tools to facilitate implementation of environmental policies, audits and reviews. They

have also been seeking to improve their environmental performance (Wellford, 1998). A growing number of corporate executives have integrated environmental issues in their corporate strategies (Sweatman and Simon, 1996). According to Kane (1994) this can be seen from the increasing number of firms that are going green. There is evidence that many firms have taken a proactive approach to the environment.

However this study shows that what pertains in the Sekondi-Takoradi Metropolis is different. Generally firms in the Sekondi-Takoradi Metropolis did not use any corporate environmental management tools. Two firms (8 percent) use environmental management systems (the management tool for action). The remaining 23 firms (92 percent) did not use any of the management tools. Though the 8 percent that use environmental management systems is commendable, the environmental management systems alone cannot be used to address all the environmental problems. It would have been ideal if they used the other corporate environmental management tools, like environmental audit, environmental reporting and life cycle analysis. These, together will not only help to reduce considerably a firms' impact on the environments but also bring some economic and social advantages.

The benefits of the environmental management tools serve as self-regulatory compliance, legal and regulatory requirements, to reduced costs from customer audits, better market impression, to increase efficiency of resources and the ability to adopt changing circumstances. Now we are facing many global environmental issues such as global warming (greenhouse effect), ozone

depletion, acid rain, deforestation and pollution (land, air, water and noise). In minimizing these effects, corporate bodies and the international community have developed many environmental agenda such as environmental auditing, environmental management systems, environmental reporting among others aroused to these global environmental concerns (Seetharaman, Mohamed & Saravanan, 2007).

The management of every firm that is committed to ensuring sound environmental practice, first of all must have an environmental manager who is part of senior management and oversees all the firms' environmental policies. The environmental manager must implement and monitor the firms' environmental strategies and advise management accordingly if the firm wants to take proactive steps to manage the environment. This is confirmed by the environmental management systems module, which says, the first is for firms to appoint a 'green manager' to take responsibilities for the environmental performance of an organization. Most of the firms in the Sekondi-Takoradi Metropolis did not have environmental managers.

The findings showed that 8 of the firms (32 percent) had environmental managers. The remaining 17 firms (68 percent) did not have environmental managers. Out of the 8 firms that had environmental managers, 3 were part of senior management. The presence of the environmental managers in senior management position can influence top management decisions on environmental issues. In a case where a firm does not have an environmental manager, environmental responsibility of the firm will be an added responsibility on

another officer who may not have any educational background in environmental management or science.

For example 32 percent of officers who had responsibility to ensure environmental compliance by the firms used in this study were personnel/human resource managers, 16 percent were production and 20 percent were marketing managers. This situation where majority of the firms have no environmental managers is not healthy for the nations' drive at environmental protection. Sweatman and Simon (1996), notes that in such circumstances, little attention will be given to the environmental impact of the firm. The knowledge needed to predict potentially significant environmental damage as well as the environmental impacts of firms' operations, and implement environmental policies is often weak or absent.

Again 20 firms (80 percent) did not also have environmental management teams. Just 5 firms (20 percent) had environmental management teams. Nonetheless, their meetings were also not regular. Those environmental management teams did not have a regular meeting plan. Modern trends in environmental management, using corporate environmental management tools, are missing in the strategies adopted by most firms in the Sekondi-Takoradi Metropolis to approach issues about the environment.

As the environment is continuously degraded, carrying capacity of the commons actually shrinks and the carrying capacity of the land is also affected, leaving the environment no longer able to support even the number of people who could formerly have lived in the area on a sustainable basis. It is said that the

carrying capacity for any given area is not fixed and no population can live beyond the environment's carrying capacity for very long.

Motivation of firms for higher environmental standards

There is a worldwide debate on the issue of environmental management, stemming from a flow of evidence about ecological degradation caused by economic development (Taylor, et al., 2001). Due to cost pressures, customer awareness, supply chain relations and activities of environmental campaigners, firms are adopting good environmental initiatives (Perry & Sheng, 1999). External pressures such as legislation and public concern, as well as market opportunities arising from environmental concerns, have compelled firms to integrate environmental issues into their strategic planning process describing organizations' participation in a wide range of environmental activities in a number of industry sectors (Banerjee, 2001). The action plan for sustainable development Agenda 21, which was adopted at the United Nations Conference on Environment and Development in Rio de Janeiro in June 1992, demands that the business community, including transnational corporations, should recognise that environmental management is one of the highest priorities and a decisive factor in sustainable development (Skillius & Wennberg, 1998).

