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Corporate Environmental Management of Private Businesses in Saudi Arabia

Samia S.Magbool

A thesis submitted to the University of Huddersfield

in partial fulfilment of the requirements for

the degree of Doctor of Philosophy

2009

A prayer

O’ ALLAH

Give me the strength to change what I can change

The Ability to accept what I cannot change and

The Wisdom to know the difference

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DEDICATION

I would like to dedicate this to the memory of my beloved parents who got me to where I am today. Also I would like to dedicate this work to my beloved brother, Sami, to express my eternal and deepest gratitude for being my role model and father figure after my parents.

I would further like to dedicate this work to my dearest husband who provided all the support and encouragement needed to get me through this endeavour.

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ACRONYMS

Corporate Environmental Management	CEM
Saudi Arabia	SA
United Nations Conference on Environment and Development	UNCED
World Business Council for Sustainable Development	WBCSD
Corporate Environmental Management performance	CEMP
Gross domestic product	GDP
Tetrachlorodibenzo-p-Dioxin	TCDD
International Union for Conservation of Nature	IUCN
World Wildlife Fund	WWF
united nations environment programme	UNEP
Corporate Social Responsibility"	CSR
Coalition for Environmentally Responsible Economies	CERES
United Nations	UN
International Standardization Organization	ISO
Environmental Management System	EMS
ECO-Management and Audit Scheme	EMAS
Quality management system	QMS
The international standard that specifies a process for controlling and improving an organization's environmental performance	ISO14001
a generic name given to a family of standards developed to provide a framework around which a quality management system can effectively be implemented	ISO 9000
British Standard 7750	BS 7750
Life Cycle Assessment	LCA
American National Standards Institute	ANSI
Design for the Environment	DFE
Environmental Health and Safety	EHS
U.S. Environmental Protection Agency	EPA

European Union	EU
Environmental Performance Evaluation	EPE
Non-Governmental Organization	NGO
ISO's Technical Committee 207	TC 207
U.S. EPA's Toxic Release Inventory	TRI
Technical Advisory Group	TAG
standard for the measuring and reporting of ethical behaviour in business	AA1000
a voluntary, universal standard for companies interested in auditing and certifying labour practices in their facilities and those of their suppliers and vendors. It is designed for independent third party certification.	SA 8000
World Trade Organization	WTO
North American Free Trade Agreement	NAFTA
The Organization of the Petroleum Exporting Countries	OPEC
Meteorological and Environmental Protection Administration (Saudi Arabia)	MEPA

ABSTRACT

The implementation of corporate environmental management system has become an essential part of running any business to attempt to achieve sustainable development. No previous studies in Saudi Arabia have been conducted to explore the use of environmental management systems. The objective of this thesis was to investigate the attitudes and levels of awareness of business managers towards their companies' environmental practices and to determine how far private Saudi companies are taking up environmental management. Different factors like the demographic features of the private Saudi companies, some important drivers and barriers that affect the levels of taking up corporate environmental policies and practices were explored and discussed.

Two studies, qualitative and quantitative studies, were conducted to bridge this gap of knowledge. The survey method was used for the quantitative study (N=176), while a semi-structured interview was developed to run the qualitative study for a sample of 18 representatives from six companies to confirm and elaborate on the findings of the quantitative study. The results of these two studies showed that some demographic features of the company may have an effect on the uptake of CEM. It also showed the significance of a number of themes (i.e. environmental initiatives, organizational support, environmental operations, and environmental responsibility) in the uptake of sound environmental practices and procedures.

The study also classified Saudi Arabian companies, according to the perception of their employees, in terms of their level of environmental performance into three categories; the

Inactive/unaware, the Concerned-inactive, and Potentially proactive (ICP). Most of the companies investigated fell in the first category (51%) and second (27%) category which indicates that Saudi Arabia is still to begin developing in this area.

Overall, the perceived level of the CEM performance of Saudi private companies is low due to the lack of enforcement of environmental laws, the philosophy of top management, the absence of environmental protection societies and an organizational structure in companies that does not support implementation of an EMS.

CHAPTER 1 Corporate Environmental Management of Private Businesses in Saudi Arabia

1.1 Introduction

Saudi Arabia plays a very important role in the world economy. The Kingdom covers a total area of 2.15 million square km, which is almost 80% of the Arabian Peninsula. The country has an arid climate with an average rainfall of just 70.5mm. In 2007, the population of the country was estimated to be 27,601,038 million (Population estimate includes 5,576,076 non-nationals) and the annual growth rate is 2.8%. Over 60% of the population lives in the main urban areas.

Source: www.mopsofworld.com

Figure 1.1 Regional Map of Saudi Arabia

Table 1.1 Saudi Arabia's Economic Indicators

Foudi Arabia in year 2008	Indicator Value
GDP (Constant Prices, National Currency)	SAR 860.589 Billion.
GDP Growth (Constant Prices, National Currency)	5.853 %
GDP (Current Prices,)	SAR 1,978.56 Billion. (US$ 528.322 Billion)
GDP Per Capita (Constant Prices, National Currency)	SAR 34,566.51 .
GDP Per Capita (Current Prices, National Currency)	SAR 79,471.22 . (US$ 21,220.62)
Inflation (Average Consumer Price Change %)	11.451 %)
Population	24.897 Million
Current Account Balance	171.662 Billion (US Dollars)
Current Account Balance (% GDP)	32.492 %

Source: IMF (2008). The World Economic Outlook country group compiles the country's profile based on the data for the domestic economy. The data is analysed to determine the country weight.(World ResourceFund, 2008)

Table 1.2 More Economic Indicators for Saudi

Indicators		2006	2007	2008	2009f	2010f
GDP per capita	USD	15,050	15,724	19,345	14,656	16,204
GDP growth (real)	% yearly avg	3.0	3.5	4.6	-0.5	3.0
Industry	% GDP	64.7	63.7	61.9	61.3	60.4
Agriculture	% GDP	3.0	3.0	3.1	3.1	3.1
Investment	% GDP	17.4	20.0	19.5	28.5	27.1
CPI	% yearly avg	2.3	4.1	9.9	5.5	4.5
Exports	% yearly avg	16.9	10.9	45.5	-41.3	20.0
Imports	% yearly avg	17.2	29.4	37.8	3.5	8.5
Trade balance	USD bn	147.4	151.6	227.0	82.0	112.0
Current account	% GDP	25.2	22.4	29.1	-1.5	5.4
FDI (net)	USD bn	17.0	11.2	6.5	7.2	8.2
Intern. Reserves (excl. gold)	USD bn	27.5	33.8	30.3	27.0	22.0
Financial market indicators						
Exchange rate	US$1 = SR	3.7	3.7	3.8	3.8	3.8

Source: http://www.interex.gr/uk/countries-trading-profiles/saudi-arabia/economic-indicators

The backbone of the Saudi Arabian economy is dominated by the oil sector, roughly 75% of budget revenues and 90% of export earnings come from the oil industry. 45% of Saudi Arabia's gross domestic product is generated from the oil industry in comparison to 40% from the private sector (Development plans Saudi Arabia 2005-2009). The government has made it clear that they realize the necessity of reducing its dependence on oil through diversification and spelt out their intentions in the seventh and eighth 5 year development plans (2000-2004, 2005-2009). Although Saudi Arabia has been transformed into a modern industrial state through its petroleum income, the period 2000-2004 witnessed a greater emphasis being placed on agricultural and industrial growth with the private sector being encouraged to take a greater role and responsibility. The government objective was to increase 4.01% growth in the non-oil industries by encouraging and promoting growth through development by investing 5.04% of the GDP in the private sector. By implementing such plans, the Saudi Government projects an average GDP growth rate of 3.16% each year. In order to seek solutions to relieve the growing governmental expenditures due to the annual population growth of 2.8%, other economic reforms have been introduced in the eighth 5 year development plan to attract foreign direct investment that would greatly assist in the transition towards greater privatisation of business and promote tourism trade. Opening the country to international investment, should aid stronger private sector growth and increased competition in international ventures. An example of the country’s direction towards privatization is the government's attempt to promote private sector industries notably in the electric and telecommunications sectors. Saudi Arabia began privatising the electric companies in 1999, which was followed by the ongoing privatisation of the telecommunications company. The future for the private sectors looks promising since elaborate plans are

made throughout several sectors; a classic recent example would be the privatisation of the Saudi Airlines industry The Saudi eight Development Plan.(2005-2009)

Since government deregulations, the industrial and agricultural sectors now account for a larger share of the economic activity. Since 2007, the non-oil manufacturing industry contributed 10% of Saudi Arabian GDP and provided 6% of the total employment sector an increase to prior years. The IT industry is a good example of this growth. Since the deregulation in 2002, the computer industry per capita has increased 13%, the expansion had reached nearly 43% of the population in 2005. In 2007, Saudi Arabia had announced a high per capita income of $20,700 establishing it as one of the fastest growing economies. Six new economic cities are in the process of being built, one of which, the King Abdullah Economic City is expected to be completed by 2020. By diversifying the economy, Saudi Arabia is hoping to increase the per capita income from $15,000 in 2006 to $33,500 in 2020. By diversifying the location of the economic cities, the plan is to have these new economic cities to contribute $150 billion GDP whereas the urban areas of Riyadh and Jeddah are predicted to contribute $287 billion GDP by the year 2020. The Custodian of the Two Holy Mosques, King Abdullah Bin Abdul Aziz announced the Saudi Arabian national budget for the fiscal year of 2009 during a cabinet meeting in Riyadh. Government expenditures were budgeted at SR 475 billion for fiscal 2009, and total revenues were estimated at SR 410 billion leaving an expected deficit of SR 65 billion. The 2009 budget is the largest budget in the history of Saudi Arabia and is an increase of SR 65 billion to the 2008 budget, the second largest budget in Saudi history.

However, Saudi Arabia, has projected its first deficit in seven years for 2009, and has ordered departments to stick to allocated funds and has halted its aggressive public

debt reduction push. The world's biggest oil exporter said its spending focus will be on infrastructure, education and healthcare next year but the $157 billion surplus generated by the 2008 budget would be put into reserves. For ordinary Saudis then, the budget will do little to address income inequalities or their housing and employment needs.

Due to its oil industry and the subsequent economic expansion and urbanization, Saudi Arabia now faces many significant environmental challenges, such as increased water shortages, which means a heavier reliance on desalination plants to supply the domestic need. Other related urbanisation problems are water and air pollution, coastal development, biodiversity and desertification. In order to rectify these important environmental issues, the seventh and eighth national development plans call a coalition of agencies (government and non-government organizations) and the general public to address the environmental and wildlife resource conservation.

In order to demonstrate concern regarding domestic and global environmental problems, Saudi Arabia has attended the United Nations Conference on Environment and Development (UNCED) in 1992, which subsequently resulted in the Saudi Arabian National Agenda 21 in 1994. The Kingdom fully endorsed the United Nations Framework Convention on climate change and was a signatory to a number of international and regional environmental laws and agreements. However, Saudi Arabia has made it clear that concern for the environment should not result in negative economic consequences for developing countries (including Saudi Arabia),and particularly those dependent on oil. It is this provision that might explain the limited evidence of any progress towards environmentally sustainable practices by private companies in the Kingdom and the limited focus from the government on this area. In fact several studies undertaken with the aim of ranking countries on the greenhouse gas emissions and other

environmental indicators have consistently placed Saudi Arabia in the bottom quarter for the last two years (Germanwatch, 2008)

One of the outcomes of UNCED and the Rio Declaration, and subsequent meetings such as the RIO+10 in South Africa, was the pressure for businesses to be more proactive and become more involved with environmental challenges. Businesses were constantly urged to engage in initiatives that promote environmental responsibility and develop new technologies that would deliver better results. This was one of the first times that the global business community had been explicitly identified as a primary cause of environmental degradation. On the positive side, the Rio Declaration and more recent United Nations outputs have all acknowledged that businesses could also be a major player in solving or restructuring this damage.

The Earth Summit stimulated a new series of initiatives designed to facilitate the transformation of business from a damaging force into a healing and progressive driver of change. For example, the Summit led to the establishment of the World Business Council for Sustainable Development (WBCSD). The WBCSD's activities are founded on the belief that the pursuit of sustainable development is good for business and business is good for sustainable development.

In the Western world, realizing that they have some responsibilities in this field, the business sector has seen a significant "mainstreaming" of environmental concerns. There has also been a continuous development of techniques and schemes that businesses can adopt in order to improve their environmental performance. This period has also seen the emergence of environmental management systems that are allied to internationally recognized standards. The most well-known is the ISO 14000 series which is a set of standards on environmental management established by the International Standardization

Organization(Welford, 1996b, p,441) , The uptake of environmental policies and initiatives has been varied and a number of general trends can be identified. For example, larger companies are those most likely to adopt such practices and address the environmental agenda, with Trans-national companies tending to lead the field. The response by small and medium- sized enterprises (SMEs) is much patchier with relatively few active in this area (Merritt, 1998).

From Table 1.3 it can be seen that progress does not yet seem so apparent in Saudi Arabia towards environmental issues like CO2 emissions, water conservations,. Despite the Saudi government's recognition of environmental problems, there is, in fact, very little evidence of any improvement in environmental awareness or behaviour among businesses in the country. Despite governmental efforts, ironically no research has ever been conducted in this field and currently it is impossible to ascertain the level of environmental activity at any level within the Saudi Arabian economic sector. This research therefore, aims to address this gap in knowledge and will consider if and how Saudi Arabian businesses have responded to the environmental challenge. It will also identify both the internal and external drivers and barriers for adopting environmental practices by private businesses.

Table 1.3 Data Profile: Kingdom of Saudi Arabia

Data Profile: Kingdom of Saudi Arabia				
	2000	2005	2006	2007
World view				
Population, total (millions)	20.66	23.12	23.68	24.16
Population growth (annual %)	2.3	2.6	2.4	2.0
Surface area (sq. km) (thousands)	2,000.0	2,000.0	2,000.0	2,000.0
Environment				
Forest area (sq. km) (thousands)	27.3	27.3	..	..
Agricultural land (% of land area)	80.8	80.8	..	..
Renewable internal freshwater resources per capita (cubic meters)	..	..	..	99
Improved sanitation facilities, urban (% of urban population with access)	100	..	100	..
Energy use (kg of oil equivalent per capita)	5,169	6,077	6,170	..
CO2 emissions (metric tons per capita)	14.3	16.5	..	..
Electric power consumption (kWh per capita)	5,666	6,813	7,080	..
Economy				
GDP (current US$) (billions)	188.44	315.58	356.63	381.68
GDP growth (annual %)	4.9	5.6	3.2	3.4
Inflation, GDP deflator (annual %)	11.6	19.3	9.5	3.6
Agriculture, value added (% of GDP)	5	3	3	3
Industry, value added (% of GDP)	54	63	65	65
Services, etc., value added (% of GDP)	41	34	32	32
Exports of goods and services (% of GDP)	44	61	63	65
Imports of goods and services (% of GDP)	25	28	32	38
States and markets				
Time required to start a business (days)	..	64	39	15
Market capitalization of listed companies (% of GDP)	35.6	204.7	91.7	135.0
Military expenditure (% of GDP)	10.6	8.0	8.3	9.3
Mobile cellular subscriptions (per 100 people)	7	61	83	117
Internet users (per 100 people)	2.2	13.0	19.8	26.4
Roads, paved (% of total roads)	30	21	..	..
High-technology exports (% of manufactured exports)	0	1	1	1
Global links				
Merchandise trade (% of GDP)	57.2	76.1	78.8	85.0
Net migration (thousands)	70	285	..	..
Foreign direct investment, net inflows (BoP, current US$) (millions)	-1,881	464	660	-8,069
Official development assistance and official aid (current US$) (millions)	22	26	25	-131

Source: http://www.economywatch.com/economic-statistics/country/Saudi-Arabia/

1.2 Research Objectives and Questions

The main objective of the research is to assess the uptake of environmental policies and practices within a sample of private businesses in Saudi Arabia. For this to be achieved, the following will be explored:

- Levels of environmental awareness among business managers and employees
- The company characteristics (e.g. type, size, company sector) that might relate to their ability to engage with corporate environmental policies and practices.
- Internal and external drivers and barriers affecting the ability of companies to position corporate environmental policies and practices in their strategies

1.3 General Research Design of the Study

In an attempt to achieve research triangulation, the design of the study will utilise both qualitative and quantitative data. The following are the steps undertaken to conduct these qualitative and quantitative assessments:

Previous research was reviewed to identify the most suitable tool for assessing levels of environmental engagement in private Saudi businesses. An integrative conceptual model of analysis was developed as a result of the review. Subsequently, a set of hypotheses were developed to test this model.

A questionnaire was developed to collect data so the levels of activity could be assessed and also identify some key internal and external drivers of environmental management

The questionnaires were sent to representatives in 700 Saudi-based companies in various business sectors. A response rate of 25% was achieved, representing 176 respondents.

The data was then analysed quantitatively and a broad overview of the reported situation in Saudi Arabia was presented, grouped under a number of specified demographic features.

Companies were classified into three levels, low, medium and high according to the environmental management initiatives undertaken by them. The companies were also assessed for their attitude and uptake of environmental policies and practices on the basis of which they were categorized into; The Inactive/unaware, The Concerned/inactive and the Potentially Active.

Two companies from each category were selected as case studies which were scrutinised through the qualitative study to explore the issues behind the companies' categorisation

The main hypotheses were evaluated in relation to the results and linked to previous theoretical and practical research.

Finally conclusions and recommendations for future business applications and research were drawn.

1.4 Data Analysis

The quantitative study (i.e. the results drawn from the survey questionnaire) was analyzed using known statistical methods while the qualitative study (i.e. the interviews

from the focus groups of the six selected case studies) were analysed qualitatively with reference to other similar previous methods in the literature.

1.5 General Outlines of the Thesis

After this first introductory chapter, the thesis is divided into a further fourteen chapters. The first four of these review the most relevant literature.

Chapter two presents a historical account of the environmental concerns that lead to the development of various economic and political initiatives and policies to respond to these concerns. It also reviews the concepts of sustainability, sustainable development, and corporate environmental management.

Chapter three describes some general initiatives, charters, and guidelines produced by governmental and non-governmental organizations to improve businesses' environmental performance.

Chapter four reviews some of the well-developed and documented tools for corporate environmental management (e.g. environmental auditing, life cycle analysis (LCA) and ISO 14000).

Chapter five focuses on the previous studies done to investigate corporate environmental management in practice all over the world.

Chapter six describes the general Saudi Arabian environment especially in terms of the environmental problems faced, Saudi environmental initiatives, laws and regulations, the effects of the roles of religion and ethics on environmental attitudes as well as the role of private companies in the face of environmental challenges.

Chapter seven presents a conceptual model of analysis developed to assess the environmental performance of private enterprises and the sample of companies selected to undergo this analysis. The chapter also presents the hypotheses for the study.

Chapter eight describes the methodology used for the quantitative study implemented.

Chapters nine, and ten, report the results of the quantitative study.

Chapters eleven and twelve report the methodology and the results of the qualitative investigation.

Chapter thirteen discusses the results of the research, draws general conclusions and recommendations from these discussions.

Finally, chapter fourteen deals with the limitations and recommendations of the study.

CHAPTER 2 Historical Development of Environmental Concern and the Development of the Concept of Sustainability and Sustainable Development

This chapter comprises of two sections:

Section 1: Historical Development of Environmental Concern

Section 2: The Development of the Concept of Sustainability and Sustainable Development

SECTION 1: HISTORICAL DEVELOPMENT OF ENVIRONMENTAL CONCERN

This section focuses on the development of concern for the environment and looks at a number of major publications and incidents that led to a raised awareness of the link between the growing economic activity of mankind and the despoiling of the environment.

2.1 The Development of a Global Concern for the Environment

When mankind lived a largely subsistence, agrarian lifestyle, the link between the environment and man's welfare was clear. The environment very obviously provided the resources required by man for food, shelter and clothing. However, as mankind developed new ways of making use of environmental resources the strong link between humans and the environment gradually weakened, so that over time natural resources

were exploited for their economic value, but without any regard for the sustainability of the resources, and other associated negative environmental impacts. Thus humans have become so de-linked from the natural environment and the role it plays in providing them with all their resources, that many still fail to grasp the absolute necessity of protecting the environment not just for themselves but for future generations. This is a basic oversight due to the fact that we are utterly dependent on ecosystems to sustain us. From the water we drink to the food we eat, from the sea that gives up its wealth of products, to the land on which we build our homes, ecosystems yield goods and services that we can't do without. Ecosystems make the earth habitable: purifying air and water, maintaining biodiversity, decomposing and recycling nutrients, and providing a myriad of other critical functions World Resource Instiute .(2000-2001.)

Ironically, concern for the environment is one of the fundamental concepts in most historic religions, reflecting the wisdom of those times. For example, the religious beliefs of religions like Christianity, Judaism and Islam all state that humans are part of nature and that they must preserve a respectable tie with the natural resources around them such as water, air, land and other living things. However, even with these religions placing a great deal of importance on the environment and their surroundings, the human race continued to demonstrate very little concern for the environment. In western parts of the world it is possible to identify various trends regarding the relationship between mankind and the environment. For example, in the 16th and 17th centuries the dominant view of the environment was that nature was made by God to serve humanity, that animals and plants were provided for practical human use such as food or labour, or even as a moral lesson or stimuli, such that horse flies were created so that men should exercise their wits and industry to guard against them. At that time, animals and plants were believed to have no souls so no one cared for their treatment even if they were

abused or tortured. There was a blurred distinction between animals and humans with some humans displaying 'animal like behaviour'. This behaviour needed to be subdued by religion and morality for people to become fully human. So animal like behaviour such as being dirty, having sex, or being greedy was seen to be immoral and needed curbing. These concepts and beliefs rather conveniently gave humans a good excuse to treat certain sections of the population badly, as they were thought of as less than human. Obvious examples of such victims were people of colour, poor people and women, the latter largely because of the animal like activity of childbirth (Nash, 1989).

The late 17th Century witnessed a growing interest in science, initially to aid understanding of God's creation and to gain greater control over nature to enhance human livelihood. This was the time of the early explorers and botanists. The educated middle classes became more interested in nature and the 'sensitive' man made his first appearance. There were calls against unnecessary cruelty and wild areas of landscape, previously despised because of man's inability to tame them, were now revered (Koslowsky, 2004).

The 18th Century saw the beginnings of urbanisation and the countryside began to be seen as a destination for leisure purposes, a place to get away from it all. The countryside became fashionable largely because the towns were becoming increasingly polluted and the country was seen more and more as beautiful and serene (Prasad, 2003).

In the UK at the end of the 18th Century first concerns for the protection of the countryside were expressed. New roads, canals and industrial buildings were being constructed and people started to realise that the countryside was being threatened. This eventually resulted in the emergence, in the 20th Century, of pressure groups and environmental activists (Munton, 1997).

The onset of the industrial revolution sparked growing concern for the environment, but as documented above, it wasn't until the mid 20th Century that awareness began to rise as a counter-movement to the damaging state of complete separation between humans and the environment that had resulted from industrialization (Zealand, 2006).

The 1960s saw the emergence of a number of international thinkers who openly expressed their fears of the threat humans were imposing on their eco-system by abusing the environment for economic purposes without considering the future. Their fears raised awareness about environmental issues and highlighted the need for governments, businesses and individuals to reduce their consumption of environmental resources for the sake of future generations. Environmental awareness was given a boost through a series of important events worldwide which reinforced this growing awareness (Appleton, 2006).

The next section will report on the most important publications that appeared in the 20th century that expressed vital concerns about the environment. The section will also identify major world events, including environmental disasters, conferences, and meetings, that paved the way to form a solid understanding of the need for sustainable environmental management in businesses.

2.2 Publications and Events Supporting Concern for the Environment

One of the earliest authors to highlight resource limits was Robert Malthus (1766 – 1834). Malthus became concerned about the limits that man was likely to face in the future in terms of growth and developed his "Population Theory". He theorized that the populations would grow and then fail as the result of insufficient agricultural productivity. Since he was only interested in discussing this problem in relation to

agriculture, the theory remained limited (Pullen, 1995). However, it was the first time such issues were addressed and thus it remains an important milestone in the development of awareness of the problem of environmental degradation.

In the 19th Century, the prevalent view of the environment was a public property owned by all and thus to be exploited by all and this was the backbone of economic thinking at that time. The role of the government in maintaining the environment wasn't even considered by businesses or individuals alike. It was Alfred Marshall (1890) who first introduced the concept of "external economies" in his book *Principles of Economics* which was followed up by Arthur C. Pigou (1920), in his book *The Economics of Welfare*. Pigou was the first modern economist to suggest specific proposals for dealing with the environment as an externality. His analysis of the externality concept led to a distinction between private and social costs. He, in fact, attacked the free market which, he argued, left to itself does not guarantee a maximization of environmental welfare. Later, Ronald Coase in 1960, in his much cited article "The Problem of Social Cost", discussed this issue further (Ulhoi and Madsen, 1994). This often referred to as the Coase Theorem attempted to enlarge the domain of the invisible hand by introducing private markets in which the costs of external economies were internalized through voluntary, bilateral contracts between the polluter and the polluted. In theory, then, this should allow the identification of pollution rights, e.g. to a watercourse. Such rights would be tradable and typically end up in the possession of the firms, who valued them most. The idea of these contracts was to influence the polluter's behaviour and ensure that the economy returned to a state of Pareto optimality (Ulhoi and Madsen, 1994).

It is interesting that both the concept of "external economies" and the "Coase Theorem" emphasize the high price the environment pays when the economies do not

consider the social welfare of the society. The Coase theory was much discussed later by many economists e.g; (Cooper, 1995; Hurwicz, 1995; Maeda, 1995; Dixit and Olson, 2000; Butler and Garnett, 2003; Cerin, 2006). Most of them came to the conclusion that a public authority needs to control the polluter's behaviour to ensure future protection of the environment. However, contrary to this, Allen, Tainter, and Hoekstra (2003), talk about how the complexity of democratic institutions in the decision making process makes the problem solving ability unsustainable due to the public opinion self serving interest. In the examples of the environmental policies, they are held at the mercy of the tax payers and interest groups. Due to this dilemma, democratic public authorities may not always be able to implement the policies that are needed.

In the 1960s, a number of popular individual writings by environmentalists emerged. The most important of these were Silent Spring (Carson, 1962) and *Population Bomb* (Ehrlich and Birch, 1967).Carson's research on toxicology, ecology and epidemiology, argued that the environment, does not have an infinite capacity to absorb pollutants; a view considered contrary to mainstream political opinion at the time. Carson drew public awareness to the problem of pesticides and their impact on the natural world, particularly to singing birds, which is what influenced the name of her book, *Silent Spring*. Ehrlich focused on the link between human population, resource exploitation and the environment. He predicted disaster for humanity due to "population explosion". His book predicted that "in the 1970s and 1980s hundreds of millions of people will starve to death", and that nothing can be done to avoid it. History proved Ehrlich wrong, as the mass starvations predicted for the 1970s and 1980s never occurred, though it is true that famine had hit different parts of the world then and the world environment has been affected by overpopulation. Ehrlich's failure to regard technological developments and structural changes meant that his predictions were too pessimistic thereby undermining

his contribution. However, partly as a result of these writings, a number of environmentally focussed groups emerged in America, including the Environmental Defence Fund and Friends of the Earth (Avner, 2004).

There were camps of enthusiastic pro-growth supporters and zero-growth supporters in the 1960s and 1970s. Some of these argued that if society continued in its pursuit of wealth, then it must accept an imbalance between economics and ecology (Ehrlich and Birch, 1967; Tisdell, 1999). Others argued that economic growth should take second place to the interests of nature, which led, among other things, to the emergence of the zero-growth schools of thought, which, in varying degrees, stressed the necessity of halting population growth and of ensuring the desired conduct by means of regulations (Mirrlees, 1967; Davis, 1973).

A global group of environmental thinkers got together in April 1968 led by Aurelio Peccei, an Italian industrialist, and Alexander King, a Scottish scientist. This was the emergence of the Club of Rome, which was considered "a global think tank that deals with a variety of international political issues". The Club of Rome had scientists, economists, businessmen, international high civil servants, heads of state and former heads of state from all five continents who were convinced that the future of humankind is not determined once and for all and that each human being can contribute to the improvement of our societies (Bhaskaran, 2002).

The Club of Rome raised considerable public attention in 1972 with its report *Limits to Growth* which sold 30 million copies in more than 30 translations, making it the best selling environmental book in world history. There were five elements basic to the research: population, food production, industrial production, pollution and consumption of non-renewable resources. The authors considered the trends (globally) of these five

elements between 1900 and 1971 and concluded that all were not only increasing but were increasing exponentially. The authors of *Limits to Growth* also claim that exponential growth is the driving force causing the human economy to approach the limits of the earth (Van Dieren, 1995).

A computer model that looked at food production, industrial production and population was designed to model what would happen if they all increased exponentially. Under this scenario a lack of resources forces a slowdown. Population increases are finally halted by an increase in the death rate due to decreases in food and medical services (Stokey, 1998). As a result, there is what the authors called 'overshoot beyond the limits and collapse'. Key conclusions and recommendations were made as follows:

- If present growth trends in world population, industrialisation, pollution, food production and resource depletion continue unchanged, the limits to growth on this planet will be reached within 100 years. The most probable result will be a sudden and uncontrollable decline in both population and industrial capacity

- It is possible to alter these trends and to establish a condition of ecological and economic stability that is sustainable far into the future. The state of global equilibrium could be designed so that the basic material needs of each person on earth are satisfied and each person has an equal opportunity to realise his or her individual human potential.

- If the world's people decide to strive for this second outcome rather than the first, the sooner they begin working on it the greater their chances of success.

The list of recommendations included:

- Zero population growth

- Minimise waste of non renewable resources
- Decrease resource consumption in use in production in industries and the home (i.e. more efficient use of resources).
- Ecologically sound methods should be adopted where possible - especially in food production
- More efforts to look at new technology to reduce and control pollution from agriculture and industry

The book gained considerable attention around the world and many authors reviewed and critiqued its propositions {e.g. (Clark *et al.*, 1973; Motylev, 1977; Dror, 1991)}. Though the Club of Rome had some critics, it did raise awareness about these issues and was an important contributor to the debate throughout the 1970's. However, possibly because their concerns appeared overplayed at the time, and because time subsequently proved them wrong, their influence has waned in the last 30 years. It might well be that they were right, but that they had their timings wrong.

The 1980s was a decade dominated by subject specific issues largely because it was a decade dominated by major environmental disasters. During this decade several major incidents occurred that drew attention to the impacts of economic activities on the environment. Some of these incidents are mentioned below in Table 2.1.

Table 2.1 Top 10 Anthropogenic Environmental Disasters

Incident	Date
1. Bhopal: the Union Carbide gas leak:	**December 3, 1984**
2. Chernobyl: Russian nuclear power plant explosion	**April 26, 1986**
3. Seveso: Italian dioxin crisis	**July 10, 1976**
4. The London smog disaster	**1952**
5. Major oil spills of the 20th and 21st century Amoco Cadiz **Piper Alpha** **Exxon Valdez** **The Gulf War** **Tricolor:**	**March 16,1978** **July 6, 1988** **1989** **1990** **December 14, 2002**
6. The Love Canal chemical waste dump	**1953**
7. The Baia Mare cyanide spill	**January 30, 2000**
8. The European BSE crisis	**1989 – 2003**
9. Spanish waste water spill	**April 25, 1998**
10. The Three Mile Island near nuclear disaster	**March 28, 1979**

Source: http://www.lenntech.com/environmental-disasters.htm

Note: The division in the top 10 is dependent upon death toll, injuries, (lasting) damage and media exposure of the environmental disasters in question. It does not imply that one specific disaster is worse than another.

The impacts of some of these incidents were the cause of some legislative initiatives as governments sought ways of preventing future crisis. Examples of these are as follows:

Seveso Dioxin Crisis:

Seveso the Italian dioxin crisis was caused from ICMESA chemical company in Meda, Italy. One of their reactors exposed releasing a toxic cloud that escaped into the atmosphere containing high concentrations of TCDD, a highly toxic form of dioxin. Because of this incident, European regulation, known as the Seveso Directive, was introduced for the prevention and control of heavy accidents involving toxic substances. This Directive was a central guideline for European countries for managing industrial

safety. The Council of Ministers of The European Committee adopted the Directive in 1982. It obligates appropriate safety measures, and also public information on major industrial hazards, which is now known as the 'need to know' principle. http://www.lenntech.com/environmental-disasters.htm

London Smog

December 1952 brought an episode of heavy smog to London, which lasted until March 1953. The smog was made up of coal combustion, car exhaust, sticky particles of tar and gaseous sulphur dioxide. The smog episode killed approximately 12,000 people, mainly children, elderly people and people suffering from chronic respiratory or cardiac disease, lung disease, tuberculosis and heart failure. Mortality from bronchitis and pneumonia increased more than sevenfold. The highest death rate during the smog episode occurred on December 8 and December 9, at 900 deaths per day. The London smog disaster resulted in the introduction of the first Clean Air Acts in 1956 (BBC,19 December 1956)

Exxon Valdez

In 1989 the American oil tanker Exxon Valdez clashed with the Bligh Reef, causing a major oil leakage. This incident was highlighted not because of the damage from the accident, but the fact that sometimes response plans are not thought through. The official NOAA (National Oceanic and Atmospheric Administration) investigations have shown that most of the damage from the oil spill was caused by the cleaning operation following the disaster. The pressure-washing was responsible for killing most of the marine life. Another startling finding was that the unclean beaches recovered after

18 months compared to the 3 to 4 years it took the cleaned beaches to recover http://response.restoration.noaa.gov/

The European BSE crisis

The outbreak of Bovine Spongiform Encephalopathy (BSE), a fatal cow disease sometimes called 'mad cow disease' highlighted many issues. BSE was caused by feeding cows with meat and bone meal, a high-protein substance obtained from butchered sheep and cows. Prions (proteinaceous infectious particles) accumulated in the animal and made them sick. Europe required animal feed to undergo a steam boiling process for sterilization; however, in the UK they didn't. This gave the infectious agents a chance to spread. In 1996, BSE was found not only harmful to cows but also discovered that a human equivalent of the fatal brain disease existed known as Creutsfeldt Jacobs Disease (CJD). Once infectious prions are activated, the disease runs its course within 12 to 18 months and ultimately results in death. Symptoms include depression, coordination problems, memory loss and mood swings, pain in the limbs, bad headaches, cold extremities, pain in the feet, rashes and short-term memory loss. Many countries banned the use of meat and bone meal after the outbreak of BSE in Europe. However, in Germany meat and bone meal was still permitted in cow feed until 2000. This caused an aftermath of the epidemic in 2003. Little over 5000 people in Europe and the UK were affected (Enzler, 2006)

Consequently, towards the end of the decade it became clear that global environmental problems had to be linked to the overall process of economic, social, political development. In 1991, the Beijing Declaration, issued by the group of 77, defined an agenda for a future meeting to discuss this new perspective. This meeting, the United Nations Conference on Environment and Development (UNCED), was held in

1992 in Rio and was later known as the “Rio Earth Summit”. This conference was another turning point as the representatives of 179 countries and participating businesses had come together to combat environmental challenges. The outcome of this summit saw the birth of the Rio Declaration, the Convention on Biological Diversity, the Framework Convention on Climate Change, and Agenda 21.

In 1997, the UN General Assembly held a special session to review the situation since the “Rio Earth Summit”. The main aim of this session was to review the progress of integrating the environment into a system of sustainable development, but it was clear that this had not yet happened in any of the world countries. In spite of all the important declarations and the follow-up on the1992 Rio Earth Summit, the implementation of the action plan set out by the “Rio Earth Summit” wasn’t that effective. There was a general air of dissent and many countries were concerned about how sustainable development might conflict with their need to develop or maintain their economic status. This suspicion was partly the result of confusion regarding methods of implementation and the perceived lack of leadership and non-delivery by richer countries on promises made. The developing countries blamed the developed countries for over-consumption and the rich countries criticised the developing countries for their high levels of population growth. This dissent was a major setback, since the “Rio Earth Summit” had hoped to unite many countries to work together towards a common goal.

In 2002, the World Summit on Sustainable Development (WSSD or Rio+10) focussed on the balance between environment and economy. This Summit held in Johannesburg with around 37, 000 international delegates, had a more precise agenda and objectives, which revolved around five themes. These themes were as follows;

Water and sanitation – Provide access to at least 1 billion people who lack clean drinking water and 2 billion people who lack sanitation.

Energy – Provide access to more than 2 billion people who lack modern energy service; promote renewable energy; reduce over consumption; and ratify the Kyoto Protocol to address Climate Change.

Health: Address the effects of toxic and hazardous materials; reduce air pollution; prevent the spread of HIV/AIDS, and lower the incidence of malaria.

Agriculture: Reverse land degradation, which affects almost two thirds of the world's agricultural lands and promotes food security.

Biodiversity: remote ecosystem management, focusing especially on forest management, coral reefs protection and rehabilitation of decimated ocean fisheries.

The Johannesburg Declaration, signed by 189 nations, recognized three main challenges in the years ahead (poverty eradication, changing consumption and production patterns, and protecting and managing the natural resource base for economic and social development) and expressed a commitment to sustainable development, emphasizing the need for implementation. However, instead of having new agreements between governments during this huge gathering to encourage implementations, the Earth Summit was organized mostly around almost 300 "partnership initiatives" that were to be the key means to achieve the Millennium Development Goals (MDGs), which were agreed upon at the United Nations Millennium Summit in September 2000. These goals were build on agreements made at major United Nations' conferences of the 1990s and represent commitments to reduce poverty and hunger, to tackle ill health, gender inequality, lack of education, lack of access to clean water, and environmental degradation. The Millennium

Development goals were framed as a compact that recognises the contribution that developed countries can make through fair trade, development assistance, debt relief, access to essential medicines, and technology transfer.

However the summit was not widely seen as a success. The absence of the U.S. president, George W. Bush (Senior), undermined the goals of the meeting and there were more parochial criticisms relating to the 'hypocritical' provision of expensive food and drink for dignitaries within a few miles of impoverished South Africans. The summit organizers have also been criticized by others for excluding a variety of organizations and individuals, particularly some early founders, instrumental in raising awareness and concern. The summit also excluded critics in the movement who believe the "sustainable development" mantra is being misused in order to 'greenwash' economic development at the expense of long term environmental goals. Thus, many people believe that the Earth Summit of 2002 did not achieve much and that it was actually a "failure". The main reasons put forward by commentators regarding this failure is that the promises for subsides offered by the Western world to poorer countries were vague and inadequate. Furthermore, there was an expectation that poor countries would further need to open their markets for Western companies and their products even if it caused environmental harm. The competitive capacity of developing countries would therefore be expected to deteriorate with all the negative consequences for poverty and non-sustainable development that this entails. Ted Van Hees (2002) stated that:

> *Together with many of (my) colleagues, I have to say that the Rio+10 Summit overall is a failure, unfortunately. The beautiful words in speeches (e.g. Chirac the champion in talking about poverty, but not one time mentioning subsidies; Berlusconi forgetting to mention the word environment), the Plan of Implementation or the Political Declaration do not manage to mask the many vague promises, the lack of concrete targets and timelines, the frequent passages in the text of terms like "as appropriate", "feasibly", "where possible", "on a voluntary basis". The*

> *few (as such important) lightning points in the area of water and sanitation, chemicals, over-fishing, and corporate responsibility and accountability cannot take away this impression of failure (Hees, 2002).*

One good point that came out of this global meeting was the fact that more countries were brought in to support sustainable development in the 21st century by signing the Johannesburg Declaration which essentially highlighted the need to work on issues like poverty eradication, changing consumption and production patterns, and protecting and managing the natural resource base for economic and social development. The Summit was also successful in raising awareness of the crucial role that the private sector plays in achieving sustainability. As it states in its declaration the "private sector has a duty to contribute to the evolution of equitable and sustainable communities and societies". In this way, this declaration was an additional document supporting the need for involving the private sector in the environmental initiatives. However, no real achievements resulted from this declaration. For example, in July 2004, the World Health Organization stated that:

> *"Although overall trends are clear, much remains to be done if we are to get a more accurate picture of what is really happening A recent high level meeting on the health goals noted,*
>
> *"We cannot count the dead in the vast majority of the world's poorest countries— paradoxically these are the countries where the disease burden is greatest. In sub-Saharan Africa fewer than 10 countries have vital registration systems that produce viable data . . . The considerable investments in measuring health outcomes, often to monitor the effectiveness of donor-driven programmes . . . too often do not strengthen national health information systems"*(Haines and Cassels, 2004, p 395).

Reflecting on how global attitudes towards the environment have evolved, it can be deduced that humanity went through different stages. First of all the links between man and his environment were clear and strong, and this then led to a second stage when humanity became inconsiderate of the environment as

environmental resources were abundant and always available. The third stage, after the industrial revolution, exposed humanity to environmental problems and limited resources which led to greater concern about environmental resources and the relationship with economic growth.

In the next stage, this concern grew and led to structured activities that helped in "streamlining" global efforts to maintain sustainability development. Thus, the attitudes towards nature have become more positive as almost the whole globe is now aware of the need to preserve natural resources and help in sustaining and ensuring future economic and social development.

The main concern, however, is that although there is a growing awareness of the environmental problems and the need for sustainability, no effective actions have been taken up till now to prevent such problems or work towards achieving sustainability in the real sense. Although many regulations have been introduced in different global gatherings, the global environment is still under threat and global environmental damage continues. Evidently, governments are simply not doing enough and neither are businesses. Perhaps the main reason is that most businesses are still more concerned with their economic bottom line regardless of the threat their businesses impose on the environment. Governments and social organizations that are concerned with sustainable development and environmental protection do not appear to have any effective control over the private sector. For example, looking at CO2 emissions, the cause of the most significant environmental threat- global warming, it is clear that no major changes or reductions are expected within the next 10-15 years (Table 2.2).

It is clear that major changes are required to deal with this and other urgent global and national environmental problems. There is a clear need for businesses to be involved

if not to lead these changes. Before looking at the detail of how environmental sustainability might be achieved and the role of business, it is necessary to discuss the meaning of these terms. The next section will attempt to do that.

Table 2.2 Global Carbon Dioxide Emissions Scenarios – Annual rates of change for each factor & time period

Developed Countries	1990 – 2000	2000 – 2025
Population	0.55	0.28
GDP / Capita	2.12	2.16
Energy Intensity	-1.70	- 0.76
Carbon Intensity	0.14	- 0.94
Under Developed Countries	1990 – 2000	2000 – 2025
Population	2.14	1.68
GDP / Capita	1.40	1.45
Energy Intensity	- 0.47	- 1.21
Carbon Intensity	0.41	0.32

Source: (Yang and Schneider, 1997)

SECTION 2: THE DEVELOPMENT OF THE CONCEPT OF SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT

2.3 Global Attitude and concerns

The most well-known definition of the term "sustainability development is derived from the *Our Common Future* report published by the World Commission on Environment and Development (WCED) in 1987. According to the Brundtland Definition:

> *"Development is sustainable if it "meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987, p 43).*

The evolution of this term has been followed by other historical and conceptual attempts to understand the concept of "sustainablety development" and to develop it in many different directions and there are now many hundreds of varying definitions. It is

beyond the scope of this research to explore all of these, but what follows is a summary of key interpretations and applications.

In terms of terminology, the years after the Stockholm Conference (1972) witnessed the use of different related terms such as “environment and development”, “development without destruction”, “environmentally sound development” and finally the term “eco-development” which appeared in the UN Environment Program Review in 1978. According to Coomer (1979, p 29) :

> *“The sustainable society is one that lives within the self-perpetuating limits of its environment. That society … is not a “no growth’ society … It is rather, a society that recognizes the limits of growth … [and] looks for alternative ways of growing.*

The same focus was aired in The World Conservation Strategy issued by the IUCN, WWF and UNEP which made one of the first attempts to define sustainable development as the “maintenance of essential ecological processes and life support systems, the preservation of genetic diversity, and the sustainable utilization of species and ecosystems’. These widely developed uses and definitions of the terms “environment”, “sustainable” and “development” show that the need to relate environmental and developmental efforts had became internationally recognized. Various other definitions that focus on the long lasting economically and socially related aspects of Sustainability Development can be found from the works of Solomon (1990), the Organization of Economic Cooperation and Development,(Shaw, 1993) the National Research Council (Kessler et al., 1992) World Bank (Pezzey, 1992), Richard Norgaard (1992), and Varvrousek (1994). However, these definitions, though beneficial, were still limited in their conceptual view of sustainability.

The Brundtland definition (see above) remains the most widely referred to definition. This is perhaps due to its simplicity which in turn also led to the various interpretations of what it meant. Even though, this definition is widely used, critics such as Pearson, Atkinson, and Dubourg consider the Brundtland definition as over generalised and vague. It does utilise the word "need" which indicates that it has a material component that can be construed to include ecological processes, endangered species, or uncut forests; however, the vagueness hinders the policy making process (Allen *et al.*, 2003). Therefore, holistic definitions will be discussed.