The findings revealed that what is motivating a lot of firms in the metropolis to ensure and promote environmental management is to achieve standards contrary to what is stated in literature. Eighty percent of the firms (rating strong/very strong, since they all give indication in the same direction)

were motivated to ensure sound environmental practices because they want to achieve standards set for them by the government. Responses for the other factors, as shown in Table 9, that drive responsible environmental behaviour such as community pressure, corporate image, sustainability, competitive advantage, ethical reasons and employee pressure were simply not acceptable. Although what makes firms in the metropolis to pursue good environmental practice is to achieve standards, there are EPA's regulations and guidelines regarding waste management, effluent discharges, and others which the firms have flouted greatly due to very poor monitoring.

Table 9: Motivation of firms for higher environmental standards

Motivation factors	Very Low/	Undecided (%)	Strong/	Interpretation
	Low (%)		Very Strong (%)	
Achieving standards	16	4	80	Excellent
Community pressure	76	4	20	Not acceptable
Corporate image	60	16	24	Not acceptable
Sustainability	56	20	24	Not acceptable
Competitive advantage	56	16	28	Not acceptable
A matter of ethics	68	4	28	Not acceptable
Employee pressure	72	8	20	Not acceptable

Source: Field work, 2007.

Criteria for the interpretation of Table 9 are:

- If 40% or more of the respondents rated very low/low = Not acceptable
- If 40% or more of the respondents rated undecided = Just acceptable
- If less than 50% of the respondents rated strong/ very strong = Weak
- If 50-59% of the respondents rated strong/ very strong = Satisfactory
- If 60-69% of the respondents rated strong/ very strong = Good
- If 70-79% of the respondents rated strong/ very strong = Very good
- If 80-100% of the respondents rated strong/ very strong = Excellent

In his study, Benneh (1993) argues that there are many laws and regulations governing the environment in Ghana that are not properly coordinated making them very weak. He continues that these 'weak laws' are poorly monitored by the agencies responsible for their enforcement. The regulatory agencies also lack almost everything, including the political will to punish offenders, and discharge their duties effectively and efficiently.

The believe that the growing awareness and pressure by community, customer, and stakeholders as well as corporate image, sustainability, competitive advantage and ethical reasons has forced firms to accept the introduction of environmental protection measures into their organization does not apply to firms in the Sekondi-Takoradi Metropolis. The World Business Council for Sustainable Development (1996) notes that reducing material and energy intensities are in the natural interest of firms which want to minimise costs with a view towards increasing profits. Those firms who choose to be reactive to environmental legislation and implement end-of-pipe solutions to pollution problems will

consume more resources just to comply with these regulations (Sroufe *et al*, 1998).

Since the motivation of firms to adopt sound environmental practices is to achieve standards, there is the need for a strong political will from the government and an effective monitoring system from the relevant agencies of state. According to Seetharaman *et al* (2007), the government is ranked above the influence of business associations and is to be more important than the resource or shareholder and investment pressure. Therefore, strong instructions and enforcement is needed to overcome resistance and perceptions that environmental management is an unnecessary cost burden. Very weak and old regulations should be replaced with new and stiffer ones that meet the current environmental demands since the motivation of firms to good environmental practice is to achieve standards.

The participation of the citizenry can complement existent legal and economic instruments, which are facing shortage of institutional, managerial and financial capabilities for enforcement. The increase of participation of citizen means that legal frameworks would be more respected and economic mechanisms would be more accepted thus increase their effectiveness (Lizuka, 2000).

To what extent have firms' environmental performance been made public?

One of the ways firms are improving on their environmental performance is to communicate their impact on the environment, and steps they are taking to mediate the impact. More and more firms overseas are reporting on their environmental performance, whether it is a brief mention of their green activities

in the annual report or a separate document to record their quantified emission targets to be achieved (Welford, 1998).

Firms are also to have an environmental policy that is open and well communicated to all the staff in the firm as well as the general public. This is because the environmental policy is a statement of what an organization intends to achieve from an environmental management systems. It ensures that all environmental activities are consistent with the organization's objectives. As a requirement in the environmental management systems, top management are required to define the organization's environmental policy and ensure that, within the defined scope of its environmental management system: it is appropriate to the nature, scale and environmental impacts of its activities, products and services; a commitment to continual improvement and prevention of pollution and a commitment to comply with applicable legal requirements and with other requirements to which the organization subscribes.