Definitions supporting a more holistic view of development were those that referred to sustainability as a process that covers the three aspects of economy, human society and environment. One of the early good examples of such a definition is that of Barbier (1989), according to whom a sustainable economic system aims:

> *"To find the optimal level of interaction between three systems -- the biological and natural resource system, the economic system, and the social system. A broad consensus does exist about the conditions required for sustainable economic development. Two interpretations are now emerging: a wider concept concerned with sustainable economic, ecological and social development; and a more narrowly defined concept largely concerned with environmentally sustainable development (i.e. with optimal resource and environmental management over time) (Barbier, 1989, p441).*

Another simple yet effective definition is the IUCN definition http://www.iucn.org/about/work/initiatives/futureofsustainability/definitions/ According to this:

"Sustainable development means achieving a quality of life (or standard of living) that can be maintained for many generations because it is:

1. Socially desirable, fulfilling people's cultural, material, and spiritual needs in equitable ways.

2. Economically viable, paying for itself, with costs not exceeding income.

3. Ecologically sustainable, maintaining the long-term viability of supporting ecosystems."

Interestingly in defining terminology that encompasses the business sustainability versus environmental view, many various labels were coined such as 'reformists' and 'radicals' (Shrivastava and Hart, 1994); 'technocentrics' and 'ecocentrics' (Pearce, 1993; Adams, 1995), 'business view' and 'public view' on sustainability (Rossi *et al.*, 2000), 'light (shallow) green' and 'deep green' (Atkinson, 2000), and 'weak sustainability' and 'strong sustainability' (Bebbington *et al.*, 2001) .

In Saudi Arabia, solutions will be found through learning and by developing the existing practices, e.g. market mechanisms (Pearce and Barbier, 2000) because a sustainable Saudi society is considered to be relatively easily achievable within a relatively short time frame (Bebbington *et al.*, 2001). On the whole, the social and environmental problems which are deemed more structural therefore require radical solutions. The environmental and social problems being faced are due to the prevailing economic system which must therefore be restructured in a major way (Welford and Casagrande, 1997; Jeff and Dean, 2000; Gray, 2002).

The United Nations 2005 World Summit Outcome Document 14-16 September 2005 refers to the "interdependent and mutually reinforcing pillars of sustainable development" as economic development, social development, and environmental protection. However, indigenous people have argued through various international forums such as the United Nations Permanent Forum on Indigenous Issues and the Convention on Biological Diversity, that there are four pillars of sustainable development, the fourth being cultural. To add to this, the Universal Declaration on Cultural Diversity (U N,2001) further elaborates the concept by stating that:

> *"...cultural diversity is as necessary for humankind as biodiversity is for nature"; it becomes "one of the roots of development understood not simply in terms of economic growth, but also as a means to achieve a more satisfactory intellectual, emotional, moral and spiritual existence"*

Therefore, in this vision, cultural diversity is the fourth policy area of sustainable development.

Another definition is that of Allen, Tainter, and Hoekstra (2003), mentioned earlier, and were critical of the overall generalisation and vagueness of the term sustainability in Brundtland's definition. They defined sustainability as "maintaining, or fostering the development of the systemic contexts that produce the goods, services, and amenities that people need or value, at an acceptable cost for as long as they are needed or valued". The focus of this definition is based on the context and not the output and on making distinctions between sustainability (ability to continue a desired condition or process) and resiliency (ability to adapt and change).

Generally, it is important to state that the range of different definitions for the concept of sustainable development demonstrate the elusiveness of the term (Barbier, 1989; Pearce and Barbier, 2000; Bebbington *et al.*, 2001). This elusiveness has helped

the concept to gain a predominant position in environmental and social discussions worldwide, as it has been possible to define the concept to suit one's own purposes. The main challenge is now to understand how these definitions might work in a business context. Therefore, in the following section, the term sustainable development will be considered in terms of how it relates to the business world. The definition will touch on all the aspects, elements and tools that would make a business "sustainable" and then link this to the concept of corporate environmental management.

2.4 The Development of the Definition of Sustainability Development

To define sustainability development in business, we may consider the definition developed by the International Institute for Sustainable Development (IISD) in conjunction with Deloitte and Touche and the World Business Council for Sustainable Development "WBCSD" (1992). They suggest that:

> *For the business enterprise, sustainable development means adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future. (Deloitte and Touche, 1992, p1)*

As previously emphasized in the general concept of sustainability development, this definition indicates that enterprises are required to attend to the future needs of stakeholders as much as their present needs. It also recognizes business dependence on natural and human resources and that these resources must be protected from degradation and destruction to ensure future sustainability. Moreover, it highlights the importance of adopting specific strategic plans to implement sustainable development in business.

Consequently, all these elements in the definition capture the spirit of sustainable development as proposed by the WCED. Of particular interest here is the last point about planning for implementing sustainable development in businesses. The definition suggests that businessmen must be aware of the importance of sustainability for their own businesses and that sustainable development needs to be incorporated into the policies and processes of a business if it follows developmental principles. Although, this seems to encourage cultural orientation and refinements to systems, practices and procedures, this definition is ambiguous as it does not specify any strategies that would need to be implemented. Ironically, it seems to encourage a business-as-usual approach without really outlining how fundamental change will be made.

A more developed definition of business sustainability is the one presented by Dyllick and Hockerts (2002, p 131) which is primarily based on the original Brundtland's definition (1987):

> *"Corporate sustainability can accordingly be defined as meeting the needs of a firm's direct and indirect stake-holders (such as shareholders, employees, clients, pressure groups, communities, etc), without compromising its ability to meet the needs for future stakeholders as well. Towards this goal, firms have to maintain and grow their economic, social and environmental capital base while actively contributing to sustainability in the political domain."*

From this definition, it is becoming clear that the performance of businesses is no longer judged by the services, products and profits, but it's also judged by the impacts they have on human and social well-being at present and in the future. There is a need that companies which take a more sustainable approach need to consider, not only economic development, but also social and environmental developments. It can be stated that "these problems are not simply economic and environmental in their origins or nature. Instead, they raise social, ethical and, above all, political issues" (Elkington,

1998). Moreover, according to Dyllick and Hockerts (2002), economic development may be very profitable in the short-term, but choosing to ignore developing the natural and social resources will have long-term consequences. To them, the spirit of sustainability aims to manage not only the "economic capital", but also the "natural capital" and the "social capital" to ensure the success of business today and in the future.

These different dimensions of sustainability have resulted in the integration of the economic, ecological and social aspects of sustainability in a "Triple-Bottom Line" (TBL) model (Elkington, 1998; 1999; Fiksel, 2001; Zollinger, 2001; Crawford, 2002; Dyllick and Hockerts, 2002; TPfer *et al.*, 2002; Elkington, 2004). This term, which was originally coined by John Elkington in his 1998 book *'Cannibals with Forks:* the Triple Bottom Line of 21st Century Business' has come to dominate discussions surrounding sustainable business. This is unsurprising as the triple bottom line model captures the spectrum of values that organizations must embrace - economic, environmental and social. In practical terms, triple bottom line accounting means expanding the traditional company reporting framework to take into account not just financial outcomes but also environmental and social performance.

To understand more how these three aspects are considered in relation to "business sustainability", the more recent definitions of these aspects are presented and discussed below.

2.5 Environmental Sustainability

Elkington (1998), refers to "natural capital", which can be divided into two types; The critical natural capital and The renewable natural capital

The first form, critical natural capital, refers to all wealth that is essential to the maintenance of life and ecosystem integrity (e.g. water, fish). The second form, renewable natural capital, refers to the resources that can be renewed through breeding or repairing the ecosystem or substituting or replacing certain types of resources by others (e.g. using solar energy instead of fossil fuel). For business development to be sustainable environmentally, companies need to consider how their current operations would affect the environment negatively. Similarly, according to Dyllick and Hockerts (2002, p.133),

> *"There are two main types of [environmental sustainability]: It can firstly take the form of natural resources. These are consumed in many economic processes, and can either be renewable (e.g. wood, fish, corn) or non-renewable (fossil fuel, biodiversity, soil quality). On the other hand, [environmental sustainability] takes the form of ecosystem services (e.g. climate stabilization, water purification, soil remediation, reproduction of plants and animals).*

Since "natural capital" of the earth is limited, humans and business owners and executives need to develop businesses that do not harm the natural resources, especially if they are non-renewable, and help in renewing them if they are renewable. The Business Council for Sustainable Development (BCSD) identified the concept of and defined it as:

> *"the delivery of competitively priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the life cycle, to a level at least in line with the Earth's estimated carrying capacity.(Najam, 1999, p 70)*

This concept was further shaped and developed by the WBCSD (2000) http://www.wbcsd.org/web/publications/eco_efficiency_creating_more_value.pdfand by many othe organizations.

According to the WBCSD there are four aspects of eco-efficiency that make it an essential element in any company's strategic system. These are the following;

De-materialization (i.e. companies need to substitute knowledge flow for material flow).

Closing production loops (i.e. the aim is to have closed loop production systems and zero-waste factories where the output of any product goes back to nature and becomes an input for manufacturing another product).

Service extension (i.e. companies are re-thinking how they satisfy the demands of their customers to extend their services by, for example, leasing durable goods, rather than making costumers buy them).

Functional extension (i.e. companies are manufacturing 'smarter" products with new and enhanced functions)

2.6 Social Sustainability

A socially sustainable system must achieve distributional equity, adequate provision of social services including health and education, gender equity, and political accountability and participation. Dyllick and Hockerts (2002) have identified two different types of social sustainability: Human sustainability and Societal sustainability.

Human sustainability is more concerned with sustaining human skills, motivation, and loyalty of employees and business partners while societal sustainability is more concerned with the quality of public services, such as a good educational system, infrastructure or a culture supportive of entrepreneurship. A firm can be viewed as managing social capital if it manages to make its stakeholders broadly understand clearly

the motives of its decisions. Due to this, socially sustainable companies are considered as:

> *"...adding value to the communities within which they operate by increasing the human capital of individual partners as well as furthering the societal capital of these communities. They manage social capital in such a way that stakeholders can understand its motivations and can broadly agree with the company's value system (Dyllick and Hockerts, 2002, p.134).*

Similar to the concept of eco-efficiency is the concept of socio-efficiency. This concept describes the relationship between a firm's added values and its social impact. Although it is expected that businesses may have some positive impacts (e.g. creating new jobs, giving donations to social projects, etc.), they may also have some negative impacts (e.g. work accidents, abuse of human rights, etc). This is the opposite case with the environmental impacts of businesses which are expected to be generally negative. However, both eco-efficiency and socio-efficiency are concerned with increasing economic sustainability (Dyllick and Hockerts, 2002).

A related concept is that of social capital. As with sustainability, it has various interpretations and definitions. Bourdieu (2001), defines social capital as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition". Coleman (1988), regarded social capital as a way of explaining why humans choose to cooperate – a twist on the economists 'invisible hand, while the most famous recent commentator on the subject, Puttnam (2001) regarded it as features of social organisation, such as trust, norms and networks, that can improve the efficiency of society by facilitating coordinated actions'. Early attempts to define social capital focused on the degree to which social capital as a resource should be used for public good or for the benefit of individuals (Putnam *et al.*, 1993; Putnam and Goss, 2002). In

“The Forms of Capital”, Pierre (1986) also distinguishes between three forms of capital: economic capital, cultural capital and social capital. However, Nan Lin's(2001) concept of social capital has a more individualistic approach "Investment in social relations with expected returns in the marketplace".

Foley and Edwards (1996) believe that "political systems...are important determinants of both the character of civil society and of the uses to which whatever social capital exists might be put". Hence, a high level of social capital is seen as being almost a necessary condition for modern liberal democracy which could in turn be one of the drivers of support to sustainable development in business. A low level of social capital leads to an excessively rigid and unresponsive political system and high levels of corruption, in the political system and in the region as a whole. Formal public institutions, including NGOs supporting corporate environmental development, require social capital in order to function properly, and while it is possible to have too much social capital (resulting in rapid changes and excessive regulation), it is decidedly worse to have too little. As far as the knowledge of the researcher goes the role of public institutions and NGOs supporting corporate environmental development is rather weak Saudi Arabia. However, this study will attempt to find how much influence it has as a driver or barrier in the uptake of corporate environmental management.

2.7 Economic Sustainability

For achieving economic sustainability, Agenda 21(Allan and Castillo, 2007) clearly identified information, integration, and participation as key building blocks to help countries achieve development that recognizes the three interdependent pillars of sustainability. It emphasizes that in sustainable development everyone is a user and provider of information. Most countries around the world (including Saudi Arabia) need

to change from old sector-centred ways of doing business to new approaches that involve cross-sector co-ordination and the integration of environmental and social concerns into all development processes. Furthermore, Agenda 21 emphasizes that broad public participation in decision making is a fundamental prerequisite for achieving sustainable development.

There are a number of types of economic capitals that companies need to consider to ensure the development of the overall economic capital. These are the financial capital (i.e. all types of monetary exchanges that ensure that cash flow and liquidity are sustained even while producing a persistent above average return to shareholders), the tangible capital (i.e. all the materials owned by the firms as stable sustaining capital and on which production is based), and intangible capital (i.e. all the extra-monetary activities and elements that help and support the financial processes that firms are engaged in during production, marketing, selling, etc.). In general, if the two first elements are the traditional elements that executives believe are essential to business undertakings, the third type of capital links to the issue of social sustainability, which in itself is an aspect to be considered in business sustainability.

Similarly, Elkington (1999) sees that the economic bottom line includes the economic capital (i.e. equity capital) which is "the total value of a corporation's assets minus its liabilities" which includes "the physical capital (including machinery and plant) and financial capital". However, he stressed the fact that the concept of sustainability can enter into the traditional accounting through the measurement of the depreciation and depletion in previous accounts and the evaluation of the growing earning power in future accounts. Economically, companies are held accountable and therefore they must be responsive to the "investment community" by serving their needs in informing its

members. Thus, stakeholders need to be fully informed through auditing and reporting about the financial situation of the organization at present as well as the predicted performance, its calculated risks, expectations of share prices, premiums for insurance policies and security for loans. Again, it must be understood that companies are held accountable for their impacts on people both inside and outside such organizations. Therefore, social accounting is to assess this impact by considering issues like "community relations, product safety, training and education initiatives, sponsorship, charitable donations of money and time, and the employment of disadvantaged groups" (Elkington, 1999) On the other hand, social auditing and reporting are meant to assess the company's performance in relation to the society's requirements and expectations.

Many financial analysts argue that the implications of social issues are rather vague and therefore they find it difficult to support the need to produce social reports, but many enterprises and organizations around the world have realized that "in today's society, companies not only need to operate in an ethical manner, but also need publicly to demonstrate they are doing so (Hess *et al.*, 2002).

2.8 The rise of Corporate Social Responsibility

Judging by history, all previous efforts made by governmental and non-governmental organizations, corporations are one of the causes for environmental problems and therefore their role in solving these problems is essential for making a change. Corporate Social Responsibility could be the key, the basic idea is that business should act and be held accountable for more than just its legal responsibilities to shareholders, employees, suppliers and customers. That is, business should be 'expected' to acknowledge and take full responsibility for the non-economic consequences of its

activities with respect to wider society and the natural environment. “Corporate Social Responsibility” (CSR), is defined by the WBCSD (1999)as:

> *“the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large”, is gaining a lot of interest in the field of sustainable development as an essential concept “whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis.”*

Despite differences of philosophy and principle, many businesses are already experienced in dealing with social and environmental issues at a practical level. The social aspect of sustainable development has gained importance in the business world as a result of a number of high profile scandals involving major, formerly well trusted organisations such as Enron and Parmalat. Businesses are keen to demonstrate that they do consider social issues as well as economic and environmental ones and the main vehicle for this has been the growing concept of CSR. In large part this is on account of the growing influence of ‘Triple Bottom Line’ (TBL) reporting. This is a ‘whole-of-business’ approach comprising a balance sheet of environmental and social consequences of business operations in addition to the necessary financial outcomes. This approach requires a company to look at its impact on the social fabric, environment and, in some cases, human rights. This involves recognizing and assessing a range of potential non-business risks, not all of which need have financial implications for the firm. Whether motivated by external pressure or internal strategy, large corporations increasingly regard TBL reporting as necessary. In fact, by 2001, 45 per cent of the 250 largest global companies published reports covering TBL. In Australia, 11 per cent of the top 500 companies currently do so. Even in Japan, 72 per cent of the country’s top 100 companies produce ‘sustainability’ reports (Macken, 2002).

CSR has formalised some of the efforts that were made by organisations that were already seeking to achieve this. Examples of enterprises that realized early on the importance of reporting their social performance are the Skandia (1994).The 1995 Body Shop's Values Report, ,(Sillanp, 1998) and The 1998 Shell Report - Profits and Principles: Does There Have to Be a Choice?,(Shell, 2000) In the last ten years the number of similar reports has grown hugely and most large companies produce such a report.

The practice of CSR is subject to much debate and criticism. Proponents argue that there is a strong business case for CSR, in that corporations benefit in multiple ways by operating with a perspective broader and longer than their own immediate, short-term profits. Critics argue that CSR distracts from the fundamental economic role of businesses; others argue that it is nothing more than superficial window-dressing; still others argue that it is an attempt to pre-empt the role of governments as a watchdog over powerful multinational corporations. For example, some argue (Matten and Moon, 2004) that CSR programs undertaken by companies such as British American Tobacco (BAT), the petroleum giant British Petroleum, which is known for its high-profile advertising campaigns on environmental aspects of its operations, and McDonald's, are a means of distracting the public from asking ethical questions concerning these companies' core operations. They argue that some corporations use CSR programs for the commercial benefit they enjoy through raising their reputation with the public or with government. They suggest that corporations which exist solely to maximize profits are unable to advance the interests of society as a whole. Critics concerned with corporate hypocrisy and insincerity generally suggest that better governmental and international regulation and enforcement, rather than voluntary measures, are necessary to ensure that companies behave in a socially responsible manner.

CSR at the moment has become an essential tool for achieving corporate environmental management. It is seen as the paradigm for change in companies as it takes a much broader view of corporate behaviour. Western countries that have been more progressive with corporate environmental management are now beginning to embrace CSR while developing nations (including Saudi Arabia) are still struggling with basic environmental management. One of the other major concerns to raise here is that the three aspects of business sustainability – environmental, social and economic - must not be perceived as separate, but rather as entangled. The problem with many enterprises is that they approach these aspects separately. Thus, if these private institutions in Saudi Arabia, with the help of Saudi governments and Saudi fellow citizens, continue to care more for the economic outcome regardless of the negative effect of their industries on the environment, and are not supported by the enforcement of legislation from the Saudi government and the various individuals working in them, it is likely that it will be impossible to achieve sustainable development.

2.9 Corporate Environment Management

To understand the term "Corporate Environmental Management", we need first to explore the term environmental management. As with many of the concepts introduced in this thesis, this seemingly simple phrase can cause quite a lot of debate surrounding its definition. The environment is complex and diverse and there are many different aspects of its management and many different layers of responsibility. As a result there are many millions of people around the world engaged in environmental management, yet doing vastly different tasks. Cultures and contexts define environmental management in practice, and the diversity that exists is in itself a challenge when attempting to define the term. It might therefore be helpful to consider the two words that comprise it in more detail.

Pitkethley and Wood (1994) identified six different elements to the study of management:

1. The processes of making choices which exist in several forms, mainly decision taking, policy making and planning

2. The inputs thought necessary and relevant to making those choices

3. The outputs of the process and the outcome on events

4. The mangers who inhabit organisations and structures of responsibilities

5. The relationship with the surrounding political and social systems, the policy, economic and social setting, and how these influence outputs and outcomes

6. The performance of management as a whole, or with respect to particular styles or methods

It is possible to identify key themes from these approaches, and it is possible to conclude that management involves making things happen and performing tasks (identifying and analysing problems, finding solutions, choosing between options, implementing solutions, reviewing performance, and gaining feedback). Strategic and practical skills are required including setting priorities, marshalling resources, assigning responsibility, co-ordinating and controlling operations.

If we now link this definition with environmental management, we are able to begin to pinpoint the activity that this thesis is concerned with. However, defining the term ‘environment’ is problematic as it has hugely different meanings to different people.

Some commentators distinguish between the ‘natural’ and ‘man-made’ environments but these are regarded the same because all our resources, ‘man-made’ or otherwise, come from the earth’s environment.

Pitkethly and Wood (1994) have identified a range of definitions of the term including:

- The management of specific resources
- The management of human activities within environmentally tolerable limits
- The management of human activities to minimise risks
- Management of human activities to minimise direct and indirect environmental consequences
- Resolving competition over how to use resources
- Environmental housekeeping to maintain the stock of resources
- Management to halt and reverse processes of degradation

Environmental Management involves acting to prevent or avoid, mitigate or remedy damage to environmental systems or situations that potentially put environmental systems at risk. The overall aim is long term sustainability, so that people can pursue securely their various and more specific aims in society, their company, state, or household, whatever scale, this definition rather conveniently included reference to the business world.

Environmental Management can simply be understood to mean administrative functions that develop, implement, and monitor the environmental policy of an organization, but there remain many definitions for it. Environmental management was defined best by Bataineh as, a part of a full management system that contains the

administrative aspects- planning, organizing, directing and controlling. He further elaborated by stating that environmental management is an operation of a human action used to control the activities that affect the environment and to achieve the company's goals and policies in a planned program. Finally, he concludes the definition by stressing that environmental management is to make a continuous auditing for the operation of the company and for its products and services in order to develop its environmental achievements (Bataineh, 2006).

Ralph Meima (2002) defined Corporate Environmental Management (CEM) as a "cross functional activity of the firm akin in many ways to accounting and financial control, human resource management, technology management, and quality management and encompassing much of what has traditionally been called EH&S (environment, health, and safety) in many countries". His definition focussed on the environmental aspect that is the involvement of all activities of business such as the operations management practices, technical methodology, organizational arrangement, strategies etc that the organization identifies, monitors, communicates about, limits, eliminates or modifies the interactions of the natural environment. Relating to the corporate aspect, Meima focussed on the involvement of the senior executives, corporate staffs, network specialists and all involved in the practices of policy making, management control systems, reporting activities, and supply chain management supply.

The next chapter will now consider how the concept of environmental mangement has been applied in a business context and will look at a range of initiatives, guidelines, and charters that have been produced with the intention of encouraging companies to adopt sustainable business practices

CHAPTER 3 Initiatives, Charters and Guidelines of Corporate Environmental Management

Companies are faced with the challenge of integrating environmental considerations into their strategic plans. There are many drivers of this (which will be discussed later) but they include stronger environmental legislation, stakeholder and peer pressure, and growing public opinion, driven by greater awareness. These are increasingly putting pressure on businesses to adopt more sustainable strategies and as a result companies are seeking to develop management strategies that will achieve economic, social and environmental dividends. However, it was recognised fairly early on that these companies need guidance on how this can be achieved. This chapter will introduce some of the most well-known general principles and guidelines that are available to assist business corporations in developing sustainable environmental management systems.

3.1 General Initiatives and Principles

Many general initiatives, charters, and guidelines have been produced by both governmental and non-governmental organizations in order to guide businesses toward improving their management of environmental resources, and general principles have been developed to encourage sound environmental policies. There are many of these initiatives and principles but the most important and widely known are the CERES Principles, the World Business Charter for Sustainable Development (WBCSD), the Global Compact and the Principles for Responsible Investment.

3.2 The CERES Principles

The Coalition for Environmentally Responsible Economies (CERES) is a non-profit organization working with companies and investors addressing vital global issues such as global climate change. The mission of this organization is integrating sustainability into capital markets for the health of the planet and its people. Its has more than 70 members and its resources include a national network of investors ('Social investment members' include the United States Trust Company of Boston, Harrington Investments, Parnassus Fund, Social Responsibility Investment Group, Calvert Social Investment Fund and Foundation, and the Presbyterian Church), environmental organizations (Green Seal, the Sierra Club, Valdez Society of Japan, Earth Island Institute, and the International Alliance for Sustainable Agriculture and the Worldwide Fund for Nature), and other public interest groups.

The CERES principles were launched in response to the Exxon Valdez oil spill in Prince William Sound, Alaska in 1989. They were initially known as the Valdez Principles, and are a ten-point code of corporate environmental conduct. They were developed from the "Sullivan Principles", a code of conduct for US companies that operated during the 1980s in South Africa, to show a company's commitment to environmental sustainability, continued improvement, and accountability (Julia, 2000) The ten CERES Principles fall under the following main areas:

1. Protection of the biosphere
2. Sustainable use of natural resources
3. Reduction and waste disposal
4. Energy conservation
5. Risk reduction

6. Safe products and services
7. Environmental restoration
8. Informing the public (Potential Hazards)
9. Management Commitment
10. Audits and Reports

Though not legally binding, these principles (especially the first six principles) assist organizations in forming long-term comprehensive environmental policies. Companies aim to become self committed to environmental awareness and accountability as well as adhering to the ongoing process of continuous improvement, dialogue, and comprehensive, systematic public reporting. Companies that sign up are given access to the diverse array of experts in the CERES's network, comprising of investors to policy analysts, energy experts, scientists, and others International Institute of Sustainable Development.

In 1993, the first Fortune 500 Company, SUNOCO had endorsed the CERES Principles. That started the trend, and now over sixty companies (thirteen of which are Fortune 500 firms) have adopted the CERES Principles or their own equivalent environmental principles (See Appendix A).

In early 2009, five leading U.S. corporations (Levi Strauss & Co., Nike, Starbucks, Sun Microsystems and The Timberland Company) joined with Ceres to the launch of a new business coalition, Business for Innovative Climate and Energy Policy (BICEP), requesting for strong U.S. climate and energy legislation to spur the clean energy economy and reduce global warming pollution. The group's key principles 000000000000 include stimulating renewable energy, promoting energy efficiency and green jobs, requiring 100 percent auction of carbon allowances, and limiting new coal-

fired power plants to those that capture and store carbon emissions. These eight principles are:

- Set greenhouse gas reduction targets to at least 25 percent below 1990 levels by 2020 and 80 percent below 1990 levels by 2050.
- Establish an economy-wide GHG cap-and-trade system that auctions 100 percent of carbon pollution allowances, promotes energy efficiency and accelerates clean energy technologies.
- Establish aggressive energy efficiency policies to achieve at least a doubling of our historic rate of energy efficiency improvement.
- Encourage transportation for a clean energy economy by promoting fuel-efficient vehicles, plug-in electric hybrids, low-carbon fuels, and transit-oriented development.
- Increase investment in energy efficiency, renewable and carbon capture and storage technologies while eliminating subsidies for fossil-fuel industries.
- Stimulate job growth through investment in climate-based solutions, especially "green-collar" jobs in low-income communities and others vulnerable to climate change's economic impact.
- Adopt a national renewable portfolio standard requiring 20 percent of electricity to be generated from renewable energy sources by 2020, and 30 percent by 2030.
- Limit construction of new coal-fired power plants to those that capture and store carbon emissions, create incentives for carbon capture technology on new and existing plants, and phase out existing coal-based power plants that do not capture and store carbon by 2030 http://www.ceres

As of 22 May, 2009, major legislation containing several key elements included in BICEP's core principles had passed the House Energy & Commerce Committee. This legislation included the first national limit on greenhouse gas emissions, targets for renewable energy and efficiency and a cap-and-trade program in the US, so some progress is started to be seen in the developed world. This measure taken has given Ceres more teeth.

3.3 The World Business Charter for Sustainable Development

The World Business Charter for Sustainable Development was first developed by the International Chamber of Commerce (ICC) and was officially launched in Rotterdam in April 1991, at the Second World Industry Conference on Environmental Management. Now it's managed by the World Business Council for Sustainable Development (WBCSD). According to the International Institute for Sustainable Development, the endorsement of the ICC Charter is voluntary. By signing it, companies commit themselves to respect its three general aims and sixteen principles for environmental management. The charter's three main aims are as follows:

1. To provide common guidance on environmental management to all types of business and enterprise around the world, and to aid them in developing their own policies and programmes.
2. To stimulate companies to commit themselves to continued improvement in their environmental performance; and
3. To demonstrate to governments and the electorate that business is taking its environmental responsibilities seriously, thereby helping to reduce the pressure on

governments to over-legislate and strengthening the business voice in debate on public policy (Welford, 1998a).

The Charter is therefore considered a "code of conduct" (Brophy, 1998) that is followed by the industry though it doesn't have any established mechanisms for monitoring or complying with its 16 principles. These principles include: Research, Precautionary Approach, Contractors and Suppliers, Emergency Preparedness, Transfer of Technology, Contributing to the Common Effect, Openness to Concerns, Compliance and Auditing , Corporate priority, Integrated Management, Process Improvement, Employee Education, Prior Assessment, Products and Services, Customer Advice, Facilities and Operations

These principles address most areas of good environmental management but, like the CERES principles they lack any restrictive measures that could enforce compliance or make businesses produce any environmental reports about its environmental performance. Therefore, it is viewed to be quite limited

In response to these criticisms, the International Chamber of Commerce is currently assessing how companies that have endorsed the Charter are applying the principles, and what their experiences were with implementation. This has been achieved by encouraging corporations to sign up to this charter in order to report on the outcomes of applying these principles on the main website of International Institute of Sustainable Development. In Saudi Arabia, only one company has signed up for the charter, the Abdul Latif Jameel Co ltd. which is the sole distributor for Toyota vehicles. http://www.wbcsd.org/web/about/asia.html

Some of the most prominent businesses to sign up to this charter can be found in Table 3.1.

Table 3.1 List of some WBCSD members

Company	Description	Improvements
Nike	**Multinational company employing more than 500,000 people**	**Committed itself to the CERES principles as well as numerous more specific sustainability targets**
Johnson & Johnson	**US manufacturer of healthcare products**	**Adopted a systematic approach to improving the energy efficiency of its buildings**
Tunweni Brewery	**Brewery in Namibia**	**First commercial application of the 'Zero Emissions Research Initiative' whose managers are striving to find applications for all liquid effluents and solid residues**
Suvera	**Food processing plant in India**	**Peddireddy (NGO) helped to improve the company's efficiency and waste reduction**
IKEA	**International retailer of furniture and household goods**	**Take steps to address both the social and the environmental impacts of its purchasing decisions**

Source: http://www.sustainable-finance.org/web/about/members.html

3.4 Global Compact

Global Compact, an initiative of UN Secretary-General Kofi Annan, was established in 1999 and supported by a Global Compact Office under his direct authority which collaborate with businesses world-wide to build the social and environmental framework to support and ensure the continuation of open and free global markets ensuring that people everywhere have a chance to share the benefits of the new global economy. The Global Compact covers four key areas accepted by most of the national governments around the world and are often referred to as "universal principles".

Human Rights: under the UN High Commissioner for Human Rights (UNHCHR) drawn from the Universal Declaration of Human Rights:

- Principle 1: Business should support and respect the protection of internationally proclaimed human rights.
- Principle 2: Ensure that they are not complicit in human rights abuses

Labour: drawn from the International Labour Organization (ILO) Declaration on Fundamental Principles and Rights at Work:

Principle 3: Business should uphold freedom of association and the effective recognition of the right to collective bargaining.

Principle 4: The elimination of all forms of forced and compulsory labour

Principle 5: The effective abolition of child labour

Principle 6: Eliminate discrimination in respect of employment and occupation

Environment: UN Environmental Programme (UNEP) drawn from the Rio Principles on Environment and Development and United Nations Development Programme (UNDP) assisting the agencies in developing country specific responses and activities:

Principle 7: Business should support a precautionary approach to environmental challenges

Principle 8: Undertake initiatives to promote greater environmental responsibility

Principle 9: Encourage the development and diffusion of environmentally friendly technologies

Corruption: drawn from the UN Convention against Corruption added in June 2004.

Principle 10: Business should work against corruption in all its forms including extortion and bribery

Although the Global Compact is not a legally binding code of conduct nor a prescriptive instrument linked with external monitoring or auditing of company efforts by either the UN or any other group or body, Secretary-General Annan in July 26, 2000, concurred the UN has neither the mandate nor the capacity to monitor or audit company performance regarding the Global Compact. Its purpose was mainly to create a forum for learning and sharing experiences in the promotion of the ten principles. This places Global Impact in the same position as the WBCSD Charter and the CERES Principles. They are all voluntary codes of behaviour that are not audited and do not require specific actions and do not require precise reporting. However, Global Compact differs from the Charter and CERES Principles in that it is an impressive operating network that reaches out to the developing world and emphasizes ethical and environmentally safe human behaviours in businesses. The fact that it was initiated by the UN also gives it significantly more legitimacy and clout.

However, the journey for Global Compact hasn't been smooth and it has faced a number of criticisms. This includes that during the first eighteen months, the membership was a growing secretive group that was under the control of the International Chamber of Commerce which was criticized for taking 'ownership' of sustainability without actually doing anything about it and failed to publish even a single case study of sustainable practices. Moreover, the Global Compact logo, which UN officials insist is strictly controlled, has been used without attribution by Daimler Chrysler. Some feel that Global Compact should not be considered a contribution to or framework for the Johannesburg Summit because of the many business agendas of the United Nations.

However, as observed by Bray (2003) the Compact gives companies the opportunity of engaging in both 'greenwash' where companies have a veneer of

greenness but are actually doing very little about it and "bluewash" whereby companies associate themselves to values of the UN, but in fact do very little .

It is clear then that one of the key criticisms of all these charters is that companies can sign up without actually having to prove they are doing something. Although there are few official channels for contesting company claims, there has been a growing number of NGOs that have assigned themselves the duty of exposing the fraudulent or misleading claims of companies. Corpwatch is one such group and their website (http://www.corpwatch.org/) is keen to expose Global Compact violators all over the world. Table 3.2 gives a list of some recent violating companies:

Table 3.2 List of some violating companies

Company	Principle violated	Description of violations
Advanta (2000)	**Principle 7**	**The 3rd largest chemical group in the world --the 2nd largest agrochemical producer, and --the 5th largest seed producer who had sold seeds that were found to contain small amounts of genetically modified material forbidden by the EU. The seeds, grown in Canada, were contaminated by windblown pollen from other GM oilseed rape nearby.**
Unilever (2001)	**Principle 6, Principle 7, Principle 8, Principle 9**	**Many violations are occurred in the thermometer factory in Kodaikanal, India** **The company has also been accused of employed a double standard in relation to worker safety.**
Nike (2005)	**Principle 3**	**In Vietnam, China, Indonesia, Cambodia and Mexico and was actively involved in lobbying Washington against using trade policy to pressure China to respect workers' rights**
Mc Donalds (2007)	**Principle 3 and 4**	**In China and Vietnam, various international labor laws were violated and provided poor working conditions.**
Coca Cola (2006)	**Principle 1, Principle 2, Principle 3, Principle 4, Principle 7, Principle 8 and Principle 10**	**In Mexico, El Salvador, India, Guatemala, Colombia, and Turkey groups exposed the company's abuse of human rights and natural resources and cited abuses include suppressing unions by hiring paramilitary groups, toxic dumping on agricultural lands, and exhausting water resources for its bottling operations, lacing the beverages it sells with large doses of caffeine, without citing it on the labels, also high concentrations of pesticides and insecticides, including lindane, DDT, malathion and chlorpyrifos, in the colas, making them unfit for consumption (30 times more than the standard allowed by the EU), and implicated in a bribery scandal involving Kerala Pollution Control Board member K.V. Indulal.**

Source: compiled from corpwatch.

3.5 The millennium development goals

The idea of having sets of principles to guide good behaviour is a very important aspect of environmental management, and most of the declarations, statements etc, are concluded with a set of such principles. The ones discussed above are those that relate most specifically to the business world. In 2000, a new initiative was established by the UN which sought to bring together all sectors in the global society in order to improve the livelihoods of the planet's inhabitants. These were the Millennium Development Goals (MDGs). These, although not directly targeted at businesses, are of relevance and are beginning to be addressed by business leaders around the world. In 2008, UN renewed the commitment to achieving the MDGs by 2015 by setting up action plans. The goals are as follows: end hunger, universal education, gender equity, child health, Maternal health, Combat HIV/AIDS, Environmental sustainability, and Global partnership

The United Nations Economic and Social Commission for Western Asia (ESCWA) had coordinated with the League of Arab States (LAS) to establish the Arab Millineum Development Goals. In 2007, a report was submitted in Beirut addressing the Arab MDGs called "A Youth Lens". This report focused on the goals for the region and the barriers the region is facing especially dealing with the financial resources of the Gulf Cooperation Council (GCC) versus the Arab least developed countries (LDC) in trying to meet the UN MDGs. The findings were:

Goal 1: Based on proportion of the populations, the Arab world has not been successful in combating poverty. Rural poverty was found to exceed urban poverty with a high rate of youth unemployment (25%).

Goal 2: Socio Economic differences are apparent in the fact that 7.5 million children are without education and two- thirds live in the Arab LDCs. The 2005 statistics showed that 1 out of 3 youths are illiterate in the LDC area and that 73% of girls of the same area are not attending school.

Goal 3: This goal is one of the focuses of the region. It is facing and dealing with the discrimination of women hindered by the legal, educational, social, behavioural, and economic factors that help to exclude women.

Goal 4: Tackling of child mortality rate especially in the war torn regions like Palestine, Iraq, and Sudan.

Goal 5: Reducing maternity moratality rates by providing universal maternal care, awareness of issues of early pregnancy in youths, birth spacing etc.

Goal 6: The HIV/ AIDS are relatively low for the population. High percentages are in the countries of Sudan and Djibouti. The Arab region is more affected by malaria and tuberculosis.

Goal 7: The environmental issues are tied to poor management, weak institutional capacity, and insufficient public funds expenditures on environmental issues. Water resources are limited with 7 or the 10 countries suffering severe shortages are in this region.

Goal 8: Trade doesn't have that much of an overall impact to global integration for it is more integrated trade with other Arab nations. As mentioned before, the distribution of wealth in the region has affected this outcome which has brought UN criticism to the oil rich nations (Escwa, 2007).

UN officials criticized the gulf oil rich nations and recommended that in exchange for a louder voice, the Gulf nations should give more development aid and provide more transparency especially with programmes such as IMF and World Bank during the financial recession (Abocar, 2008).

This chapter has outlined the most prominent charters and guidelines to encourage corporate environmental management. These really are only the very beginning of a company's engagement and are the first steps a company might make towards becoming a sustainable business. The next chapter takes a step further and looks at the specific tools a company can engage that might be more effective in encouraging sustainable business strategies.

CHAPTER 4 Standards and Practical Tools for Corporate Environmental Management

In recent years various conceptual models of sustainable development for business have been developed, the most dominant being the concept of the Triple Bottom Line (Elkington, 1999). Practical approaches are needed to translate these conceptual models of sustainable development into practice. This chapter seeks to explain some of these approaches and will start by discussing the internationally known environmental management systems of ISO 14001 and EMAS. The chapter will then go on to review some of the well-developed and documented tools for corporate environmental management which are often used either with these environmental management systems or on their own. These include environmental auditing, Life Cycle Analysis, and green supply chain management.

4.1 Environmental Management Systems (EMS)

The International Organization for Standardization (ISO) defines EMS as;

> *"that part of the overall management system includes organizational structure, planning, activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing, and maintaining the organization's environmental policy" http://www.deq.state.va.us/ems/pdf/mod3ppt.pdf*

According to a report by Warhurst (International Institute for Environment and Development) environmental management system in a company is described as a system that comprises

> *"A formalized framework of interlinked procedures – checks, reports, plans, and actions – which is implemented at the plant level to facilitate*

the achievement of the environmental policy objectives." (Warhurst, 2002, p.42).

From this definition, it is clear that having an EMS is now considered a pre-requisite for having a successful business that is sustainable in the long run. As with all management functions, effective management tools, standards and systems are required. The ISO 14001 standard is the most widely used standard for environmental risk management and is closely aligned to the European Eco Management & Audit Scheme (EMAS). As a common auditing standard, the ISO 19011 standard explains how to combine this with quality management. UK has developed a phased standard (BS8555) that can help smaller companies move to ISO 14001 in six manageable steps. Any management that applies EMSs' in business is considered to be utilizing Corporate Environmental Management. All individuals and institutions (including Saudi) setting up their businesses need to be aware of the importance of setting up corporate environmental management systems that are comprehensive, understandable and open for review to have new ways of looking at their businesses, their foundations and their business operations to ultimately achieve sustainable development.

However, some, but not all EMS requires external validation before achieving certification. There are obvious benefits to an organisation by being able to demonstration the approval of an external body such ISO or EMAS. However in the some countries like USA, many organisations are implementing their own internal EMS and have accumulated the benefits suggesting that it might not be necessary to have external certification. Nevertheless, general benefits of having EMS include: The attainment of competitive advantage, The approval of the organization's customer base (image benefit), Compliance with regulations, First mover advantage, The creation of barriers to entry by the establishment of set-up costs that are difficult to emulate and Cost

savings (Kollman and Prakash, 2001; Mcintosh and Smith, 2001; Aalders, 2002; Kolln and Prakash, 2002; Holland and Boon Foo, 2003; Jiang and Bansal, 2003).

In the USA where in-house EMS are often more acceptable, there are many questions raised about accreditation. Companies such as Ford and General Motors now insist on external approval before doing business with a supplier and this may well erode the acceptability of in-house systems in the USA. For this reason, ISO14001 is beginning to dominate and the details of this system will now be discussed.

Thus, Environmental Management System (EMS) is part of a management system of an organization (enterprise, authority, etc.), in which specific competencies, behaviours, procedures and demands for the implementation of an operational environmental policy of the organization are defined. An EMS therefore generally follows the adoption of an environmental policy. The environmental policy formally outlines a company's commitments to environmental management and commonly includes commitments to reduce waste, pollution, energy and resource use, sets objectives and targets and reviews the company's environmental performance. Once the policy and EMS are in place, a company will consider the publication of an environmental report to document the company's progress against its policy and performance targets set within the EMS. Companies may adopt a certified EMS (such as ISO 14001 or the EU Eco-management and audit scheme (EMAS) or they may develop their own 'in-house' systems.

Environmental management systems are quickly becoming popular. There are a variety of important reasons for this. An EMS can be an effective tool for communicating the value of an environmental program to a wide variety of audiences. For the chemical health and safety professional in Saudi Arabia, this can be a critical advantage in

obtaining the upper management support necessary to do a job effectively. However, there is a chicken and egg problem in that an EMS cannot function effectively without a commitment from the upper management to its goals. Implementing an EMS is not a simple process because a complete EMS is likely to affect every aspect of an organization's operations. Support for the EMS does not simply require more resources. For example, the information systems required to support an EMS involve the organization's employees, operations, purchases, and facilities. If any of these systems are ineffective, they will limit the effectiveness of the EMS.

In the developing world, however, the situation is not expected to be the same due to the fact that European and American countries have begun their discourse on sustainable development and corporate environmental management long time before. Developing countries like Saudi Arabia are probably still trying to catch up with the development in businesses and understand the concept of sustainable development, let alone implementing its tools and systems. Environmental management systems in Saudi Arabia will not cure environmental problems by themselves. They will place new demands on the planning, management, and communication skills within the Saudi companies. They will require synchronized development of other information systems within an organization. However, these developments will be in line with the increasingly complex needs of large Saudi organizations in general. For example, chemical health and safety professionals who are involved in occupational health and safety issues will also find that these skills and information systems can equally valuable in other areas within the organization. For these reasons, I expect EMSs' to be a prominent feature of the 21st century. Since it is not yet known how far companies in developing countries like Saudi Arabia are aware of the concepts of sustainable development, environmental management and corporate environmental management, the

present study aims at exploring these concepts and attitudes towards them by looking at the levels of environmental awareness among business managers and employees and their attitudes towards environmental issues.

To conclude, it is apparent from the previous discussion that EMS provides companies with the framework for better management of its resources in ways to avoid harming the external environment, but how they actually address these issues is up to the companies themselves as there are a whole range of tools available to help organizations manage and limit their environmental impacts. The following will be discussed further in this chapter: the major charters, guidelines and tools available to companies to achieve this goal.

4.2 ISO 14000 Series

ISO is an external body which provides one of the most widely acceptable EMS accreditation systems. Thus, the ISO 14000 series are now considered as the most well-known international standards for environmental management which provide.

> *"A framework for organizations to begin identifying and quantifying their effects on the environment, and provide for a commitment to continuous improvement of environmental performance(Netherwood, 1998, p49).*

A standard is defined by the ISO as a *"document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context"(*www.iso.org/iso/iso_catalogue.htm).