First of all, the firms used in this study did not report on their environmental impacts or have any interaction with the media on the impact of their operations on the environment. Secondly, the majority did not have an environmental policy. The result showed that only 32.0 percent of the firms had environmental policy; the remaining 68.0 percent of the firms did not have environmental policy. Those that did have environmental policies did not also review the policy regularly.

People are the instruments and beneficiaries, as well as the victims of all development activities. Their active involvement in the development process is

important to the success of every industry. Unless firms keep in mind the need to improve the welfare of the local population through sound environmental practices, peaceful co-existence will not be achieved. People – centred approach is needed in a firms' desire to manage and protect the environment if development is to be truly sustainable.

Benefits firms derive from using corporate environmental management tools.

Firms' adoption of more systematic approaches to environmental management can have environmental, social and economic benefits. A lot of benefits can accrue from improved environmental performance, ranging from reduced effluent charges to better community relations. More broadly, better environmental management is being seen as a key source of competitive advantage for industrial firms (Levy, 1996). From this study, the approaches of firms in the metropolis to environmental management have not yielded any benefits.

Sixty eight percent of the firms said consumers preferred their goods to their competitors because of its quality, while 32 percent of the firms said consumers preferred their goods to their competitors because they were cheaper. None admitted that consumers' preference for their goods was due to their environmental credentials. This is contrary to the argument of competitive advantage where consumers purchase goods of a firm based on the firm's environmental credentials. Consumers in the Sekondi-Takoradi Metropolis

purchased goods based on quality and the price differential (how expensive or how cheap the products were).

According to Feldman, Soyka and Ameer (1996), improving environmental management leads to reduced risk to the firm, and that this risk reduction is valued by financial markets. Investments in environmental management lead to better short-term environmental performance as well as the prospect of further improvements in the future. They continued that these improvements confer a reduction in the firm's risk, which is the key factor that investors consider when deciding upon the return that they will require for making a particular investment. The study revealed that major investors in the metropolis, like the banks, did not consider a firm's risk as priority before loans were given out.

Table 10: Criteria for obtaining loan from banks by firms

Criteria to meet	Very Low/ Low (%)	Undecided (%)	Strong/ Very Strong (%)	Interpretation
Credit worthiness	4	4	92	Excellent
Condition to satisfy	8	4	88	Excellent
The cash involved	20	4	76	Very Good
Collateral needed	32	4	64	Good
Environmental performance	34	56	12	Just acceptable

Source: Field work, 2007.

Criteria for the interpretation of Table 10 are:

- If 40% or more of the respondents rated very low/low = Not acceptable
- If 40% or more of the respondents rated undecided = Just acceptable
- If less than 50% of the respondents rated strong/ very strong = Weak
- If 50-59% of the respondents rated strong/ very strong = Satisfactory
- If 60-69% of the respondents rated strong/ very strong = Good
- If 70-79% of the respondents rated strong/ very strong = Very good
- If 80-100% of the respondents rated strong/ very strong = Excellent

As shown in Table 10, 92 percent were emphatic that the banks considered their credit worthiness as the major criterion before loans were given to them. Second to the credit worthiness of a firm is conditions to satisfy (88 percent) in order to obtain a loan. Next to this criterion is the amount of money involved (76 percent). The fourth rated criterion (64 percent) was the need for collateral. Using environmental performance as a criterion to acquire a loan, more than half (56 percent) rated 'Undecided'. This simply means that environmental performance of a firm was not the key factor that investors consider when deciding upon the return that they would require for making a particular investment.

Therefore, if firms reduced their risk to the lowest level, it was still not a beneficial basis to obtain a loan to invest in their firms. Hence, firms in the Sekondi-Takoradi Metropolis would not benefit from the banks even if they had a very good environmental performance record. All the firms used in this study also noted that they had not received any economic incentives in the form of tax

reliefs, pollution control levies and other economic incentives from the government as a motivation for improving on their environmental performance.

Firms that have excellent environmental performance benefit from good community relations. Some communities have gone on rampage, blocking access roads to very important facilities in protest against unfair treatment. A report by Lasey (2000) said in July 1999, the people of Manso Nkran besieged the Amansie Resolute mines and prevented the workers from going to work. The report further said violent clashes between communities and firms, to some extent, have been an effective tool for the powerless and defenceless indigenous communities.

According to the data gathered, none of the firms had experienced demonstrations or violent clashes between them and their communities as a result of pollution from the firms. Notwithstanding the fact that firms in the Sekondi-Takoradi Metropolis did not have good environmental practices and that most of them are also located in human settlement area. About 76 percent (19 firms) responded that they have not been sued either by employees or the community. Twenty four percent of the firms responded that they have been sued. However, these court actions were as a result of unpaid Social Security contributions, unpaid claims by the firms to workers, debt to creditors, but not on environmental concerns.

Seetharaman *et al* (2007) argued that societies, particularly from developed countries, are highly concern about the impacts on the quality of their life due to the pollution of air, land and water. However, the same concern is rather slow in developing countries. According to Fujisaki and Shigeaki (1997),

studies have indicated that many developing countries already equipped with environmental policies, legal frameworks and economic instruments, which are regarded as highly sophisticated by international standards yet face the worsening of environmental conditions.

Firms in the Sekondi-Takoradi Metropolis did not benefit from using the corporate environmental management tools. Arguing from the point of competitive advantage, it was clear that if consumers had the chance to purchase goods of the same kind, they would purchase that which is of higher quality with disregard to its impact on the environment. Even though most firms did not have good environmental management plan, strangely they did not have bad relations with the community. Those firms that had already made some effort to contain their impact have also not benefited from relieves in taxes.

Problems firms face using the corporate environmental management tools.

Firms face a lot of problems in their quest to using the corporate environmental management tools. Many firms are apparently taking the position of only investing enough to meet the current regulatory requirements. They seem to have found little incentive for taking a leadership role, as it pertains to environmental management. This lack of environmental management leadership reinforces the paradox that environmental management is only a cost to firms. Many firms only see environmental management as a cost of doing business. As a result, firms may only invest enough resources to meet the minimum regulatory requirements (Sroufe, Melnyk, & Vastag, 1998).

From Table 11, 60 percent of the firms attributed their inability to use the corporate environmental management tools to the huge cost involved. Another 24 percent of the firms also blamed their inability to use the corporate environmental management tools to unwillingness on the part of management; in other words lack of management commitment, and as low as 16 percent also attributed their inability to use the corporate environmental management tools to bureaucracy.

Table 11: Problems firms face using the corporate environmental management tools.

Problems	Number of firms	Percentage
Cost	15	60.0
Unwillingness of management	6	24.0
Bureaucracy	4	16.0
Total	25	100.0

Source: Field work, 2007.

Looking at these results, one can conclude that there is a problem of cost, bureaucracy and unwillingness on the part of management in firm's attempt to use the corporate environmental management tools. Though there is a huge financial cost involved in using the corporate environmental management tools, however investments in environmental management lead to better short-term environmental performance. Environmental improvements also confer a reduction in a firm's risk. Management must therefore show greater commitment to managing the environment.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This research focused on the use of corporate environmental management tools by manufacturing firms in the Sekondi-Takoradi Metropolis. The objective of this research was to assess the use of corporate environmental management tools by firms in the Sekondi-Takoradi Metropolis to manage their environmental problems. Structured questionnaire was used to obtain data for this research. The data obtained were analyzed with the use of tables, from the use of Statistical Product for Service Support (SPSS version 12). A five point likert scale was also used in analyzing some data. The likert scale state that: very low (V/L) =1, low (L) = 2, undecided (U) = 3, strong (S) = 4 and very strong (V/S) =5. The evaluation criteria were then used to make value judgment about the quality of each quality indicator and the component.

The major findings are:

- The current state of firms' environmental performance in the Sekondi-Takoradi Metropolis is very bad.
- Modern trends in environmental management, using corporate environmental management tools, are not part of the strategies adopted

by most firms in the Sekondi-Takoradi Metropolis to approach issues about the environment.

- That there is a problem of cost, bureaucracy and unwillingness on the part of management in firm's attempt to use the corporate environmental management tools.
- The only thing that is making firms in the Sekondi-Takoradi Metropolis to pursue good environmental practices is to comply with environmental standards set by the government.
- There is weak monitoring of industrial wastes discharge and enforcement of regulations that require the installation of treatment plants appropriate for the type of wastes generated; encourage waste reuse and recycling. Waste, like any other part of business needs to be monitored, measured and analysed in order to be managed.
- Most of the firms did not have environmental policy and those that had, did not review it regularly.