Table 4.1 The ISO14000 Environmental Family

Standard	Title / Description
14000	Guide to Environmental Management Principles, Systems and Supporting Techniques
14001	Environmental Management Systems – Specification with Guidance for Use
14010	Guidelines for Environmental Auditing - General Principles of Environmental Auditing
14011	Guidelines for Environmental Auditing - Audit Procedures-Part 1: Auditing of Environmental Management Systems
14012	Guidelines for Environmental Auditing – Qualification Criteria for Environmental Auditors
14013/15	Guidelines for Environmental Auditing - Audit Programmes, Reviews & Assessments
14020/23	Environmental Labeling
14024	Environmental Labeling - Practitioner Programs - Guiding Principles, Practices and Certification Procedures of Multiple Criteria Programs
14031/32	Guidelines on Environmental Performance Evaluation
14040/43	Life Cycle Assessment General Principles and Practices
14050	Glossary
14060	Guide for the Inclusion of Environmental Aspects in Product Standards

Source / http://www.ibnorca.org/04_sg/doc/iso14000.pdf

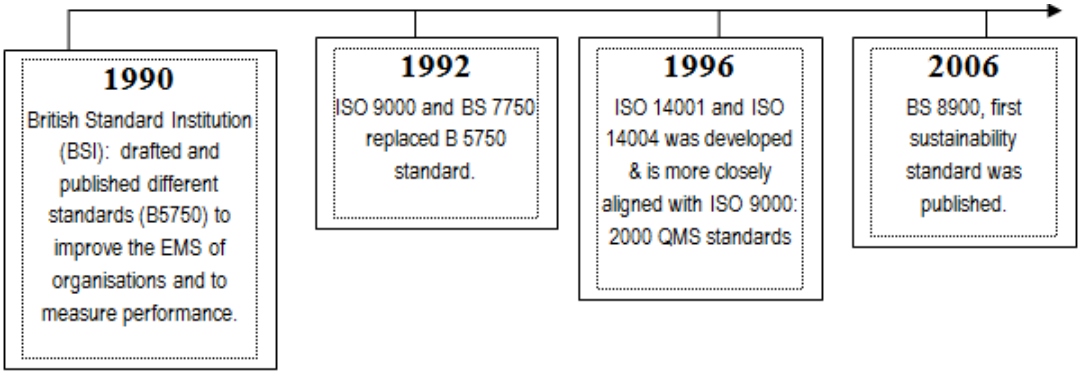

Figure 4.1 Timeline of standards

Figure 4.1 shows the historical development of various standards that relate to ISO14001. It can be seen that ISO14001 was launched after BS7750, which was the world's first standard for environmental management systems. However, as said before,

ISO14001 now dominates and it is for that reason that this thesis is primarily interested in it.

There are five key stages to ISO14001 and these are illustrated in Figure 4.2 below.

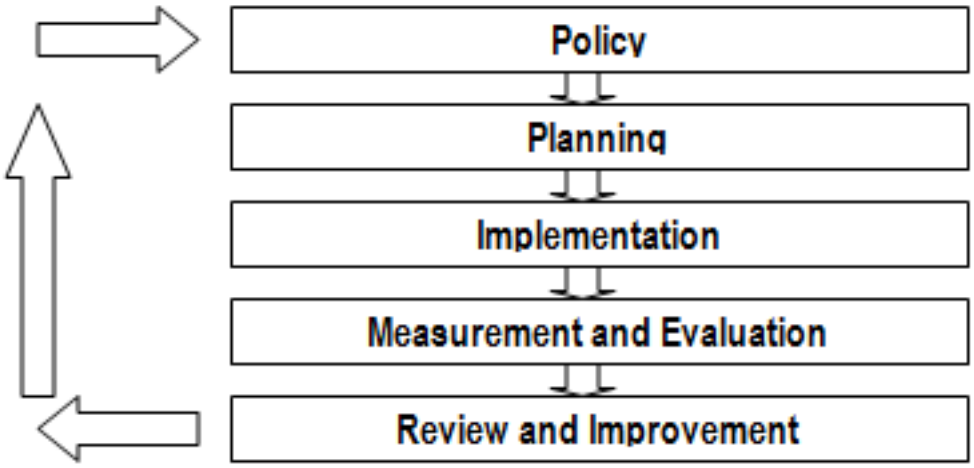

Figure 4.2 ISO 14001

The basic differences between ISO 9000 and ISO 14000 relate to the policies and objectives of the two systems .(Affisco *et al.*, 1997) ISO 9000 has become a critical "business standard" of quality production and a "qualifying criterion" in the global market, and therefore many companies seek certification regardless of whether they expect to achieve or believe in the need for improvements in quality (Struebing, 1996). ISO 14000 standards are, on the other hand, related to environmental protection and is significantly more committed to stakeholder satisfaction and improving relationships with stakeholders (Poksinska *et al.*, 2003). However, because of their similarities, there is virtue in adopting both. According to Zeng et al. (2005) the similarity and compatibility of the ISO 9000 QMS and ISO 14000 EMS are good reasons for pursuing integration. Empirical studies of such integration have suggested that organizations can

benefit from avoiding the duplication of procedures, reducing conflict among procedures, and reducing their requirements for resources.

As with other components of the ISO 14000 series, the guidance on environmental performance evaluation is flexible and non-prescriptive, but does not provide information on establishing indicators, collecting data, and evaluating performance (Master, 1996; Kuhre, 1998).

ISO14001 is organized around five steps to help business organizations establish environmentally sound management systems. These five steps are;

1. Environmental policy
2. Planning
3. Implementation and Operation
4. Checking and Corrective Action
5. Management Review

The first requirement necessitates the existence of a written environmental policy and a corporate commitment to environmental improvement. Essentially, what this means is that their company must include pollution prevention as one of its policies, and must have a commitment towards continuously improving environmental performance. The plan of action indicates the “what”, the “how” and the “when” of environmental management. Generally, this stage describes what the company is going to do, how it is going to go about doing it, and when it is to be done. Central to the effective operation of the EMS is employee involvement. Without it, the system may not bring significant improvements to the environment. As a consequence, the allocation of responsibility is a crucial element of ISO 14001. The checking and corrective action elements of the system

help ensure continuous improvement by addressing root causes or non-conformances. It is at this stage that the auditing aspects are pertinent. The ongoing management review of the EMS and its elements help ensure the continuing suitability, adequacy and effectiveness of the program. In addition, management review gives the system credibility and reinforces its diligent operations. Thus, while an audit examines the structure of the EMS and its component parts (ensuring that the requirements of ISO 14001 are in place), management review focuses on the EMS itself and its interrelationship with the functioning of the company as a whole. These requirements appear to be similar to Deming's plan-do-check-act cycle reproduced in Table 4.2 below.

Table 4.2 EMS and Deming's PDCA comparative analysis

EMS model →	**Deming's PDCA**
Policy	→ **Plan: Design or revise a business process components to improve results**
Planning and doing	→ **Do: Implement a plan and measure its performance**
Check Corrective	→**Check: assess the measurements and report the results to the decision makers**
Management Review	→ **Act: Decide on changes needed to improve the process**

Source(Barnes, 2004)

The ISO 14001 EMS standard was purposely written to be flexible, allowing facilities across industries and of various sizes and under varying regulatory requirements, to follow the standard. This flexibility allows facilities to direct efforts at significant environmental problems that may be unique to their operations and business strategy. For example, emission levels for pollutants or performance goals are not established. Instead the goals and targets of the EMS are self-selected. These are selected by the company themselves who are required to identify all the activities of the company that have an environmental impact. This list is then subjected to a risk analysis which

allows the company to prioritise the activities that cause the most damage. Thus, the focus and effect of the EMS may be very different, even for facilities in the same firm.

The operation of an EMS is typically self-contained within a facility. All documentation, records, audit results and other materials reside within the boundary of the facility and do not have to be widely shared. Hence, the management that initially implemented the system must carry out the management review itself. This is a weakness in the system, as there is no third party that reviews the success of the implementation and thus may result in a rather non-objective review process (Matthews, 2003). There is no specification on how a firm should establish systems at various facilities or how these systems can work together. For some firms, individual facilities have chosen to implement an EMS even though the corporate parent may not require or encourage it. Other firms may initiate corporate directives to implement an EMS at facilities, but not provide central support or regular evaluation of how the systems are operating.

For a facility following ISO 14001, the standard does not have specific requirements for data collection and dissemination on environmental performance efforts. Most of the documentation related to an ISO 14001 consists of procedures for completing activities that have environmental impact or the potential to create environmental impact. Procedures are required for identification and maintenance of environmental records, which should include training records and results of audit and review activities.

Essentially ISO 14001 is a specification standard in that it has a set of requirements for establishing and maintaining an environmental management system which are then checked through "certification" by a certifying accreditation body.

However, the ISO standard has a number of operational drawbacks that include the following;

A lack of some key elements that would allow corporate level comparison of operations across facilities in an organization. The ISO framework also does not require common environmental performance goals. It also doesn't assess or audit the business for conformity. ISO and International Electro technical Commission (IEC) established guides assisting in a conformity assessment based on what are international accepted practices. ISO can't certify or issue certification which makes benchmarking tricky. This means in-built flexibility can mean that objectives are not always consistent with the environmental policy and can sometimes give a false impression which is another drawback based on the inaccurate public assumptions of ISO. In the paper, "Publicizing your ISO 9000 or ISO 14001 certification" published by ISO mentions some of the assumptions. For example, ISO is a registered trademark. Often ISO 9000 is used as a quality product label, and this is misleading. As with ISO 14001, people make the assumption that an enterprise applies green or environmentally friendly product and this could be further from the truth. Some companies use the assumptions, especially ISO 14001, to advertise their product while in actuality it's not true http://www.iso.org/iso/home.html

Companies clearly adopted ISO 9000 in order to get into the international market regardless of whether they actually believed in the value of adopting the standard or not. The adoption of ISO 14001 has not yet been enforced on such companies to such an extent and hence they may not still feel the pressure of incorporating it in their business operations. This eludes to the fact that Saudi Arabia has only 22 companies that are ISO 14001 certified (see Table 4.4)

As a consequence the adoption of ISO 14001 has been much lower than that of ISO 9000, and generally, as mentioned before, companies in the Middle East, including Saudi Arabia, are less active in applying such standards due to its costs and voluntary compliance. These problems (and other broader issues which will be discussed shortly) have prevented many companies from signing up to the scheme but the data provided below in Table 4.3 demonstrates that more and more companies are getting certification.

Table 4.3 Number of ISO certifications

ISO	# of worldwide certification	Year	Comments
9000	340,000	1999	Annual growth rate at least 50,000 to 60,000 per year
14001	14,106	1999	
14001	22,000	2000	
14001	74,000	2005	Annual growth rate approx. 15,000 to 17,000 per year
14001	129031	2006	

Source: www.ecology.or.jp/

Table 4.4 Country ISO Comparison

Country	# ISO 14001 from Dec2006/jan 2007
Saudi Arabia	20
United Arab Emirates	172
Qatar	9

Source is http:// www.ecology.or.jp/

Table 4.5 Organization in Developed countries with ISO 14001 certification

Organisation	Description
IBM	**International company based in the USA: certified since 1995 for its energy conservation, reuse / recycle, conservation efforts, and hazard waste reduction. Saved more than $15million.**
The Rockwell Automation Plant	**A company working in automation in Ohio, USA which was one of the first registrants contributed to a continuing reduction of energy consumption and waste production. Recycling reduces material sent to landfills**
Plasticolor	**Company from Ashtabula, Ohio, USA registered in October 1996**
Xerox	**Company that implemented recycling programs, including the conversion of solid waste to useable energy through incineration. Saved more than $12 million**
3M Company	**US based Company that is a producer of diversified industrial products that adopted a pollution prevention program which was a major waste reduction effort in their Brazil branch. Saved the company $790 million (1975-1996)**
Copley Square Hotel	**Hotel is an historic one with an upscale clientele which created an aggressive environmental program. The major benefit areas were: recycling, energy use reduction, and water use reduction. Saves $6341 annually.**
The Body Shop	**Company that is a sustainable business with a pro-active environmental stance since 1976 that publicized Environmental Values report in 1995 was recognized by an award from UNEP (the United Nations Environmental Programme).**
BP Amoco	**An oil company committed to making a positive contribution to society that took environmental precautions and supported community development for areas in which they operate. They have implemented environmental programs to reduce habitat loss from upstream development activities.**
Collins and Aikman Floor coverings	**Only carpet manufacturer in the world that is reclaiming old carpet and recycling it into new, high-performance carpet. This flooring product is the first that is recyclable back into itself in a closed-loop fashion.**
Volvo	**Company that is becoming a world leader in the transportation equipment industry, based on its performance in the areas of safety, environmental care, and quality.**
ST Microelectronics	**French-based electronics firm reduced the risk of having to pay higher disposal costs, which were rising with regulatory tightening on landfill.**
The Beacon Press	**UK-based printing company that developed an environmentally friendly, waterless printing system which eliminates the need for ozone-damaging Isopropanol alcohol (an unacceptable pollutants it produces) from the printing process.**
Baxter International Inc	**Corporation that is a leader in environmental management. Baxter's Sustainable Development Goals for the year 2005 were to reduce air toxic emissions, reduce hazardous and regulated waste generation by 4 millions, reduce non-hazardous waste generation by 3 million, improve energy efficiency by reducing costs by 25 million, and reduce packaging materials by 35 million.**

http://www.iso.org/iso/about/iso_members.htm

The Table 4.5 above, however, suggests that there is a bias towards large international companies. This is one of the criticisms of ISO14001, and indeed, other systems such as the Eco-Management and Audit Scheme (EMAS). This criticism will therefore be discussed once EMAS has been presented.

4.3 ISO14001 and the Middle East

ISO members are asked to participate in technical committees (TC) set up to assist in getting developing countries more involved in international standardization work by making them a participating member (p member). By giving developing countries bigger roles, it would be possible to name experts from the developing countries as vice-chairs of technical committees and subcommittees.

Table 4.6 Saudi Arabia's Participating Roles in the Technical Committees

# of Technical Committee	Name of the Committee
TC 22	Road vehicles
TC 22/SC 17	Visibility
TC 28/SC 2	Measurement of petroleum and related products
TC 28/SC 5	Measurement of refrigerated hydrocarbon and non petroleum based liquefied gaseous fuels
TC 71	Concrete, reinforced concrete and pre stressed concrete
TC 71/SC 4	Performance requirements for structural concrete
TC 71/SC 7	Maintenance and repair of concrete structures
TC 71/SC 8	Environmental management for concrete and concrete structures
TC 79	Light metals and their alloys
TC 94	Personal safety, Protective clothing and equipment
TC 138/SC 6	Reinforced plastics pipes and fittings for all applications
TC 176	Quality management and quality assurance
TC 180	Solar energy
TC 180/SC 4	Systems Thermal performance, reliability and durability
TC 180/SC 5	Collectors and other components
TC 207	Environmental management
TC 211	Geographic information/Geomatics
TC 228	Tourism and related services

Source: http://www.iso.org/iso/search.htm?qt=technical+committees&searchSubmit

Saudi Arabia is currently a member of ISO and is on 134 technical committees. Of the technical committees, Saudi is participating in 18 of them (www.iso.org). Table 4.6 shows a list of its participating roles.

4.4 Eco- management and audit scheme (EMAS)

Eco-Management and Audit Scheme (EMAS) is the audit scheme that was developed by the European Commission as a mandatory scheme, but was later changed to become voluntary. On June 29, 1993 the Council of Ministers adopted EMAS. Under the EMAS there are a number of steps that need to be followed to set up an "Environmental Management System (EMS)". These include "the formulation of an environmental policy followed by an environmental review, the introduction of an environmental program and management system and then an environmental audit" (Starkey, 1998, p. 80). The most important requirement of the EMAS is the organisation's environmental statements after the initial environmental review and following the completion of each subsequent audit or audit cycle. It is therefore very similar to ISO 14001. If an organisation is already ISO 14001 certified, the recent revisions of EMAS as published on the EMAS web site (EMAS Facts sheet, 2008) have made it easier to register for EMAS. Minor modifications will need to be made to the core ISO 14001 elements as well as some additional steps specific to EMAS. The number of companies that have adopted EMAS is now more than 5,389 registered organizations representing a wide range of economic sectors (http://ec.europa.eu/environment/emas/news/events_08_en.htm

All in all, EMAS is regarded as a more exacting standard because of the features shown in the table below. The key differences pertaining to stringency are highlighted below in Table 4.7.

Table 4.7 Comparisons between ISO series & EMAS

ISO series	EMAS
1. Registrations is open to all international organisations. Voluntary for organisations **2. Doesn't require employee involvement** **3. Approach auditing from a quality management systems approach emphasising documentation.** **4. Require only the public details of an organisation's environmental policies** **5. Requires improvement periodically without specifying the frequency** **6. Doesn't require external validation**	**1. Registration is limited to organizations resident within the EU Applies to all 27 Member States of the European Union, to the European Economic Area (Norway, Iceland and Liechtenstein), and to the Candidate Countries for EU membership (Croatia, the Former Yugoslav Republic of Macedonia and Turkey).** **2. Requires the involvement of the employees in the process of development** **3. Emphasises on changes in the environmental impact that an organisation makes** **4. Requiurd Information about an organization's policy and its EMS programme** **5. Requires annual evidence of improvement** **6. Requires more third party involvement and scrutiny**

Source: (Mcintosh and Smith, 2001); (Watson and Emery, 2004)

Table 4.8 below gives an indication of the types of companies that have succeeded in gaining EMAS certification.

Table 4.8 EMAS registered organization and projects

Organisation	Country	Description
El Tinter	Spain, created in 1994	First Graphic industry that specializes in colour printed products.
Stora Enso	European company	integrated paper, packaging and forest products company
Leonardo Company	Established in 1993, Italy	Produces ceramic tiles and technical and enamelled porcelain stoneware
ZS Brno	Czech Republic	International Construction Company:
Leeds City Council	UK	Make Leeds an "environmental city" by implementing their green strategy: waste and paper recycling, refurbish computers and IT equipment, and training and employment of the disabled.
Leicester City	UK in 1999	Britain's first Environment City and the City Council gained EMAS registration: environmental policy includes the wise use of energy, water, other natural resources and manufactured materials, minimising and safely disposing of waste, environmental training for all councillors and employees of the City Council and awareness-raising of their contractors and suppliers
Viterbo area: "Tuscia Viterbese" trademark		A number of multi-level initiatives are carried out in the framework of a coherent strategy promoted by the local Chamber of Commerce to guarantee the origin and the environmental quality of typical products.
City of Malmö,	Sweden	A four-year Environmental Programme as part of their participation in EMAS. They are a model for 'green' marketing by the International Council for Local Environmental Initiatives.
The district administration of Unna	Germany: one of the economically most potent regions in Europe in 2001	Achieved a substantial reduction of costs but it proved to the public its historic concern for the environment.

Source: http://ec.europa.eu/environment/emas/activities/index_en.htm

The numbers of companies that have adopted EMAS are now 5389 registered organizations in a wide range of economic sectors http://www.emas-online.org/Pages/Home.aspx).

Despite the value of adopting EMAS by such organisations all over Europe, there is evidence that there are some difficulties in implementing EMAS. Some of these difficulties are related to the costs of adopting this system as the case with ISO 14001. In addition, an Italian study found that financial barriers were not the main obstacle to SMEs registering for EMAS. The main problem appeared to be the complexity of the system. Nevertheless, the research notes that some of the difficulties encountered with

EMAS could be surmounted if SMEs co-operated with each other (Biondi *et al.*, 2000). The perspective that EMAS developed in the SMEs, with its emphasis on reducing waste, resulted in further co-operation. This yielded external economies of scale. For example, neighbouring SMEs in the same industrial sector, ceramic tiles, were able to share equipment used to recycle broken tiles.

Criticisms of ISO14001/EMAS

Environmental management systems such as EMAS and ISO 14000 have come under a large amount of scrutiny. Some of the main criticisms are coming from studies that have a surmountable evidence to back up their claims of the EMS insufficiencies. In the following paragraphs, a review of some of these criticisms is discussed focussing on the areas of their discontention and on their suggestions.

One such criticism comes from a 2006 study that was a joint effort by the Europeoan Consumer Voice in Standardisation (ANEC), the European Consumer Organisation (BEUC), European Environmental Cititzen's Organisation for Standardisation (ECOS), and European Environmental Bureau (EEB). This study is based on the findings of the 2005 EVER study in which the effects of ISO 14000/ EMAS uptakes were investigated (Anec-Env, 2006). This study found that the implementation of EMAS or ISO 14000 does not lead to improved environmental performance. This claim was based by the ANEC and EEB on the following criticisms:

-Decisions making for environmental performance issues that were previously influenced from the public interest advocates are now more influenced by the companies and their interest.

-The pay off of environment investment governs the business interest so therefore, protections measures are not enforced because of their nonprofitability.

-There are no minimal limits set for environmental performance and legal compliance is not necessarily enforced.

-Tax breaks and reduction of government control that are connected to the compliance do not result in a better environmental performance in a company.

-Lack of evidence that implementation of EMS standards increase environmental performance

-Lack of defined key indicators and scales of comparison and some reporting requirements in such as ISO 14000

The following suggestions by the European study were made:

- EMAS should be an eco label for organisations. The EMAS and Eco label systems need to be clearly separate. EMAS logos should not be used on products.
- Minimum performance levels should be established with incentitives being linked to the improvement of environmental performance or the best practices.
- The requirements should be both general as well as sector specific.
- Re-enforced obligations to comply to legal provisions.
- Shorter time scale for organisations that are subject to international environmental agreements to comply in comparison to the legal

implementations. Multinational organisation should require the same high environmental criteria in all countries they operate in.

- Methods to evaluate and rank the overall performance should be developed and published publically and the detailed reporting easily legible and comprehendable.
- Key indicators both general and sector specific should be defined allowing the comparison between different organisations and be based on the legal provisions, the best practices, and other benchmarks using an appropriate scale as well as a level of excellence should be defined.
- The structure for developing indicators should be built in analogy to the European eco label scheme with sufficient resources needed to be available to assist in the transformation. Other measures including promotion should be adopted after the reformation.

Another study which mentions some cricisms is (Castka and Balzarova, 2007) study. This study evaluated the mechanisms and maintenance of ISO 14001 and the barriers, drivers, and opportunities of the effects on SMEs. The findings of this study stated that the motivation behind implementation of the ISO 14001 was for external factors rather than internal factors. Simply stated, the corporate image, marketing advantage, customer/ network pressure and demands, relations to the communities and that of authorities were more of the drivers than the internal factors of simply improving enviromenmental performance and emergency responses. This study addressed some of the shortcomings of the ISO EMS system and generated a M- ISO conceptual model to overcome some of the shortcomings by improving the efficiency in the communication channels, skills, knowledge and attitudes between staff and management (Castka and Balzarova, 2007).

Rondinelli and Vastag criticised ISO 14001 because it is based on public assumptions. When a company is ISO 14001 certified, people assume that it has a EMS to deal effectively with environmental impacts, but in reality, the focus on the actual environmental performance is rather weak. This is due to the fact that the objectives are based on the development goals and objectives of the consensus of the best interest of the company (Rondinelli and Vastag, 2000).

Another critic of ISO is the 1999 Hillary study which highlighted the fact that EMS systems like ISO are marketed and sold to companies to entice them to partake in the system. These companies believing in all the benefits that were told to them to entice them to participate later find that these benefits fail to materialise into something obtainable. Instead, these organisations are many time ill advised and develop ineffective systems that require more resources, skills, training and etc using up the valuable cost, time and or skills of a company/ organisation without any apparent benefit or gains (Hillary and Thorsen, 1999).

The 2008 Balzarova and Castka study found evidence that the understanding and accepting and the communicating and learning were linked to the acceptance, maintenance and continuous improvement of ISO 14001 EMS. However, the availability of the resources of specialised staff, time, knowledge of the legislation were found to be lacking despite the considerable amount of effort put forth to acquire new skills and sourcing necessary resources (Balzarova and Castka, 2008).

Barriers for Small and Medium Sized Enterprises

A global study by ISO found that small and medium enterprises experienced difficulties in adopting ISO 14001. They lacked government assistance in adopting the standard, perceived higher costs in their operations, and were intimidated by the amount

of paperwork and time involved in adopting it (Lundberg *et al.*, 2007). They were less likely to perceive any improvement in productivity in return. Some research conducted with Mexican companies illustrates these issues. Mexican citizens have become increasingly environmentally aware to an extent where they don't tolerate further environmental degradation. However, SMEs in Mexico (like in Saudi Arabia) are major sources of pollution and could benefit from the ISO standards. Indeed, Mexican SMEs are now facing pressure to require certification by some large international companies. However, the cost of acquiring a certified environmental management system such as ISO 14001 is not in their reach. In order for Mexican SMEs to take advantage of ISO 14001, there is demand for low cost certification. Even if they obtain certification, they will also need to see an economic rate of return to make up for the added expenses incurred. The advantages to the environment in this case are tangible. The good news is that in the case of the Mexican SMEs, there were real environmental improvements when an EMS was adopted (Wells and Galbraith, 1999).

Green washing

Vogel (2005) was concerned about the issue of "greenwashing", and feared that the potential benefits to corporate image might provoke a desire to become ISO 14001 certified merely for the sake of appearance, and that this might threaten to erode the value of the standard. This was a point raised early on in the debate by Welford (Welford and Gouldson, 1993).

Poor Rates of Improvement

ISO14001 has been criticised because of the 'in-house' nature of the EMS. Since the organization can set its own environmental objectives and targets for improvement, it is argued that it can improve its environmental performance by as little or as much as it

wants and will still get certification regardless of minor or major improvements Barry,(2006, p 2). Furthermore, it is also argued that sustainable business practices require efforts more than simply building on continuous environmental improvement, as the eco-modernists have encouraged (Welford and Starkey, 1996). According to Watson and Emery (2004), there are many examples that indicate standards themselves will not lead to environmental improvement, mainly because they are not designed to do so. They argue that standards like ISO 14001 and EMAS have a useful function in getting the managers to focus on the environmental impacts their organizations are making, and in the process of gaining certification actually produce some tangible reduction in pollution., but that they are little more than a marketing tool for larger organizations that are already taking environmental responsibilities seriously. Also, according to them, in many respects ISO 14001 and EMAS illustrate one of the worst trends in environmental management by creating the illusion to executive management that all is well because the process is in place. This may cause management's attention to shift from improving performance goals to completing a procedure and getting the box checked.

Problems for Benchmarking

The process of benchmarking is best described by Kozak (2002, p 499) as the *"continuous measurement and improvement of an organisation's performance against the best in the industry to obtain information about new working methods or practices''.*

However, a facility does not have to use the environmental performance guidelines for evaluation, and even if a facility does use the guidelines, the implementation may be quite different from other facilities in the firm. Overall, if the information to compare facility performance doesn't follow standard EMS requirements, benchmarking can't be completed.

Threat to Economies of Developing Countries

Some commentators, (Mohamed, 2001), argue that ISO 14001 may pose a threat to the economies of developing nations and gulf economies, not least because the standard is now part of the World Trade Organization's trading agreements. There is a fear that if ISO 14001 becomes a standard in the same form as ISO 9000, it becomes a barrier to free trade since an international standard cannot be deemed a non-tariff barrier. Some argue that there is not much evidence to support this view because the pressures to implement ISO 14001 are unlike those for ISO 9000, and as a result such concerns are unjustified (Krut and Gleckman, 1998). Some point out that some large companies (General Motors) require certification before doing business and fear that government agencies will follow suit (Gutowski *et al.*, 2005). This will force companies operating in Saudi Arabia, for example, to have to obtain certification before they can do business with developed nations. Gulf countries like Saudi Arabia, will then be faced with heavy expenses in obtaining certification. Although, this is raised as a criticism, some would argue that this is exactly what is required if we are to achieve sustainable development.

Despite these problems, many commentators believe that certification in accordance with ISO 14001 does bring substantial operational, managerial, and competitive benefits to those organizations that adopt the standard as well as environmental benefits for the wider community (Poksinska *et al.*, 2003). Other researchers who discussed the advantages of the ISO standards like Gonza´lez-Benito and Gonzez-Benito (2005) indicated the advantages in the ethical, competitive and relational arenas.

ISO14001 and Saudi Arabia

In order to adopt ISO 14001 Saudi companies will have to demonstrate specific practices. One core element of both systems is environmental auditing that is considered to be one of the frameworks and tools of these systems which works as a practical means of achieving sound environmental practice. However, the formal requirements of environmental management and auditing systems may be simultaneously too complicated and too vague which may cause serious problems, especially for SMEs, (Biondi *et al.*, 2000). Both EMAS and ISO 14001 were intended to provide guidelines for the correct implementation of an EMS to a wide range of enterprises, including very complex and large sites and organisations. This could make them too detailed and complex for Saudi SMEs. Neither EMAS nor ISO 14001 could be suited to fulfil the needs of all types of organisations, and thus, despite the detailed approach they are open for a flexible interpretation. This can backfire in that Saudi companies may encounter a lack of clarity on what is exactly required for an effective EMS in certain specific situations. In addition, many Saudi and world wide SMEs lack the internal expertise (including management expertise) to establish environmental policies and effective management and auditing systems (Hillary, 1998). The complexity of issues and stakeholders associated with an organisation's environmental impact is frequently underestimated by management. This has led to the responsibility of an organisation's EMS being given to a quality or health and safety manager with little or no experience of environmental issues. These problems are particularly acute in developing countries (Krut and Gleckman, 1998). In addition, some studies have shown that there is always some resistance on the management's part to disclosing their environmental audits. A well-known example is when Prime Minister Tony Blair challenged all the FTSE 350 companies in 2001 to publish their environmental reports by the end of the year and only

79 did so Dickson (2001). Another example is the study of Brazilian companies (Da Silva and De Medeiros, 2004) which showed that companies resist inserting environmental management into their processes and that there was resistance towards sharing information with other organizations. Perhaps the biggest problem is that until companies see the necessity, they will not do anything, and if they perceive any difficulties in implementing any new standards they are more likely to leave it until they are forced to comply (Chen, 2004) .

Saudi Arabia however developed and applied its own conformity assessment procedures. The Saudi Arabian Standards Organization (SASO) does not aim at creating unnecessary technical barriers to international trade. However, it tends to ensure that the product, manufacturing conditions process, or/and the service fulfills specified conditions and standards, as well as observes the rulings of Islamic Sharia, hygiene and safety of man, animals, plants, and environment, national security protection and prevention of fraudulent practices. SASO depends in its work on conformity assessment procedures which were prepared in accordance with the relevant international standards, guides, and recommendations issued by international organizations such as the International Organization for Standardization (ISO). To achieve this goal, SASO's technical work manual was developed to present the conformity assessment procedures adopted by SASO, which include:

- Quality Mark regulations

- Conformity Certificate regulations

However, there are no systematic studies or statistical information available to assess the effectiveness of procedures implemented by SASO (www.saso.org.sa).

4.5 The Natural Step (TNS)

The Natural Step is not any certifiable EMS but is a strategic planning framework that helps an organization identify the risks and opportunities associated with sustainability development in business. First developed in 1989 by Karl-Henrik Robert, it proposes that acknowledging and understanding the causes that underlie sustainability development were essential factors for success. In that sense, according to(Robèrt, 2000) TNS is less concerned about the details of operational procedures, but provides guidelines for thinking about sustainable strategies. However, he also believed that each company is the expert in managing its system and hence the framework he was setting up was meant to give general conditions and strategies that each company needs to consider and apply in relation to its own enterprise. Therefore, the Natural Step framework offers four main "System Conditions" based on four scientific principles to enhance the Environmental Management System (EMS) of an organization through a cyclical TNS Management System

The nine principles on which the four system conditions are set are as follows;

1. Matter and energy cannot be created or destroyed.
2. Matter and energy tend to disperse.
3. What society consumes is the quality, purity, or structure of matter, not its molecules.
4. Increases in order or net material quality on earth are produced almost entirely through sun driven processes.
5. As a result, the four system conditions are as follows;
6. Substances from the Earth's crust must not systematically increase in the ecosphere.

7. Substances produced by society must not systematically increase in the ecosphere.
8. The physical basis for productivity and diversity of nature must not be systematically diminished
9. We must be fair and efficient in meeting basic human needs

TNS is based on setting environmental policies, planning and implementing these policies through actions, as well as confirming and managing such actions. In general, the application and re-application of this cycle is expected to differ from one corporation to another. As part of implementation of these conditions, companies must go through a TNS Management System Cycle (Burns, 2000, p.8).that starts with reviewing their operations in the light of the short and long, local and global effects they have on the environment. In addition, business operations should set a number of long-term objectives and goals as targets as part of their EMS (e.g. if the company realizes that its reliance on a particular type of material is persistent and that this may harm the environment and the future of this material, the company should reduce its dependence on it and find a replacement). As stated by Burns (2000, p11).

> *"this company-wide strategic planning plays a vital role in creating an EMS that is focused on sustainability."*

In addition to the process of setting objectives and goals, companies, as part of implementing their TNS Management System, must train their employees to raise their awareness of the issues of environmental sustainability and enhance their understanding of the company's environmental visions and goals to help them clarify their social responsibilities. Companies must use a variety of tools like audits and indicators to measure their environmental performance to be able to review periodically their objectives and plans for the next cycle.

The Natural Step framework aims to give a general direction to companies on the general conditions while reviewing their businesses in relation to environmental aspects, to set long-term objectives and targets, to help employees understand their social responsibility in relation to the economic and environmental issues, and to provide managers with a framework to understand how business objectives relate to sustainability development.

Major corporations around the world have adopted the use of the Natural Step Framework and it has offices in Sweden, the United Kingdom, Canada, Japan, Australia, New Zealand, South Africa, and the United States"(Davis, 2000)

As with the charters, principles, guidelines and ISO 14001 and EMAS, the Natural Step is voluntary and hence only good if businesses choose to follow it.

4.6 SIGMA

The SIGMA project http://www.projectsigma.co.uk/ has developed, with the support of the British Standard Institute; from the Triple Bottom Line model discussed earlier (See Chapter 2). This, like TNS is a sort of hybrid concept combining guidelines with focussed directions for businesses. It was the result of the partnership between the British Standard Institution (BSI) and the Forum for the Future and Accountability (FFA). The BSI is a multinational business service provider whose principal activity is the production of standards and the supply of standards-related services. It was instrumental in the formation of ISO by pioneering the development of management systems standards, the first of which was BS 5750 and ISO 9000. The world's first environmental management standard, BS 7750, in 1992, was published which led to the publication of the first international environmental management standard, ISO 14001, in 1996. BSI also published the world's first sustainability standard, BS 8900, in 2006.

The SIGMA project provides a theoretical framework for sustainable business through the provision of SIGMA Guidelines that are meant to establish sustainable business management principles, systems and tools. The Guidelines consist of Core Elements (i.e. principles and a management framework) and Non-Core Elements (i.e. tools). Unlike the previous principles and guidelines, SIGMA due to its initiation by BSI, a body that sets up tools for measurement of performance, includes both the theoretical principles and tools that could be used to measure them. Whereas the concepts of accountability, capital enhancement and environmental sustainability are core elements to the SIGMA principles, the management framework has the following 10 key phases which could be also considered tools that could measure the SIGMA core elements:

1. Sensitization and Awareness
2. Baseline Review
3. Actions, Impacts and Outcomes
4. Legal, Regulatory and Other Requirements
5. Strategic Planning
6. Tactical Planning
7. Communication and Training
8. Control and Influence
9. Monitoring, Objective Evidence and Feedback
10. Reporting Progress, Tactical and Strategic Review

Again, SIGMA has core elements that are non-binding and is open enough for wide interpretations, as is the case with previously discussed guidelines. However, it includes an attempt to identify tools for implementing the general principles. SIGMA allows corporations the freedom to set their own targets and objectives in endorsing these

principles and adopting these tools. Hence, like those discusses previously, it still remains good practice only if taken up (Parkin, 2000; Doane *et al.*, 2001)

4.7 Environmental Auditing

One of the key features of both ISO14001 and EMAS is environmental audits. Environmental auditing is an essential tool for reporting the performance of a business enterprise and is at the core of most EMS. Since the 1970's, the overall aim of the environmental audit has been to have an on-going check on the environmental performance of the organization so that it can continue to improve on its status.

According to Watson and Emery (2004) environmental auditing began in North America in the 1980s. The Shell Oil Company was one of the first companies to introduce environmental auditing in 1981. Many other companies followed suit but created systems that suited their own needs. By the early 1990s, auditing started to have growing support. In 1993, the European Community adopted its Eco-Management and Audit Regulation (1836/93/EC,(Wenk, 2005) and in 1995, ISO 14001 was created by the International Standardisation Organisation (ISO), both of which have auditing at their core. Their environmental auditing component was viewed as a tool for demonstrating environmental responsibility in the global marketplace (Maclean, 2004) and both the European and the international standards were enthusiastically met with the expectation that some of the burden of government regulations would be eased and companies would become more self- regulated.

According to Welford (Welford, 1998c), the main objectives of environmental auditing include the following:

1. Verifying compliance

2. Identifying problems
3. Formulating environmental policy
4. Measuring environmental impact
5. Measuring performance
6. Confirming environmental management system effectiveness
7. Providing a database for corrective action and future plans
8. Developing the company's environmental strategy

He goes on to say that environmental auditing 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 company in relation to the company's stated objectives and environmental policy." (Welford, 1998c, p. 117)*

Partial environmental audits are carried out to measure the performance of the organisation in relation to specific tasks, processes, or issues. Examples of such types of audits include:

The compliance audit: a regular check that follows up with an organization to see if they are complying with existing environmental laws and policies laid down by the company

The process safety audit: a periodic process safety audit that attempts to identify production process's hazards and risks and to assist in setting up procedures for providing help in case of accidents and emergencies as part of complying with health and safety legislation

The occupational health audit: a periodic audit that aims to measure the workers' exposure to pollution (noise, water, air, etc) and other physical problems

The product audit: an audit that examines the process followed in sourcing production, packaging and disposing of waste – similar to the Life Cycle Analysis (LCA)

The product quality audit: an on-going audit that examines the quality standards applied like ISO 9000

The issues audit: an audit that examines the specific policies, guidelines, and operating procedures of some specific environmental issues

The pre-acquisition audit: investigates a site or an organization that is associated with acquisition or merger activities.

There are three main stages of an audit.

Stage one: The pre-audit stage**:** Preparatory stage that plans the audit's scope, selects the audit team, and performs the industrial analysis by involving the workforce.

Stage two: The audit stage**:** Investigative stage that inspects records, examines the company's policy and the management lines, performing physical inspections and interviews with selected staff

Stage three: The post-audit stage**:** Findings stage evaluates and reports the findings and prepares an action plan.(Welford, 1998b)

Welford pinpointed a number of factors that would make auditing more successful. These include:

- The presence of supporting board of directors that can develop a positive culture in their corporations.
- The involvement and participation of the staff in carrying out the audits.
- The recognition of the need to consider auditing as an integral part of the whole environmental management system, not in isolation.
- The verification of audits by consultants or auditors to ensure the quality of audits especially if they are to be presented to stakeholders.
- The use of well-qualified audit teams.
- The frequency of conducting audits.

However, audits can be costly and may disrupt the organisation's operations. The authors of the Swiss study of ISO 14001 state:

> *"Audits can be a powerful tool for achieving effective improvements; however, over-emphasising on compliance and conformance to standard requirements often does not support the intended improvement process" (Hamschmidt and Dyllick, 2001, p.52); see also Freimann and Walther, (2001, p.95), Conformance standards are not without value but can lead to "paper-chases" and "box-ticking" exercises(Maclean, 2004, p 13)*

4.8 Working Group of Environmental Auditing (WGEA)

The Working Group of Environmental Auditing (WGEA) maintains an up-to-date website of environmental audits and classifies those under 5 categories:

1. Pollution:
    - water (e.g. Pollution of water bodies (such as by industry and agriculture)
    - air (e.g. Climate change and stratospheric ozone layer depletion),
    - waste (e.g. Hazardous and radioactive waste)

2. Natural resources (e.g. Minerals and forestry and timber resources)
3. Human activities (e.g. Land development and energy efficiency)
4. Governance (Environmental management system and Sustainable development)
5. Other issues (information on financial, compliance, performance and prior audits).

The objectives of issuing these audits are to encourage:

- Fair presentation of financial statements and expenditures
- Compliance with international environmental agreements
- Compliance with domestic environmental legislation
- Compliance with domestic environmental policies
- Performance of government environmental programs
- Environmental impacts of non-environmental government programs
- Evaluate environmental impacts of proposed environmental policies and programs

The multilingual site also publishes audits by year of issuance or by countries. The existence of these public reports reflect the public's desire to have more available and accessible reporting on the performance and finances of government and the private sector on environmental practices which are part of the commitment of enterprises accredited by ISO 14001 and EMAS. Table 4.9 shows a list of selected countries and the number of environmental audits recorded.

Table 4.9 Country Audits

Country	# of Audits	Period
UK	50 audits	1993-2006
Germany	94 audits	1993-2006
Canada	135 audits	1993 -2008
Yemen	12 audits	1993 -1996
Saudi Arabia	45 audits	1993 -2006

Source: http://www.environmental-auditing.org/tabid/126/RegionId/387/Default.aspx

Another tool used to assess the impact of implementing environmental protection systems is Life Cycle Assessment (LCA). LCA is an internationally recognized approach to evaluating the potential environmental impacts of products and services. LCA looks at environmental impacts from raw materials extraction and processing through to end-of-life. LCA underpins most of the business organization's work, either directly by providing information and data, or indirectly through the application of life cycle thinking as a fundamental approach when considering sustainability and its relationship to production and consumption. LCA is mainly applied as an internal measurement tool to assist in minimising the environmental impact of products and should be incorporated into all environmental strategies and the management systems which seek environmental performance. There are four main stages in the LCA methodology (Ayres, 1995).

Inventory: gathering data about the all the materials and energy used in the life cycle of a product

Impact Analysis: analysis of the inventory's impact on the environment throughout the life cycle of the product

Impact Assessment: impact assessment done through the stages of classification, characterization and valuation

Improvement: feedback for improving the environmental profile of the product

Life Cycle Assessment can be performed at many levels - from small LCA projects done in less than 1 day to provide internal advice on a design project; through to detailed public studies that may take up to 12 months to complete.

According to Welford (1998d), the main advantage of the LCA is that it facilitates direct measurement of the environmental impact as it focuses on the measurement of the product rather than the whole system. Also, it focuses on the marketing strategies of products while focusing on the environmental strategies used in production. Furthermore, it widens the scope of environmental analysis to issues beyond the management system. Finally, this tool can help in environmental communication. It is also an important tool for designing low impact products.

The main problem with LCA is that it can be very difficult to achieve as it can be very complicated. Therefore, importance in deciding the parameters of the assessment from the beginning is the key to ensuring that the assessment is not that impossible. In addition, the fact that different data are measured using different systems (e.g. joules for energy, kilograms for mass of physical waste) makes the comparison of data and measuring their environmental impact at the end very difficult. Many issues are also involved in making such data comparisons. Furthermore, studying the product's

decomposition, which the LCA needs to consider, is very difficult too. In many cases, the assessment outcome will remain subjective as the source of the environmental damage may not be very specific in terms of the products or the producers who cause them. However, in the planning stage for the LCA all these problems must be addressed.

Companies which have conformed to ISO 14001 and/or EMAS have used LCA to carry out internal assessment of the environmental impact of the process of producing its products. For example, in 1995, Electrolux committed to ISO 14001 as the environmental management system to institute into all of its 150 facilities before the year 2000. The goal was to fully integrate ISO into the business strategy process so as to drive innovation in making its operations, products, marketing, sales, and strategic planning more sustainable. Electrolux estimates that between 80 and 90 percent of the environmental impact of its products during their life cycle occurs as they are being used, rather than during the manufacturing or disposal phases. For that reason, the company focused on LCA (Electrolux, 2007). Procter & Gamble Company (P&G) constructed a Life-Cycle Inventory (LCI) and Life- Cycle Assessment (LCA) database using SimaPro software (LCA6, 2001) using the model in Belgium. The input data for laundry detergents which needed to conduct a product LCA from several different, supporting databases to cover supplier (extraction and manufacturing of raw materials), manufacturing of the detergent product, transportation, packaging, use and disposal stages. The database has been constructed to allow Procter & Gamble managers to analyse detergent products from a system-wide, functional unit point of view in a consistent, transparent and reproducible manner. Based on the results, P&G set processes and policies to update all detergent ingredient inventories .The new Ariel laundry detergents (coolclean) developed in 2005 was designed through the use of LCA (P&G, 2005) .

In another project the U.S. Environmental Protection Agency's Design for the Environment Program, and the Toxics Use Reduction Institute (TURI) at the University of Massachusetts formed a partnership to identify and investigate the environmental impacts of selected products, processes, and technologies in the wire and cable industry (EPA,2008). This study focused primarily on the comparison of lead-stabilized and lead-free cable constructions through the analyses of the life cycle of cables. This life-cycle assessment (LCA) evaluated the potential health and environmental impacts of the jacketing and insulation of selected telecommunications and low-power voltage cables as alternatives to lead-stabilized cables.

LCA can be very effective if used to enable the redesign of products after improving their environmental characteristics. The uptake of LCA, however, could be a good indicator that the corporation is attempting to comply with environmental policies and regulations.

4.9 Green Supply Chain Management (GSCM)

Sustainable supply chain management can be defined as the management of material, information, and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, (economic, environmental and social) into account which are derived from customer and stakeholder requirements. It is the means to identify all social and environmental issues and address them. In sustainable supply chains, environmental and social criteria need to be fulfilled by the members to remain within the supply chain while competitiveness would be maintained through meeting customer needs and related economic criteria. This definition is rather wide and combines those given for sustainability and supply chain management. It is also able to integrate

green/environmental supply chain management as one part of the wider field (Hervani *et al.*, 2005).