Conclusions

Form this study, 80 percent of the firms did not measure the volume of waste they generated. Sixty percent did not have plans to manage their firms' waste. The method of waste disposal was also a problem. Seventy percent did not monitor the effects of their wastes on the environment at all. As much as 84 percent of the firms did not inform the Environmental Protection Agency to inspect the method of their wastes disposal. The current state of firms' environmental performance in the Sekondi-Takoradi Metropolis is very bad.

About 90 percent of firms did not use any of the corporate environmental management tools. Sixty percent did not have environmental officers. Out of the 40 percent that had environmental managers, as low as 15 percent responded that the environmental managers were part of senior management. This is not healthy for the nations drive at environmental protection. Again modern trends in the environmental management are not part of the strategies adopted by most firms in the Sekondi-Takoradi Metropolis.

Again the main motivating factor for the majority of the firms in the metropolis to pursue good environmental practices is to comply with environmental standards set by the government. About 80 percent of the sampled firms indicated that their motivation to ensure sound environmental practices was just to achieve standards set for them by the government. Even though the firms indicated that their motivation to ensure environmental management was to comply with government standards, these have not been adhered to.

In the Sekondi-Takoradi, firms Metropolis did not benefit from their effort to ensure good environmental practices. Arguing from the point of competitive advantage, it was clear that if consumers had the chance to purchase goods of the same kind, they would purchase that which is of higher quality with disregard to its impact on the environment. Even though most firms did not have good environmental management plan, strangely they did not have bad relations with the community. Those firms that had made some effort to contain their impact did not also benefited from relieves in taxes.

Cost, bureaucracy and unwillingness on the part of management were the problems firms faced in their attempt to use the corporate environmental management tools. Though there is a huge financial cost involved in going green, however, investments in environmental management lead to better short-term environmental performance as well as the prospect of further improvements in the future. Environmental improvements also confer a reduction in a firm's risk. Management must therefore show greater commitment to managing the environment in view of the reduction in a firm's risk and the future benefits firms will derive.

Firms have not made public their environmental performance. All the firms did not report on their environmental impacts. Most of the firms did not have environmental policy which must be open to both the public and the staffs of the firm and those that have do not review it regularly.

Recommendations

- The government should use standards to put more pressure on firms to manage their impact on the environment properly. There is the need for a stronger political will from government and effective monitoring system from the Environmental Protection Agency. Very weak and old regulations should be replaced with new and stiffer ones that meet the current environmental demands since the motivation of firms to good environmental practice is to achieve standards.

- People – centred approach is needed in a firms’ desire to manage and protect the environment if development is to be truly sustainable. Unless firms keep in mind the need to improve the welfare of the local population through sound environmental practices, peaceful co-existence will not be achieved. In the advance countries, peaceful co-existence is making firms reform to meet the environmental challenges.
- The government should ensure that firms treat their wastes before they are disposed off. Where they can be recycled or converted into other usable products, firms should be made to do so. If the cost would be beyond the firms involved, two or more firms with quite similar wastes can team up to do so or government could support them with long-term loans.
- The government should motivate the firms by using economic instruments like the polluter pays principle, tax incentives among others so that firms who are doing relatively better in terms of environmental management will be motivated to do more.
- The government, through the Environmental Protection Agency, Ghana Association of Industry, and the Ghana Chamber of Commerce, should ensure that all firms have environmental managers as a requirement for the registration of firms as a corporate body or before licenses are issued or renewed. The presence of the environmental manager in the firm is very important to the management of the environment.
- The government should ensure the use of the environmental management tools to protect the environment for sustainable development.

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APPENDIX 1

A questionnaire designed to study the use of corporate environmental management tools used by firms in the Sekondi-Takoradi Metropolis.

COMPANY PROFILE

1. Who owns this firm?

- a) Government b) multinational Company c) Ghanaian Company

2. What is the classification of your firm?

- a) Small Scale b) Medium Scale c) Large Scale

3. Where is your company located?

4. What is the situation of human settlement in the location of your company?

- a) No Human Settlement b) Least Populated c) Densely Populated

STRUCTURE OF MANAGEMENT

5. Do you have an environmental manager/officer?

- a) Yes b) No c) Yet to be considered

6. Is the person part of senior management?

- a) Yes b) No c) Yet to be considered

7. Do you have an environmental management team?

- a) Yes b) No c) Yet to be considered

8. Do you organize environmental training for the workers?

- a) Yes b) No c) Yet to be considered

ENERGY SITUATION

- 9. What is your energy requirement now.....
- 10. Has your energy requirement increased or decreased.....
- 11. What is responsible for this change?

WASTE MANAGEMENT

- 12. What types of wastes are generated by your company?
 - a) Liquid b) Gaseous c) Solid d) All of the listed
- 13. Do you measure the quantities of waste your company generates?
 - a) Yes b) No c) Yet to be considered
- 14. Are there increases or decreases in your values?
- 15. What can be attributed to these changes?.....
- 16. How are the waste generated disposed.
 - a) Released into drains / water bodies b) Buried c) Burnt Others
 - (Please State it)
- 17. Are the wastes generated treated before their disposal?
 - a) Yes b) No c) Yet to be considered
- 18. Can the wastes generated be reused by your firm?
 - a) Yes b) No
- 19. Can they be used by other firms?
 - a) Yes b) No
- 20. Can they be recycled or converted to other products.
 - a) Yes b) No c) No idea

21. Do you monitor the effect of your wastes on communities within your catchments area?

- a) Yes
- b) No
- c) Yet to considered

22. Do you inform the EPA to inspect your waste or obtain disposal permit?

- a) Yes
- b) No
- c) Sometimes

THE PUBLIC’S CONCERN

23. Has there been complains of various sickness due to your companies activities.

- a) Yes
- b) No

24. Do you have community meetings with the settlers in your area of operations?

- a) Yes
- b) No
- c) Yet to be considered

25. How many demonstrations have been staged by the settlers or the public against your operations?.....

LEGAL ISSUES

26. Has your company be sued at the law court in the last 10 years as a result of your operations.

- a) Yes
- b) No

27. Which people initiated the suet?

- a) The State
- b) State agencies
- c) Community members
- d) Staff
- e) Others (please state)

28. What were the substances of the suet (Please use short phrases)

.....

29. Why do consumers prefer your products to that of your competitors?

- a) It is quality b) It is cheaper c) It is environmentally accredited

CORPORATE ENVIRONMENTAL MANAGEMENT TOOLS

In your view what is your motivation for environmental management? Please tick the number that corresponds to your view. Response scale; 5=Very/Strong (V/S); 4= Strong (S); 3= Undecided (U); 2= Low (L); 1= Very Low (V/L)

Motivating factors	V/ L	L	U	S	V/ S
30. Government regulations	1	2	3	4	5
31. Community pressure	1	2	3	4	5
32. Firm’s corporate image	1	2	3	4	5
33. Sustainability	1	2	3	4	5
34. Competitive advantage	1	2	3	4	5
35. A matter of ethics	1	2	3	4	5
36. Employees’ pressure	1	2	3	4	5

37. Which of the environmental management tools does your company uses?

.....

.....

38. What benefits have you derived from using the environmental management tools you have mentioned?

.....

In your view what increases the firms' chances of obtaining a bank loan to invest in their firms? Please tick the number that corresponds to your view. Response scale; 5=Very/Strong (V/S); 4= Strong (S); 3= Undecided (U); 2= Low (L); 1= Very Low (V/L)

Motivating factors	V/L	L	U	S	V/S
39. Credit worthiness	1	2	3	4	5
40. Collateral needed	1	2	3	4	5
41. The cash involved	1	2	3	4	5
42. Condition to satisfy	1	2	3	4	5
43. Environmental performance	1	2	3	4	5

44. Do you receive economic incentives from government by improving on your environmental performance?

- a) Yes b) No c) In the process

45. What problems have you encountered for using the environmental management tool(s)?

.....

.....

46. Does your firm have any international accreditation?

- a) Yes b) No c) Yet to be considered

47. Do you have an environmental policy?

- a) Yes b) No c) Under Consideration

48. How many times has the policy been reviewed since it was developed.

.....

49. Do you have regular interaction with the media on environmental successes and failures?

- a) Yes b) No c) Yet to be considered

50. Please list the measures put in place to manage the environmental impact of your firm.....

.....

51. What factors do you look for before you design new products

.....

.....

APPENDIX 2

GUIDE MAP OF SEKONDI-TAKORADI METROPOLIS



Source: Physical Planning Unit of the Sekondi-Takoradi Metropolis, 2008