Academic and corporate interest in sustainable supply chain management has risen considerably in recent years. There has been an increase in the number of papers published in journals. Around 2007, a study was made of 191 papers published from 1994 to 2007 on GSCM. The study summarized all the research and found two distinct strategies: Supplier management for risks and performance, and Supply chain management for sustainable products.

It is evident that research is still dominated by green/environmental issues. Social aspects and also the integration of the three dimensions of sustainability (environmental, economical and social) are still rare. Hervani, A. A., Helms, M. M.& Sarkis, J. (2005), reviewed green supply chain management as another essential tool for environmental management systems. According to them, supply chain management is the coordination and management of a complex network of activities involved in delivering a finished product to the end-user or customer. It is a vital business function and the process includes sourcing raw materials and parts, manufacturing and assembling products, storage, order entry and tracking, distribution through the various channels and finally delivery to the customer.

A company's supply chain structure consists of external suppliers, internal functions of the company, and external distributors, as well as customers (commercial or end-user). Firms may be members of multiple supply chains simultaneously. The management and coordination is further complicated by global players spread across geographic boundaries and multiple time zones. The successful management of a supply

chain is also influenced by customer expectations, globalization, information technology, government regulation, competition and the environment.

Sustainable supply chain management can be seen as the tool by which progressive companies can drive good environmental practices down the supply chain by insisting on specific standards.

The development of industrial ecosystems would be greatly supported by GSCM practices.(Niutanen and Korhonen, 2003). In their study of material and energy flows in the local forest industry in Finland suggested that these flows were comparable to other economic and industrial systems.

The most frequently cited predictor for GSCM implementation is the pro-activity of the firm's corporate environmental approach developed by a proactive corporate environmental stance and a strategic purchasing and supply chain management approach (Drumwright, 1994; Cramer, 1996; Carter and Ellram, 1998; Carter *et al.*, 1998; Ellram and Siferd, 1998; Bowen *et al.*, 2001) Once developed, supply chain management can ease the implementation of green supply and thus help spread environmentally sound practices throughout the complex network of industrial buying and selling.

4.10 Corporate Social Responsibility

So far most of the discussions have centred on environmental management systems and tools. As stated earlier in Chapter 2, corporate social responsibility has begun to usurp environmental management. As with many previous concepts discussed in this thesis, one of the early problems surrounding CSR has been defining it. The early 2000s saw a range of definitions emerge from academics and practitioners, but it is still a difficult term to define, and consequently it is even more difficult to implement. In fact

the interpretation of the meaning of CSR was so confused that many companies reporting on it admitted that they didn't really know what to include (Van Marrewijk and Werre, 2003).

In response to this confusion, in 2002, the ISO Committee on Consumer Policy (ISO/COPOLCO) became interested in developing a standard for Corporate Social Responsibility (CSR). The rationale was to develop a standard that is complementary to the ISO 9001 (Quality Management System Standard), the ISO 14001 (Environmental Management System Standard), and the ISO Corporate Social Responsibility Management Systems Standards (CSR MSS). It seems that standards considering the social aspects of business activities may well come to take over ISO 14001 and ISO 9000. Existing standards include SA 8000, which is a global social accountability standard for decent working conditions, developed and overseen by Social Accountability International (SAI). Detailed guidance for implementing or auditing to SA8000 is available from its website. SAI offers training in SA8000 and other workplace standards to managers, workers and auditors. Contracting with a global accreditation agency, Social Accountability Accreditation Services (SAAS) that licences and oversees auditing is to award certification to employers that comply with SA8000.

AA1000 standard is principle based on stakeholder groups' accountability and inclusivity which is defined as;

"concerns the reflection at all the stages of the process of the aspiration and needs of all the stakeholder groups" (ISEA,1999).

The standards and principles fit into the four main categories: planning, accounting, auditing and reporting, and embedding. Besides the principle of inclusion above the other principles of the AA 1000 are:

1. Scope and nature of the social and ethical accounting process: completeness, materiality, regularity and timeliness.
2. Meaningfulness of the information: quality assurance, accessibility, and information quality.
3. Management of the social and ethical accounting process on an on-going basis: embeddedness, and continuous improvement.

SA 8000 standard was introduced by the Council on Economic Priorities Accrediting Agency (CEPAA) and was conceived on the recommendations of the International Labour Organisation (ILO), Universal Declaration of Human Rights, and Convention on the Rights of the Child of the United Nations with the initiative to verify third party sources of products and goods.

During the implementation procedures, a social management system (SMS) must be established to ensure compliance and improvement. The set of standards for SA 8000 are: child labour, forced labour, health and safety, freedom of association and the right to collective bargaining, discrimination, working hours and compensation

Difference between the AA 1000 and SA 8000 lie in the following (Gobbels and Jonker, 2003):

Object and scope: SA manages and controls the value chain where as AA1000 is more directed in helping the stakeholders to ensure quality of the social and ethical accounting, auditing, and reporting process.

Normative perspective: both don't focus on functional aspects. SA focuses on employment and working conditions, however, AA1000 allows the business to have the choice to decide what issues of management system to include

Basic principles: both are about the same except that SA8000 doesn't include the reflection component (at all stages of the process of the aspiration and the need of all stakeholder groups)

Improvement perspective: both are the same on this.

Methodological perspective: SA has all the main processes as AA except the reporting process is not detailed and the stakeholders' presence is not in the overall process.

A study done on German companies (Hahn and Scheermesser, 2006) has shown that among environmental management tools, ecological procurement guidelines and environmental reporting were most frequently used by the companies. In contrast, social management tools like social reporting or social procurement guidelines were used much less often. Compared to certified environmental management systems that were quite well adopted by the sample companies (almost 58% of the companies had an ISO14001 certified management system in place and roughly 40% have an EMAS management system in place), social standards like SA8000 were hardly used or implemented (only 2.8% of the companies). This is beginning to change as more companies are now interested in adopting CSR and its related standards like SA8000.

As of June 30, 2008, roughly 900,000 workers are employed in 1700 facilities certified to SA8000, in 64 countries and 61 industrial sectors. The industrial sectors with the most certifications include apparel and textiles; building materials; agriculture;

construction; chemicals; cosmetics; cleaning services and transportation. Countries with high levels of certification to SA8000 include Brazil, India, China and Italy. The level of SA8000 certification in Saudi Arabia is unknown, but is likely to be very low. For this reason, consideration of CSR related issues was not a prime issue in this research. As already stated above, Saudi Arabia is a lag nation in terms of its environmental management, and the reasons for that need to be explored before we start looking at the uptake of even more progressive social standards.

4.11 Measuring environmental performance

Because this research seeks to identify levels of environmental engagement in Saudi businesses, and seeks to place these on a scale representing that performance, it is pertinent to look at previous attempts at performance scales. While there is a wealth of literature looking in detail at environmental indicators, environmental measures and other such detailed instruments and measures, nevertheless, when it comes to placing companies in tables of performance, they are relatively scarce (Delmas, 2001; Roy and Vézina, 2001; Morisawa, 2002; List and Machaczek, 2004). Of course there are tables, including the Sustainability Index, the Green Business League, and even the UK University Green League. However, there are relatively few that look at how to measure a random sample of companies. One of the most well known is the scale developed by Dodge & Welford (Welford, 1996a). This is a corporate environmental performance scale which has become known as the ROAST scale, based on the five categories identified, and is now used to identify levels of environmental performance. Table 4.10 illustrates these.

Table 4.10 ROAST scale internal values

R – Resistance – Stage One: Total resistance to environmental values and rules
O – Observe & Comply – Stage Two: Organization observes environmental laws, but action reflect lack of ability to comply
A – Accommodate – Stage Three: Organization begins to adapt to change; exhibits voluntary behaviour
S – Seize & Pre-empt – Stage Four: Organization voluntary seizes and pre-empts its actions with environmental concerns
T – Transcend – Stage Five: Organization's environmental values exhibit a total support for the environment

To measure performance, there is a need to define an ultimate goal towards which the organization must move. This goal may not be achievable but will serve as a benchmark on a five point scale. The utopian form of an organization is referred as "transcendent firm". This firm will have their ideals in environmental sustainment and will perform in a way which is completely consistent with sustainable development. The least environmentally sensitive measure on ROAST scale is represented by the "resistant organization" where the firms' environmental performance would be represented by extremely resistant behaviour with the prime motive of profit and the satisfaction of the shareholders. Table 4.11 highlights the difference between such organization in depth.

Table 4.11 Environmental performance scale extremes

Resistant Organization	Transcendent Organization
▪ **Resists any green behaviour** ▪ **Disregards green aspects in decisions** ▪ **Willing to damage environment if beneficial to the organization**	▪ **Internalises sustainable development** ▪ **Green criteria becomes paramount** ▪ **No decision will upset ecological relationships**

It is argued that an organization's performance can be categorized as lying somewhere between the resistant firm and the transcendent firm. The ROAST scale is useful in the classification of environmental responses from stakeholder groups and the internal organization functions, systems and activities. These "stage" models do provide us with an ability to categorize companies according to their environment-related

behaviour, but it is understood that they are somewhat simplistic generalisations. This research will utilise a similar scale in order to categorise the environmental behaviours of Saudi private companies.

This chapter has introduced the main tools and techniques used by businesses to pursue their environmental agendas. Some of these tools will be included in the research methodology as measures of a company's behaviour. It is also important for this research to find out about any issues relating to these key tools and for that reason, the next chapter will explore the literature on past studies of environmental management.

CHAPTER 5 Past Studies Investigating Corporate Management in Practice

The previous chapters have noted that there are some problems companies face when they seek to engage with ISO 14001 and other environmental management systems. These problems include concerns about expertise and ability of staff to conduct all the procedures necessary and also concerns about cost. It has been noted that larger companies are more likely to be able to overcome their problems than smaller ones. Several previous studies have explored this. For this purpose, some of the major studies done in the last ten to fifteen years on the uptake of environmental management systems by businesses across the world were reviewed. A number of key themes under which these studies could be categorized were identified.

5.1 Studies on the Effect of the Characteristics of Companies on the Uptake of CEMs

In a survey done by the Standards Council of Canada, 64% of the 1500 companies responding to the survey had implemented an environmental management system. (1998).This figure dropped to 58% in 2000. It was found that larger companies seem more likely to adopt and implement an EMS than a small or medium sized enterprise (SME). For example, in 1998, of the surveyed companies, 88% of companies with more than 999 employees indicated uptake of an EMS. This level of practice contrasts with that of companies with 100-499 employees (64%) and less than 100 (52%). Comparable statistics are not available for the survey year Standards Council of Canada (2000).

Additionally, the same survey found that EMS practice varied considerably between industries. For example, in 1998 the natural gas distribution (92%) and pipeline transportation (90%) industries led the way in EMS implementation. These industries were followed closely by oil and gas extraction (88%) and to a lesser extent by electric power generation/ transmission and distribution (74%) and mining (72%). Industries with low levels of EMS implementation included wood products (50%), food (51%) and beverage and tobacco products (54%). The results of 2000 indicate that the same industries have maintained higher or lower levels of adoption, although worryingly there seems to have been a general decrease in the percentages of companies indicating use of an EMS (64% to 58%). Logging and transportation equipment were the only industries to record a percentage increase in use Standards Council of Canada (2000)

Another report on Canadian companies and their uptake of EMSs (2002) pointed to a growing sophistication and responsibility on the part of Canadian industry with respect to managing the environment (Probe *et al.*, 2002) . While there is further room and need for a high level of Canadian private sector environmental practice and performance, the report indicated that business has made significant advances in environmental management. Canadian companies are making investments in and adopting practices, systems and technologies that address environmental issues particular to their industry. Systematic environmental management approaches and tools are becoming commonplace. Tools such as EMS and environmental reporting are becoming more popular, while other tools such as LCA and green procurement are either losing relevance or have not become standard practice. In general, companies realize the importance of managing issues such as energy use, waste, and Greenhouse gas (GHG) and toxic emissions in a way that decreases costs and mitigates negative environmental impacts before they occur. According to the same report, there is a difference between

companies in the private sector based on the size of the firm. Some insight is available regarding environmental management, where indicators, like those mentioned above, suggest that the level of uptake is typically highest in large companies (>999 employees). Smaller companies (i.e. <100 employees) typically have low proportions of environment practice (i.e. EMS – 88% versus 52%). This observation raises important public policy questions about the factors that influence the adoption and implementation of environmental practices.

Gisele Cristina Sena da Silva and Denise Dumke de Medeiros (2004) sought to evaluate the uptake of environmental management systems by the Brazilian companies. The study was based on conducting three analyses for 37 companies; (1) a general analysis, incorporating the data of all companies, independent of the activity sector; (2) an analysis more related to the sector of the company - the three branches of activity that had received more responses were the electric sector, services and chemical sector- and (3) in the third analysis the companies were divided into three groups: companies without environmental management; companies with environmental management, but without certification; and certified companies. The 37 companies researched represented the following sectors: electric sector (six companies), services (five companies), chemical (four companies), textile, civil construction, automotive and foods (two companies each sector), petrochemical, glasses, paper and cellulose, farming, steel, pneumatic, telecommunications, wood, health, metallurgist, mechanic, and druggist (one company each sector), and a mix of sectors (two companies).

The results of the general analysis showed that most organizations in the study appeared to be engaged in environmental policies. However, it was observed that some companies still dealt in an informal way regarding the environmental question. Though

organizations possess a responsible structure that ensures the fulfilment of the previously defined goals, the allocation of finances is one of the greater obstacles observed. Some of these organizations do not appear to be prepared to resolve problems nor to prevent them; however, their main concern is preserving the supervision data and developing activities of inspection, calibration and maintenance. These companies still carry through the revisions and the critical analysis of the EMS through the auditing, focusing on whether results are adjusted to the objectives and previously defined goals. The highest response came from three groups of companies: the electric sector, the services, and the chemical sector. At the top of the general analysis came the electric sector and this study revealed their interest in environmental protection. These companies showed concern with the environmental education of the community and the sharing of information with other companies. These organizations set the appropriate available resources (human, physical and financial) to the environmental programs and promoted the integration of the EMS throughout the corporation. However, they were still weak in the identification of the expectations of the customers and suppliers.

The results of the service sector showed that some of these companies had been through an initial environmental evaluation, but there was not a total commitment with the environmental policies and integration with the community. This group of companies knew the environmental impacts that they were promoting but these companies are not in compliance with the environmental laws and they are not prepared in case of environmental accidents. The allocation of resources is minimal and the obtained data are evidence of little commitment with the preservation of the natural resources. The companies of the chemical sector were unanimous in disclosing that integration between the EMS and other functional policies do exist, and that they were in compliance with the environmental legislation as these companies identified the environmental aspects of the

activities that they exert; knew which of these activities are associated with significant environmental impact and identified the legal requirements of environmental performance. In the chemical sector, some of the companies place resources on, and possess an operational control of the process. There are emergency handling services and also projects of communication and documentation of the EMS.

The results of the third type of analysis concerning the effect of certification on the companies' environmental behaviours showed that: The first group which comprised companies without EMS had a certain ambiguity in their behaviours and assumed a passive position with regard to the environmental management and these organizations did not identify the chances and competitive advantages of the EMS. The second group included companies with EMS, but without certification in environmental management. These companies showed themselves to be engaged with ecological management and possessed an EMS integrated with the other corporate functions. The third group was companies with environmental certification. These companies identified the impacts associated with the process and their projects were in compliance with laws and legal requirements as they established monitoring procedures and measurement of the EMS.

Arnfalk and Thidell (1992) surveyed 305 Swedish manufacturing companies. The classical CEM typology of companies came from this study in which companies were classified according to their performance: Environmentally passive, Compliance driven, Regulation-optimized, Environmentally conscious, and Environmentally adapted. These classifications were determined by their undertaking of environmental policies, nature of their policy if one was present, environmental responsibility, and the environmental auditing practice (Meima, 2002).

Welford (1996a) used the typology similar to the Arnfalk and Thidell except that he expanded on the levels of auditing into: Compliance auditing, System auditing, Environmental auditing, Ecological auditing, and Auditing for sustainability

However, Ans, K.& Anniek, M. (2002) in their study re-evaluated typologies of various models and stages and agreed with Meima's (2002) study that these typologies are not statements of facts but only labels. Both studies are noting the current trend is focussing more on organizational and strategic complexities in which more attention is not given to the management side. A good example of such is the following study by Allen, Tainter, and Hoekstra (2003). They addressed the idea that in environmental matters, the institutions or research and management need to avoid becoming too complex. The complexity stems from the fact that in most cases management is centred on the amount of outputs. If the outputs are below the expected standard, the management cycle is then revolving around ways to adjust and produce more outputs instead of focussing on the "supply side of sustainability". The managing of outputs result in higher complexity and decline in marginal returns as was the historical cases of Romans and the Abbasids compared to the Byzantines who used the supply side of sustainability by transforming its empire to be more producers than consumers. They also identified that two main components are needed for this sustainability: problem solving ability which is more or less a prerequisite and centring on context instead of output. The principles of supply side sustainability are:

- Manage for productive systems rather than for their outputs
- Manage systems by managing their context.
- Identify what dysfunctional systems lack and supply only that.

- Deploy ecological processes to subsidize management efforts rather than conversely. For example use resources that are freely available such as winter precipitation and gravity to subsidize management objectives.
- Understand diminishing returns to problem solving

Allen, Tainter, and Hoekstra (2003) cite the study of Acheson (1998) in which a scientific approach is used to evaluate the parametric management that has many things in common with the supply side of sustainability. The parametric management uses the management of outputs by setting quotas. Furthermore, the study of Allen et al. (2003)depended on several factors such as;

- Complexification due to the diminishing returns and unsustainable resources.
- Resilience based on simplification.
- Growing complexity based on further subsidies.
- Knowledge producing abilities.

Knowledge is the basis of the supply side of sustainability focussing not so much on the mechanical knowledge but more so, on the problem solving aspect. The theory is based on the premise that by minimizing cost of problem solving allows for high levels of information and less energy in management. So the Allen et al (2003) study was exploring ways to switch the sustainability from central to supply side who felt that understanding problem solving, develop trends and defining the factors that make it successful (or not) are ways in which to increase the changes of sustainability.

The problem being explored in Saudi is that environmentally sustainable business system must maintain a stable resource base, avoiding over-exploitation of renewable resources only (Oil in case of the Saudi economy) to the extent that investment is made in adequate substitutes. This includes maintenance of biodiversity, atmospheric stability,

and other ecosystem functions which aren't ordinarily classed into economic resources. In fact, these plans aim to balance the cost of environmental exploitation and the benefits derived from it. Saudi Arabia businesses can do this by setting better management plans to ensure that environmental sustainability is incorporated into the economic accounting of the business and by auditing and reporting on environmental performance. Regular and consistent audits and reports focus on reviewing "compliance against (environmental) regulations and other standards, the performance of internal management systems, energy usage, waste production and recycling and the use of eco-efficient technologies". Although nowadays, more audits and reports are issued by companies about their environmental performance, "most are not yet much help for those trying to assess the risks associated with the operations of given companies (Elkington, 1998, p.30).

Contrary to the fact that the Saudi companies are subjected to imposed government legislation (in relation to the environmental damage made against "the volume or value of their production", (see Table 2.2 in chapter 2) illustrates the level of carbon dioxide emission and such indicating that the laws and regulations are not implemented. In addition, they seem to ignore the social aspect which is highly related to the issue of environmental sustainability. More recently, models have been developed to define sustainable development in businesses that refer to the need to the development of social capital.

Another study conducted in 2002 investigated companies in Taiwan, an export-oriented country, and aimed to see how it adopted international trends in environmental protection (Tien *et al.*, 2002). Since there was a promotion of ISO 14001 in recent years in Taiwan, this study was therefore investigated, through an industry survey; the current

environmental design practices among ISO 14001-certified manufacturers (manufacturers with design capability) as listed by the Commodity Inspection Bureau in Taiwan.

The implementation of environmental design was studied according to five categories: raw materials, energy, design of recyclable products, product life cycle, and packaging. The manufacturers included were ISO 14001-certified by international organizations and listed by Taiwan's Commodity Inspection Bureau between the years 1991 and 2000 using a questionnaire, based on documents related to environmental design, and then modified according to discussions with experts.

The results of this study indicated that the current environmental design implementation status of Taiwan companies was discussed in five dimensions and 30 design principles, among which, eight principles were well implemented. Companies usually take only 26.7% of all of the environmental design principles into consideration; in other words, they actually implement only 8 out of 30 principles. Taiwan manufacturers should shift their focus to environmental management; from pollution prevention in the manufacturing process to product life cycle research and optimization of its impact on environment.

In the energy category, however, large companies exhibited the most advanced implementation. Small and medium companies are still the majority in Taiwan and they are not as advanced as the larger ones. Due to the limited human, financial, and material resources, their implementation performance is not satisfactory. The future trend toward the purchase and consumption of green products creates the need for the government to develop some incentive policies and programs to help companies promote environmental design.

According to Ytterhus's survey (2003), 2000 firms of nine countries in Europe, respondents to the written questionnaire identified "environmental enforcement agencies, managers, national legislators, parent companies and European legislators as the five most influencing stakeholders, when undertaking environmental initiatives" It was also found that the size of the firm has an effect as larger companies seemed to perceive a larger influence to implement environmental activities than smaller enterprises. In addition, the business activity also has an influence as it was found that "polluting" sectors like chemicals perceive the highest influence to implement environmental initiatives.

From all the above studies it can be stated that research findings confirm that the bigger the size of the company (i.e. the more employees it has) the more likely it is that they would be engaged in corporate environmental management. Companies that are engaged in the industrial sector like chemical, oil and transport companies are more proactive in taking up environmental management systems to combat the harmful effect of the business activities it is involved in. Other factors that may have an effect on the uptake of environmental management systems included the location of the company, its ownership, whether it is domestic or foreign. The present study will explore which of these company characteristics have influence on the decision of Saudi Companies to take up CEMs.

Another study of typology was the joint study by The Ethical Investment Research Services (EIRAS) and Organisation of Economic Cooperation and Development (OECD) concerning CEM practices in companies from UK, Europe, Japan, and USA (Maier and Vanstone, 2005). In this study large enterprises were classified according to their environmental impact (high environmental impact, medium

environmental impact, and low environmental impact) making note that definition of a large enterprise from region to region may be defined differently. The environmental management practices are assumed to follow in three steps:

1. Issuance of policy statement outlining the environmental management and performance.
2. Establishing formal environmental management system to control the operations (production processes and outputs) to minimize the environmental impact.
3. Establishing a reporting mechanisms

Each acts as an indicator of the companies' environmental performance. Similarly, in this study some of these indicators will be used to judge performance in Saudi Arabia. With a broad understanding of the term, it is now possible to look at the range of initiatives, guideline and charters that have been produced with the intention of encouraging companies to adopt more sustainable business practices. Getting nations to uptake corporate environmental management may pose a major problem conceptually for oil rich nations, including Saudi Arabia, whose wealth lies with a single most important non-renewable resource –in this case; oil- which is also considered to be the greatest cause of pollution and climate change, hence the primary threat to the continued viability of the planet. By promoting solutions to the barriers the Saudi business owners and executives encounter by finding ways to protect the ecosystem by setting certain strategies and plans, this can ensure that the ecosystem is sustained which would then ensure that their businesses are in turn sustainable in future.

5.2 Studies on the Effect of External and Internal Drivers and Barriers

In a paper by Zutshi, A. & Sohal, A. (2003) the implementation and integration of EMS with other standards such as quality and/or Occupational health and safety, for example, as done by the Gates Rubber Company (Baird and Is, 2000) is providing organizations with a more flexible, open and cost effective option. Integration would also ensure that instead of using two or more different standards/systems, only one integrated standard is present within the organization, which could be efficiently and effectively understood, implemented, and maintained, especially by its employees. Recommendations for other organizations contemplating integrating their management system include: obtaining commitment from the top management; having adequate resources to integrate the systems; having communication and training across the organization in aspects of integration; and, last but not the least, having integrated audits. Implementation of these recommendations may vary from one organization to another; however, it would result in lesser resistance for the organizations following them.

Holt's (2003) study showed that there are a number of internal and external factors for driving environmental responses. The main drivers included legislation, image and risk (perceived and actual). This shows that there is a growing awareness of the importance of environmental issues on the relationship between the organization and its suppliers. In other studies conducted in the UK, (Howarth, 2001; Howarth and Farber, 2002; 2003a) explored the general attitude, awareness, and behaviour to establishing EMS by a number of small sized companies in Nottinghamshire. The findings of this study supported the results found in earlier studies (Baylis *et al.*, 1998; Merritt, 1998; Hillary, 1999; Tilley, 1999b; Friedman and Miles, 2002). Such studies found out that the driving forces for establishing EMSs and helping in affecting the attitudes and behaviours to them in the small firm include education and training, effective research,

regulatory framework and institutional reform. On the other hand, the resistance forces include poor eco-literacy, low environmental awareness, economic barriers, inadequate institutional infrastructure, and limited business support. It was also found that education and business supports are important factors in overcoming barriers to EMS adoption.

According to Tinsley (2002, p.377), the organizational barriers that impede the introduction and development of environmental management systems, as seen in the current literature, can be summed into twelve factors. These are as follows:

Management Style

The style of management that the executives of large organizations adopt in running their companies can become a barrier if they follow the rule of avoiding problems, including environmental ones, thinking that they will be resolved by themselves. Also, the issue looking at the company as an entity can be dissected, rather than treated as a holistic identity. Thus, the environmental department can be easily viewed as an additional entity that can fall out of "focus". In addition, even if the top management feels the necessity of introducing and applying EMSs, they need to turn their convictions of the environmental legislations and policies into a clear plan that has achievable objectives.

Top Management Commitment

Another type of organization barrier to EMSs is the fact that top management may not be committed to the idea of introducing environmental policies into the organization. This may mainly be due to their limited knowledge about the importance of environmental sustainability and its value for commercial benefit. This limited knowledge may be the cause that top management lacks the commitment and hence

EMSs are not introduced into the organization or, if introduced, are isolated and ineffective.

Credible Plans

Another barrier is the lack of credible environmental plans. Plans that are not credible may lead to management mistakes and in turn to "disenchantment" and finally resistance to the introduction of EMSs.

Innovation

Although innovation may be considered as a favoured quality generally, it can become a barrier as it was noticed that innovations can cause delays and misunderstandings in newly developed EMSs. Companies may benefit from finding innovative solutions for their environmental problems, but sometimes companies can find innovative means for obstructing environmental policies to escape them!

Communications

Lack of communication can be also a barrier. If the top managers are not well-trained on how to educate and communicate with their employees the issue of the importance of environmental issues, it is expected that this will become one of the barriers of establishing EMSs.

Company Culture

The culture of the company, i.e. the values and attitudes prevailing in the company, may become a barrier if it is resistant to the environmental long-term plans set by the management. Hence, the organization must help in developing this culture and apply such environmental policies.

System Integration

If the new EMS developed is not well-integrated within the overall organizations' system, the EMS may not be successful.

Technology

The use of technology in an innovative way could be successful if it is part of the environmental management of the organization.

Strategy Complexity

If the top managers believe that the establishment of EMSs is adding to the complexity of the organizational strategies already in existent, this may become a barrier for developing environmental sustainability development.

Available Resources

The shortage of available resources is also another barrier that may hamper the introduction of EMS.

Incentive and controls

Lack of incentives and controls by the management could become a barrier to the development of EMSs. Studies e.g.(Tapon and Sarabura, 1995), have shown that employees support is essential to ensure that the staff is involved in the establishment and support of new organizational schemes.

Organizational Structure

The type of structure that the company has can become one of the barriers for the introduction of environmental management systems.

Tinsley's study has examined these barriers in six different types of companies that have different types of EMS structures (i.e. what he called the Integrated, Isolated, Devolved, and Devoid). The four EMS models offer a method for management to assess how each model would suit the organization, its industry and the economic climate in which it operates. They offer management the opportunity to assess the profile of their own organization and the way it uses its EMS. The findings of the case studies also suggested that EMS organizational models can be created and used as a management tool with which to determine the barriers that can potentially occur and act against an EMS within an organization.

Kirkland and Thompson (1999), carried out a very valuable study of 32 resource-based Canadian companies in order to measure the success of their environmental management systems. The study has shown that the main environmental driving forces include laws, lawsuits, government policies, banks, investors, accounting systems, employees, markets, costs, public and Environmental Non-government Organizations (ENGO), industry codes and standards, self-regulation and international factors. On the other hand, the investigation has shown that there are many barriers that may impede the introduction of EMS. The study also presented five case studies of different businesses that have attempted to implement the EMS and the barriers and benefits that they had as a result of that. In half of the case studies reported the implementation of the EMS did cause a positive change, while in the rest it seemed that the management was not well aware of the value of the implementation of an EMS or how it should be implemented.

An example of these studies is the one done by Pacheco and Wehrmeyer in Mexico (2003).which highlights the most relevant studies related to identifying the drivers and obstacles that influences the environmental performances of a company. This

study was based on a postal survey that was conducted in Monterrey, Northeast Mexico, among manufacturing and service companies. It was found that the main obstacles were:

- The lack of economic or human resources to perform environmental activities.
- The separation of the environmental function from the rest of the organization.
- The lack of awareness of Mexican companies about their environmental impacts.
- The lack of environmental pressures companies experience and foresee in the short term.

On the other hand, the main drivers included:

- Developing awareness of the value of the protection of the environment and the benefits for the future generations
- Having economic benefits like saving costs and having a better image
- Developing clients and employees satisfaction and having competitive advantages
- Creating new market opportunities and an environmental culture
- Environmental policies and legislations
- Globalization

A case study application of environmental performance evaluation (EPE) was undertaken at a dairy owned by Mother Dairy Fruit and Vegetable Ltd. of New Delhi, India in 2001 The dairy had implemented an environmental management system and obtained certification to ISO 14001. Facility management was interested in enhancing their existing management system by establishing an environmental performance

evaluation and improvement program, and benchmarking its performance. Since performance monitoring began five years ago, the dairy has realized significant increases in the amount of milk processed per unit of electrical power (23%) and diesel fuel (38%) consumed, and reductions in the amount of wastewater generated (20%). In addition to these indicators, the following environmental aspects were identified as priorities for performance measurement:(Putnam *et al.*, 2002)

- Groundwater conservation and reliability of well water supply;
- Water use conservation; cost and efficiency of wastewater treatment;
- Employee training and awareness; and
- Green horticulture activities (planting gardens and composting bio-sludge).

Some Asian countries have moved towards sustainable development with environmental regulation (particularly China), economic incentives (e.g. China, Thailand and Philippines) and voluntary initiatives by large companies in Taiwan, Thailand, China and Japan (Peter Hills, 2004). Asian companies are, however, lagging behind their counterparts in Europe and North America in having written policies on supporting third party sustainable development programmes (Welford, 2005) and much of the Asian growth has been, and continues to be, fuelled by unprecedented levels of environmental degradation and human health impacts in this region (Welford, 2004).

In terms of company policies and business actions there are some encouraging signs in Hong Kong. Large Hong Kong corporations have voluntarily stepped forward and published their social and environmental policies and practices. A survey of opinion

leaders among eight key stakeholder groups in Hong Kong indicated that there is considerable support among all groups for wider use of voluntary agreements and partnerships but that progress may be hindered by lack of understanding as to how these can be engineered and how they will operate in practice (Hills, 2005). Hong Kong businesses intend to pursue partnerships with goals of financial support and environmental education classes for employees; five businesses have plans for NGO involvement in business environmental practices.

When the corporation collaborated with NGOs in Hong Kong, there were substantial gains such as greater employee loyalty, saving resources, better brand imaging, new employee skills, new product designs and employee education. There were a few obstacles such as wastage of employee time, financial loss from changing production process. These losses were minute compared to the gains these enterprises had. Overall, all businesses are optimistic about increasing the number of partnerships with environmental NGOs in future in Hong Kong. On government's future role, eight out of ten businesses answered the questions posed while one refused questions without providing any specific reason; the business association was not asked about the government's role.

Businesses would like to see Government equally involved in educating public and companies on their social responsibility and environmental education, providing awards supporting partnerships and taking a proactive role in environmental regulation including eco-labelling of products. Businesses also believe that government should encourage companies to form partnerships by highlighting their advantages and set good examples by themselves forming partnerships.

Since Rio, a significant change in awareness and understanding of the environment has been witnessed globally. UK academic Potter says that industry needs the certainty of regulations otherwise they risk commercial disadvantage:

> *''Most industries won't go too far ahead of regulation, so you tend to get compliance reactions, rather than 'compliance plus' reactions because most industries feel it would be too risky to go too far ahead of legislation [because it may] put them at a commercial disadvantage or that legislation might go off in a different direction.*''cited from (Dummett, 2006, p.8)

Hillary R. (1995) stated that most SME's did not engage in compliance-plus activities because they were not legally required to do so. In fact, this was the most frequently chosen barrier to every single type of environmental initiative. Large companies credited less weight to legislative requirements. The major factor for them was a lack of demand from stakeholders, which was among the prime barriers against every given initiative, except the support of local environmental initiatives. Some SME's mentioned a lack of demand from customers. For SMEs, this figured among the top three barriers for nine out of the ten examined initiatives. One-third of the companies did not pursue environmental initiatives because they were not seen as a priority by senior management. This hindered engagement with stakeholders, participation in voluntary environmental initiatives, environmental reporting and, surprisingly, supply chain management. A general lack of incentives was named as a barrier against a broad range of initiatives by another third of the companies. A lack of resources and the costs of voluntary initiatives appeared to be of lesser importance, with little difference between small and large companies: Only two of the cited initiatives (extended producer responsibility and the support of local environmental initiatives) were regarded as costly, and only in one case (engagement with stakeholders) did a lack of resources appear to

play a major role. The least important barriers were corporate inertia, lack of in-house knowledge and skills and competitive disadvantage.

There were some cases of corporations like Volvo, which were proactive in their environmental management even before ICC started following up on these corporations by setting their own policies and reporting on them (Rothenberg and Maxwell, 1993). Other companies are part of this general trend of going towards environmental management. On the other hand, some less developed countries are not even aware of such initiatives or thinking of joining these efforts. The power to enforce the principles lies in the self-regulations of corporations. This raises the question of whether voluntary action by corporations will lead to a collective self-regulation if world governments do not support these initiatives with forced legislations.

The problematic fact remains that most governments world wide have never developed effective capacities for environmental regulation, or even for supporting and enforcing collective self-regulatory regimes (Andrews, 1998).

According to Andrews, the government exploits the economic vulnerabilities in their countries and utilises this as an opportunity to take advantage of valuable environmental resources and situations by allowing corporations to forego environmental laws and regulations. What is considered to be more vulnerable - the economic balance or that of the environment? These governments tend to prioritise economic growth over restrictive environmental regulations. The trend is often prominent in less developed and non democratic societies such as Saudi Arabia. To sum up, these governments accept environmental destruction as the price of these immediate gains (economic).

Some business scholars believe that businesses should be able to achieve globalization by driving towards sustainable development which is profitable to them in the long run (Welford, 2002).or outperform their competitors (Hart *et al.*, 2003) so they will be the driving force for setting legislation or following internationally acceptable ones, regardless of the pressure of public institutions. It is believed that by setting principles and regulations by governments and public institutions only just isn't enough (Rintanen, 2005). Saudi corporations therefore need to collaborate with these institutions, adopt these principles, and help in developing the necessary and most suitable business tools to make them work in their own business environment. To reiterate this view, UlhŏI, J. P., Madsen, H. & Hildebrandt, S. (UlhŏI *et al.*, 1996) stated that "*When it comes to environmental protection and conservation, society has various means of control at its disposal." These can be boiled down to behaviour-inhibiting (legislative) and incentive-creating (economic) means of control*

In general, most of the studies mentioned above show that even in the developed countries where the pressure of the consumer is high and attitudes towards environmental issues may be high, awareness of the environmental issues are still considered low and hence there is a need for further training and education. On the other hand, the most influential driving force for the establishment of business environmental management systems is legislation which forces firms to implement environmental policies. Concerning the barriers to environmental sustainability they vary according to the type of organization, but it seems that lack of commitment of the management is one of the most serious barriers. It is clear from the above studies that many internal and external drivers and barriers play a great role in the uptake of CMSs and that these may vary in terms of the companies and according to the countries they belong to. In the present study, these

drivers and barriers will be investigated to identify which of these factors have an effect on private Saudi companies in taking up CMSs.

5.3 Evaluating Corporate Environmental Performance

The main reason why EMS is encouraged is to improve corporate environmental performance. There have been many studies looking at this and many have sought to categorise the company performance in various ways. This section will report on some of these past studies.

The Northern Telecom has developed an Environmental Performance Index (EMI) as a tool that is designed to measure the environmental performance of the company. The tool measures the company's performance against a set of environmental goals which are: Compliance, Environmental releases, Resource consumption, and Environmental remediation

Although there are previous case studies which show that the implementation and use of EMS by companies should lead to improved environmental performance and better, and more consistent, legal compliance, there are widely held concerns about the ability of EMS to secure good environmental performance. A study done in 2005 EIRIS explored the correlation between quality of environmental management systems and environmental performance improvements, focusing on companies with high environmental impacts. Over 800 high environmental impact companies in the FTSE representing medium and large companies globally showed that the majority (72.6%) of high impact companies have implemented an environmental management system of at least a ‘moderate’ standard. The implementation of both certified and uncertified environmental management systems is lower in Hong Kong, Ireland and Singapore (where over 50% have an inadequate EMS than in Germany, Finland, France, Greece,

Italy, Denmark and Portugal (where less than 5% have an inadequate EMS). Such companies adopted a certified EMS, such as ISO 14001 or Eco-management and audit scheme (EMAS), or they have developed their own 'in-house' systems.

The study also found that almost half (48%) of high impact companies demonstrated some improvement in performance over the previous three years. There is a wide range with over 75% of companies in Switzerland, Italy and Portugal demonstrating some improvement but less than 25% in Hong Kong, Singapore and Ireland. In fact, less than half (38.8%) of high impact companies produce environmental reports of at least a 'moderate' standard. The key message is that almost all companies who can demonstrate environmental performance improvements have a good environmental management system, but a good EMS is no guarantee of environmental performance improvements. For investors this means that while encouraging companies to adopt an EMS is a significant first step (only 2.5% of companies achieve improvement with an 'inadequate' EMS), actual environmental performance also needs to be monitored. For regulators and policy-makers this indicates that there is a correlation between well developed environmental management systems and improved environmental performance. However, efforts are needed to encourage greater disclosure and reporting of companies EMS and quantitative data on their environmental impacts.

This study identified some of the drivers behind the adoption of EMSs by companies in the developed world. For example, companies in the US, in particular, have historically been more tightly regulated. Achieving regulatory compliance, or even preventing increased future regulation, is a commonly sited driver for establishing environmental management systems. Therefore, US companies may believe they have already achieved the main purpose of introducing an EMS just by complying with the

regulations, which may go some way toward explaining the relatively low adoption rates. These regulations, however, do not require public reporting of data. Instead, data is predominantly reported to the regulators only. On the other hand, the high level of certification to ISO 14001 and EMAS standards in Germany is partly explained by the strong public awareness of environmental issues historically and the desire by companies to demonstrate a commitment to managing their environmental impacts. Some German companies also demand certified management systems from their suppliers, which supports the high adoption rate. Moreover, the high adoption of ISO 14001 in Japan is primarily due to the country's experience with the quality standard ISO 9000. Initially, adoption of ISO 9000 was slow as Japanese companies considered their quality management to be very good and adoption of a quality standard to be unnecessary. However, customers in Europe and the US started requiring ISO 9000 registration of Japanese suppliers so the Japanese Ministry of International Trade and Industry (MITI) organized a major registration effort among Japanese firms to avoid losing export business to registered firms elsewhere. When ISO 14000 followed, Japanese companies did not want to risk a similar situation and adopted the standard to a high degree.

As a result of several low levels of awareness amongst the population as compared to Germany, in some parts of the Middle East, although some laws were issued regarding the protection of the environment still the issue of the implementation of such laws and policies aren't enforced. In addition the issue of the level of awareness of and attitudes to environmental sustainability of the public and business owners, managers and employees are points for exploration.

In a study carried out by Jahamani (2003).in Jordan and U.A.E. to compare and contrast the two Arab countries in terms of their environmental awareness, a

questionnaire was developed and distributed to all decision makers of all U.A.E. and Jordanian Companies to identify the main circumstances leading to awareness. The results showed that Jordan and U.A.E. are in their early stages concerning environmental awareness. It showed, however, that the factors of environmental laws, philosophy of top management, suggestions from environmental protection society, and alignment with parent company are the main factors that lead to the development of the awareness in such companies. However, it must be stated that the decision makers were not willing to shut down their plants if environmental protection necessitates that. Thus, it seems that although knowledge and attitudes may be high concerning environmental issues that does not mean that behaviour is influenced.

The above case studies on measuring the environmental performance of companies and the attitudes and level of environmental awareness of their management prove that companies vary in terms of their levels of performance. The present of study will attempt to measure the level of the performance of private Saudi companies in terms of their environmental activities accordingly.

5.4 The situation in Saudi Arabia

No previous studies were made in this country concerning the factors that affect the uptake of environmental management systems in private business organizations or the drivers and obstacles facing the attempts to establish environmental management systems in companies. The only studies that were made in Saudi Arabia were in relation to the study of the environmental policies implemented in Saudi Arabia e.g. (Al-Gilani and Filor, 1997; Al-Gilani, 1999).which investigated the current framework for national environmental policies (which was part of the fifth, sixth and seventh development plans) and the difficulties they face in terms of their implementation. Another study measured

the levels of satisfaction of the uptake of ISO 9000, the quality standard (Magd *et al.*, 2003). Although these studies did not carry out practical studies of the level of public and business awareness of environmental issues and environmental business sustainability, they referred to the Saudi Environmental Awareness Project (SEAP) of 1995 (Al-Gilani, 1999) which was the first organized plan to educate the public about environmental issues and problems. Though the project had wide media coverage and lasted for two months, its lasting effects were limited and never documented. According to the authors, there is "no clearly structured strategy for environmental awareness" (p. 259). Hence, the authors proposed a reformed national framework for the environmental policies in Saudi Arabia. This is indeed a needed practice. However, there is still no information in the literature about the level of awareness of firms and companies, large or small, about the attitudes and implementation of these environmental policies that the authors considered.

This research therefore aims to address this gap in knowledge and will consider if and how Saudi Arabian businesses have responded to the environmental challenge by identifying the characteristics of the companies that take up EMSs as well as the barriers and the facilitating frameworks required for progress in this arena. It will also review the attitudes and level of awareness of company managers of the elements that make up sound CEMs to be able to measure their companies' performance based on these levels of environmental awareness and attitudes. To be able to pave the way to the presentation of this study, it is necessary to become aware of the environmental situation of Saudi Arabia, the role of Saudi environmental laws and legislations, Islam as factor affecting the behavior of Saudis towards their environment and finally the steps already taken by Saudi Arabia and Saudi companies to keep up with the global environmental movement. All these issues will be the focus of the following chapter.

CHAPTER 6 Saudi Arabia and the Environment

6.1 Saudi Arabia – background

The Kingdom of Saudi Arabia is the largest country of the Arabian Peninsula with diverse environmental resources. It is bordered by Jordan on the northwest, Iraq on the north and northeast, Kuwait, Qatar, Bahrain and the United Arab Emirates on the east, Oman on the southeast, and Yemen on the south

Source: Adapted from Latimer Clarke Corporation, Pty.Ltd. 1998. and Saudi Military Survey Administration

Figure 6.1 Relative location of Saudi Arabia

The Arabian Gulf lies to the northeast and the Red Sea to its west. It has an estimated population of 27.6 million, and its size is approximately 2,150,000 square km

(830,000 square miles). The Kingdom was founded by Abdul-Aziz bin Saud and established in 1932 with the proclamation, and recognition of the Kingdom of Saudi Arabia. Saudi Arabia is the world's leading petroleum exporter and petroleum exports fuel the Saudi economy along with other products. However, oil accounts for more than 90 percent of exports and nearly 75 percent of government revenues

In terms of the climate, Saudi Arabia's temperatures can vary considerably from winter to summer in the different parts of the country. The winter in the north cool weather prevails. On the other hand, warm weather prevails in the western coastal plains. In summer, the temperatures are very high in most areas in the country. It varies between 38˚+ on the coasts and 42˚+ in the interior parts. Humidity is lower in the interior parts than on the coasts. On the whole, the country has an arid climate with an average rainfall of just 70.5mm. The climate of the Kingdom varies from region to region, according to its location. Since the Kingdom lies in the tropics, the nationwide average temperature is 18C. However, temperature varies considerably, increasing as we descend towards the southwest. The average reaches 24C in the Western Region, 38C in Jeddah and 30C in Jizan. The Central Region is extremely hot and dry. Saudi Arabia has no rivers or permanent streams. Although the dry valleys are often flooded with rain water, actual utilization of this water is limited due to evaporation and soil absorption.

In terms of the general geology of Saudi Arabia, the country is divided into the Arabian Shield and the Arabian Shelf. The Arabian Shield, which contains the horizontal volcanic rocky plateau that extends for almost 99,000 sq. km of the shield's surface, occupies the western part of the peninsula. The Arabian Shelf, which contains sands that cover large parts of the north, east and south of the country, lies to the east of the shield and makes up two thirds of the peninsula.

In terms of the geography of Saudi Arabia, the country may be divided into nine regions (Al-Gilani, 1999, pp.132-140), . These are as follows:

1. Tehama Coastal Plains, along the Red Sea
2. Al-Hejaz (Al-Sarawat) Mountains, along the Red Sea
3. Arabian Hinterland (Asir Plateau, Najd Plateau, Harrahs Plateau, Hisma plateau, and the Great Northern Sandstone Plain)
4. The Cuesta Region (Sedimentary Najd)
5. Aeolian Sands (including the Great Nafud , Al-Dahna, the Central Nafuds, Al-Jafurah, and Al-Rub' al-Khali)
6. Al-Summan and Widyan Plateaus
7. Arabian Gulf Coastal Region
8. The Red Sea
9. The Arabian Gulf

Source: After Chaman R. Asad, Geography of the Kingdom of Saudi Arabia, Maktabat Dar Jeddah, 1996

Figure 6.2 Land forms of Saudi Arabia

Tehama Coastal Plains, along the Red Sea

This is the coastal plain running along the Read Sea which forms a narrow transitional zone between the shelf of the red Sea and the high mountains to the east. Much of this area is still covered with sand, but cultivation exists in limited areas to the south. Along the seaward margin a low-lying coralline also exists.

Al-Hejaz (Al-Sarawat) Mountains, along the Red Sea

This is a belt of mountains that stretches along the Arabian Peninsula forming a belt of 40 to 150 km and are sub-divided into three sub-regions (i.e. Asir (Al-Hejaz) escarpment, Asir Highlands (Southern Hejaz Highlands), and Al-Hejaz Coastal Mountains.

Arabian Hinterland

This is a vast trapezoidal shaped area that lies east of the Al-Hijaz mountains and consists of five sub-regions; Asir Plateau, Najd Plateau, Harrahs Plateau, Hisma plateau, and the Great Northern Sandstone Plain. Again, this area is very varied in its geological and climatic features. Overall, it is a mixture of rocky and sandy plains with limited water resources.

The Cuesta Region (Sedimentary Najd)

This is the sedimentary Najd area which lies to the east of Najd Pedi plain. It is made of limestone, sandstone and shale.

Aeolian Sands

About a third of the Arabian Peninsula is covered by wind-blown sand. This large sand area can be sub-divided into five main sub-regions including the Great Nafud , Al-Dahna, the Central Nafuds, Al-Jafurah, and Al-Rub' Al-Khali.

Al-Summan and Widyan Plateaus

This is the area lying between Al-Dahna desert and the low flat plains of the Arabian Gulf coast. It is the Southern extension of the Syrian Plateau. It has the world's largest oil fields of Al-Ghawar near Al-Hofuf.

Arabian Gulf Coastal Region

This coast is very gradual flat salty coast that extends along the Arabian shelf (about 1,930 km long).

Red Sea

It is a continuation of the Indian Ocean and hence its waters are very deep although its width is limited to 280 Km only. The deep waters are separated from the

Gulf of Aden by a shallow sill only 100 to 10 m below the surface. To the north this depth is only 65 m at the Gulf of Suez, but almost 1,000 at the Gulf of Aqaba.

The Arabian Gulf

Unlike the Red Sea, the Arabian Gulf is very broad and shallow (depth is from 35m to 165 m on the Iranian side).

In general, the above geological, climatic and geographical divisions of Saudi Arabia confirm the diversity of the environment of this vast country. Due to the population growth in Saudi Arabia and the rapid economic expansion and urbanisation that have begun since the 1970's as a result of the country's dependence on the huge profits from Oil Sector, Saudi Arabia is now facing a number of environmental challenges. Although the word environment implies the image of desert when thinking of Saudi Arabia, the rapid industrial development of Saudi Arabia over the last 70 years has seen several generations become increasingly separated from the desert environment. The original inhabitants of the Arabian Peninsula were well aware of their environment; their lives depended on it. Urbanization and the ready acceptance of technology have brought the modern Saudi public a largely western-style social infrastructure in an arid land, and insulated them from it. This in turn witnessed an uptake of initiatives and policies by the Saudi government

6.2 Environmental Policies and laws

The first law to regulate and manage natural resources was issued in 1931 to control the fishing process in the Red Sea. However, it was not until 1970s when the five year development plan introduced the first policies and laws concerning environment appeared. These early laws include the Animal Quarantine Law (1976), the Plant

Quarantine Law (1976), The Trade and Pesticide Law (1976), the Wild Animals and Hunting Law (1978), and the Forestry and Rangeland Law (1978). It was 1981 when the Department of Meteorology has become the body responsible for the duty of protecting the environment. Later, this department was called the Meteorology and Environmental Protection Administration (MEPA), under the Ministry of Defence. In the same year all the agencies involved in handling environmental issues were unified under the Environmental Protection Coordination Committee (EPCC).

According to Al-Gilani (Al-Gilani, 1999), six documents were produced to address environmental issues in Saudi Arabia. These include the following: Development Plans, State of the Environment Report, Conference on Environment and Development in Saudi Arabia, The National Plan to Protect Areas in Saudi, The National Report on the United Nations Conference on Environment and Development –Rio 1992, and Arabia Agenda 21- Saudi Arabia. Table 6.1, compiled by the researcher, shows the major events and laws in chronologically.

Table 6.1 Major Environmental Events and Laws in Saudi Arabia

Fishing in the Red Sea Coast Law	**1931**
First commercial oil production	**1938**
Abolishment of the Hema system	**1957**
Animal Quarantine Law -(CM/208 1396 H.)	**1976**
Agricultural Quarantine law- (CM/207 1396 H.)	**1976**
Trade in Pesticide law- (CM/19 1396 H.)	**1976**
Uncultivated Land law -(M/26 1388 H.)	**1978**
Wild Animals and Birds Hunting law -(M/17/ 1389 H.)	**1979**
Forestry and Rangelands law -(M/22 1389 H.)	**1979**
Water Resources Conservation law- (M/34 1400 H.)	**1980**
Forest and Rangelands section upgraded to a Separate Directory	**1980**
Establishment of Meteorology and Environmental Protection Administration (MEPA)- (7/M/8903) and Environmental Protection Coordination Committee (EPCC)	**1981**
The first National Park- Asir National Park	**1981**
Environmental Standards- (01-1409)	**1982**
Obligation to use the best available technology to reduce pollutant emissions and to reclaim quarries and dispose waste -(CM/271 1404 H.)	**1984**
First State of the Environmental Report -(SoE-84)	**1984**
Forest Land Ownership and Conservation law- (1128/8 1405 H)	**1985**
Protection of Public Utilities (wadis & water installation) from Waste Disposal -(CM/225 & M/62 1405 H)	**1985**
Establishment of National Commission for Wildlife Conservation and Development (NCWCD)	**1986**
Prohibition of Clay Mining from Wadis -(M/1114 1407 H)	**1987**
Living Marine Resources within the National Waters, Fishing, Investment, and Conservation law -(M/9 1408 H)	**1988**
Establishment of Ministerial Committee on the Environment (MCE)- (5/B/ 5635)	**1990**
Conference on Environment and Development in Saudi Arabia	**1990**
Gulf War- Kuwaiti Oil Spill	**1991**
National Contingency Plan for Marine Pollution Control (NPMPC)- (CM/157 1411 H)	**1991**
The National Report to United Nations Conference on Environment and Development (UNCED)- Rio	**1992**
Hazards Waste Disposal Standards- (1413-03)	**1992**
Wildlife Reserves Areas law- (M/12 1415 H)	**1995**
From Sea to Sea Conference on Marine Environment	**1995**
Agenda 21- Saudi Arabia- (CM/78 3/7/1415 H)	**1995**
Saudi Environmental Awareness Project	**1995**
First National Conference on Environmental Pollution and Health	**1996**
Saudi Arabia was nominated by the World Conservation Union (IUCN) to coordinate environmental programs and help in organizing the fifth World Parks Congress in South Africa	**2003**
United Nations Climate Change Conference in Nairobi	**2006**
First Environmental Forum at the Jeddah Chamber of Commerce and Industry with the "Restore, Protect and Sustain"	**2008**

Source: compiled by the author

6.3 The role of private sector and environmental challenges

The private sector can be defined as a sector which aims to fulfil the needs of consumers in return for a profit, whether these needs are in the form of services or products (Saudi business regulation). The private sector includes:

- General partnership
- Limited partnership
- Joint venture
- Joint stock company
- Partnership limited by shares
- Limited liability partnership
- Company with variable capital
- Co operative company
- Registered branch of a foreign company

The government has been interested in developing the private sector's ability to support and undertake corporate environmental management. This is clear from the reference to the role of the private sector in the development plans issues every five years by the government. It also shows from the number of laws and regulations that has been especially set up to control the private sector's use and abuse for the environment

In particular, the private sector can make an important contribution to the goal of longer term sustainable development by engaging in the following activities during the five year plan:

- Continuing its contribution to managing and financing environmental awareness activities in cooperation with the concerned government agencies

who can provide the necessary scientific and technical support for such activities; in this regard, the establishment of voluntary non-profit organizations in the environmental protection field will be encouraged;

- Establishing industries to produce environment-friendly products for which demand is already proven at the international level;
- Providing environmental consulting services for both public and private sectors, and preparing environmental impact assessments for various government and private projects;
- Following existing environmental protection regulations and guidelines with respect to the rational use of natural resources, limiting waste generation, and increasing operational efficiency; investing in activities which entail "environmental returns" in addition to their financial returns; examples include industrial projects for treating and recycling solid waste and waste water, and manufacturing equipment required by industry according to sound environmental standards; the development of national parks and recreational facilities and resorts should also be organized according to sound environmental principles (Abu-Ghazzeh, 1997).

6.4 The role of Islam in response to environmental concerns

Since Saudi Arabia is a Muslim country there it is mandate to understand the stance of Islam concerning the environment it is important to present some of the basic doctrines that relate to the Islamic view of the universe, natural resources and the relation between man and nature. In paper no.20 issued in 1994 by the IUCN (The World Conservation Union) on Environmental Protection in Islam, it was explained that Quran and Prophet Teachings clarified that “man is part of the universe and that all the other elements are complementary to one another in an integrated whole” (p.2). Due to this,

man's relation to the universe is strong. Though he is considered a distinct part of the universe he holds a relationship of sustainable utilization, development and employment for man's benefit and for the fulfilment of his interest. Man therefore needs to care for and nurture nature for his good. His work must not only be limited to the human species but to all created beings as "there is a reward in doing well to every living thing".

God, according to Islam, has granted man the right to use and harness natural resources. This involves an obligation on man's part to conserve them both quantitatively and qualitatively. The prophet, peace be upon him, once declared that "If any Muslim plants a tree or sows a field, and a human, bird or animal eats from it, it shall be reckoned as charity from him." On the other hand, man has the right to use nature for his own living, contemplation and worship, but he has no right to exploit or use natural resources unwisely, or expose them to destruction. This attitude of Islam that prevents man from abusing nature is clear in the prophet's teachings. The prophet, peace be upon him, forbade that a person would relieve himself in a water source or on a path, or in a place of shade, or in the burrow of a living creature. The values underlying these prohibitions should be understood as applicable to the pollution of critical resources and habitats in general. The prophet also prohibited the destruction of animals and plants even in the case of war. All of this and more shows that the attitude of Islam is towards protection of nature rather than destruction.

The Quran is also full of verses in which God instructs man to preserve the natural resources on earth. These include water, air, soil, plants and animals. For example, concerning water, God has indicated the importance of water when He stated that "We made from water ever living thing" and hence He commanded with regard to the people of Thamud and their camel, "And tell them that the water shall be shared

between them". The Prophet, peace be upon him, too said," Muslims are to share in these three things: water, pasture and fire." Concerning air, God said, "And He it is Who sends the winds as tidings heralding His grace: until when the have raised a heavy-laden cloud, We drive it to a dead land and cause the rain to descend upon it, and thereby bring forth fruits of every kind." Since the atmosphere causes all this as stated in Quran it conservation is considered part of the conservation of life itself. Therefore any activity to pollute or ruin water is forbidden and considered as going against God's wisdom.

Concerning earth and land, God has declared in Quran "*Have We not made the earth a vessel to hold the living and the dead? And We have made in it lofty mountains and provided you sweet water to drink." And also said, "And a sign for them is the lifeless earth: We bring it to life and bring forth from it grain of which they eat. And we have made therein gardens of palms and vines, and caused springs to gush forth therein – that they may enjoy of the fruits thereof, and it was not their hands that made this – will they not, then, give thanks?"* Thus, we need to give thanks to our Creator by maintaining the productivity of the soil through farming, grazing, forestry and mining. We should not allow its degradation in any way that may cause its erosion. The Prophet, peace be upon him, also stated that "The whole earth has been created as a place of worship for me, pure and clean.(Bagader *et al.,* 1994, p.9). Accordingly, we are charged with treating it with the respect due to a place of worship, and with keeping it pure and undefiled.

The same principles apply to the handling of plants and animals. The Glorious Quran mentions that animals and plants are living societies like human beings; "There is not an animal on the earth, nor any being that wings its flight, but is a people unto you." Hence, animals and plants are as distinct creatures as mankind and therefore Islam

emphasized all measures for the survival and perpetuation of these creatures. The absolute destruction of these species for mere sport or in torture is absolutely forbidden.

Islam also has doctrines and decrees that encourage man to protect the environment from the impacts of his own products like wastes, exhausts, toxic substances, pesticides, radioactive materials, noise, intoxicants, drugs, and even natural catastrophes. This is mainly based on the Islamic laws that "There shall be no damage and no infliction of damage", "Damage shall be eliminated" and "Damage shall be removed to the extent that is possible".

Islamic law stipulates the interference of the ruling authorities to secure the common welfare and eliminate injuries to society. This is their original and primary duty. Historically, many of the responsibilities of environmental protection and conservation were under the office of HISBAH. The MUHTASIB, who headed this office, was required to be a jurist thoroughly familiar with the rulings of Islamic law and had the responsibility of the inspection of markets, roads, buildings, watercourses, reserves (Hima) and so forth. Also, he was responsible for supervising and enforcing the regulations and measures related to hygiene, safety and cleanliness; the disposal of wastes and pollutants; the prevention and elimination of hazards. Up till now, this attitude is undertaken by the authorities following the main principles of Islamic Law. Hence, under Islamic laws there are many Islamic Institutions that are responsible for the conservation and sustainable development of natural resources like land and reclamation or revival authorities (ihya'al-mawat), reserves (al-hima), the two inviolable sanctuaries (Al-haramaan), inviolable zones (al-harim) and charitable endowments (waqf).

It must be understood that Saudi Arabia, being a Muslim country, is encouraged to adopt a sound environmental behaviours as its religious faith supports that. In the

Quran, Muslims are taught that God has created every thing in this universe in due proportion and measure quantitatively and qualitatively and that man is part of that universe, but he is a distinct part. This distinction comes from the fact that God has granted human beings stewardship (khalifa) on the earth. Therefore, in addition to being part of the earth and the universe, man is also the executer of God's orders and commands which also include that man should maintain a relation of sustainable utilization, development and employment with the universe for man's benefit as well as a relation of care and nurture to extend this benefit to all created beings: "there is a reward in doing good to every living thing". Thus, Muslims understand that the right to utilize and harness natural resources, which has been granted to them by God, necessarily involves an obligation on man's part to protect them and not to cause the degradation of the environment and distort its intrinsic suitability for human life and settlement.

The attitude of Islam to the environment is not only limited to protecting it against human abuse, but also extends to constructing and sustainably developing it. According to Prophet Muhammed, peace be upon him, "if the day of resurrection comes upon any one of you while he has a seedling in hand, let him plant it." This positive attitude involves taking all measures to improve all aspects of life including health, nutrition, spiritual dimension for man and all future generations. This is exactly the essence of sustainable development. Moreover, Islam is equally concerned with protecting man and the environment from the harmful impacts of external factors such as chemical products and wastes. This rule is fundamental in Islam as it is stated in the Prophetic declaration that "There shall be no damage and infliction of damage". In terms of disposal of waste materials, one of the well-known incidents to show this is the Prophet forbade that a person would relieve himself in water source or a path or in a place of shade or in the burrow of a living creature. The values underlining these

prohibitions should be understood as applicable to pollution of resources and habitats in general.

6.5 The Saudi participation

The implementation of Agenda 21 was intended to involve action at international, national, regional and local levels. Some national and state governments have legislated or advised that local authorities take steps to implement the plan locally, as recommended in Chapter 28 of the UN document. Such programs are often known as 'Local Agenda 21' or 'LA21'.

From this point onwards, Saudi Arabia has taken many initiatives and participated in many environmental awareness seminars to comply with the global environment protection agreements. The Kingdom has striven, through the ministerial committee for the environment, to define future environmental priorities on the national level within the concepts of sustainable development. To this end, a national Agenda 21 for Saudi Arabia was established, which is in harmony with the Kingdom's polices.

Saudi Arabia was nominated by the World Conservation Union (IUCN) to coordinate environmental programs and help in organizing the fifth World Parks Congress in South Africa in 2003. On behalf of the Kingdom, the Riyadh-based National Commission for Wildlife Conservation and Development (NCWCD) participated in the event

In early August 2007, a major move was initiated from all sectors of society and industry to protect the environment with a major awareness campaign. The drive, labelled “My Environment, My Responsibility,” lasted two weeks.

In January 2008 and in an attempt to educate youngsters on the importance of personal responsibility in environmental issues, a group of Saudi teachers at Riyadh's No. 130 School for Girls organized an exhibition aimed at building community awareness of green living.

In February 2008, Saudi Arabia together with several Arab countries participated in a high-profile international conference that was hosted by Germany to find out solutions for the depleting water resources in the Middle East and North Africa region.

Saudi Arabia recently joined the world in celebrating Earth Day on April 22/2009. It was believed to be one of the most memorable Earth Days as it came amid serious concerns of climate change. Saudi Arabia has observed that the earth's average temperature will rise by 1.8 to 4C (3.2 to 7.2F) during this century, according to the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report. It also stated that the sea level rises, storms, floods and drought would force millions of people from their homes. And our planet's biodiversity would face the greatest extinction since the dinosaurs were wiped out 65 million years ago.

The Kingdom has joined a campaign launched at the United Nations, Climate Change Conference in Nairobi, in November 2006, to plant a billion trees in a single year. The Plant the Planet campaign in the Kingdom sponsored the Presidency of the Meteorology and the Environment Prince Turki Bin Nasser Bin Abdul Aziz, has set a target of one million trees planted a year. Recently, Saudi Arabia organized and hosted its first Environmental Forum 2008 at the Jeddah Chamber of Commerce and Industry with the "Restore, protect and sustain" theme in April 2008.

The Kingdom of Saudi Arabia has constantly been an active member of the environmental committee – sharing concerns and contributing solutions. On the regional and international levels, the Kingdom of Saudi Arabia was a founder of the Regional Organization for the Protection of the Marine Environment (ROPME), and the regional authority for the Preservation of the Environment of the Red Sea and the Gulf of Aden (PERSGA). It has also ratified the Vienna Convention and the Montreal Protocol for the protection of the ozone layer, and the Basel Convention on toxic substances. It also acceded to the UN framework convention on climate change as well as the convention to combat desertification. The Kingdom of Saudi Arabia has participated in the activities of the IPCC [International Protocol on Climate Change] since its inception, through its vice chairman and the participation of Saudi nationals in the authorship of its scientific assessment reports.

Saudi Arabia has signed and/or ratified many international and regional conventions and protocols that are relevant to protection of environment, including, Basel Convention on Transboundary Movement of Hazardous Waste; Kuwait Regional Agreement for Cooperation on Protection of Marine Environment from Pollution and the regional cooperation protocols for combating marine pollution by oil and other harmful substances in emergencies; The Regional Agreement for Protection of the Red Sea and Gulf of Aden and its complimentary Protocol on Regional Cooperation for combating Pollution by Oil and other Harmful Substances in Emergency Situation; The Protocol on Marine Pollution due to Exploration and Exploitation of the Continental Shelf in the Arabian Gulf sea area; Protocol on Protection of Marine Environment from Land-based Sources (Arabian Gulf); Agreement on Conservation of migratory wildlife; and the Vienna Convention (and its protocol) on Protection of Ozone Layer. Although the Saudi Government has taken many initiatives in contributing towards the protection of the

environment, it realizes that environmental challenges are inevitable and it remains keen on tackling problems and finding solutions for a safe planet to live on (Al-Gilani, 1999).

The environmental law in Saudi Arabia urges and encourages public companies to comply with the provisions of the law and to introduce executive measures to ensure commitment to the environmental standards set by the competent authority. In the Saudi government's initiative, the regulations specify four areas required to make special efforts in the area of environmental awareness and they are the educational authorities who are required to introduce environmental concepts into the curricula of the various educational stages; the information authorities who are required to enhance existing programs and draw up national plans to enhance awareness; the Islamic affairs authorities who are required to play a stronger role to promote environmental awareness from an Islamic perspective; and all the other authorities (governmental, NGOs and private organizations) who are required to make sure their programs contain environmental awareness plans.

The lack of public awareness has caused the pace of change to remain sluggish. However, sluggish it may seem sometimes, change continues to happen in this developing country. Not only the natural evolution of species, but the evolution of societies and ideas take time and perhaps even several generations. Although Saudi Arabia might be relatively slow in implementing certain projects, but it always immediately adopts new initiatives, particularly when concerned with environmental issues. And this is obvious when considering how far Saudi Arabia has come when one realizes that the country has grown from tented nomads to a major industrial economy in less than a lifetime.

One way to evaluate how Saudi Arabia compares to the Western world is by looking at their performances according to the Environmental Sustainability Index. The environmental sustainability index is an index that was developed to act as a benchmark indicators about environmental performance for a pressure state response policy model created by Yale Center for Environmental Law and Policy (2005). In the Yale study, a variety of indicators were classified into five categories: www.envirocenter.research.yale.edu).

1. Environmental systems
2. Reducing environmental stress
3. Reducing human vulnerabilities to the environmental stress
4. Societal and institutional capacity to environmental challenges
5. Global stewardship.

On the performance criteria, a score is given for each country.

Table 6.2 ESI Score

Countries	ESI score
Bangladesh	44.1
Belgium	44.1
Canada	64.4
China	38.6
France	55.2
Germany	57.0
India	45.2
Indonesia	48.8
Norway	73.4
Saudi Arabia	37.8
United Kingdom	50.2
United States	53.0
Yemen	37.3

Source: http://envirocenter.research.yale.edu

From the index above, it can be seen that even some of the poorest countries with lack of financial resources are still able to perform better than those countries with a strong financial system. Saudi Arabia's performance is the same as Yemen's a significantly poorer country. The range given shows how some progressive economies such as Norway received a high score while other developed countries like Belgium only managed a score equal to Bangladesh's. Also by looking at the developing economies such as India and China and their performance, it can be seen that while the economies are doing well they are scoring poorly with regard to environmental performance.

With regard to Saudi Arabia it would seem that although there is evidence of governmental engagement with global, regional and national environmental concerns, these have not been translated into action. Despite these Islamic teachings, there appears to be poor legislation and poorly enforced environmental laws in Saudi Arabia. Although international guidelines exist for the creation of environmental legislation, current laws in the country are barely implemented. It would seem that legislation is not the main barrier to effectiveness in this largest oil exporter in the world, but rather the non-existent or impotent enforcement of it .(Ardichvili, 2008) This research will seek to discover business responses and attitudes towards legislation and will endeavour to empirically explore these issues.

CHAPTER 7 The Conceptual Model

This chapter presents the conceptual model developed to assess the level of uptake of environmental policies and initiatives by private businesses in Saudi Arabia. The model seeks to identify the factors that control, encourage or inhibit the uptake of corporate environmental initiatives. The model will direct the research in order to:

- Understand the characteristics of businesses most likely to adopt effective environmental policies and initiatives,
- Identify the factors that support the uptake of such environmental initiatives,
- Create a typology of private businesses based on their uptake of environmental policies,
- Identify the reasons why businesses do or do not engage with the environmental agenda.

The conceptual model hypothesizes that levels of corporate environmental engagement are influenced by a range of factors, including the characteristics of the businesses themselves, and the various external and internal drivers and barriers to engagement. These will now be discussed in detail and a number of core hypotheses will be developed.

7.1 Company Characteristics

At the heart of the model business organizations are categorized according to the type and size of the company, company origins and ownership and the business sector in

which they operate. The following sections explore what is meant by each of these variables.

Company Ownership

According to several studies including Robson (1993) the ownership of a company (domestic vs. foreign) may have an effect on its environmental performance and the environmental behaviour of its management and employees. It has been found that companies that have international origin or are owned by foreign companies are more likely to engage with the environmental agenda. Additionally, studies in developing economies, including a survey of Thai businesses and a Tunisian study have shown that local private businesses owned by foreign investors or foreign branches working domestically whose parent companies follow strict regulations in protecting the environment often have stronger environmental policies than indigenously owned companies (Serwan *et al.*, 1999; Onchan, 2000).

Therefore, it is hypothesized that;

Null Hypothesis: Foreign branches (Saudi plus nonsaudi ownership) that work under their names in Saudi Arabia, and those owned locally by Saudis will not differ in the uptake of environmental management policies and practices.

Explanation of hypothesis development:

This is hypothesized because firstly there are no studies to inform on the Saudi situation and secondly because a foreigner was not allowed to conduct business in Saudi Arabia as a sole proprietor. This Regulation for Companies was amended in 1992 when the Ministry of Commerce issued administrative fiats that have allowed the creation of

wholly foreign owned branches. Every industrial or commercial establishment must be registered in the Saudi Commercial Register. Saudi participants in foreign companies and foreign branches need to obtain the consent of the Foreign Capital Investment Committee prior to registration. Such branches do not require a local sponsor and may enter the country and do business in Saudi Arabia under their own names. A registered company is deemed to be a commercial entity, whatever its objectives may be. Upon registration, the company acquires legal personality. Although it is not fully owned by Saudis and it may not enjoy certain rights it would still be defined as a Saudi company.

The regulations list business forms and structures, of which joint stock companies and limited liability partnerships are the most attractive to foreign investors. Additionally, there are certain business forms and structures, such as liaison and technical/scientific offices, which are not specifically dealt with by the regulations but are nevertheless subject to them. Establishments of sole proprietorships although required to register with the Ministry of Commerce, are not subject to the regulations. Such enterprises are of marginal interest to foreigners since a foreigner is not allowed to conduct business in Saudi Arabia as a sole proprietor. In addition, Saudi law forbids foreigners from engaging in business in the Kingdom under the name of a Saudi national (Saudi business regulation).

Although not provided for in the Companies Law, the Ministry of Industry and Electricity and the Ministry of Commerce have issued administrative fiats that have allowed the creation of wholly foreign owned branches. Such branches do not require a local sponsor and may enter the country and do business in Saudi Arabia under their own names. The regulations define a company as a joint undertaking to participate in an

enterprise with a view to profit. Upon registration, the company acquires legal personality. Although it is not fully owned by Saudis and it may not enjoy certain rights it would still be defined as a Saudi company.

Therefore, it is anticipated that the lack of environmental awareness among the Saudis and the weak enforcement of law by the Saudi government will have a negative influence on the foreign based companies who will not fully implement the environmental policies of the mother company.

To investigate this, the study will compare the Mean scores of the foreign and Saudi based companies on the adoption of the corporate environmental management scale (CEM). A significant difference between the Means will reject the hypothesis and also indicate which of the two types of companies tends to have a higher adoption of CEM.

Size of the Company

Past studies have found that the size of a company will have an influence on its uptake of environmental initiatives with larger companies being more likely to address their environmental responsibilities. Arora and Cason (1996) found a positive and significant relationship between firm size and participation in voluntary environmental programmes and King and Lenox (2001) observed that the larger a production facility the higher the probability of adopting the ISO14001 standard. Min and Galle (2001) confirmed the importance of size in the adoption of environmental practices in the purchasing function and Murphy (1995) detected that the larger the company the greater the importance given to the role of logistics in environmental management by managers.

There are many types of classification systems for size. The three systems that will be compared are the Brazilian Development Bank (BNDES) definition (http://inter.bndes.gov.br/english/mpme.asp). North American Industry Classification System (NAICS) used by the US, (www.census.gov) and Organisation of Economic Co-operation and Development (OECD) used by the European Union (Loecher, 2000). The differences among these are the defining factors of companies and the scale of these factors. For instance, BNDES system uses the annual operational gross revenues and the NAICS and OECD use the amount of employees in the company. The difference between NAICS and OECD systems is that the scale in which they classify each category; a company with that employs 70 people would be considered small on the NAICS system but medium size on the OECD system. Below are some tables showing the classification on each of these systems.

Table 7.1 BNDES Company Size Classification

Company Size defined by annual operational gross revenues	
Micro enterprise	**up to 1.2 million Reals (376,000 £)**
Small enterprise	**from 1.2 million - 10.5 million Reals (376,000 £- 3.3 million £)**
Medium enterprise	**from 10.5 million – 60 million Reals (3.3 million £ - 18.8 million £)**
Large enterprise	**more than 60 million Reals (18.8 million £)**

Source: www.bndes.gov

In the NAICS system, companies are categorized by their total number of domestic employees (http://www.sba.gov/). The following are the six company size-classes:

1. Fewer than 500 employees (small)
2. 500 to 999 employees
3. 1,000 to 4,999 employees
4. 5,000 to 9,999 employees
5. 10,000 to 24,999 employees
6. 25,000 or more employees

The NAICS was not considered feasible to be used in this research because of the large scaled numbers.

Table 7.2 OECD Classification system

Company Size	Defined by number of employees	Revenue
Micro enterprise	up to 10 employees	Less than 2 million Euros
Small enterprise	10 – 49	Up to 10 million Euros
Medium enterprise	50 – 249	Up to 50 million Euros
Large enterprise	Greater than 250	More than 50 million Euros

Source: http://www.realinstitutoelcano.org/materiales/docs/OCDE_handbook.pdf

Null Hypothesis: **It is hypothesized that there is no difference in the uptake of environmental management polices due to size of companies in terms of number of employees.**

This is hypothesized because as mentioned above there is no valid statistical information for selecting companies according to size. Therefore, based on the responses of respondents to the number of employees in the company, the companies were assigned to three categories less than 100 = small, 100 to 300 medium, above 300 = large.

One way ANOVA will be used to determine if there is any significant effect of size (small, medium or large) on the total CEM performance of the companies. , If there is a significant effect of size this analysis will help highlight which of the three sizes tends towards adopting environmental management.

Business Sector

Previous studies have suggested that some specific areas of company activity, such as the oil and chemical sectors are more likely to have high levels of engagement with environmental initiatives than other sectors such as service industries, and import and export companies. Pacheco's study in Mexico (2003) showed that the specific type of sector can even show variations in the types of factors that may work as drivers or obstacles for the companies in the uptake of environmental initiatives. One of the key reasons for this (as discussed in the literature review in chapter 5) is that industries that have the potential for major negative environmental impacts have been subjected to tighter laws and regulations and that these regulations have driven awareness of the need for good environmental practice, sometimes beyond the levels required simply to stay within the law.

Null hypothesis: This study hypothesizes that there is no difference between manufacturing and service enterprises in the uptake of environmental management.

Explanation of hypothesis development:

A no difference in the adoption of CEM is anticipated because again the chamber of commerce did not have an updated list of companies according to their activity. Moreover, the researcher also discovered that many companies were operating in both manufacturing and service sectors. Therefore, the companies were assigned to the two categories according to the responses of the respondent companies to the question 'what is the major activity of the company; industry or service'.

Parametric test for significant difference between the Means (T test) of the two sectors on the CEM measure will indicate whether the hypothesis is true. However, caution will be exercised while dealing with the findings of this factor because any significant difference between the two sectors cannot be generalized to the adoption of CEM situation in Saudi Arabia. Nevertheless, it will help understand to what extent both sectors differ on their the attitude and responsibility towards the environment.

7.2 External and Internal Factors Affecting the Level of Uptake of Corporate Environmental Initiative

To understand the level of environmental engagement of Saudi private businesses it is necessary to consider the factors that encourage or hinder the uptake of environmental policies and environmental management systems, and differentiate between external drivers and barriers (those factors beyond the control of the business organization investigated) and internal drivers and barriers (factors that are under the control of the company).

Chapter five has already discussed past studies that identified these various factors and so this discussion will only briefly recap the most significant and important of these factors. Many of the drivers can also act as barriers. For example, (Kirkland and Thompson, 1999; Howarth and Melton, 2001; Howarth and Farber, 2002; Tinsley, 2002; Holt, 2003; Howarth, 2003b; Jahamani, 2003; Luken and Hesp, 2003; Zutshi and Sohal, 2003b; Bailey and Rupp, 2005). So for those reasons the following discussion will be presented under the headings of External and Internal Factors, and the various factors will be discussed regarding their definition as either drivers or barriers.

External Factors

Globalisation

Past research (Chudnovsky and López, 1999) has suggested that globalisation can be a driver of corporate environmental engagement because companies operating in developing economies become subject to pressures from businesses working in the westernised (and typically more environmentally conscious) world. The environmental revolution has been gathering momentum since the 1960s and developed rapidly in the 1990s. A competitive advantage can be achieved not merely by keeping in track of environmental developments, but also by initiating change within an organization and responding with new environmental friendly products and production processes.

The Saudi economy has become more fully exposed to these pressures through their fairly recent membership of the World Trade Organisation (WTO) in 2005. As a result Saudi Arabia will be expected to allow branches of foreign companies to be based in Saudi Arabia which will mean that Saudi companies will have to work or compete with foreign companies that are likely to be more advanced in their corporate environmental behaviours. With increased competition around the free markets (including the Saudi market), environmental management will provide firms with a competitive edge. The Saudi government should seek to make the polluter pay and corporate environmental management should be seen by the government as a pre-requisite for doing business. This is discussed in Chapter 5 as the external economies and "Coarse Theorem". Saudi firms will be expected to introduce environmental management systems into their operations (first part of the theory: public authority needs to control the polluter's behaviour). It is hoped that these initiatives can make a contribution to the enormous task of moving towards a sustainable future (second part of

the theory: to ensure future protection of the environment). This may have a positive effect on private Saudi companies if it encourages them to develop their own abilities in this area.

Null Hypothesis: It is hypothesized that globalization will not influence CEM performance of Saudi corporate sector.

Explanation of hypothesis development:

This is anticipated because it has been observed that since accession of SA to WTO in 2005 no substantial environmental activity has been exhibited by the Saudi corporate sector. Moreover, there is no direct method of measuring the effect of globalisation which can only be inferred by analysing the trend of responses to certain specific statements in the CEM scale. These statements refer to the application of international standards to compete with the environmentally active world market.

The Role of the State/ Legislation and Laws

According to the researcher environmental laws and regulations exist in Saudi Arabia but their is either a lack of enforcement or their is some ambiguity. Therefore, using **the Null Hypothesis it is expected that the Role of the state will not influence the level of environmental performance adopted by the corporate companies in SA.**

Explanation of hypothesis development:

The role of the state is singled out in many previous studies for example. (Kirkland and Thompson, 1999; Holt, 2003; Luken and Hesp, 2003); as one of the most important external drivers or barriers for corporate environmental behaviour. Strong legislation, strictly enforced is increasingly being seen as a key driver of environmental responsibility in all aspects of society. If governments support and encourage good environmental behaviour by giving incentives or enforcing legislations and fines, companies normally respond positively. This might simply be to protect their business from fines and other punishments should they transgress, but recent evidence suggests that companies working in a supportive framework of legislation begin to recognise the positive aspects of good environmental practices in terms of cost-savings, reputation enhancement and competitive advantage (Horn, 2007). However, it is equally evident that the lack of environmental legislation from the state and the poor enforcement of any such legislations and laws are major barriers to good environmental management (Faure and Niessen, 2006). Chapter 5 discussed case studies in terms of the role of government. On one hand, the issue that Hillary (Hillary *et al.*, 1995) raised showed that when businesses are not enforced to comply with laws, they lack the initiative to take up CEM. However, another issue concerning government is the one Stephen Potter raised in chapter 5 about business's fears that compliance plus reactions are too risky based on the unknown direction of government legislation cited from (Dummett, 2006, p.8) . This research will also attempt to find out which of these issues is relevant to the Saudi situation.

This hypothesis will be inferred from the trend of responses to statements in the CEM scale that are built around this theme as well as the findings of the qualitative study.

Membership of Trading Blocks

Another factor influencing environmental engagement is the membership of international trading blocs such as the European Union (EU), the North American Free Trade Agreement (NAFTA), and The Association of Southeast Asian Nations or ASEAN. There has been a great deal of discussion regarding the usefulness of these blocks for environmental improvement and there is no real consensus regarding blocs in general (Joffe, 2001). However, some of these economic trading blocs have demonstrated leadership in this area. The EU environmental policy gathered speed in the 1980s as Germany and other states began individual movements to increase protection measures in issues like acid rain, marine pollution and toxic waste. Many new laws were passed due to this. The 1990s witnessed a modification and regulatory consolidation phase. Older laws were revised and new ones addressed such as climate change, genetic modification and the need for more sustainable waste management practices. However, the 2000s have more complex challenges for the EU than those in the past such as making human development within and outside the EU more sustainable, and addressing the multiple challenges of enlargement into central and Eastern Europe, where environmental protection has tended to be a low priority (Jordan and Lenschow, 2000; Scott and Holder, 2006).

The EU however is being criticised for poor implementation. An example of this is in 2003 when a report on environmental infringement procedures was initiated by the

European Commission. The environment sector represented over a third of all complaints and there were 509 ongoing infringement cases concerning non-compliance related to violations of EU environmental law, with the number of new complaints totalling 505. The EU member environmental infringement cases are on the rise despite the implementation of green legislations (Commission, 2003).

Since the implementation of NAFTA, each of the NAFTA countries has weakened basic environmental protections even though each country expressed their commitment to environmental standards. For instance, British Columbia in Canada recently relaxed environmental standards for its forestry sector in order to compete more effectively for export markets. Another incident, MMT ban was lifted in Canada. US manufacturer of MMT, (Methylcyclopentadienyl manganese tricarbony) a gasoline additive that is a suspected neurotoxin, accused Canada of defaming the company's image and therefore, decreasing their profits which is a violation of NAFTA. Under this precedent established in the MMT-Canada case, virtually any environmental law that affects the profits of a foreign investor can be challenged as a NAFTA violation (Club, 2004).

In addition to direct challenges in the international trading system, business lobbyists, regulators, and trade officials have weakened or blocked proposed laws and regulations as violations of trade rules. Under the WTO's Agreement on Government Procurement, states and localities could be barred from procurement aimed at promoting environmental protection, human rights, and other causes. An example of this is the ban on beef treated with growth hormone being lifted in Europe because the US complaint was based on the premise that such a ban is forcing the country to adopt a lower

international health and safety standards. European Union scientists have conducted new studies establishing a cancer risk from hormone-treated beef (Kastner and Pawsey, 2002).

Another example, United States Trade Representative (USTR) is now lobbying the European Commission to reject proposed new regulations aimed at cleaning up the computer industry based on the premise that the proposed regulations, including a hazardous materials phase-out and a recycled plastics requirement, violate WTO rules. In addition to that example, the Commerce Department is also lobbying Japanese environmental officials to block improvements in Japan's guidelines on motor vehicle fuel efficiency, arguing that the regulations would hurt U.S. auto exports.

Saudi Arabia is a member of the WTO and OPEC. Neither of these has been shown to be conducive of green legislature in many countries. However, in general governments have incentives to weakly enforce environmental policies as globalisation increases, as a result of both supply driven pressures and demand driven political pressures arising from heightened trade openness (Andonova *et al.*, 2007).

Membership of certain trade blocks can have many effects on the environment depending on the CSR (corporate social responsibility) for the trade block. WTO for example has shown that money overrides good economic policies especially in the case of genetically modified foods and in the case of hormone treated beef.

In 2007, an article in the Financial Times, criticised OPEC for its stance on bio fuels. OPEC had insinuated that rise in oil prices were due to the increase of bio fuels in

the market which lead to cutting investment in new oil production in response to moves by the developed world to use more bio fuels. Many groups likes the Canadian Renewable Fuels Association (CRFA), the European Bio Ethanol Fuel Associations, the Brazilian Sugarcane and Ethanol Industry Association (UNICA) and the US Renewable Fuels Association – were answering the charges by OPEC that ethanol was in part responsible for the soaring price of crude oil, a price that will fetch OPEC nations more than $1.2 trillion dollars in 2007 cited from (Arthur, 2007) These groups entered a counter claim stating that OPEC is misleading and making unsubstantiated claims about the role of ethanol in world oil markets. These groups published a counter advertisement against OPEC's view on bio fuels which was published in the Financial Times http://energystandard.blogspot.com/2007_07_01_archive.html

This small but important exchange of opinion suggests that, certainly in this case, OPEC is hindering the development of green source alternatives because it threatens their sustainability. As there is no reliable information on this there is a need to explore the importance of this issue for Saudi businesses **Therefore, no hypothesis has been formulated for this factor.**

Business Support and Advisory Groups

Null Hypothesis: Lack of environmental business advice in Saudi Arabia will not influence the level of CEM performance adopted.

Explanation of hypothesis development:

In western countries there has been a plethora of organisations seeking to advise companies on how to ‘go green’. In the UK, for example, these include, Business Link and the Green Business Network, but there are many more. Globally there have been a

range of initiatives designed to encourage good corporate environmental performance. Chapter 3 described some of the early charters and principles that emerged in this role and these are supported by a range of international organisations including the Sustainable Development Advisory Council, the International Council for Local Environmental Initiatives (ICLEI), the International Initiative for Sustainable Built Environment (IISBE), and the World Business Council for Business Development (WBCBD). This study will aim to find out if companies in Saudi Arabia have accessed advice and guidance from these quarters. According to the knowledge of the researcher there are few, if any, local advisory services that exist in Saudi Arabia.

The Quality Revolution

The last two decades have witnessed what is commonly called the quality revolution, during which businesses became more focused on quality in services and products. The revolution was both started and supported by the advent of quality management systems such as ISO 9000 and this new systematic approach to business has paved the way for the uptake of environmental management systems such as ISO 14001. The objective of ISO 9000 is to provide an effective quality system reflecting a company's practice for producing goods and services that conform to certain requirements (Van Der Wiele *et al.*, 2005). Many diverse opinions on ISO 9000 in different developed countries have emerged but little empirical research has been undertaken in developing countries (Magd *et al.*, 2003).

Null Hypothesis: there will be no significant difference in CEM performance due to quality revolution.

Explanation of hypothesis development:

This research hopes to find out if the Saudi companies are engaging in the quality revolution that might result in environmental revolution, via a commitment to CEM. An empirical survey of 175 certified manufacturing firms in Saudi Arabia focused on the benefits achieved from ISO 9000 implementation. These included the level of satisfaction with the standard, the anticipated steps after ISO 9000 implementation, factors influencing the choice of registration agencies and the associated problems with registration agencies. It found that certified firms in Saudi Arabia have performed well in their registration process and have benefited from ISO implementation. It concluded that this could be due to the high level of interest in the area of quality, as most customers request quality or a certificate to prove existence of quality products/services (Magd, 2006).

Science and Technology

Null Hypothesis: There will be no significant difference in CEM performance due to scientific innovations.

Explanation of hypothesis development:

Scientific innovations are often seen as important for solving environmental problems. The 'technological paradox' is relevant here; in other words while technological development has been the main reason for environmental problems, technological developments are also likely to provide many tools for managing and improving our environment. Developments in science and technology are therefore often

seen as drivers of environmental management. However, it is difficult to predict whether this is likely to be an important factor in the Saudi Arabian context.

Incidents and Accidents

We have seen from the literature review that accidents causing environmental harm have often been the catalyst for better environmental legislation and management. For example, the Exxon Valdez spawned the CERES principles and the Love Canal incident lead to the US superfund.

Null Hypothesis: The necessity of preventing environmental accidents will not significantly influence the level of corporate environmental management performance in Saudi Arabia.

Explanation of hypothesis development:

In some cases, the fear of causing environmentally related incidents and accidents are also major drivers for good environmental management. It is anticipated that this fear is likely to be an important driver of good practice.

The Arabian Gulf has experienced a number of moderate-to-large oil spills over the past 20 years. During the Iran-Iraq war from 1980 to 1988, oil tankers in the Gulf were attacked, resulting in thousands of barrels of oil spillage. Many ships were submerged during the Iraq-Iran War, and will remain a chronic source of contamination of the Arabian Gulf for many years (Krupa, 1997). However, the damage done to the environment by that war was dwarfed by the catastrophic effects of oil spilled during the Gulf War (Vincent, 2008).

On January 23, 1991, Iraq began intentionally pumping crude oil into the Gulf from the Sea Island super tanker terminal 10 miles off the Kuwaiti coast -an estimated 11 million barrels of oil from January 1991 to May 1991(Sadiq and Mccain, 1993) . The Gulf War- Kuwaiti Oil Spill in 1991 was described by then Pentagon spokesman Pete Williams as "the worst environmental disaster in the history of the Arabian Gulf". As the worst oil spill in history, this was more than twenty times larger than the Exxon Valdez spill and twice as large as the previous world record (www.incidentnews.gov/).

Krupa (1997), investigated the environmental impact of the oil spills on Kuwait and Saudi Arabia. The environmental damage affected more than 800 miles of Kuwait and Saudi Arabian beaches that were oiled and marine wildlife was devastated. Oiled birds revealed on CNN were the hardest hit of any group of organisms and thousands lost their lives (Sadiq and Mccain, 1993). Along with the migratory birds, marine turtles were also in danger. Both the hawksbill and green turtles utilise the offshore islands of the Gulf as nesting sites. After the National Commission for Wildlife Conservation and Development (NCWCD) investigated the Gulf beaches, they determined that some turtles had died and that most Karan Island green turtles had lesions.

While a major international response effort recovered more than one million barrels of oil from Saudi Arabia's shoreline, the spill caused severe environmental damage, highlighting the need to respond quickly to future spills. The Saudi government through MEPA, brought forth legislation concerning the reporting and response capabilities outlined in the National Contingency Plan for Combating Marine Pollution by Oil and Other Harmful Substances in Emergencies (CM/157 1411 H) A series of NGO's have been established in the area to help coordinate and prevent future spills.

The International Tanker Owners Pollution Federation (ITOPF) established Environmental Protection Coordinating Committees—one for the Red Sea coast and one for the Gulf Coast. Among their responsibilities are the preparation of area plans (including local plans for marine and coastal oil facilities), identification of necessary manpower and equipment, and training staff in response activities http://www.itopf.org/

In addition, the Regional Clean Sea Organisation (RECSO), formerly known as Gulf Area Oil Companies Mutual Aid Organization (GAOCMAO), was established to protect the marine environment in the Arabian Gulf from oil pollution emanating from operations of member oil companies in the region. The organization was founded on the CSR idea that each company shares the responsibility to ensure a long-term commitment to the "Clean Gulf" concept by preventing operational oil spills, stopping tanker discharges, safety of ships leading to cleaner seas, and total stoppage of industrial waste discharge to sea (www.recso.org).

However, despite these war created incidents, and the governmental responses to them, it is fair to say that the general public in Saudi Arabia have never really had their environmental consciousness raised. These incidents are seen not as accidents but as wilful actions, and the difference in interpretation might be one reason why public outrage as been minimal. A further factor being that overall the Saudis have relatively low levels of environmental awareness therefore it is assumed that;

Stakeholder Pressure

Another factor that also drives private companies to take up CEM is related to the pressure that some stakeholders have on them.

Null Hypothesis: Stakeholder pressure is not an important driver for CEM performance in Saudi Arabia.

Explanation of hypothesis development:

Some previous studies like the EIRIS study showed that many Japanese companies were compelled to adopt ISO 9000 to secure the buyers from foreign companies (Maier and Vanstone, 2005). Similarly research has found that this has also been the case for ISO 40001 (Corbett and Russo, 2001) and this is some of the reasoning behind hypotheses 1 to 5 of this study. For example foreign branches of multi-national organisations are often pressurized to raise the quality of their products as well as their business operations to meet the international standards followed by their peers.

Other stakeholder groups include local NGOs and environmental groups who push for greater engagement of the business world with the environment. The literature review has already identified this to be the case and has provided a number of examples where this pressure has resulted in improved corporate environmental performances as seen in business group like International Tanker Owners Pollution Federation (ITOPF) and Regional Clean Sea Organization (RECSO).

For this reason it is expected that this factor will generally not be a driver for the uptake of environmental policies and procedures of private companies in Saudi Arabia.

Corporate Social Responsibility

Terms like ‘corporate social responsibility’ (CSR), ‘corporate citizenship’, and ‘partnership’ have become buzzwords in international development discourse. This reflects the fact that an increasing number of transnational corporations (TNCs) and large domestic companies, supported by business and industry associations, are adopting a variety of voluntary initiatives that aim to improve their social, environmental, and human rights record. Such initiatives include, for example, codes of conduct; measures to improve environmental management systems and occupational health and safety; dialogue with stakeholders and partnerships with NGOs and UN agencies; and increased support for community development projects and programmes (Utting, 2005). This interest in CSR from companies around the world has resulted in a new impetus for environmental management. CSR grew primarily out of the need for companies to demonstrate their responsibility in the aftermath of various scandals (e.g. ENRON and NIKE) and initially tended to focus on social issues, such as human rights, fair wages, and terms of employment. However, more recently much of the focus has returned to the environment and many of the CSR reports that have been published in the last five years have tended to highlight environmental initiatives as much as social ones.

Null Hypothesis: Corporate Social Responsibility will not have a positive effect on the environmental performance of private companies in Saudi Arabia.

Explanation of Hypothesis development:

Although CSR is not firmly established in Saudi Arabia, it is anticipated that those companies that are a part of larger, international organisations, or those that work

with these, will be encouraged or even required to address the issues raised. This research therefore views the CSR agenda as an external driver that will encourage companies to adopt environmental legislations and policies.

It has been seen in the literature review that it is often the opinions and actions of one individual that leads to change in an industrial sector. For example, the Body Shop entrepreneur Anita Roddick was responsible not just for establishing alternative products that were more natural and did not use animals for product tests, but also for revolutionising the industry so that very few cosmetic companies now use animal testing and many have sought to create a more naturally produced range of products. So it is possible to say that the presence of environmental pioneers in industry is likely to pressurise other companies in that sector to improve their performance.

This research will explore the effect of the presence of such pioneers in Saudi Arabia and how far they can be seen as an external driver for the uptake of environmental policies and practices.

Consumer Awareness

In the literature review it was found that consumers can play an effective role in encouraging good practice in industries. In some western countries the consumers have played a significant role in encouraging stronger environmental performances. For example, in the 1980s it is thought that consumer concern for the hole in the ozone layer was a major driver for companies to improve their products to lessen the harm. As a result, aerosols were redesigned so that they did not release CFCs (a major cause of

ozone depletion (Geller, 2002). In Germany and Scandinavian countries, consumer awareness about the environment is higher than in other parts of the world and this translates into greater pressure for companies to have higher environmental standards (Miles and Covin, 2000; Ginsberg and Bloom, 2004). However, as far as the knowledge of the researcher goes consumer awareness is very low if any, nevertheless, this research will explore what efforts are being undertaken by the Saudi companies to develop consumer environmental awareness in Saudi Arabia.

Null hypothesis: Consumer awareness will not influence the adoption of environmental management performance in Saudi corporate private sector.

Internal Factors

As can be seen from Figure 7.2 the internal drivers for taking up corporate environmental management systems include senior management support, perceived competitive advantage, the need to develop new markets and pioneers within the company.Senior Management Support

Null Hypothesis: Senior management support does not influence adoption of corporate environmental management performance.

Explanation of hypothesis development:

Previous studies including those by Tinsley, (2002) and Zutshi(2003a), found that the commitment of top management has a major positive effect on the environmental performance of the company. If top management is committed to introduce and implement policies and procedures that are environmentally safe, they are more likely to

help in improving environmental management in the company. All things being equal (cost, quality and flexibility) many top management executives would rather choose a supplier with better environmental performance than other higher environmental risk suppliers. For example, Bergstrom (1996) found that it was senior management backing that encouraged companies like Ford Motor to implement ISO14001 at all North American manufacturing facilities. This factor will be explored in this research to find out the effect of top management on introducing and implementing environmental management and how far this works as an internal driver. It is expected that the Saudi companies whose senior management is committed will help in introducing and implementing good practice. The support and commitment of top management is considered an essential factor for the development of proactive environmental strategies on the basis of two arguments: (1) the resources required for the implementation of environmental practices will be more easily available if the person responsible for these resources supports the plans and (2) many environmental initiatives require the collaboration and coordination of different departments and divisions and this is easier to manage when such initiatives are endorsed from the top (Hunt and Auster, 1990; Berry and Rondinelli, 1998). Top management in corporate organizations in Saudi Arabia are seemingly geared mainly to sustaining economic benefits with negligible or no involvement in environmental agendas.

Perceived Competition

Null Hypothesis: Perceived potential competitiveness as an internal driver does not influence good environmental management.

Explanation of hypothesis development:

Often senior management's engagement is not a result of altruism but a pragmatic response to the need to compete for a share in market. Electrolux is an example of a company which has taken corporate environmental management very seriously following management identifying the need to compete with for a share of the market (Shipley, 2000). Other internal drivers include the perception of the competitive advantages of introducing environmentally safe products and using environmentally safe business operations. Management that understands that any initial higher costs are countered by long term benefits are more supportive of good environmental practice.

Developing New Markets

A further potential internal driver is the need to develop new markets.

Null hypothesis: The need to develop new markets will not influence adoption good environmental policies and procedures.

Explanation of hypothesis development:

If Saudi companies want to compete with other companies in countries around the world, it is likely that they will have to improve their environmental performance. This is related to some of the external drivers discussed above (e.g. globalisation, block membership, stakeholder pressure) but the focus here is on the perception in individual companies of their need to develop new markets. It is, of course related to the previous factors and several of those in the 'external' section.

Pioneers within a Company

Past research has identified the importance of environmental pioneers or 'champions' within a company (Simon *et al.*, 2002). It has been found that if you have an individual or a group of individuals who feel strongly about environmental issues, and if they are supported they are likely to push awareness down to other members of the company. This raised awareness then means that they are able to encourage other staff to engage in good environmental practices.

Null Hypothesis: Pioneers within a company will not influence the adoption of good environmental management performance.

Explanation of hypothesis development

In Saudi Arabia, some examples of pioneers were mentioned in the newspaper Arab News Sept 2007. http://arabnews.com/saudiarabia/ An example of a pioneer is Suhaila Baarma who works in Mawakib Al –Ajr, Environmental Dept. Mawakib Al-Ajr, a nonprofit organization that manages the large Haraj market in Jeddah's Industrial City. It takes second hand materials like furniture, clothes and etc and sells them with the proceeds going to the orphanages. The organization also started a recycling initiative. With efforts from the "bin ladies" – a group of trash collectors that sift through dumpsters - as well as municipal garbage collectors (often low-income South Asian workers), garbage hawkers and dump-sifters form the backbone of recycling in the Kingdom. They skim through the dumpsters and separate plastic, metal and paper and in return make some money off of it. Places like Mawakib Al-Ajr buys these materials and sells it back to the factories.

> *"Recycling is not only an environmental responsibility, it is a religious and social responsibility, too," said Suhaila Baarma, director of the Environmental Department at Mawakib Al-Ajr.When I first took charge of the Environmental Department I had to search in the local Yellow Pages for companies that were willing to buy used materials, like metal, glass and plastic," she said. "And it took me a couple of months to find companies that wanted to recycle."*

Other examples of pioneers mentioned in the Arab News article are from a nonprofits group called Nabta. Nabta was founded and managed by Doaa Alim, Sawsan Alim and Anwar Abulkher. Specializing in educational environmental awareness, Nabta developed a curriculum which includes workshops and real life activities for students at the primary and high school levels about recycling, pollution and water and energy conservation.

This research will seek to explore the existence and the role of any such pioneers working within the businesses included in this study**.**

Lack of Knowledge

Lack of knowledge and environmental awareness can be a major barrier to enhanced environmental performance. If the staff is not aware of the need to behave responsibly then it is unlikely that they will engage with good practice. This is one of the key reasons why internal pioneers are so important (see above). Past studies have found that low levels of awareness are problematic and that good environmental practice often starts with environmental awareness campaigns (Tinsley, 2002).

Null Hypothesi: Lack of environmental awareness amongst staff will not influence environmental performance among Saudi private sector.

Explanation of hypothesis development:

This hypothesis is related to consumer awareness discussed earlier wherein low environmental awareness among Saudis in general includes the staff in various Companies.

Lack of Investment

It is a known fact that when senior management supports environmental management policies it normally results in the release of funding or other resources to facilitate it. A certain level of investment (whether time or money) is imperative for good environmental practice. Where there is no investment, it is likely that performance will be poor, even if there are good intentions (Tinsley, 2002). Therefore, it is assumed that;

Null hypothesis: A lack of investment in environmental projects will not influence good environmental management as an internal barrier.

Explanation of hypothesis development:

This has been assumed because it has been mentioned earlier that lack of environmental awareness in general among Saudis is evident to a great extent in the lack of pioneers, lack of CSR activity and lack of investment in environmental projects.

Perceived Lack of Need

While it is clear that there are various barriers to good environmental management, perhaps the most crucial one of all is the perception by companies that they do not need to engage with the environmental debate and that they can continue quite

happily, and profitably, without worrying about it (Dilts and Prough, 1989). Therefore it is hypothesized that;

Null Hypothesis: **Companies that perceive the need to engage with environmental issues will not influence the uptake of good environmental management practices.**

This is clearly a major problem in Saudi private sector, but one that needs little discussion.

7.3 Typology of Corporate Environmental Performance in Saudi Arabia

Based on the investigation of the salient characteristics of private businesses and the external/internal drivers/barriers that may affect the level of their uptake of environmental policies and procedures, this study will also attempt to classify the organizations studied under one scale in terms of their level of environmental performance.

It is argued that an organizational performance can be categorized as lying somewhere between the resistant firm and the transcendent firm as previously discussed in Chapter 4. The final categories will be comparable to scales used in past research (e.g. the ROAST scale by Welford, 1995), but will reflect the unique situation of private companies in Saudi Arabia. It is anticipated that the study will result in at least three categories that will reflect good, bad and indifferent performances. In order to make that

classification it will be necessary to explore what is actually meant by corporate environmental performance.

7.3.1 Measuring Performance

According to Figure 7.1, a company's performance is derived from investigating the initiatives a company has undertaken for environment sustainability, the type of organizational support it has along with the extent of environmental operations and environmental responsibility of its actions it undertakes. The model suggests that the corporate environmental performance of companies can fall under these four themes and in turn under each theme the level of the corporate environmental performance of the company could be measured in relation to the various business features and external and internal drivers/barriers discussed above. The four themes derive from those suggested by Illinitch et al (1998) who attempted to categorize the different factors that have an impact on the corporate environmental performance of private companies. The themes suggested by this earlier study included (l) internal systems; (2) external stakeholder relations; (3) external impacts; and (4) internal compliance. Another researcher (Banerjee, 2002) also identified various indicators of environmental performance that included driving forces and the existence of reactive response and proactive responses. This research has been influenced by these authors and these ideas have been modified to cover elements relevant to the Saudi situation. The contents of each of these four themes; Environmental Initiatives, Organizational Support, Environmental Responsibility and Environmental Operations, will now be explained.

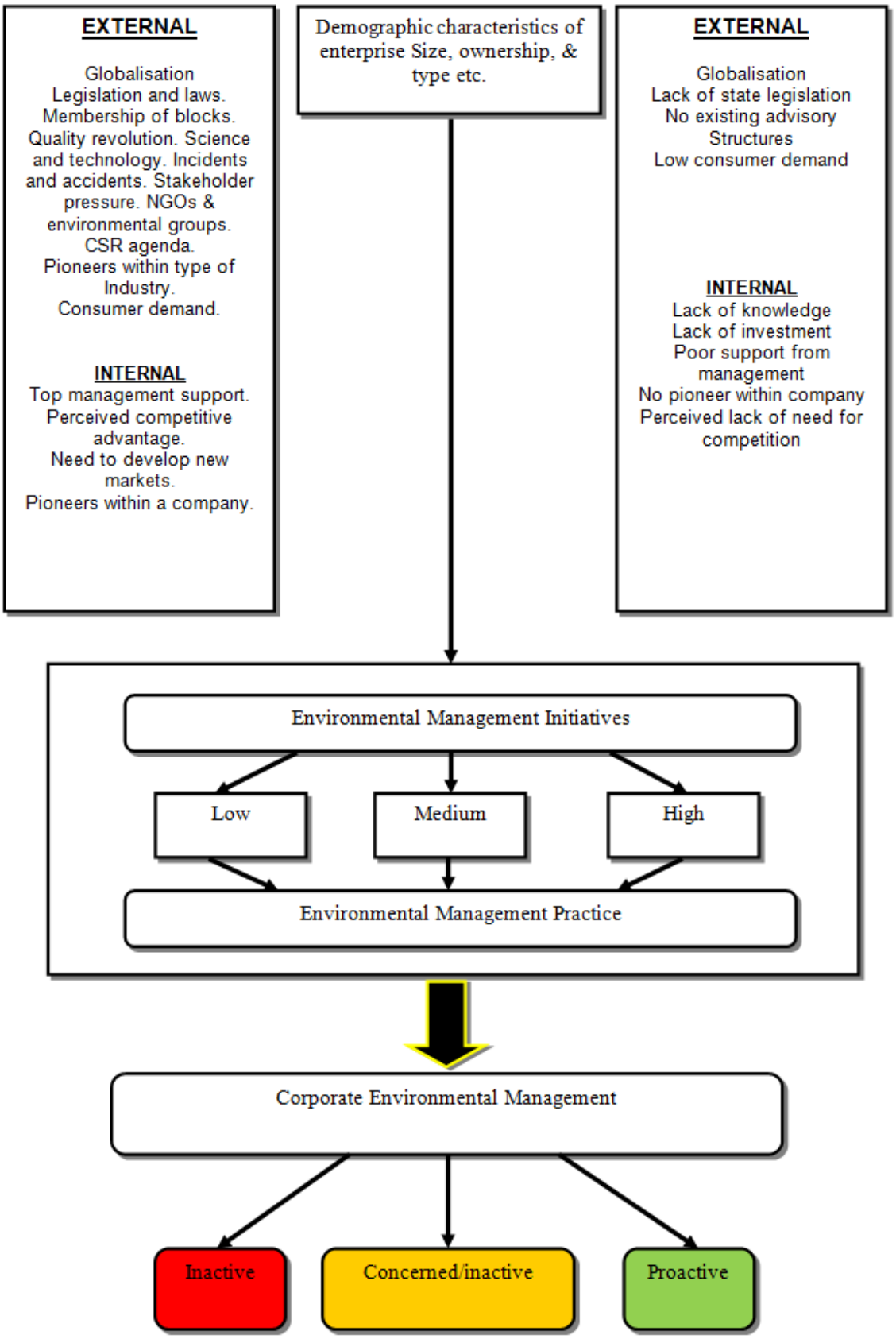

Figure 7.1 Conceptual Model

7.3.2 Environmental Initiatives

The first theme covers environmental initiatives which are about whether organisations have nine specific initiatives in place. These initiatives are: written environmental missions statements, board members with specific responsibility for environmental issues, accreditation to ISO14001, or working towards IS014001, the use of Life Cycle Analysis, external experts for environmental advice, environmental marketing programmes, environmental audits, and influential environmental officers in post. The research plans to use these as indicators of a company's commitment to environmental issues. For example, the existence of an environmental mission statement should be a signal that a company wishes to address its responsibilities, the existence of environmentally aware board members and environmental officers should give an indication of commitment (Metcalf *et al.*, 1996) and environmental auditing provides the basis and support for forming environmental policy and targets, and as such should indicate how seriously an organization takes its responsibilities.

It is assumed in the present research that the environmental initiatives that Saudi companies actually have taken will be the first single most important theme that will reflect the company's level of uptake, in terms of high, medium, or low levels, of environmental policies and practices (see Figure 7.1). Hence, this theme will be investigated separately first to see how it is affected by the demography of the company (e.g. company size, company type, sector, origin, nationality and linked later to the three other themes (organizational support, environmental operations and environmental responsibility).

7.3.3 Environmental management practice

This comprises of three measures namely; Organizational Support, Environmental Operations and Environmental Responsibility discussed below.

Organizational Support (OS)

The second theme is about the level of commitment senior management gives to their organization and will indicate the level of support that is provided for environmental actions. The issues covered in this theme are primarily about the perceived attitude and behaviour of senior, or 'top', management with regard to a range of environmentally related issues. These include accident prevention, compliance with legislation, health and safety practices, support for employees, allocation of resources, training initiatives, employee incentives and the profitability of good environmental management and the importance of the image of the company. These various issues had all been identified in the literature as important and relevant to the role of senior management.

Environmental Operations (EO)

This theme relates to the specific operations undertaken by a company with regard to the environment. Although many organizations use similar practices to manage their environmental responsibilities, there is great discrepancy in the actual implementation of these actions. This theme attempts to identify the main areas of activity that an organisation might be expected to engage with if they were hoping to ease their environmental impacts. This theme therefore includes actions to limit waste, water, energy, and other resources. It also covers product design and pollution

minimisation. Efforts of the company to educate suppliers and to communicate their environmental performance with stakeholders are also part of this theme.

Environmental Responsibility (ER)

This theme pulls together much of what has already been covered but instead of looking at detailed actions, aims to look at the broader issue of responsibility. This theme therefore explores more general issues about a company's willingness to improve technology and its products and how the company is prepared to publicly demonstrate its responsibility. Corporate responsibility must span across four distinct domains: legal, social, economic and technological. This will explore Saudi businesses' commitment towards society and the environment, their responsibility towards improving their productions to suit the needs of their customers, their responsibility towards the stakeholders by reporting in a timely and accurate manner, as well as looking at the overall environmental impacts of their business operations.

The companies will be categorised into three categories according to their environmental management scores on the total CEM scale and each of its three submeasures. It is anticipated that three categories of environmental management will emerge namely; Inactive, Concerned and Proactive. The companies will be statistically assigned to these categories based on the Mean score and plus/minus one Standard Deviation on the total CEM scale as well as its submeasures. For example, companies below one Standard deviation minus the Mean score will be categorized as Inactive, while those falling in the range of plus and minus one standard deviation from the Mean will be categorized in the mid category of Concerned. One standard deviation plus the

Mean are those that will fall in the proactive category. This procedure will be implemented in chapter 9 where the descriptive analysis of the findings is undertaken.

The following chapter will outline the methodology used to carry out this study and to test the hypotheses.

CHAPTER 8 Research Methodology

This chapter gives an overview of the methodology used to test the hypotheses outlined in the previous chapter. It covers in particular the main stages that were followed in undertaking the study, the research design and methodology used, the sample data investigated and the criteria for the selection of these data.

8.1 Research Design and Methodology of Data Collection

The hypotheses stated in the previous chapter were formulated inductively from the researcher's observation and the literature surveyed. The methodology follows the hypothetical- deductive model to assess the factors that influence corporate environmental management policies adopted by private business enterprises in Saudi Arabia.

The study was undertaken in two main stages:

- Quantitative stage where the researcher aimed to gather information about the level of awareness, attitudes and performance of a large sample of Saudi private enterprises in relation to environmental policies and practices.
- Qualitative stage where some enterprises, from the large sample investigated earlier, were selected and explored in more detail, as case studies, to gain more information and understanding about their culture, attitudes, environmental performance.

The methodology used in the first stage is described below. The methodology of the qualitative stage followed by its findings is described later in chapter 11.

As the objective of the first stage of the study was to assess the environmental performance of private enterprises all over Saudi Arabia, it is considered a descriptive study. Therefore, the survey method was used in this stage. A considerable amount of research has been undertaken regarding the advantages and disadvantages of the various types of survey and these have been summarised in Table 8.1

Table 8.1 Summary of advantages and disadvantages of the most typical survey

	Mail Survey	Telephone Interview	Face-to Face Interview
Speed of data collection	**Slow – No control**	**Very fast**	**Moderate to fast**
Geographic Flexibility	**High**	**High**	**Limited to moderate**
Respondent cooperation	**Moderate – poorly designed questionnaire will have low response**	**Good**	**Excellent**
Versatility of questioning	**Highly standardized format**	**Moderate**	**Versatile**
Questionnaire length	**Varies depending on incentive**	**Moderate**	**Long**
Item non response	**High**	**Medium**	**Low**
Possibility of respondent misunderstanding	**Highest**	**Average**	**Lowest**
Interviewer's influence	**None**	**Moderate**	**High**
Supervision of answers	**N/A**	**High**	**Moderate**
Cost	**Lowest**	**Low to moderate**	**Highest**

Source: Business Research Methods, USA: The Dryden Press (Zikmund, 2000)

8.2 Sample of the study

The main objective of the study required a sizable sample of private enterprises to draw reliable inferences about the nature and trend of environmental management in

the Kingdom of Saudi Arabia. As such, firstly, a list of all private enterprises registered in the Ministry of Commerce was acquired by the researcher. However, the information provided in the list by the Ministry was not adequate enough to apply a systematic random sampling procedure. That is, it lacked detailed information regarding the profile of the enterprises that indicates their major characteristics in terms of size, turnover, number of employees etc. However, the Ministry of Commerce releases every year an updated general list of enterprises in the country. The researcher used the list that appeared in the 2006/07 (www.the-saudi.net/business-center) These included businesses from the manufacturing and service sectors from all over the country, and ranged from the well-known to the relatively obscure. A part of the list is given in Appendix B).

Source: Department Of Military Survey, Ministray Of Defense and Aviation, 2000 and General Department of Statistics, 2005.

Figure 8.1 The three major administrative and commercial regions in Saudi Arabia

Thus, 700 enterprises were short listed from all three regions of Saudi Arabia; western, central and eastern.

This short list was compiled based on the following general criteria;

- All businesses must be private companies with a base in Saudi Arabia
- The different businesses must represent a wide range of types (Multi-national, International, National working globally, national working nationally only, franchised) and sizes (large, medium or small)
- The different businesses must fall under the two sectors of industrial and service companies and must represent a wide range of areas of activity (e.g. oil, chemical, food, construction).
- The businesses must be accessible to the researcher and readily available to partake in the study

Data collection instrument:

This research used a self-administered questionnaire designed in the English language (Appendix C1) and the Arabic language (Appendix C2) to extract vital information on the main themes of the study mentioned in the conceptual model (see chapter 7). It is the procedure that links theoretical categories (concepts) with empirical research and is therefore, the means by which such categories are researchable. (Bryman and Cramer, 1996). The self administered questionnaire was developed in Arabic and translated into English and again back translated into Arabic to ensure that statements in both versions conveyed the same meaning.

According to Emory and Cooper (1991) and Mangione (1995), the quality, validity and effectiveness of the research can be affected by various design factors, such as question content, question type, wording, sequence, format, structure and flow of

instrument. The following sub-sections discuss steps that were taken in this research in the design of the questionnaire.

Question Types

There are two broad types of questions, and they can be termed open and closed ended questions (Mangione, 1995). The first do not provide the respondent with specific response categories from which to choose from. The respondent is free to write in narrative form. Here although, the respondent is given the opportunity to respond freely, it has two potential disadvantages. First, the legibility of an individual's handwriting may interfere with accurate data collection. Secondly, they don't work well since many respondents tend to leave them blank. For these reasons closed ended questions were used, primarily because of two main advantages; they are quick to answer requiring no writing and the respondent chooses the response that best represents his/her opinion or situation. In addition, the analysis of close end questions is more straight forward. Here, multiple-item Likert scales were used to measure the main variables of this study. Likert scales are designed to measure attitude towards an object, which requires that an individual agrees or disagrees with a statement or responds to a single question to indicate his/her attitude towards the object (Zikmund, 2000). Because attitude scaling is used to measure the distance between "low to high", "agree to disagree", and so on, the purpose of an attitude scale is to find an individual's position on a continuum. Numerical values (e.g. 1 to 5) are assigned to the item or question responses, and these values are added to obtain total scores. Rating scales used in most surveys are typically between five and seven categories (Zikmund, 2000; Mccall, 2001). A five-point Likert scale was used for scoring responses in this research for the main independent variables. The responses ranged from 1 = Strongly disagree to 5= Strongly agree. The middle category was assigned a score of 3 = neither agree nor disagree category. All the questions in this

section were positively framed because firstly, the respondent's image is less likely to be affected by the responses and/or the results and secondly the responses require the respondent to answer the questions objectively to the best of his knowledge of the company. It also helped keep the analysis simple and straight forward.

Additionally, in one of the variables the questions were designed as a checklist for brief answers 'yes' or 'no' because they required factual information related to the presence or absence of environmental initiatives in the enterprise.

Thus, the questionnaire was meant to be short and concise to help encourage respondents to answer it effectively and in a short time. However, it tackled all the elements of the conceptual model developed in Chapter 7.

Item Content, Wording and Sequence

The content, wording and sequence of questions and statements strongly impact the effectiveness of a questionnaire. Poorly worded questions / statements can distort the true meaning, leading to inaccurate research results.

The research followed several techniques that can improve the reliability and usefulness of the research instrument. Frankfort-Nachmias and Nachmias (2000) recommended several simple techniques to increase the instrument quality. Some of the important techniques that the researcher adhered to is that questions should be brief to be read completely. Furthermore, double-barrelled questions, which combine two questions to one, were avoided as it's difficult to determine whether the answer was applicable to either, both, or neither of the two adjectives.

Another technique that this research applied was that terminology should be clearly understood by the respondent and should have the same meaning to all

respondents (Zikmund, 2000). Ways to help ensure this include defining key terms, avoiding jargon, including clear referents to pronouns and avoiding a leading question.

In order to determine the simplicity and understanding of the language used in the Arabic version of the questionnaire the researcher administered it to five PhD Saudi students at KAAU University. The students were encouraged to comment on the wording and highlight unclear points and difficult questions.

The content of the questions aimed at measuring the variables described in the conceptual model in chapter 7. These variables relate to three main components; demographic information, environmental initiatives and attitude towards corporate environmental management (CEM). Thus, the questionnaire was divided into two sections described below.

Section one

Demographic information: To reduce the effort of writing and save time the questions in the demographic section were accompanied by all the possible responses. These questions elicited information related to the main characteristics of an enterprise, example size, number of employees, type of enterprise and organizational structure.

Section two

This section consists of two subsections:

Environmental Initiatives (EI): This subsection was designed to yield categorical data consisting of 'yes' and' no' responses to nine different areas that indicate what environmental initiatives an enterprise is presently applying.

1.	**My company has clear written environmental mission statements.**	**Yes □**	**No □**
2.	**My company has a board member who is responsible for environmental issues.**	**Yes □**	**No □**
3.	**My company is accredited to ISO14001.**	**Yes □**	**No □**
4.	**My company is working towards accreditation to ISO 14001.**	**Yes □**	**No □**
5.	**My company uses Life Cycle Analysis to assess the environmental impact of the product.**	**Yes □**	**No □**
6.	**My company hires external experts to consult them on environmental issues.**	**Yes □**	**No □**
7.	**My company has an environmental marketing program.**	**Yes □**	**No □**
8.	**My company carries out regular environmental audits.**	**Yes □**	**No □**
9.	**My company appoints influential environmental officers to enhance environmental performance.**	**Yes □**	**No □**

Corporate Environmental Management (CEM):

The questions in this section were designed to assess the overall attitude of an enterprise towards environmental management. Using a five point Likert scale three sub measures; Organizational Support, Organizational Operations and Organizational Responsibility were explored. The sub-measures were designed to give three sub-scores and a combined composite score.

Organisational Support (OS)

The organisational support theme generated various statements that investigated the attitude of the respondents to the actions taken by and vision of the top management of their companies to enhance environmental policies and actions. For example, some statements asked whether the organization, represented by the top management, has a clear vision of the importance of environmental policies (statement 11), others tackled whether environmental issues are being addressed in the most important operations and projects of the company (statements 15 and 17), while some explored the existence of strategic plans to develop internal environmental performance (statements 13 and 14). To further investigate whether the organization supports the uptake of environmental policies and measures, other statements explored whether top management complies with environmental laws and legislations (statement 12) as this ensures the prevention of

future environmental problems (statement 24). They also explored whether the organization encourages its employees to consider and handle environmental issues (statement 25) by giving them incentives (statement 10), allowing them to offer suggestions on improving environmental performance (statement 26), evaluating their performance by their environmental contributions (statement 27), as well as providing all resources for training them and raising their awareness of the importance of environmental issues (statements 27, 28, 29 and 30). In the rest of the statements, respondents are asked if they believe that the top management seemed to be concerned with preventing any incidents that may cause environmental hazards (statement 18) and whether handling environmental issues will give a better image to the company (statement 22), or be profitable to the company on the long run (statements 20 and 23).

Environmental Operations (EO)

Analysis of the environmental operations of the companies investigated the attitudes of the respondents towards the operations run by their companies and the level with which they engage with environmental procedures. This was meant to give an indication of the level of environmental performance of the companies. The statements given to the respondents included reference to whether the companies design their operations in ways that minimize the use of different types of environmental resources including energy, water, paper and other raw materials (statements 35, 36, 37 and 38). They also explored whether companies ensure that their activities minimize the amount of emissions that contaminate air, water or land (statements 39, 40, and 41) and whether they generally use ways of designing, manufacturing and distributing products that do not have any harmful environmental impacts (statements 31, 32 and 33). In addition, under this theme, it was explored whether companies ensure that their operations minimize the amount of waste produced (statement 34) and whether they promote

operations of re-use of wastes and/or recycling (statements 42 and 43). The statements also explore the respondents' attitudes to whether their companies influence their suppliers of raw materials (statement 46) or at least educate them about the environmental requirements needed in the raw materials they provide (statement 45). Furthermore, this theme covers the exploration of whether respondents agree or disagree that their companies are actually ready to cover the costs of the environmental impacts of their operations (statement 48), whether they are willing to pursue alternative operations if they identify that theirs are environmentally harmful (statement 44) and whether they are subsequently transparent enough to report openly on their environmental performance (statement 49).

Environmental Responsibility (ER)

This sub-measure attempted to identify the attitude of respondents towards their company's attempts at being environmentally responsible. The statements given to respondents hence referred to the company's level of accuracy, timeliness given about the environmental performance of the company (statements 50 and 51) as well as availability of the information on such environmental aspects given to all stakeholders (statement 52). They also covered the keenness of the company on improving their end products, their manufacturing technologies and strategies for waste management (statements 54, 53, and 55).

Reliability and validity of the questionnaire

Validity of a measure can be derived by assessing the extent to which it measures what it is meant to measure. Any variable that is used in the study should be well defined and the items in the questionnaire well designed so that they measure the phenomenon under study

The questionnaire was sent to two academics at KAAU University, who were knowledgeable about the objectives and the methodology used in this study, to evaluate it in terms of its construct validity, also known as academic validity (see Appendix D) they were instructed to assess the relevance of each question to the dimension it is meant to measure. There was 100% agreement between the two faculty members regarding the face and construct validity of all the measures designed for the study.

In the study the variable, corporate environmental management (CEM) consists of three submeasures; organizational support (OS), environmental operations (EO) and environmental responsibility (ER). These variables were correlated with each other by using Factor Analysis which helps discover the factorial validity of the questions that make up each measure or construct and reveal patterns of inter-relationships among them. Three primary applications of Factor Analysis include exploring data for patterns, data reduction, and confirm hypothesis of factor structure. In this study data was explored to reveal patterns of relationships among variables.

In factor analysis eigenvalues represent the amount of variance in the data that is explained by the factor with which it is associated. The findings in Table 8.2 show that each sub measure accounts for more than 65% of the variance while the total CEM dimension accounts for 75% of the variance in the data. The extracted communalities that represent the amount of variance of the variable are given in Appendix E

Reliability means that a measuring scale should be consistent in what it measures. One way of doing this is to ensure that two people who are the same in terms of the construct should get the same score.

Table 8.2 Factor Analysis

Factors	Total Variance Explained
Organizational Support	76.492
Environmental Operations	66.601
Environmental Responsibility	73.745
Corporate Environmental Management Total (CEM)	74.868

Source: Appendix E

Reliability analysis procedure calculates a number of commonly used measures of scale reliability and also provides information about the relationships between individual items in the scale. This research uses Cronbach's Alpha as the main method for measuring reliability. Alpha is measured on the same scale as a Pearson's (correlation coefficient) and typically varies between 0 and 1. Although there is no definite value for evaluating the reliability of a measure, the closer the alpha is to 1.00, the greater the internal consistency of items in the instrument being assessed(Nunnally, 1979; George and Mallery, 2003) suggested that a set of items with coefficient alpha greater than or equal to 0.70 is considered to be internally consistent. Thus, this is a model of internal consistency, based on the average inter-item correlation (Appendix F). The alpha coefficients for constructs (factors) used in this study are shown in Table 8.3. It is noted that all the values of Cronbach's Alpha are high enough (above 0.70) to reflect a reliability in the data which means that the factors are internally consistent or reliable enough to provide support for the statistical analysis.

Table 8.3 Reliability analysis

Factor	No. of Items (Statements)	Cronbach's Alpha
Organizational Support	21	0.966
Environmental Operations	19	0.967
Environmental Responsibility	6	0.859
Total: Corporate Environmental Management (CEM)	46	0.982

Souece: Appendix F

Regression analysis

In order to determine the extent to which the measure of environmental initiatives actually undertaken by a company predicts the type of environmental performance of a company measured by the CEM scale multiple regression analysis was conducted between these two main components of the study; Environmental initiatives and environmental performance of a company measured by the CEM scale. The findings have been undertaken here to provide an empirical basis for categorizing companies both according to the factual information revealed on the EI scale and the CEM performance as perceived by the respondents of the companies.

Stepwise regression was applied as there are multiple predictors of the EI scale It aimed to identify which items (total 9 items) of EI are good predictors of performance on CEM as the outcome variable (See Appendix G for details)

It was observed from the regression analysis that four statements were found to be important predictors of overall environmental management performance of the sample companies measured by the corporate management scale CEM scale that consisted of

three submeasures; organizational support (OR), environmental operations (EO) and environmental responsibility (ER).)

- My company has clear written environmental mission statements
- My company uses Life Cycle Analysis to assess the environmental impact of the product.
- My company hires external experts to consult them on environmental issues.
- My company appoints influential environmental officers to enhance environmental performance.

The percentage of respondents who said 'yes' to the above statements is 64%, 33%, 47% and 52% respectively (see Table 9.7).

The remaining statements not found to significantly predict CEM performance were:

- My company has a board member who is responsible for environmental issues
- My company is accredited to ISO14001 or
- My company is working towards accreditation to ISO 14001
- My company has an environmental marketing program.
- My company carries out regular environmental audits.

It can be seen that these statements are directly related to having ISO 14001. As 85% of the Saudi enterprises claim to be working towards but are not yet accredited to ISO14001 therefore these statements do not have a significant association with CEM. The regression analysis helped identify the predictors in the uptake of environmental initiatives that influenced CEM performance and attitude of the sample companies.

Pilot Study

A pilot study was conducted to reveal any possible problems relating to the design of the questionnaire and also determine the nature and analysis of the responses.

The questionnaire was administered to 10 randomly selected enterprises in the city of Jeddah. On the basis of the pilot results the researcher developed a feasible method for analysing the results of the main study.

Table 8.4 gives the demographic details of size, ownership, origin and type of enterprise of the pilot sample N = 10. It can be seen in the Table that both the ownership and the origin of the enterprise are restricted to Saudis mainly as a governmental policy which is in the process of change.

Table 8.4 The demographic details

Company Size	Frequency	Percent
Less than 100	4	40.0
100 and less than 300	1	10.0
300 or more	5	50.0
Company Owner		
Saudi Only	9	90.0
Saudi & Non Saudi	1	10.0
Company Origin		
Saudi	9	90.0
Non Saudi	1	10.0
Company Type		
Industry	6	60.0
Service	4	40.0
Total	10	100

It was also observed in the pilot study that all of the respondents were not able to respond to the question of size of the enterprise because they did not have criteria from the government to categorize the enterprise. However, they provided information about

the number of employees. Therefore, it was considered appropriate to utilize this information to classify the enterprises according to the number of employees.

The second section of the questionnaire elicited information on subsection ' A'- the environmental initiatives adopted by the sample enterprises and subsection 'B'- their attitude towards CEM (corporate environmental management).

Section A consisted of 'yes' or 'no' questions all of which were positively oriented. Therefore, a response of 'yes' was scored =1 and 'no was scored = 0. The maximum score = 8 for nine questions. This is because the response of 'yes' to one of the questions (3 or 4) given below is considered as valid. This is because a company is either already accredited to ISO or working towards it.

3 - My company is accredited to ISO14001
4 - My company is working towards accreditation to ISO 14001

Section B of the questionnaire measured the attitude towards CEM. The participants did not report any problems while responding to the questions.

Overall the pilot study helped restructure the questionnaire by making it more short and precise. It also helped develop a statistical framework for identifying significant correlations and differences in factors relating to the uptake of environmental management policies by the Sample private enterprises.

8.3 Data Collection

The questionnaire was designed to collect information about the uptake of environmental management and the levels of environmental awareness and performance of a large sample of Saudi private businesses which could not be achieved by face-to-face or telephone interviews. The drop off / pick up method was considered to be the

most appropriate to distribute the research questionnaires. This reduced the disadvantages of the mail questionnaire like low response rates and slow rates of return.

Moreover, in Saudi Arabia the response rate for mail questionnaire surveys is low. According to the experience of the Research Centre of Commerce in Riyadh, the response rate for mailed questionnaires doesn't exceed 10%. However, the female researcher encountered difficulties in personally distributing the questionnaire outside the city of Jeddah (in the western region) where she resides because of the vast area of Saudi Arabia (2,250,000 sq km) including large areas of sand deserts, and the cultural gender segregation that exists in the country. Consequently, a few male graduates from the major of Business Administration were engaged to distribute and collect the questionnaire from far off places like the central and eastern regions. In all cases, the questionnaire was accompanied by a cover letter that described in detail the aim of the study and the general instructions for answering the questionnaire. The questionnaire was given in two versions (Arabic and English) to make sure that the performance of the informants was not affected by their misunderstanding of the questions.

8.4 Preparing data for Analysis

The process of analysis begins after the data have been collected. Generally, the goal of most research is to provide information. There is a difference between raw data and information. Information refers to a body of facts that are in a format suitable for decision making, whereas data is simply recorded measures of certain phenomena. The raw data collected in the field must be transformed into information that will answer the research questions (Zikmund, 2000). Thus, several processes must be performed after the return of the questionnaires in order to prepare the date for analysis to meet the research objectives. These processes include coding and data entry. Data entry encompasses

several sub-processes: editing, verification, and cleaning the data (Mangione, 1995). The following sections discuss these steps in detail.

8.5 Coding

Mangione (1995) defines coding as "the process of assigning numerical equivalents to each answer for each question in the study". In other words, coding is the process by which responses are classified into meaningful categories; the initial rule of coding is that the numbers assigned must make intuitive sense (Nachmias and Nachmias, 1992). Different coding systems were devised to categorize the raw data represented in the questionnaires in an accessible manner for later analysis of the data. This was done as follows;

Part one:

The demographic information of the company approached (i.e. name of company, number of employees, nationality of owner, origin and type of company, the area of activity of the company, and the existence of an administrative structure for the company) were categorized according to their response to each and every aspect explored. As mentioned in the pilot study the respondents' lack of information regarding the size of their company compelled the researcher to resort to the number of employees as criteria to categorize the enterprise into small, medium or large. The most comparable categorisation is that used by OECD (as discussed in Chapter 7).

The ownership of the company consisted of 3 response categories – Saudi, Non-Saudi and a combination of both Saudi plus Non-Saudi. This was reduced to Saudi and Saudi plus Non-Saudi, due to the non-existence of the third category (non-Saudi). In the case of the types of the companies, the responses were reduced to two major types;

industries or services according to the main or specific area of activity (e.g. oil industry, construction industry, plastic industries). The aim of reducing this information is to enable comparisons, between these two types, on environmental performance.

Part two:

The responses to the statements on environmental management initiatives (EI) from 1 to 9 elicited 'yes' or 'no' responses which were scored 1 and 0 respectively. The Corporate environmental management (CEM) variable was measured on a 5 point Likert scale. Responses to each statement were given a code number according to the level of agreement expressed by the respondents. So, number 1 meant that respondents do not agree with the statement at all, 2 means that they disagree to a little extent, 3 neither agree nor disagree, 4 means that they agree to little extent and 5 means that the agree to a great extent. Also, responses to some statements were analyzed individually or grouped according to a theme related to either the external or internal barriers or drivers in order to assess the extent of use of environmental activities and policies by the sample enterprises.

8.6 Data Analysis

The questionnaires for this study were distributed individually by personal contact using the drop off / pick up method of questionnaire administration.

A total of 700 questionnaires were distributed to 700 companies from the authorized database of companies issued by Jeddah Chamber of Commerce for the year 2006. The total number of questionnaires that were returned was 196 and among these only 176 questionnaires were complete and valid. Hence the rate of response (table 8.5) was 25%. Although this is a modest response rate, it still represents a sizable number of businesses in Saudi Arabia. In addition, given the sensitivity of the subject area of this

project and its low profile in the business world in Saudi Arabia, this response rate could be seen as an accomplishment

Table 8.5 Sample Size

%	Number	
100%	**700**	**Questionnaires distributed**
19.6	**196**	**questionnaires completed**
25.1%	**176**	**Valid questionnaires**

8.7 Data Entry

Once the researcher has constructed the codebook, the data needs to be coded or transferred to a form, which can then be entered into a statistical computer program for storage and analysis. This involved the following:

Methods of transferring data

This research used the Statistical Package for the Social Sciences (SPSS) to analyze the data statistically. Each questionnaire was first given a serial number, checked for errors and omissions, and can be manipulated easily by a statistical computer program for storage and analysis.

Editing Data

Editing is a sort of quality control (Parasuraman *et al.*, 1991), because some respondents may not have answered certain questions, whilst others may have written marginal comments by the side instead of checking off a box, and others may have checked multiple categories when the instructions were to select only one answer (Mangione, 1995). Therefore, the purpose of editing data is to ensure completeness, consistency and readability of the data. This was done where necessary.

Verification

Because the result obtained from data analysis can only be as good as the raw data entered, data verification is required to ensure quality data entry (Wang *et al.*, 1995), For this purpose, the research followed a careful entry of data with a check of each questionnaire entered. This process ensured that there were no mistakes in the data resulting from keystroke errors.

Cleaning Data

Cleaning data is the proofreading of the data to catch and correct errors and inconsistent codes (Nachmias and Nachmias, 1992).Two checks were made on the data before the analysis began. The first check is to verify whether coded answers were within the range of responses. The second check was to look for consistency when an answer to a particular question is determined by another answer. The researcher has applied both of these methods of cleaning data in the current research.

Data Analysis Techniques for stage one

Statistics involves methods of describing and analyzing data for making conclusions or inferences about phenomena represented by the data. Methods in the first category are termed descriptive statistics while the methods in the second category are inferential statistics.

Descriptive analysis refers to the transformation of raw data into an understandable form by summarizing, categorizing, rearranging and other forms of analysis to simplify and clarify the research data (Zikmund, 2000). Describing responses or observations is typically the first form of analysis. Descriptive analysis enables the researcher to describe and organize data in a manageable way. They provide tools for

describing associations that connect from one variable to another for reducing information to an understandable form. Inferential statistics assist the researcher in drawing conclusions about a population from research samples. It is used to determine whether an expected pattern designated by the hypothesis is actually found in the observations (Frankfort-Nachmias and Nachmias, 2000).The data were explored both for their descriptive statistics i.e. calculation of percentage, frequency distributions means, median and standard deviation. Inferential statistics included both parametric and nonparametric tests of significance i.e. t-test, ANOVA, Pearson's Chi square for association. Factorial analysis and Cronbach's alpha was also used to provide indications of the reliability and validity of the measurement scales. SPSS was used to perform all the necessary statistical analyses.

The next two chapters will be devoted to the discussion of the issues related to the results obtained from the application of the methodology of stage one described above.

CHAPTER 9 Data Analysis

The quantitative analysis of data has been undertaken at two levels. Chapter nine reports and discusses mainly the descriptive aspect of the data which constitutes the first level of the analysis of the present study while chapter ten reports and discusses the statistical significance of these results at the second level. The aim of these two chapters is to;

- Classify the information gathered about the characteristics of private businesses.
- Identify the factors that support the uptake of environmental policies and actions (drivers) or those that inhibit it (barriers)

The study consisted of two major components:

- The demographic features of the enterprise (e.g. size, location, origin, ownership and type etc.)
- Corporate environmental management measured by;
    - The environmental initiatives (EI) undertaken by the enterprise and
    - The performance and attitude towards corporate environmental management (CEM) measured on the dimensions of Organizational Support (OS), Environmental Operations (EO) and Environmental Responsibility (ER).

9.1 Statistical methods used in the study

The main statistical methods used in this study to analyse the data, were as follows:

Factor Analysis and Cronbach's Alpha's reported in chapter 8 under reliability and validity of the research instrument,

Descriptive Statistics (frequencies, weighted mean, percentages, standard deviation, cross tabulations) is undertaken to highlight the main characteristics of the sample and its distribution into categories according to their environmental performance.

The t -test was used to evaluate the differences in means between two groups of variables. We assume that the data are a random sample from a normal population with the two variables being homogeneous in variance. The p-value reported with a t-test represents the probability of error involved in accepting our research hypothesis about the existence of a difference. Technically speaking, this is the probability of error ($p < 0.05$) associated with rejecting the hypothesis of no difference between the two categories of observations (corresponding to the groups) in the population when, in fact, the hypothesis is true.

Analysis of variance, or ANOVA, also a parametric test is a method of testing the null hypothesis that several group means are equal in the population, by comparing the sample variance estimated from the group means to that estimated within the groups. We assume that the data are a random sample from a normal population. The one-way ANOVA procedure produces a one-way analysis of variance for a quantitative dependent variable by a single factor (independent) variable. Analysis of variance is used to test the hypothesis that several means are equal. This technique is an extension of the two-sample

t-test. Post Hoc Tests (e.g. LSD and Multiple Comparisons) were also applied to determine which variable mainly accounted for the significant difference.

The Pearson's Chi-Square Test for association is a nonparametric statistical test for determining the significance of the relationship between categorical variables. It was used to determine the significance of relationship between the demographic variables and the different categories the sample companies were assigned to according to both their uptake of environmental initiatives and corporate environmental management (CEM).

The value of the Chi-square test and its significance level depends on the number of observations and the number of cells in the table. The only assumption underlying the use of the Chi-square (other than random selection of the sample) is that the expected frequencies are not very small. The reason for this is that, the Chi-square inherently tests the underlying probabilities in each cell; and when the expected cell frequencies fall, for example, below 5, those probabilities cannot be estimated with sufficient precision. The same test was applied in relation to each of the demographic variables related to the two main themes mentioned above.

Additionally, the study also applied multiple regression analysis to assess the predictive power, of the environmental initiatives (EI) measure, on the outcome variable of performance on corporate environmental management (CEM) and its submeasures; organizational support (OS), environmental operations (EO) and environmental responsibility (ER)

This chapter deals with the first level of analysis, that is, the descriptive analysis of the results of the study.

9.2 Descriptive statistics of Demographic variables of the Investigated Companies.

The total number of valid questionnaires was N=176. Here 97% of the respondents who answered the questionnaire were Saudis while 3% were Saudi plus NonSaudis.

Company Size

This was assessed in terms of number of employees for reasons mentioned in the pilot study (chapter 8). The sample responses generated three categories:

Small sized companies which have less than 100 workers,

Middle-sized companies which have between 100 to 300 workers,

Large-sized companies which have more than 300 workers.

According to Table 9.1 most of the companies responding to the questionnaires were Large-sized companies (44%) followed by medium sized (35%.).

Table 9.1 Company Size of Investigated sample

Company Size	Frequency	Percent
Less than 100	37	21.0
100 to 300	61	34.7
300 or more	78	44.3
Total	176	100.0

Company Ownership

Table 9.2 shows the distribution of the sample of companies according to the origin of the company which could be Saudi based or a branch of an international chain.

From the table it can be seen that most of the companies, 93% of the total sample, were Saudi. This reflects, in general, the dominance of Saudi owned companies and companies of Saudi origin over Non-Saudi companies and Non-Saudi owners. This in turn reflects the closed nature of Saudi economy which is still beginning to open up for international investments.

Company Type

Companies were categorized into two general groups (types) according to their main activity: Industries/ manufacturing, and Service

According to table 9.3, the percentages of the Industry group of companies are 56% and 44 % are Service related group of companies

Table 9.2 Company Ownership

Company Origin	Frequency	Percent
Saudi	163	92.6
Saudi & Non Saudi	13	7.4
Total	176	100.0

Table 9.3 Company Type

Company Type	Frequency	Percent
Industry	98	55.7
Service	78	44.3
Total	176	100.0

Administrative Structure of companies

To be able to determine if the enterprises investigated have a well-developed administrative structure or not and whether respondents are aware of it, the questionnaire

inquired about the existence of an administrative structure for the company and asked for a copy of the same. This was done in order to check if the structure included any reference to a position that is environmentally oriented.

Responses showed (Table 9.4) that a large number of respondents (88%) were aware that their companies had an administrative structure. A few (8%) respondents were not aware if it had one or not and very few stated that they do not have one (5%). This is an indication that most of the private companies investigated are well-developed in terms of their structure or at least are aware of the need to have a developed administrative structure to operate in the market. However, none of the 88% reported that they have a position which is environmental oriented while the remaining 12% reported no knowledge. This will be returned to later in the thesis.

Table 9.4 Awareness of the Existence of Administrative Structures for the Companies Investigated

Does your company have a specific administrative structure?	Frequency	Percent
No	8	4.5
I don't know	14	8.0
Yes	154	87.5
Total	176	100.0

Company Location

As mentioned in the previous chapter, the questionnaire was sent to companies all over the Kingdom (Western Province, Eastern Province, and Central Province). The total number of questionnaires administered in the western region were 400 out of which 173 (89%) were returned. In both the eastern and central province 150 were administered out of which 17 (8%) and 6 (3%) were returned respectively. This rather skewed response is

discussed later, but does rather compromise any attempts to explore geography as an important influence on environmental activity.

Table 9.5 Questionnaires returned according to the location of the company

Location	Number administered	Number returned	Percentage
Western region	**400**	**173**	**89%**
Eastern region	**150**	**17**	**8%**
Central region	**150**	**6**	**3%**
Total	**700**	**196**	**Valid =176** **89.7%**

9.3 Descriptive statistics related to Measures of environmental performance

This section addresses the descriptive analysis of the data of the main part of the questionnaire that investigated the major themes that reflect the uptake of environmental policies in Saudi companies:

- Environmental management initiatives (EI)
- Measures of corporate environmental management (CEM) which consists of three dimensions; Organizational support (OR),Environmental operations (EO) and Environmental responsibility (ER)

The questionnaire is segmented in such a manner that would highlight all the above themes. It tackles the four major themes through a series of topics within that range. Table 9.6 highlights the questions relevant to the themes.

The first nine statements required yes/no answers as they explored the existence or non-existence of specific environmental initiatives (EI) carried out by respondents companies. This was used to the environmental initiatives that were actually in place within their businesses. The second measure CEM elicited responses on a 5 point scale to reflect the awareness and attitude towards environmental management as perceived by the respondents of the companies.

Table 9.6 Questionnaire Statements Categorized under the 4 themes

Theme	No. of Statements
Environmental Initiatives	1, 2, 3, 4, 5, 6, 7, 8, 9
Organizational Support	10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30
Environmental Processes/Activities	31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49
Environmental Responsibility	50, 51, 52, 53, 54, 55

9.4 Environmental Management Initiatives (EI)

Results of the responses to these questions are shown in Table 9.7. The statements are ordered according to the percentage of agreement of the respondents in a descending order. The chi square test for significance of association is undertaken in chapter 10. A significant difference was found between the 'yes and no' responses of five of the nine statements of EI which are as follows:

- *My company is working towards accreditation to ISO 14001 (Yes = 85%).*

- *My company has clear written environmental mission statements (yes =64%)*
- *My company has an environmental marketing program (No =65%)*
- *My company uses Life Cycle Analysis to assess the environmental impact of the product (No=67%)*
- *My company is accredited to ISO14001 (No = 70%)*

No significant difference was found in the 'yes' and 'no' responses to the remaining following initiatives undertaken by a company:

- *My company appoints influential environmental officers to enhance environmental performance*
- *My company has a board member who is responsible for environmental issues*
- *My company hires external experts to consult them on environmental issues.*
- *My company carries out regular environmental audits.*

The most 'popular' environmental initiative, was that *their company is working towards accreditation to ISO 14001* where nearly 85% respondents chose 'yes'. The existence of a *clear written environmental mission statement in the company* was indicated in the affirmative by 64% of the respondents while 51.7% stated that their company employed *influential environmental officers to enhance environmental performance*. This was interesting given that none of the 176 companies administrative structure provided evidence of such a role. This might suggest that if these officers do exist then they are not that prominent in the corporate hierarchy. 47.7% of respondents

declared that their company ‘carried out regular environmental audits’ and also have a ‘board member who is responsible for environmental issues'. This is interesting when we consider the much lower responses to the question on ISO 14001. Only 30% of respondents stated that their companies have been certified to ISO 14001. Although this is seemingly a small percentage, it does suggest that at least 53 companies in Saudi Arabia have met these international standards. This is slightly suspicious since a report in 2008 suggested that only 45 companies have registered for ISO 140001 (Company, 2008). from a total of 18000 companies in the whole of Saudi Arabia (http://www.alriyadh.com/2008/09/29/article377310.htm:1).

Table 9.7 Statements of the Environmental Initiatives

Statement Serial no.	Statement	Order	Yes		No	
			Freq.	%	Freq.	%
4	My company is working towards accreditation to ISO 14001.	1	150	85.2	26	14.8
1	My company has clear written environmental mission statements.	2	112	63.6	64	36.4
9	My company appoints influential environmental officers to enhance environmental performance.	3	91	51.7	85	48.3
2	My company has a board member who is responsible for environmental issues.	4	84	47.7	92	52.3
8	My company carries out regular environmental audits.	5	84	47.7	92	52.3
6	My company hires external experts to consult them on environmental issues.	6	83	47.2	93	52.8
7	My company has an environmental marketing program.	7	62	35.2	114	64.8
5	My company uses Life Cycle Analysis to assess the environmental impact of the product.	8	58	33.0	118	67.0
3	My company is accredited to ISO14001.	9	53	30.1	123	69.9

Although there is a possibility that in recent years there has been a renewed interest in achieving this standard it would seem rather fortuitous that this first fairly random survey should identify so many companies that had embraced the standard.

Additionally, to check the reliability of the responses to the statement of the adoption of ISO 14001 and that concerning carrying environmental audits chi square test of association (50.79, with p-value = 0.000) found a significant relation between the two statements. Table 9.8 shows that 3% of the sample (2 companies) claimed to have ISO 14001 yet did not carry out regular audits, suggesting a certain inaccuracy. A further 21% reported the opposite that is they do not have accreditation but conduct audits, which is slightly more understandable, but still a little suspicious in that if they are bothering with audits then they might as well go for certification. These rather confounding findings suggest the need to be cautious over the accuracy of some of this data, and confirm the necessity of a qualitative survey to authenticate (or otherwise) some of these findings.

Table 9.8 Crosstabs of responses to two statements from EI

		My company carries out regular environmental audits		Total
		No	Yes	
My company is accredited to ISO14001	No	48.5%	21.3%	69.8%
	Yes	3.0%	27.2%	30.2%
Total		51.5%	48.5%	100.0%

Table 9.7 further shows that almost half of the respondents (48%) stated that their companies have a ‘board member who is responsible for environmental issues. This is again a surprising result since none of structures presented by the companies have such a post. The validity of this response is to be further explored in the qualitative study.

Hiring external experts to consult for them on environmental issues is considered another environmental initiative by pro-active companies. The respondents were almost divided on this issue - around 48% stated that their companies hire external experts, while 53% stated that their companies do not.

Data from the Table 9.7 also shows that only 35% of the sample companies had an environmental marketing programme. A small number of respondents (33%) reported that their companies use LCA and at the same time only 30% of respondents stated that their companies have been accreditated to ISO14001 which contrasts sharply with the percentage (85%) claiming to be working towards it..

The literature in this area abounds with attempts to assign companies to categories according to their environmental performance (e.g.Welford's 'ROAST scale, 1995) as well as the uptake of environmental policies and actions. In this study an attempt was made to categorize the sample of Saudi private enterprises according to firstly the uptake environmental initiatives (EI) taken by them and secondly by the environmental management performance (CEM).

Levels of uptake of Environmental initiatives

The EI scale consists of eight statements requiring a 'yes' = 1 or 'no'= 0 response yielding a score ranging between 0 to 8. A company is placed in a level according to the number of environmental initiatives it responds to with a 'yes' =1. The levels reflect the environmental initiative levels implemented within the companies.

Based on the responses of the Environmental Management Initiatives taken by companies they have been categorized into three levels (see Table 9.9) according to their total score.

1. Low in environmental initiatives (having scores 3 or less),
2. Medium (having scores 4 up to 6),
3. High (having scores 7 or 8).

Table 9.9 shows the the frequency distribution and the percentage of companies in the three levels; Low, Medium or High. It can be seen that 51% of the sample companies fall in the low level, 27% in the medium and the least 22% in the high levels of uptake of environmental initiatives.

Table 9.9 Levels of Environmental Management Initiatives

Initiatives Levels	Frequency	Percent
Low	89	50.6
Medium	48	27.3
High	39	22.2
Total	176	100.0

Descriptive Analysis of levels of EI and demographic variables

The crosstabs of the EI categories with each of its demographic variable (size, ownership etc.) is undertaken below with the main aim to understand the distribution, in terms of frequencies and percentages, of the sample enterprises according to the levels of EI and highlight the distinctive features of the sample.

According to Table 9.9, most of the companies responding to the questionnaires were categorized as 'low' on environmental initiatives (51%) while the 'medium' was 27% and the 'high' 22%, with a chi square = 24.216 ($p = 0.00$) indicating a significant difference between the levels. This suggests that only 22% of the sample seem to be engaging with environmental management in any meaningful way.

Table 9.10 shows the crosstabs of categories of environmental management initiatives and the size of the company. The companies (N=176) categorized as small = 37 (21%), medium = 61 (35%) and large = 78 (44%). The Table also shows that out of

the 50.6% companies categorized as low on environmental initiatives, 20% of them were large, 14% were medium size and 17% were small. On the other hand, it was found that while large companies in the medium level of EI uptake showed more (14%) concern than, than those in the 'high' level (10%). On the other hand a very low percentage (2%) of small size companies was found to be in the medium and high levels of EI. The statistical significance of these findings has been taken up separately in the next chapter (10).

Table 9.10 Environmental management Initiatives levels & Company Size Cross-tabulation

Initiatives Levels		Company Size			Total
		Less than 100	100 to 300	300 or more	
Low	Count	29	25	35	89
	% within Initiatives categories (LMH)	32.6%	28.1%	39.3%	100.0%
	% within Company Size	78.4%	41.0%	44.9%	50.6%
	% of Total	16.5%	14.2%	19.9%	50.6%
Medium	Count	4	19	25	48
	% within Initiatives categories (LMH)	8.3%	39.6%	52.1%	100.0%
	% within Company Size	10.8%	31.1%	32.1%	27.3%
	% of Total	2.3%	10.8%	14.2%	27.3%
High	Count	4	17	18	39
	% within Initiatives categories (LMH)	10.3%	43.6%	46.2%	100.0%
	% within Company Size	10.8%	27.9%	23.1%	22.2%
	% of Total	2.3%	9.7%	10.2%	22.2%
Total	Count	37	61	78	176
	% within Initiatives categories (ICP)	21.0%	34.7%	44.3%	100.0%
	% within Company Size	100.0%	100.0%	100.0%	100.0%
	% of Total	21.0%	34.7%	44.3%	100.0%

Table 9.11 shows out of the 176 sample companies only 13 companies were owned by Saudi plus a Nonsaudi. Among these 13 companies 9 (5% of the 50%) of them were categorized as low in environmental initiatives while none were found to be high.

Table 9.11 Environmental Initiatives levels and Company Ownership Crosstabulation

Initiatives Levels		Company Origin		Total
		Saudi	Saudi+Non Saudi	
Low	Count	80	9	89
	% within Initiatives categories (ICP)	89.9%	10.1%	100.0%
	% within Company Origin	49.1%	69.2%	50.6%
	% of Total	45.5%	5.1%	50.6%
M	Count	44	4	48
	% within Initiatives categories (ICP)	91.7%	8.3%	100.0%
	% within Company Origin	27.0%	30.8%	27.3%
	% of Total	25.0%	2.3%	27.3%
H	Count	39	0	39
	% within Initiatives categories (ICP)	100.0%	.0%	100.0%
	% within Company Origin	23.9%	.0%	22.2%
	% of Total	22.2%	.0%	22.2%
Total	Count	163	13	176
	% within Initiatives categories (ICP)	92.6%	7.4%	100.0%
	% within Company Origin	100.0%	100.0%	100.0%
	% of Total	92.6%	7.4%	100.0%

Service and industry sectors emerged almost equal (Table 9.12) in the 51% of enterprises categorized as low in EI while out of the 27% labelled as medium most of them (19%) belonged to the industry sector. On the other hand in the high EI level the two sectors were again equally divided. The statistical significance of these findings is taken up in the next section.

Table 9.12 Initiatives Levels* Company Type Cross-tabulation

Initiatives Levels		Company Type		Total
		Industry	Service	
Low	Count	44	45	89
	% within Initiatives categories (ICP)	49.4%	50.6%	100.0%
	% within Company Type	44.9%	57.7%	50.6%
	% of Total	25.0%	25.6%	50.6%
M	Count	34	14	48
	% within Initiatives categories (ICP)	70.8%	29.2%	100.0%
	% within Company Type	34.7%	17.9%	27.3%
	% of Total	19.3%	8.0%	27.3%
High	Count	20	19	39
	% within Initiatives categories (ICP)	51.3%	48.7%	100.0%
	% within Company Type	20.4%	24.4%	22.2%
	% of Total	11.4%	10.8%	22.2%
Total	Count	98	78	176
	% within Initiatives categories (ICP)	55.7%	44.3%	100.0%
	% within Company Type	100.0%	100.0%	100.0%
	% of Total	55.7%	44.3%	100.0%

9.5 Descriptive analysis of Corporate Environmental Management measure (CEM)

The Corporate Environmental Management (CEM) consists of three sub measures:

1. Organizational Support (OS)
2. Environmental Operations (EO)
3. Environmental Responsibility (ER)

The responses to these statements on the 5 point Likert scale indicated the performance and attitude of the company towards Corporate Environmental Management (CEM) as a whole and its three sub measures as perceived by the respondents.

The categories of the 5 point Likert scale are:

1. Do not agree at all
2. Disagree a little
3. Agree nor disagree
4. Agree a little
5. Agree to a large extent.

Categorization of Corporate Environmental Management

On the basis of scores on the overall measure of Corporate environmental management and each of its three sub measures (Organizational Support, Environmental operations, and environmental responsibility) the sample companies have been categorized into three groups.

The three categories of the companies' of environmental performance were based on the total scores of all the statements in relation to the mean value (Mean) and standard deviation (SD). In the following section the method adopted for assigning the sample into low, medium and high performance on the corporate environmental management measure and its submeasures is described.

Table 9.13 shows the mean and standard deviation of Corporate environmental management and each of its three submeasures scores

Respondents of companies that scored lower than Mean minus the SD were placed in companies that have environmental performance labelled as 'Inactive' (I).

Respondents that scored between scores ranging between (Mean minus the SD) and (Mean plus the SD) were placed as companies that have environmental performance labelled as the 'concerned' (C).

Respondents that scored above (Mean plus the SD) were placed as representatives of companies that have environmental performance labelled 'Potentially Proactive' (P).

Table 9.13 Mean and Standard Deviation of Corporate environmental management and each of its three sub measures

	Minimum	Maximum	Mean	Std. Deviation
Organizational Support (OS)	**21**	**105**	**69.76**	**23.818**
Environmental Operations (EO)	**19**	**95**	**61.53**	**22.268**
Environmental Responsibility (ER)	**6**	**30**	**19.92**	**7.215**
Overall Corporate Environmental Management (CEM)	**46**	**230**	**151.21**	**50.532**

Companies that respond positively to environment work vigorously towards environment sustenance, operations and responsibilities and therefore display a potentially proactive performance. Similarly, if the organization displays merely environmental concern, but isn't doing much to work towards environmental planning, it would then show characteristics of being concerned with a tendency of being inactive. That is, these companies are concerned about implementing environmental policies and procedures, but are still inactive in applying them fully. Companies that don't seem to be even concerned display a very low performance towards environment sustainability.

These companies are considered inactive or unaware of the importance of having environmental policies and perhaps opposing sometimes. However, and as mentioned earlier in chapter 5 these typologies are not statements of facts but only labels (Ans and Anniek, 2002)

One important issue to consider here is that the labels assigned to the companies are relative. This is because they are calculated based on their relation to the responses given by all the respondents who participated in this study. This subsequently means that they may not actually reflect overall national/international high, medium or low standards of environmental performance, but rather reflect high, medium and low standards of environmental performance of the companies represented in this study compared to one another. Thus, companies viewed by respondents to be of high standard or proactive in terms of its overall environmental performance, may be actually still medium or low compared with a larger sample of companies in KSA and/or the world.

The raw scores of each company on the total CEM measure are given in Appendix H. The following two tables Table 9.14 & 9.15 show the number of companies, out of 176, that were placed in the three categories according to their scores in each of the three themes CEM and overall CEM.

On the overall Corporate Environmental Management Performance Table 9.14 reveals that almost an equal number of the sample falls into the two extremes 'Inactive' (I) and 'Proactive' (P) categories (30%) while almost 40% are placed in the 'concerned (C). This trend can also be observed in the results of the submeasures shown in Table 9.15 that gives the crosstabs of each of the three submeasures and the ICP categories of CEM performance. There are an equal percentage of cases in the 'I' and 'P' categories of OS, EO and ER measures of performance (30%) while the concerned category shows a

relatively higher (40%) percentage of enterprises. The statistical significance of these results is undertaken in the next chapter 10

Table 9.14 Categories of the Corporate Environmental Management performance (CEMP)

Corporate Environmental Management (CEM)	Frequency	Percent
Inactive (I)	53	30.1
Concerned (C)	70	39.8
Proactive (P)	53	30.1
Total	176	100.0

Table 9.15 Categories according to the three submeasures of CEM

Sub-measures of CEM	I		C		P		Total	
	F	%	F	%	F	%	F	%
Organizational Support	53	30.1	71	40.3	52	29.5	176	100.0
Environmental Operations	54	30.7	69	39.2	53	30.1	176	100.0
Environmental Responsibility	57	32.4	69	39.2	50	28.4	176	100.0

Descriptive statistics of responses to CEM statements

Undertaken below is a summary of responses to statements in each of the three sub-measures of the CEM scale

Organizational Support

This group of statements aimed to identify if Saudi private companies are pro-active, or not, in taking up environmental policies and measures in order to improve their environmental performance. The various statements attempted to investigate the attitude of the respondents to the actions taken by the vision of the top management of their companies to enhance environmental policies and actions. For example, some statements

asked whether the organization, represented by the top management, has a clear vision of the importance of environmental policies (statement 11), ensures that environmental issues are being addressed in the most important operations and projects of the company (statements 15 and 17), and includes these in its strategic plans (statement14) as part of their aim to develop the company's internal performance (statement 13). To further investigate whether the organization supports the uptake of environmental policies and measures, other statements explored whether the top management complies with environmental laws and legislations (statement 12) as this ensures the prevention of future environmental problems (statement 24). They also explored whether the organization encourages its employees to consider and handle environmental issues (statement 25) by giving them incentives (statement 10), allowing them to offer suggestions on improving environmental performance (statement 26), evaluating their performance by their environmental contributions (statement 27), as well as providing all resources for training them and raising their awareness of the importance of environmental issues (statements 27, 28, 29 and 30). In the rest of the statements, respondents are asked if they believe that top management is concerned with preventing any incidents that may cause environmental hazards (statement 18) and whether handling environmental issues will give a better image to the company (statement 22), or be profitable to the company on the long run (statements 20 and 23). The responses to these statements on the 5 Likert scale showed the varied attitudes among respondents concerning the level of organizational support they perceive about their company.

It can be seen in Table 9.16 that 52% respondents ‘agreed to a large extent’ that their top management cared about the issue of preventing any environmental incidents (statement 18), and complied with environmental laws and legislations set by the government (statement 12). Around 44% of the respondents agreed to a large extent that

enhancing environmental performance will improve the image of the company (statement 22). A large number of respondents (39%) also felt that the top management sees enhancing environmental performance as profitable in the long run. In fact, the weighted mean and general statistical attitudes of all responses at all levels on the 5 Likert scales placed these 4 statements at the top (statements 18, 12, 22 and 23), by responding positively.

The statements with which the respondents agreed the least was statement 15 that the organization links the evaluation of the performance of its employees to their contributions to improving the environmental performance of the company (15.9%), statement 29 that it regularly raises employees' awareness of environmental issues through training (15%), statement 30 that it allocates enough resources to environmental training (20%) and statement 10 it gives incentives to employees and managers who enhance environmental activities (21%).

The general attitudes discussed above are also reflected in the results of the responses to the statements under "Don't agree at all" where the top statement (statement 18) states that the respondents' companies offer incentives to employees and managers who enhance environmental activities. This is followed by statements 30 and 29 which refer to the resources for environmental training and opportunities for raising employees' awareness on such related issues (30% each). This supports the attitude that private Saudi companies are not that concerned with educating its employees environmentally as they do not provide them with incentives or even resources to do so.

In addition, it was also noticed that many more responses were placed under the "agree to a great extent" group affecting the quality of data. It was perhaps because the respondents were over optimistic in their reactions to the statements or were attempting

to offer the researcher satisfying answers rather than actually stating what actually is the situation in their companies. At the same time responses to some statements showed that a good number of respondents were quite critical of the organizational support offered by their companies especially when they stated that their organizations do not provide incentives or resources to employees to actually train them or make them aware of proper environmental performance. This means that although we need to treat the responses cautiously and test them against the results of the second phase of the empirical study, they are fairly accurate in terms of reflecting a spectrum of behaviours.

The responses given under the higher two groups of responses "Agree to a great extent" and "Agree a little" more or less support each other. For example, the statement receiving the highest rate of agreement under the "agree to a slight extent" (statement 24) indicates that private companies believe in the prevention of environmental problems by reinforcing laws and policies. This same attitude is reflected by the two statements receiving the highest agreement under the "agree to a large extent" (statements 18 and statement 12) which also state that the top management is concerned with preventing any environmental incidents and complying to environmental laws and legislations. On the other hand, the bottom scoring statements in these two groups of responses are not the same. In the first group, "Agree to a great extent", the bottom scoring statement is the need to link employees' evaluation with their environmental performance. In the second group, "Agree to a large extent", the bottom scoring statement is statement 10 which also refers to the organization offering incentives to employees to enhance environmental activities. Although the two statements are not exactly the same, both are linked to the role of the company in encouraging employees to enhance environmental performance which the respondents feel are not usually the concern of their top management. Concerning the statements in between, statements 23 and 15 in both groups are assigned

4th and 8th place respectively in terms of scoring. Thus, whereas the respondents' attitude in both groups of responses indicate that companies see environmental performance as a tool for increasing profits, but believe to a lesser degree that many of the companies' most important operations address environmental issues. In addition, it was also noticed that the responses given under the last two groups "disagree to a little" and "don't agree at all" more or less support each other. The top scoring statements in the two groups were 10 and 27 respectively. As discussed earlier, these two statements relate to each other as they relate to the theme of supporting employees by evaluations and incentives to enhance their environmental performance.

It was also noticed that the responses given in the middle groups, have rates of responses that average between 15% and 30%. Collectively, these responses show that many respondents were inclined to place their responses in these middle categories to offer a compromised answer. This is also supported by the general attitude reflected statistically from all the responses at all levels (neither agree nor disagree) for statements 19, 14, 26, 13, 16, 20, 17, 28, 27, 29, 30, and 10. This could be attributed to being noncommittal which reveals either genuine lack of knowledge of the environmental issue or evasion.

If we consider the statements that received a middle status on the Likert scale, these include statements 19, 14, 26, 13, 16, 20, and 17. These statements tackled themes like the organization's willingness for planning of environmental operations and strategies and having a clear vision of developing its environmental performance to meet the challenges they are likely to face in future. Generally, these statements link to the actual practical measures taken by the top management to develop environmental performance. These are issues which respondents seem to give more compromised

answers about as they may be still trying to satisfy the researcher or because it is actually true that their companies are in the process of picking these measures up. The same applies to the responses given in the group of responses under "either agree or disagree" where the top scoring statement is statement 19. This states that the top management considers environmental challenge to be most important in the present century. This is followed by statement 12 and 14. These are related to the themes of establishing internal strategies and strategic plans by the managing body of the company to help in developing environmental performance. All in all, many of the findings mentioned above on the role of organizational support have been identified by Tinsley (2002, p.277) who stated that lack of top management commitment, lack of credible environmental plans, lack of communication with employees on environmental issues, lack of resources and incentives as well as the presence of an organizational structure that does not support environmental practices can all be considered barriers to the introduction of good corporate environmental management.

Table 9.16 Organizational Support Statements

Serial	*2- Organizational Support* (ranked in Descending order of agreement)	Agree to a large extent		Agree a little		Agree nor disagree		Disagree a little		Don't agree at all		Weighted mean	SD	Attitude
		F	%	F	%	F	%	F	%	F	%			
18	In my company top management is concerned with preventing any incidents that may be caused by environmental hazards.	92	52.3	40	22.7	17	9.7	10	5.7	17	9.7	4.02	1.31	Agree to a large extent
12	In my company the top management complies with the environmental laws and legislations set by the government.	91	51.7	31	17.6	25	14.2	14	8.0	15	8.5	3.96	1.32	Agree to a large extent
22	In my company top management feels that environmental performance will enhance the image of the company.	77	43.8	43	24.4	29	16.5	7	4.0	20	11.4	3.85	1.33	Agree to a large extent
23	My company believes that preventing pollution is profitable in the long run.	68	38.6	47	26.7	29	16.5	10	5.7	22	12.5	3.73	1.36	Agree to a large extent

24	My company believes that to ensure prevention of environmental problems in future the private sector should support the environmental laws and policies re-enforced by governmental and academic institutions.	65	36.9	53	30.1	23	13.1	13	7.4	22	12.5	3.72	1.36	Agree to a large extent
11	In my company the top management has a clear vision of the importance of environmental policies	66	37.5	35	19.9	26	14.8	26	14.8	23	13.1	3.54	1.45	Agree to a large extent
21	In my company top management is willing to stop production if environmental or health considerations demand it.	64	36.4	39	22.2	26	14.8	16	9.1	31	17.6	3.51	1.49	Agree to a large extent
25	In my company top management encourages employees to handle environmental problems.	55	31.3	48	27.3	28	15.9	17	9.7	28	15.9	3.48	1.43	Agree to a large extent
15	In my company the top management ensures that environmental issues are being addressed in the most important company's operations.	60	34.1	39	22.2	19	10.8	28	15.9	30	17.0	3.40	1.51	Agree to a large extent

19	In my company top management considers the environmental challenge to be the most important in the present century.	48	27.3	45	25.6	35	19.9	21	11.9	27	15.3	3.38	1.40	Agree to a moderate extent
14	In my company the top management includes in its strategic plans environmental strategies.	48	27.3	43	24.4	30	17.0	26	14.8	29	16.5	3.31	1.43	Agree to a moderate extent
26	My company encourages employees to offer suggestions on improving environmental performance.	45	25.6	52	29.5	19	10.8	26	14.8	34	19.3	3.27	1.48	Agree to a moderate extent
13	In my company the top management has helped to establish internal environmental strategies to develop environmental performance.	45	25.6	40	22.7	33	18.8	28	15.9	30	17.0	3.24	1.43	Agree to a moderate extent
16	In my company top level managers are involved in environmental projects.	47	26.7	36	20.5	29	16.5	37	21.0	27	15.3	3.22	1.43	Agree to a moderate extent
20	In my company top management feels that to obtain more profit the company will have to re-think its strategies to cater for environmental concerns.	37	21.0	45	25.6	29	16.5	34	19.3	31	17.6	3.13	1.41	Agree to a moderate extent

17	In my company top management allocates sufficient resources to implement certain environmental projects.	43	24.4	38	21.6	29	16.5	27	15.3	39	22.2	3.11	1.49	Agree to a moderate extent
28	In my company employees are trained to become environmentally responsible beings.	30	17.0	38	21.6	30	17.0	34	19.3	44	25.0	2.86	1.44	Agree to a moderate extent
27	In my company the evaluation of the performance of employees is linked to their contribution to improving the environmental performance of the company.	28	15.9	38	21.6	24	13.6	42	23.9	44	25.0	2.80	1.44	Agree to a moderate extent
29	My company is regularly raising employee awareness of environmental issues through training sessions.	30	17.0	33	18.8	33	18.8	27	15.3	53	30.1	2.77	1.48	Agree to a moderate extent
30	My company allocates enough resources for training its employees on environmental issues	34	19.3	31	17.6	23	13.1	35	19.9	53	30.1	2.76	1.52	Agree to a moderate extent
10	My company offers incentives to employees and managers who enhance environmental activities.	35	19.9	24	13.6	25	14.2	36	20.5	56	31.8	2.69	1.53	Agree to a moderate extent

	Total	**1108**	**30.0**	**838**	**22.7**	**561**	**15.2**	**514**	**13.9**	**675**	**18.3**	**3.32**	**1.43**	Agree to a moderate extent

Environmental Operations

The responses to this factor on the 5 Likert scale showed the varied attitudes among respondents concerning the environmental operations of their companies (Table 9.17). These responses are represented and discussed below.

Results show that the statement most respondents agreed with was statement 40 which stated that their companies ensure that their activities minimize the amount of emissions of contaminants to water. The second and third statements (35.2 % and 34.75%) that their companies ensure that their activities minimize the amount of emissions of contaminants to land and air. In terms of the order of the statements as agreed upon by respondents, the rest of the statements up to statement 10 all revolved around the concern of companies to use operations that minimize use of resources and avoid emissions of contaminants to land, water, and air.

The statements that the respondents agreed the least with were statements 48, 49 and 47. These show that respondents see that their companies do not necessarily consider the costs of the environmental effects of their operations, do not present information about their environmental performance openly or use objective measures to assess the level of the environmental performance of their companies. These results are supported by the ranking of the same statements under the "do not agree at all" statements as statement 48 appears as the top statement, followed by statement 46, 49 and 47. These show that respondents' comments are reliable as they support one another. In addition to the points mentioned above, the respondents refer to the idea of requiring suppliers to meet certain environmental requirements before sourcing out materials from them (statement 46). The responses given under the "agree to a great extent" and "do not agree at all" groups of statements both indicate that their companies do not place great

importance on this issue. In addition issues like using recycling materials and thinking of alternatives to harmful environmental practices are ranked low under "Agree to a great extent" and ranked high under the "Do not agree at all" group. Thus these responses support each other.

It was noticed that the responses for statements (31, 32, 32, 42, 44, 46, 43, 45, 47, 49, and 48) that referred to the use of design, manufacture and distribution methods that are environmentally safe tanded to be in the middle group (agree nor disagree) with the rates of responses ranging between 15% and 20%. This either indicates that respondents think that their companies do not place these issues as high priorities in their environmental plans or suggests that the respondents know very little about it,

It also suggests that most respondents believe that their companies' activities are mainly confined to minimizing the amount of harmful emissions of contaminants to water, land and air, as well as minimizing the amount of energy, waste and raw materials. Respondents do not rate very highly any efforts to consider the costs of the environmental impacts of their products, or openly give information about their environmental impacts of their operations, or objectively measure the level of their company's environmental performance. In addition, the respondents seem to believe that their companies do not have any control over their suppliers environmentally and do not even attempt to educate them on such procedures or requirements. Thus, it was quiet clear from that respondents do not think that their companies make much of an effort designing, manufacturing or distributing their products in ways that minimize impact on the environment or encourage the re-use of materials or recycling.

The results suggest that private companies are still limited in their consideration of the outside effect their business operations have on the environment and that the main

environmental actions taken by them are concerned with minimizing the amount of materials needed for running business operations and preventing the spread of contaminants in air, water or land, possibly for fear of penalties or closure. The results mentioned above are similar to the results of the studies on Taiwanese companies made by the Commodity Inspection Bureau (Tien et al., 2002)) which showed a similar attitude towards the use of raw materials that respect energy conservation and environmental protection regulations. However, as is the case with Saudi companies, Taiwanese company requirements for recycling and re-using materials are not yet fully developed. The same outcome is found in studies of other developing countries like Brazil, Jordon and UAE which seem to a show a low level of concern or awareness of the environmental impact of their company's operations (Jahamani, 2003).

Table 9.17 Environmental Operations Statements

Serial	*Environmental Operations* (ranked in Descending order of agreement)	Agree to a great extent		Agree to a large extent		Agree nor disagree		Agree to a small extent		Don't agree at all		Weighted mean	SD	Attitude
		F	%	F	%	F	%	F	%	F	%			
39	My company ensures that its activities minimize the amount of emissions of contaminants to air.	61	34.7	41	23.3	35	19.9	13	7.4	26	14.8	3.56	1.41	Agree to a large extent
40	My company ensures that its activities minimize the amount of emissions of contaminants to water.	66	37.5	32	18.2	37	21.0	13	7.4	28	15.9	3.54	1.45	Agree to a large extent
37	My company ensures that its activities minimize the amount of paper consumed.	52	29.5	49	27.8	34	19.3	18	10.2	23	13.1	3.51	1.36	Agree to a large extent
41	My company ensures that its activities minimize the amount of emissions of contaminants to the land.	62	35.2	36	20.5	34	19.3	13	7.4	31	17.6	3.48	1.47	Agree to a large extent
35	My company ensures that its activities minimize the amount of energy used.	49	27.8	46	26.1	41	23.3	18	10.2	22	12.5	3.47	1.33	Agree to a large extent
36	My company ensures that its activities minimize the amount of water used.	48	27.3	52	29.5	33	18.8	16	9.1	27	15.3	3.44	1.38	Agree to a large extent

34	My company ensures that it minimizes the amount of waste resulting from its activities.	50	28.4	47	26.7	33	18.8	19	10.8	27	15.3	3.42	1.40	Agree to a large extent
38	My company ensures that its activities minimize the amount of raw materials used.	56	31.8	39	22.2	33	18.8	18	10.2	30	17.0	3.41	1.46	Agree to a large extent
31	In my company products are designed in ways that minimize adverse impacts on the environment.	47	26.7	42	23.9	32	18.2	20	11.4	35	19.9	3.26	1.47	Agree to a moderate extent
32	My company manufactures products in ways that minimize impacts on the environment.	47	26.7	36	20.5	36	20.5	21	11.9	36	20.5	3.21	1.48	Agree to a moderate extent
33	My company distributes products in ways that minimize the impact on the environment.	46	26.1	38	21.6	32	18.2	26	14.8	34	19.3	3.20	1.47	Agree to a moderate extent
42	My company promotes the re-use of waste using the most environmentally safe procedures available.	51	29.0	34	19.3	31	17.6	17	9.7	43	24.4	3.19	1.55	Agree to a moderate extent
44	My company identifies activities that are environmentally harmful and provides alternatives that minimize these harmful effects.	48	27.3	35	19.9	27	15.3	32	18.2	34	19.3	3.18	1.49	Agree to a moderate extent

46	My company requires that all suppliers meet certain environmental criteria before sourcing materials from them.	46	26.1	31	17.6	27	15.3	24	13.6	48	27.3	3.02	1.57	Agree to a moderate extent
43	My company promotes the recycling of waste using the most environmentally safe procedures available.	44	25.0	27	15.3	38	21.6	21	11.9	46	26.1	3.01	1.53	Agree to a moderate extent
45	In my company suppliers are educated about environmental requirements set by the company.	40	22.7	27	15.3	35	19.9	33	18.8	41	23.3	2.95	1.48	Agree to a moderate extent
47	My company uses objective measures to assess the company's level of environmental performance.	41	23.3	26	14.8	38	21.6	25	14.2	46	26.1	2.95	1.51	Agree to a moderate extent
49	In my company information about its environmental performance is openly available.	36	20.5	35	19.9	35	19.9	24	13.6	46	26.1	2.95	1.49	Agree to a moderate extent
48	My company assesses the cost of the environmental impacts of the product.	30	17.0	33	18.8	35	19.9	24	13.6	54	30.7	2.78	1.48	Agree to a moderate extent

	Total	**920**	**27.5**	**706**	**21.1**	**646**	**19.3**	**395**	**11.8**	**677**	**20.2**	**3.24**	**1.46**	Agree to a moderate extent

Environmental Responsibility

Results (Table 9.18) show the responses given as grouped under the 5 Likert scale. Results indicate that there is a feeling that companies consider the improvement of their end products as their main role (Statements 54 - 44.9% and 25.6%) followed by the improvement of their manufacturing technology (Statement 53 - 40.3% and 22.2%). The least important issue is their concern about publishing regularly information about their environmental performance (Statement 50- 30.7% and 18.2%) either in a timely manner (Statement 51- 26.7% and 11.4) or with accuracy (Statement 52 - 23.9 and 9.1%). This shows that most of the activities of the companies investigated indicate their role as productive companies that are more concerned with manufacturing products or offering services, rather than being concerned with considering their activities in the light of their social responsibility of protecting the environment. Hence, reporting on the environmental performance is not considered essential, never mind being regular, accurate or timely. The same attitude is evident in other developing countries that still view the environment as something with endless resources to be exploited and believe that their role is mainly production rather than protection of resources (Esty *et al.*, 2003).

Table 9.18 Environmental Responsibility Statements

Serial	Environmental Responsibility (ranked in Descending order of agreement)	Agree to a great extent		Agree to a large extent		Agree nor disagree		Agree to a small extent		Don't agree at all		Weighted mean	SD	Attitude
		F	%	F	%	F	%	F	%	F	%			
54	My company is always improving its end products.	79	44.9	45	25.6	17	9.7	15	8.5	20	11.4	3.84	1.38	Agree to a large extent
53	My company is keen on improving its manufacturing technology.	71	40.3	39	22.2	26	14.8	14	8.0	26	14.8	3.65	1.45	Agree to a large extent
55	My company has very effective strategies for improving waste management.	51	29.0	42	23.9	38	21.6	18	10.2	27	15.3	3.41	1.40	Agree to a large extent
50	In my company information about the environmental aspects of its activities is accurate.	53	30.1	34	19.3	31	17.6	16	9.1	42	23.9	3.23	1.55	Agree to a moderate extent
51	In my company information about its environmental aspects is timely.	47	26.7	30	17.0	32	18.2	20	11.4	47	26.7	3.06	1.56	Agree to a moderate extent
52	In my company information about the environmental performance of the company is published regularly.	34	19.3	25	14.2	31	17.6	32	18.2	54	30.7	2.73	1.51	Agree to a moderate extent

	Total	**335**	**31.7**	**215**	**20.4**	**175**	**16.6**	**115**	**10.9**	**216**	**20.5**	**3.32**	**1.20**	Agree to a moderate extent

All the responses to statements 10 up to 55 suggest that private Saudi companies are not yet fully implementing environmental management systems that aim to really protect the environment, but that they are primarily concerned with protecting their financial business interests or at least helping to avoid environmental incidents and disasters to avoid extra costs or penalties. These results are further supported when the weighted means for the responses are explored that are displayed in the same tables (9.16, 9,17, & 9,18) shown above.

Weighted means for CEM statements

The weighted mean is used as a descriptive statistic to aggregate a set of scores to a single resultant score. In the present case the magnitude of the respondent's score (weight) on each item reflects its importance. The scores of all respondents on a particular item are added. The greater the weight in respect to other weights, the greater the contribution of the corresponding datum into the resultant value of the weighted mean.

The weighted means for all responses (total score 5) to each statement on the three sub measures of CEM are also given in Tables 9.16, 9.17, 7 9.18 . The relative ranking of each statement according to the responses helps understand the trend of the respondent companies towards environmental management. The ranking of statements is presented in a descending order.

Table 9.16 shows the weighted mean of the responses to 21 statements of Organizational Support (OS). The average of the weighted mean responses is 3.32 which is considered 'agree to a moderate extent'. This either suggests that there was general positive agreement or it could suggest a rather middle of the road approach to answering the questionnaire (a hazard of 5 and 7 point scales).

Organizational support: The highest response was for statement 18 *'In my company top management is concerned with preventing any incidents that may be caused by environmental hazards'* (4.02). Statements 12,22,23,24,11,21 & 25 which reflect the esteem of an enterprise have been rated as high in agreement while on the other hand, most of the statements that are mentioned (in the same table) from statement 19 onwards relate to evidence of substantial internal organizational support for environmental policies have received a moderate response. This might suggest that Saudi Arabian companies seem to regard environmental management primarily as an activity needing attention only to help prevent environmental disasters, comply with governmental regulations perhaps to have a good image for the company

Environmental Operations: In the sub measure of EO also (Table 9.17) the responses were more in the middle or moderate category (63% of the total) and the rest were in the agree to a large extent category with an average weighted mean of moderate (3.24), only marginally lower than the previous set of statements. Again it was observed that there is a tendency to give a high rating to environmental themes (first 7 statements in the same table) that are related to saving energy or paper and contamination of water or air while responses to the rest of the statements that deal with concrete evidence of environmental operations in terms of designing the product and ensuring the use of environmental safe raw materials tended to be more moderate.

Environmental Responsibility: In Table 9.18 it can be seen that the responses are equally divided between agree and moderate. The statements that relate to what the company is planning to do (53, 54 & 55) are rated high while those related to the actual ways of acquiring feedback from the environment and acting on information responses showed a moderate trend.

This research identified the levels of corporate environmental management in Saudi Arabia. There are some concerns about the accuracy of the responses, but even if there are elements of ‘over-reporting’ this first ever study of corporate environmental activity in Saudi Arabia will be able to provide an insight into the range of activities being undertaken.

The initial findings in terms of descriptive statistics presented in this chapter have demonstrated that corporate environmental management in Saudi Arabia is in it infancy and that most companies are still lagging behind in terms of their environmental performance. The next chapter will explore this data further in a bid to understand factors and relationships that might shed more light on to these findings.

CHAPTER 10 DATA EVALUATION AND INTERPRETATION

This chapter builds on the initial data analysis conducted in the previous chapter. Firstly, some general findings related to the two major themes of Environmental Initiatives and Corporate Environmental Management will be reported and discussed followed by examining the findings related to each hypothesis stated in chapter 7.

10.1 Environmental Initiatives (EI) and Corporate Environmental Management (CEM)

As explained in chapter 9 the entire sample was categorized within two different types of categories. Firstly they were ranked at either the low, the medium, and the high levels (LMH) based on their uptake orf the nine Environmental Initiatives (EI) and secondly they were grouped as inactive, concerned or potentially proactive (ICP) based on the Corporate Environmental Management (CEM) measure.

The regression analysis reported in chapter 8 established that four of the nine environmental initiatives (EI) are strong predictors of the corporate environmental management (CEM) practices. Firstly, the data was analyzed to assess the impact of enterprises categorized as Low, Medium or High (LMH as independent variables) on each of the four dependant measures which are; Total corporate environment management (CEM) and each of its three sub-measures; organizational support (OS), environmental operations (EO), and environmental responsibility (ER).

One way ANOVA tests were conducted where the effect of EI levels (LMH) was assessed on each dependant variable of CEM, mentioned above, separately. A significant

main effect was found of level of environmental initiatives undertaken by an enterprise on total CEM performance (F (2, 173) = 30.04, p = 0.00) and each of its submeasures of OS, EO, & ER (F (2, 173) = 28.29, p = 0.00) (F (2, 173) = 24.72 p = 0.00) (F (2, 173)= 18.80, p = 0.00) respectively shown in Table 10.1. Post Hoc tests (Table 10.2) for pairwise comparison of the LMH levels revealed that there are significant differences between them. This clearly shows that differences in the low, medium or high levels of EI determines whether the sample enterprises are inactive, concerned or proactive in engaging with corporate environmental management.

Table 10.1 ANOVA the main effect of Inactive, Concerned, Proactive (ICP) on each of the sub measures of Corporate Environment Management CEM

		Sum of Squares	Df	Mean Square	F	Sig.
Organizational Support	**Between Groups**	**24472.530**	**2**	**12236.265**	**28.298**	**.000**
	Within Groups	**74805.447**	**173**	**432.401**		
	Total	**99277.977**	**175**			
Environmental Operations	**Between Groups**	**23.787**	**2**	**11.894**	**24.729**	**.000**
	Within Groups	**83.207**	**173**	**.481**		
	Total	**106.994**	**175**			
Environmental Responsibility	**Between Groups**	**1627.081**	**2**	**813.541**	**18.806**	**.000**
	Within Groups	**7483.805**	**173**	**43.259**		
	Total	**9110.886**	**175**			
Corporate Environmental Management	**Between Groups**	**115210.434**	**2**	**57605.217**	**30.048**	**.000**
	Within Groups	**331654.788**	**173**	**1917.080**		
	Total	**446865.222**	**175**			

Table 10.2 Post Hoc Tests: LSD - Multiple Comparisons

Dependent Variable	(EI) Initiatives categories (LMH)	(EJ) Initiatives categories (IMH)	Std. Error	Sig.
Organizational Support	Low (L)	Medium	3.724	.000
		High	3.993	.000
	Medium(M)	Low	3.724	.000
		High	4.483	.048
	High(H)	Low	3.993	.000
		Medium	4.483	.048
Environmental Operations	Low	Medium	.124	.000
		High	.133	.000
	Medium	Low	.124	.000
		High	.150	.020
	High	Low	.133	.000
		Medium	.150	.020
Environmental Responsibility	Low	Medium	1.178	.001
		High	1.263	.000
	Medium	Low	1.178	.001
		High	1.418	.015
	High	Low	1.263	.000
		Medium	1.418	.015
Corporate Environmental Management	Low	Medium	7.841	.000
		High	8.408	.000
	Medium	Low	7.841	.000
		High	9.439	.030
	High	Low	8.408	.000
		Medium	9.439	.030

***. The mean difference is significant at the 0.05 level.**

The above analysis sufficiently established the significant effect of uptake of environmental initiatives on the environmental management policies and performance as measured by the CEM measure. The following analysis is now devoted to examine more deeply the various factors affecting the uptake of environmental initiatives (EI) and CEM practices.

10.2 Environmental Initiatives (EI) and demographic factors

The statistical analysis undertaken below focuses on assessing the significant effects of the various factors on the uptake of each of the nine environmental initiatives by the sample enterprises.

Table 10.3 shows the findings of the Pearson's chi square test of association between the yes and no responses, reported in the previous chapter (Table 9.8), and demographic variables. The demographic information of the respondents relating to job title, age, location was excluded as most of the sample avoided the information. Gender was eliminated as traditionally women in Saudi Arabia do not venture into this field. Location was excluded because most of the valid questionnaires were found to be from enterprises located in the western region and some in the eastern region. Therefore, this variable could not be used for comparisons. The three demographic variables were size, ownership and type of sector.

It was found that size of the enterprise (categories on the basis of number of employees), was significantly associated with 6 of the nine initiatives. The ones found not significant are: *My company uses Life Cycle Analysis to assess the environmental impact of the product* where 33% said 'yes'; *My company has an environmental marketing program* (35% said yes); and 47% said 'yes'; to *My company hires external experts to consult them on environmental issues*. This suggests that those initiatives that

are related to having ISO 14001 or even working towards it are significantly influenced by size of the enterprise.

The ownership of the company was relatively less important because it was found to be significant with three of the nine initiatives; *My company uses Life Cycle Analysis to assess the environmental impact of the product, My company has an environmental marketing program, and My company appoints influential environmental officers to enhance environmental performance.*

Type of enterprise (industry or service) was found to have a significant association with *appointing influential environmental officers to enhance environmental performance.*

Keeping in view the fact that 85% of the sample reported working towards ISO 14001 the above results need to be explored further in the qualitative analysis stage of the study before substantial conclusions are drawn.

Table 10.3 relationship between Environmental initiatives and demographic variables

	Nine Initiatives	Size	Ownership	Type
1	My company has clear written environmental mission statements.	χ^2= 9.460	χ^2= 0.027	χ^2= 0.266
		0.009 Sig.	0.870 NS	0.606 NS
2	My company has a board member who is responsible for environmental issues.	χ^2= 8.968	χ^2= 0.483	χ^2= 0.139
		0.011 Sig.	0.487 NS	0.709 NS
3	My company is accredited to ISO14001.	χ^2= 7.330	χ^2= 0.330	χ^2= 0.242
		0.026 Sig.	0.566 NS	0.622 NS
4	My company is working towards accreditation to ISO 14001.	χ^2= 7.469	χ^2= 2.433	χ^2= 2.369
		0.024 Sig.	0.119 NS	0.132 NS
5	My company uses Life Cycle Analysis to assess the environmental impact of the product.	χ^2= 2.871	χ^2= 4.054	χ^2= 0.549
		0.238 NS	0.044 Sig.	0.459 NS
6	My company hires external experts to consult them on environmental issues	χ^2= 1.643	χ^2= 1.513	χ^2= 0.057
		0.440 NS	0.219 NS	0.812 NS
7	My company has an environmental marketing program.	χ^2= 4.018	χ^2= 4.664	χ^2= 0.619
		0.134 NS	0.031 Sig.	0.431 NS
8	My company carries out regular environmental audits.	χ^2= 8.793	χ^2= 3.419	χ^2= 2.522
		0.012 Sig.	0.064 NS	0.112 NS
9	My company appoints influential environmental officers to enhance environmental performance.	χ^2= 14.179	χ^2=7.415	χ^2= 4.953
		0.001 Sig.	0.006 Sig.	0.025 Sig.

10.3 Relationship between Environmental Initiatives EI and Corporate environmental management (CEM)

With regard to the relationship between the nine environmental initiatives and the measure of Corporate environmental management (CEM) and its submeasures of organizational support, environmental operations, and environmental responsibility, it was found that except one all the initiatives related with significance to rhe total CEM

and all its submeasures *My company is working towards accreditation to ISO 14001* is the only statement (Table 10.4) that did not relate to CEM and any of its submeasures. Earlier it was also mentioned in chapter 9 that 85% of the companies reported working towards ISO 14001. Perhaps, this means that Saudi companies are indeed only projecting an image of being environmentally aware and active.

Table 10.4 relationship between environmental initiatives and CEM

Nine Initiatives	OS	EO	ER	Total CEM
My company has clear written environmental mission statements.	**χ^2= 27.352**	**χ^2= 22.669**	**χ^2= 19.304**	**χ^2= 26.098**
	0.000	**0.000**	**0.000**	**0.000**
My company has a board member who is responsible for environmental issues.	**χ^2= 23.386**	**χ^2= 17.667**	**χ^2= 11.476**	**χ^2= 21.852**
	0.000	**0.000**	**0.000**	**0.000**
My company is accredited to ISO14001.	**χ^2= 27.199**	**χ^2= 25.977**	**χ^2= 11.557**	**χ^2= 25.862**
	0.000	**0.000**	**0.003**	**0.000**
My company is working towards accreditation to ISO 14001.	**χ^2= 5.984**	**χ^2= 5.317**	**χ^2= 5.741**	**χ^2= 3.216**
	0.050 NS	**0.070 NS**	**0.057 NS**	**0.200 NS**
My company uses Life Cycle Analysis to assess the environmental impact of the product.	**χ^2= 19.636**	**χ^2= 23.382**	**χ^2= 15.814**	**χ^2= 29.875**
	0.000	**0.000**	**0.000**	**0.000**
My company hires external experts to consult them on environmental issues	**χ^2= 31.016**	**χ^2= 22.715**	**χ^2= 15.514**	**χ^2= 27.124**
	0.000	**0.000**	**0.000**	**0.000**
My company has an environmental marketing program.	**χ^2= 31.692**	**χ^2= 27.033**	**χ^2= 17.343**	**χ^2= 32.460**
	0.000	**0.000**	**0.000**	**0.000**
My company carries out regular environmental audits.	**χ^2= 32.470**	**χ^2= 29.838**	**χ^2= 26.095**	**χ^2= 33.650**
	0.000	**0.000**	**0.000**	**0.000**
My company appoints influential environmental officers to enhance environmental performance.	**χ^2= 33.362**	**χ^2= 48.894**	**χ^2= 26.710**	**χ^2=52.031**
	0.000	**0.000**	**0.000**	**0.000**

10.4 Relationship between CEM and demographic variables

As described in chapter 9 the respondent companies were assigned to three categories based on their scores on the CEM performance measure where 30% of the respondent companies were found environmentally inactive (I), 40% of them were categorized concerned (C) and 30% as proactive (P).

A significant relationship (table 10.5) was found between type (industry or service) of enterprise and ICP categories of CEM. The crosstabs of the 3x2 contingency table 10.6 shows the weighted expected frequencies and proportion of cases in each cell. Comparing the proportions within company type in each category of ICP it was observed that out of 30% of the sample found 'inactive'(I) in CEM more than half (17%) belonged to the service while out of the 40% of the sample placed in the 'concerned' (C) CEM more than half (27%) are from the industry sector. However, within the 30% 'proactive' (P) in CEM the number of industry and service were found almost equal. While the results suggest that there are more service companies in the 'I' category than would be expected if the results were random, the results are far from conclusive because of the fact that a strong identifiable result is that industrial companies are more likely to be categorised as 'C' than their service counterparts.

Table 10.5 Relationship between the Type of Company and the ICP categories of CEMP

	Chi square Value	Df	Sig. (2-sided)
Pearson Chi-Square	**6.531a**	**2**	**.038**

Table 10.6 Crosstabs Type Vs ICP categories of CEM

Corporate Environmental Management (CEM)		Company Type		Total
		Industry	Service	
I	Count	24	29	53
	Expected Count	29.5	23.5	53.0
	% within Corporate Environmental Management (CEM)	45.3%	54.7%	100.0%
	% within Company Type	24.5%	37.2%	30.1%
	% of Total	13.6%	16.5%	30.1%
C	Count	47	23	70
	Expected Count	39.0	31.0	70.0
	% within Corporate Environmental Management (CEM)	67.1%	32.9%	100.0%
	% within Company Type	48.0%	29.5%	39.8%
	% of Total	26.7%	13.1%	39.8%
P	Count	27	26	53
	Expected Count	29.5	23.5	53.0
	% within Corporate Environmental Management (CEM)	50.9%	49.1%	100.0%
	% within Company Type	27.6%	33.3%	30.1%
	% of Total	15.3%	14.8%	30.1%
Total	Count	98	78	176
	Expected Count	98.0	78.0	176.0
	% within Corporate Environmental Management (CEM)	55.7%	44.3%	100.0%
	% within Company Type	100.0%	100.0%	100.0%
	% of Total	55.7%	44.3%	100.0%

No significant association was found between ownership,and size of the company and the total measure of CEM (Appendix I-1 to I-2), suggesting that neither of these variables is important in determining corporate environmental management performance

10.5 Relationship between the demographic variables and ICP categories of performance on the sub measures of CEM

A deeper analysis was undertaken to see if there was any association between the demographic characteristics of the sample and each of the three sub-measures of CEM.

Again no significant relationship was found between type, ownership and size of the company and the ICP categories that sample companies were placed in on the organizational support sub-measure of CEM. Similarly no significant relationships were found (Appendix I-3 to I-10) between these variables and environmental operations and responsibility (EO& ER) with the exception of the variable for company size..

Table 10.7 shows a significant relationship between the size of the company and the ICP levels of CEM performance (chi square value of 10.64, DF = 4, $p < 0.03$). Although the relationship is not completely clear, it seems to suggest that the medium size companies (15%) are more likely to be in the proactive performing category of

Table 10.7 Relationship between the Company Size and the ICP categories of Environmental Operations

	Value	Df	Sig. (2-sided)
Pearson Chi-Square	**10.648a**	**4**	**.031**

Table 10.8 Crosstabs of Company Size and Environmental Operations

Environmental Operations		Company Size			Total
		Less than 100	100 and less than 300	300 or more	
I	Count	13	18	23	54
	Expected Count	11.4	18.7	23.9	54.0
	% within Environmental Operations	24.1%	33.3%	42.6%	100.0%
	% within Company Size	35.1%	29.5%	29.5%	30.7%
	% of Total	7.4%	10.2%	13.1%	30.7%
C	Count	16	16	37	69
	Expected Count	14.5	23.9	30.6	69.0
	% within Environmental Operations	23.2%	23.2%	53.6%	100.0%
	% within Company Size	43.2%	26.2%	47.4%	39.2%
	% of Total	9.1%	9.1%	21.0%	39.2%
P	Count	8	27	18	53
	Expected Count	11.1	18.4	23.5	53.0
	% within Environmental Operations	15.1%	50.9%	34.0%	100.0%
	% within Company Size	21.6%	44.3%	23.1%	30.1%
	% of Total	4.5%	15.3%	10.2%	30.1%
Total	Count	37	61	78	176
	Expected Count	37.0	61.0	78.0	176.0
	% within Environmental Operations	21.0%	34.7%	44.3%	100.0%
	% within Company Size	100.0%	100.0%	100.0%	100.0%
	% of Total	21.0%	34.7%	44.3%	100.0%

environmental management while 21%, (of the 40%) of those placed in the concerned category of performance, are large industries (Table 10.7).

Size was also the only variable to be significantly related to environmental responsibility. Table 10.8 shows this relationship chi square value = 12.45, DF= 4. p< 0 .01. Although, the relationship is not overly clear the large industries are more likely to show concern for environment while the medium size (14% out of 28%) are more likely to be categorised into the Proactive performing category of ER (Table 10.9).

Thus, while only the type of industry (industry or service) was found to be significantly associated with the ICP levels of the overall CEM practiced by the private enterprises investigated in the study, size, in terms of number of employees, seems to be an important factor influencing the uptake of environmental operations and responsibility

Table 10.9 a relationship between the Company Size and the ICP categories of Environmental Responsibility

	Value	Df	Sig. (2-sided)
Pearson Chi-Square	**12.454a**	**4**	**.014**

Table 10.10 Crosstabs of Company Size and Environmental Responsibility

Environmental Responsibility		Company Size			Total
		Less than 100	100 and less than 300	300 or more	
I	Count	19	12	26	57
	Expected Count	12.0	19.8	25.3	57.0
	% within Environmental Responsibility	33.3%	21.1%	45.6%	100.0%
	% within Company Size	51.4%	19.7%	33.3%	32.4%
	% of Total	10.8%	6.8%	14.8%	32.4%
C	Count	11	25	33	69
	Expected Count	14.5	23.9	30.6	69.0
	% within Environmental Responsibility	15.9%	36.2%	47.8%	100.0%
	% within Company Size	29.7%	41.0%	42.3%	39.2%
	% of Total	6.2%	14.2%	18.8%	39.2%
P	Count	7	24	19	50
	Expected Count	10.5	17.3	22.2	50.0
	% within Environmental Responsibility	14.0%	48.0%	38.0%	100.0%
	% within Company Size	18.9%	39.3%	24.4%	28.4%
	% of Total	4.0%	13.6%	10.8%	28.4%
Total	Count	37	61	78	176
	Expected Count	37.0	61.0	78.0	176.0
	% within Environmental Responsibility	21.0%	34.7%	44.3%	100.0%
	% within Company Size	100.0%	100.0%	100.0%	100.0%
	% of Total	21.0%	34.7%	44.3%	100.0%

In the following section the hypotheses generated in chapter 7 related to the significance of difference in CEM due to company characteristics will be briefly

reviewed in light of the data generated thus far. It must, however, be remembered that some of the hypotheses are to be explored via the qualitative study that is discussed in the following chapters.

10.6 Testing Hypothesis For Significant Differences between CEM and demographic characteristics of sample companies

The null hypothesis that stated **Foreign branches that work under their names in Saudi Arabia, (Saudi plus Nonsaudi owned) and those owned locally by Saudis will not differ in the uptake of environmental management policies and practices** is accepted. There were only 5 companies (considered valid) of Saudi plus non-Saudi ownership. T Tests showed no significant differences in the performance of Saudi and Non-Saudi based companies on the corporate environmental management scale as a whole and its three sub-measures (see Appendix I-11).

The second null hypothesis states **that there will be no difference in the uptake of environmental management polices due to size of companies in terms of number of employees.** Earlier in the analysis of the results chi square test of association was applied to determine the significance of association between categories of size and the three levels of CEM performance. However, it was considered appropriate to use parametric tests where possible to test a hypothesis

One way ANOVA was applied to investigate this hypothesis which involved assessing the main effect of three independent variables of size (three groups according to number of employees; less than 100, 100 to 300, and more than 300) on the dependant variable of corporate environmental management CEM. That is, the effect of size on the overall CEM and each of its three submeasures; organizational support OS, environmental operations EO, and environmental responsibility ER. A significant

difference (Table 10.10) only due to the size of company was found on environmental responsibility (F (2,173) = 4.9, p = 0.00). Further tests, Post Hoc pairwise comparisons were conducted to determine which of the three variables of size had a significant effect on ER. Table 10.11 indicates that companies that have less than 100 employees differed significantly in environmental responsibility from companies that had 100 to 300 employees. In other words medium sized companies tended to be more environmentally responsible compared to both small and large. Earlier in this chapter it was reported that medium companies tended to be high on environmental operations and responsibility. However, it seemed premature to either accept or reject this hypothesis because the method of determining the size of the company was based on number of employees and not on all the other criteria (e.g., investment, turnover, profits). This will be further explored in the qualitative survey.

Table 10.11 ANOVA to determine the main effect of Company Size on each of the sub measures of CEM

		Sum of Squares	Df	Mean Square	F	Sig.
Organizational Support	Between Groups	1867.334	2	933.667	1.658	.193
	Within Groups	97410.643	173	563.067		NS
	Total	99277.977	175			
Environmental Operations	Between Groups	2.318	2	1.159	1.916	.150
	Within Groups	104.676	173	.605		NS
	Total	106.994	175			
Environmental Responsibility	Between Groups	488.841	2	244.421	4.904	.008
	Within Groups	8622.045	173	49.838		Significant*
	Total	9110.886	175			
Corporate Environmental Management	Between Groups	10271.322	2	5135.661	2.035	.134
	Within Groups	436593.90	173	2523.664		NS
	Total	446865.22	175			

*** significant at 0.01 level**

Table 10.12 Post Hoc Tests; LSD - Multiple Comparisons

Dependent Variable	(I) Company Size	(J) Company Size	Mean Difference (I-J)	Std. Error	Sig.
Environmental Responsibility	Less than 100	100 to 300	-4.576*	1.471	.002
		300 or more	-2.462-	1.409	.082
	100 and less than 300	Less than 100	4.576*	1.471	.002
		300 or more	2.115	1.207	.081
	300 or more	Less than 100	2.462	1.409	.082
		100 to 300	-2.115-	1.207	.081

***. The mean difference is significant at the 0.05 level.**

The null hypothesis that **there is no difference between manufacturing and service enterprises in the uptake of environmental management** was found true as 't' Tests used to explore differences between the two sectors due to the CEM submeasures, were found significant. Table 10.12 shows no significant difference in type of sector (industry or service) on both on the total CEM and each of its three submeasures. Earlier it was found that there were more service companies in the inactive 'I' category and industrial companies are more likely to be categorised as concerned 'C' than their service counterparts.

Table 10.13 t-test difference in (CEM) and its sub measures due to Company type

	t	df	Sig. (2-tailed)	MeanDifference	Std. Error Difference
Organizational Support	.047	174	.963	.170	3.624
	.046	148.171	.963	.170	3.705
Environmental Operations	.887	174	.376	2.998	3.381
	.872	153.069	.384	2.998	3.437
Environmental Responsibility	.731	174	.466	.801	1.096
	.710	141.674	.479	.801	1.129
Corporate Environmental Management	.517	174	.606	3.969	7.684
	.506	148.634	.614	3.969	7.851

10.7 Analysis of responses to selected statements from CEM

Because of the rather inconclusive results so far it was decided to look at the responses to some of the statements with more detail, particularly with regard to the three categories of CEM; Inactive, Concerned/inactive and Proactive. It was hoped that this would help determine the main causes behind the suspected lack of environmental awareness among those categorized as ‘inactive’ and ‘concerned’ in CEM. This analysis will also aid discussion of the hypotheses that will be explored using the qualitative data in the following chapters.

Pearson’s chi square tests for independence were used to assess if there is a significant relationship between the categories the (ICP) of CEM at which enterprises are placed and their response to some selected statements. The responses to all statements of the CEM measure were based on a five point Likert scale of response where Don’t agree at all =1, Don’t agree a little = 2, Agree nor disagree = 3, Agree a little = 4, and Agree to

a large extent = 5. However, to help extract a more clear cut pattern of responses these categories were collapsed to make just three categories; disagree =1 neutral =2 and agree = 3 by combining responses to the two lower categories (1 and 2) and assigning a score of 1.and combining the two higher responses (4 and 5) as a score of 3.

The chi square values of all the statements established a significant positive relationship between the responses to the statements and the companies' categorisation into the ICP categories of overall CEM. Hence both the crosstabs for each statement and -the chi square values are given in Appendix I-12 to I-22. Comparisons of proportion of cases found in each of the three categories (ICP) and the corresponding category of responses (1=disagree, 2= neutral and 3= agree) are summarized in Table10.12 to discuss the trend revealed.

The sample enterprises fell into three categories according to the CEM performance as perceived by the respondents where 30% were found to be environmentally inactive (I) , 40% concerned inactive (C) and 30% proactive

In my company top management feels that to obtain more profit the company will have to rethink its strategies to cater for environmental concerns was found to be significantly related to the ICP categories that the enterprises are placed in on the basis of their CEM performance. The weighted expected frequencies and proportions indicated by the crosstabs given in (Appendix I-12) show that 24% of the 30% found inactive in CEM also do not agree that the top management is concerned about environment while making profits compared to 25% out of 30% of those considered proactive think the opposite. On the other hand, 17% of the 40% categorized as 'concerned' also agreed, Thus, it seems that a relatively large number of respondents from inactive companies

perceive that the top management does not cater for environmental concerns while those from the proactive perceive the opposite.

Table 10.14 Crosstabs of CEM performance and responses to selected CEM statements

CEM statements	CEM Performance	Don't agree	Neutral	Agree	Total %
In my company top management feels that to obtain more profit the company will have to rethink its strategies to cater for environmental concerns	**Inactive (I)**	24.4%	1.7%	4.0%	30.1%
	Concerned (C)	10.8%	11.9%	17.0%	39.8%
	Proactive (P)	1.7%	2.8%	25.6%	30.1%
In my company the top management has a clear vision of the importance of environmental policies	I	21.6%	4.5%	4.0%	30.1%
	C	5.7%	9.7%	24.4%	39.8%
	P	6%	6%	29.0%	30.1%
In my company the top management complies with the environmental laws and legislations set by the government	I	12.5%	4.5%	13.1%	30.1%
	C	4.0%	8.5%	27.3%	39.8%
	P	0%	1.1%	29.0%	30.1%
My company believes that to ensure prevention of environmental problems in future the private sector should support the environmental laws and policies re-enforced by governmental and academic institutions	I	15.9%	3.4%	10.8%	30.1%
	C	4.0%	8.0%	27.8%	39.8%
	P	0%	1.7%	28.4%	30.1%
In my company top management is concerned with preventing any incidents that may be caused by environmental hazards	I	12.5%	6.3%	11.4%	30.1%
	C	2.8%	2.8%	34.1%	39.8%
	P	0%	6%	29.5%	30.1%
In my company top management is willing to stop production if environmental or health considerations demand it	I	18.8%	4.5%	6.8%	30.1%
	C	6.3%	9.7%	23.9%	39.8%
	P	1.7%	.6%	27.8%	30.1%
In my company top management feels that environmental performance will enhance the image of the company	I	13.1%	10.2%	6.8%	30.1%
	C	1.7%	5.1%	33.0%	39.8%
	P	6%	1.1%	28.4%	30.1%
In my company the top management has helped to establish internal environmental strategies to develop environmental performance	I	23.3%	5.1%	1.7%	30.1%
	C	9.7%	10.8%	19.3%	39.8%
	P	0%	2.8%	27.3%	30.1%
In my company top level managers are involved in environmental projects	I	23.3%	4.0%	2.8%	30.1%
	C	13.1%	10.8%	15.9%	39.8%
	P	.0%	1.7%	28.4%	30.1%
In my company employees are trained to become environmentally responsible beings	I	25.6%	2.8%	1.7%	30.1%
	C	17.0%	11.4%	11.4%	39.8%
	P	1.7%	2.8%	25.6%	30.1%

My company is regularly raising employee awareness of environmental issues through sessions	I	26.7%	1.7%	1.7%	30.1%
	C	16.5%	11.4%	11.9%	39.8%
	P	2.3%	5.7%	22.2%	30.1%

In my company the top management has a clear vision of the importance of environmental policies which was also significantly associated to CEM levels. The proportion that disagreed was 22% of the 30% sample enterprises who were inactive in CEM compared to 29% of those who were proactive and 24% of the concerned (out of the 20% and 40% respectively) stated that their management has a clear vision (Appendix I-13). From these findings it appears that most of Saudi private enterprises that are inactive in CEM is perhaps because they are not yet including EM in their policies.

The crosstabs of weighted expected frequencies and proportions to the statement ***In my company the top management complies with the environmental laws and legislations set by the government are given*** in (Appendix I-14). A comparison of the proportions indicate that respondents of enterprises labelled inactive were equally divided (13% in each) between the responses of disagreed and agreed on the above statement. On the other hand 27% and 29% of those categorized concerned and proactive in CEM respectively believe that their company does comply with the laws. Another statement that explored the same theme was ***My company believes that to ensure prevention of environmental problems in future the private sector should support the environmental laws and policies re-enforced by governmental and academic institutions.*** This was also found to be significant. The crosstabs, given in Appendix I..15, shows that 16% of those categorised as inactive in CEM disagreed, while an equal number of those in the proactive and concerned (28%) agreed. This might suggest that the poor attitude of the companies towards laws and legislation are a barrier to adopting

CEM policies in Saudi Arabia. The unclear pattern of response of those categorized inactive and the over response of those concerned shows that they are perhaps protecting the image of their company by not committing to violation of governmental laws and regulations.

A significant association was also found between levels of CEM and ***In my company top management is concerned with preventing any incidents that may be caused by environmental hazards***. Crosstabs (Appendix I-16) indicate that 16% found inactive on CEM also disagreed with the statement that their company is concerned with preventing environmental hazards while almost all of those who were proactive on CEM attributed it to their company's concern in this matter and at the same time 29% in the concerned level also agreed.

The responses to ***In my company top management is willing to stop production if environmental or health considerations demand*** *it* also supported this finding (Appendix I-17). This clearly suggests that most of the companies that are placed in the inactive CEM category is perhaps because they are motivated only by profits and are not concerned about the risks to their employees.

In my company top management feels that environmental performance will enhance the image of the company was found significantly related to the categories of CEM and the proportions indicate that those inactive in CEM were divided on this issue between agreeing and neutral while nearly all (28%) of the proactive CEM agreed with it (Appendix I-18). This suggests that there is a genuine lack of pioneers taking up environmental issues as part of social development.

In my company the top management has helped to establish internal environmental strategies to develop environmental performance was also found significantly associated with levels of CEM. While 23% who disagreed were also inactive, 27% who agreed were proactive in CEM indicating that they had internal strategies to develop environmental performance (Appendix I-19)

In my company top level managers are involved in environmental projects was found to be an important characteristic of nearly all those enterprises considered proactive on CEM. At the same time it was certainly not considered a characteristic by a majority of inactive 23% (Appendix I-20). This apparently indicates that environmental projects are not a common phenomena in SA. This is perhaps because the NGOs in Saudi Arabia are mostly governmental organizations dealing with charities dedicated to only economic and social issues. Environmental issues are not a priority yet which reflects clearly in the findings of this study.

In my company employees are trained to become environmentally responsible beings is also significantly associated with a 26% (out of 30%) disagreeing and inactive on CEM *and again* most of proactive on CEM agreed (Appendix I-21). The findings of categories of CEM and **My company is regularly raising employee awareness of environmental issues through training sessions** were also in the same line and significant (Appendix I-22).

As mentioned earlier analysis of the above few statements was undertaken mainly to identify the causes behind the attitude of those in the inactive and concerned categories. It was observed that not all those who were in the proactive CEM agreed to the statements to justify their positive attitude. The high percentage of respondents in the inactive category disagreeing to most of the statements suggests the lack of interest in a

global issue, indifference towards environmental laws and low social responsibility perceived by most respondents are the main reasons why 85% of them are yet to take up ISO 14001. On the other hand, it was also observed that most of those found concerned with CEM tended to agree or show a positive attitude towards the issues, mentioned above, perhaps because they were protecting the image of their company

10.8 Summary of the quantitative stage

This chapter and the previous one highlighted some issues related to the quantitative stage of the survey. Some of the findings related to the characteristics of the sample are summarized below.

Most of the companies responding to the questionnaires were Large-sized companies (44%) followed by medium sized 35%. Most of the Company Owners are Saudi 93%. The percentage of the Industries group of companies are 56% and 44 % are Service related group of companies.

A large number of respondents (88%) were aware that their companies had an administrative structure. A few (8%) respondents were not aware if it had one or not and very few stated that they do not have one (5%). This is an indication that most of the private companies investigated are well-developed in terms of their structure or at least are aware of the need to have a developed administrative structure to operate in the market. However, none of the companies investigated reported that they have a position which is environmentally oriented.

Most of the sample companies were categorized as low on environmental, initiatives (50%) and medium (27.7). Out of the 50% companies found as low on environmental initiatives, 20% of them were large, 14% were medium and 17% were

small in size. On the other hand, among the 22% high an equal number (10%) were large and medium.

The most ‘popular’ environmental initiative, was “*my company is working towards accreditation to ISO 14001*” where nearly 85% respondents choose ‘yes’ The existence of a ‘clear written environmental mission statement in the company was indicated in the affirmative by 64% of the respondents while 51.7% stated that their company employed ‘influential environmental officers to enhance environmental performance’. In the same order 47.7% of respondents declared that their company ‘carried out regular environmental audits'; and also have a ‘board member who is responsible for environmental issues'. However, on the issue that their companies hire external experts the respondents were divided with around 47% reporting that their companies do not have one and 53% said that they do have an external expert. A small number of respondents (33%) reported that their companies use LCA and at the same time only 30% of respondents stated that their companies have been accredited to ISO14001. Two companies (3%) of the sample who claimed to have ISO 14001 and do not carry out regular audits while 21% reported the opposite, that is they do not have accreditation but conduct audits.

On the total CEM no clear picture of the situation emerged because the weighted means of responses to all statements tended towards moderate attitude towards environmental performance.

Based on the CEM score each company was assigned to one of three categories; **I**nactive, **C**oncerned or **P**roactive in the uptake of environmental management. Here 30% of the companies were placed in the ‘I’, 40% in the ‘C’ and 30% in the ‘P’ category.

None of the predicted demographic variables except size and orwnership of the enterprise seem to effect the uptake of EI. The ones found not significantly associated with size were use of LCA, hiring external experts and having an environmental marketing program. On the other hand, contrarily, ownership of the enterprise (Saudi or Saudi plus foreigner) was significantly associated with use of LCA, having an environmental marketing program and appointing influential environmental officer.

No clear pattern emerged in the analysis of relationship between the demographic variables and categories of CEM performance with the exception of medium size enterprise (100 to 300 employees) that is likely to be placed in the higher level of environmental operations and responsibility. Therefore, although there is a direct impact of the environmental initiatives on CEM performance and attitude no reliable conclusions could be drawn from these rather confounding results which could not be adequately explained without further research

On the total CEM also no clear picture of the situation emerged because the weighted means of responses to all statements tended towards a moderate attitude towards environmental performance. In addition, it was also noticed that many more responses were placed under the "agree to a great extent" than expected. This may be an indication that the respondents are over optimistic in their reactions to the statements or are attempting to offer the researcher satisfying answers, rather than honestly stating their attitudes to what is really happening. However, close analysis of the statements showed that a good number of respondents are quite critical of the organizational support offered by their private companies especially when most of them stated that their organizations do not provide incentives or resources to employees to actually train them or make them aware of proper environmental performance.

Respondents were also inclined (30% of the responses) to place their responses in these middle categories to offer a compromised answer to statements tackling themes like the organization's willingness for planning of environmental operations and strategies and having a clear vision of developing its environmental performance to meet the challenges they are likely to face in future. Generally, these statements link to the actual practical measures made by the top management to develop environmental performance. These are issues which respondents seem to give more compromised answers about as they may be still trying to satisfy the researcher or because it is actually true that their companies are in the process of picking these measures up

Most of the activities of the companies investigated indicate their role as productive companies that are more concerned with manufacturing products or offering services, rather than being concerned with considering their activities in the light of their social responsibility of protecting the environment. Thus, reporting on the environmental performance seems not to be considered essential, never mind being regular, accurate or timely. The responses to statements in the CEM measure suggest that private Saudi companies are not yet fully implementing environmental management systems that aim to really protect the environment, but that they are primarily concerned with protecting their financial business interests or at least helping to avoid environmental incidents and disasters to avoid extra costs or penalties.

Although, the research has identified the level of environmental initiatives and type of corporate environmental management in private enterprises of Saudi Arabia there are some concerns about the accuracy of the responses and/or over-reporting. This means that we need to treat the responses cautiously and test them against the results of the second phase of the empirical study before drawing reliable conclusions regarding the

hypothesis related to drivers of environmental management. The next chapter introduces the qualitative stage of the study

CHAPTER 11 THE QUALITATIVE STUDY

The findings from the quantitative survey found that in Saudi Arabia there are more companies that are labelled as low and medium in the uptake of environmental management initiatives (EI) and that even within these low levels there was likelihood that some of the respondents had actually given more positive responses than perhaps their companies deserved. The implementation of environmental policies and some contradictory findings gave a bleak image of corporate environmental performance in Saudi Arabia. Because of these concerns, and in order to gain a deeper insight into the views and opinions behind the impersonal data, the research also included a second stage the qualitative study.

This chapter reports on the study instrument used, its design and content, the criteria used for selecting the cases, and an overview of the case studies explored. The outcomes of the qualitative study are presented in Chapter 12. In Chapter 13 an overall discussion is undertaken that relates the outcome of the quantitative study to the qualitative study and concludes by returning to the conceptual framework posed by this study model and redrawing it in light of the results of this research.

11.1 Methodology

In the quantitative study, 176 companies were categorized as environmentally inactive/unaware, concerned/inactive or potentially proactive (ICP) based on their scores on the overall corporate environment management performance as perceived by their respondents.

Sample of the study

The selection of the companies was based mainly on their categorization according to the CEM performance score. Two companies from each of the categories; potentially proactive, concerned and inactive were selected. They represented different company sizes, areas of activity, types of companies and had sometimes varied origins, even if all their owners were mainly Saudi. Further, an important selection criteria was the willingness of the management to be involved in the study and to grant the researcher access to staff. Although this may sound some what biased, it was considered more as a purposive sample Geographical accessibility had also to be taken into consideration. From each of these companies, three representatives were interviewed to explore their levels of awareness and attitudes towards the adoption of environmental management and the involvement of their company in environmental policies and actions. The respondents belonged to different level of management; top, middle and lower. The total number of respondents from the six companies was 18. All of them were males whose ages ranged from 30 to 40 for lower and middle management and 40 to 50 for those who were of the upper management. None of these respondents had been involved in the quantitative stage of the study.

To protect the privacy and anonymity of the six companies selected for the qualitative study, they will not be referred to by their original names, but by the letters A, B, C, D, E. F as depicted in Table 11.1

Table 11.1 Characteristics of the Sample Companies

Company	Type of company	Owner's nationality and Origin	Category	Representatives
A	Joint venture Industrial	Saudi + American	Potentially Proactive	1. Technical relations Manager 2. Technical Support and Engineering Module manager 3. Occupational Health leader
B	Joint venture Industrial	Saudi + British & Dutch	Potentially Proactive	1. General manager 2. Environmental officer 3. Safety officer
C	Services	Saudi	Concerned	1. General Manager 2. Manager of unit for handling Industrial waste 3. Manager of research and projects
D	Service	Saudi	concerned	1. Executive director 2. Executive director deputy 3. Human resources
E	Service	Saudi	Inactive	1. General Director 2. Director of a project 3. Head of projects
F	Constructions	Saudi	In active	1. Project Manager 2. Project manager deputy 3. Project Engineering

All interviews took place during working hours, either in the offices in the headquarters of the company or in the offices of the company's plants. To ensure that the information gathered during the interviews was well documented, all the interviews were recorded after taking the permission of the interviewees and their companies. The interviews were then transferred on CDs for ease of reference. Some of the interviews

were transcribed to keep a record of the information (see Appendix K for a sample of translated comments of 3 interviewees of one company presented in English).

The Interview method

Personal interview, a two-way communication between the interviewer and interviewee, was used to gather the information and to verify the outcome of the quantitative study. The interviews also aimed to give the respondents a chance to give further feedback and more details on the aspects explored in the questions posed in the quantitative study.

The advantages of using face-to-face interviews are as follows:

1. Provides an excellent opportunity for respondents to contribute by giving further feedback and explanations.
2. Allows the interviewer to ask a variety of questions not only those limited in the questionnaire or even those already prepared.
3. Does not allow respondents to escape answering some questions as they feel that they need to respond to all questions.
4. Possibility of misunderstanding questions is minimized as the interviewer can explain the questions to the respondent if needed.

However, the disadvantages of the personal interviews are as follows;

5. The interviewer may be restricted to meeting people only available in his/her own regional area.
6. Interviewer may have an influence on the answers given by the respondents.
7. The cost of running such interviews is high and arranging for them could be time consuming especially if they are directed to the top management in companies.

8. Due to the face to face situation, respondents may be affected by the fact that they cannot be anonymous and this may compromise their answers.

In order to minimize the disadvantages mentioned above, the following methods were employed:

9. Questions were limited to a set developed from the questionnaire used in the quantitative study together with additional extra questions in order to limit the chance of influencing the respondents.
10. Arrangements for the meetings were made through the network of businesses that were available to the researcher in the Western province and which were also highly represented in the quantitative study/
11. All interviewees were guaranteed to be anonymous so that transparency could be encouraged at all time (Zikmund, 2000)

Problems Encountered

Though personal interviews provide the opportunity for feedback to the respondent, the researcher faced a few difficulties in conducting the interviews. First of all, the researcher had to include companies from each category; Inactive, concerned and proactive (ICP) of Corporate environmental management. who were willing to cooperate, and this limited the researcher. Moreover, because personal interviews involve direct communication between the interviewer (female researcher) and a male respondent thus, a few male respondents excused themselves. Men are not comfortable in face-to-face interviews with women because of Saudi cultural norms that are strictly based on Islamic values where direct communication is still not universally acceptable. Even though the researcher showed her student identification and explained clearly the objective of the research, some potential respondents weren't confident enough to

participate, and as a consequence the first choice of respondents from these companies was unavailable.

Interview design

The interviews conducted were semi-structured interviews. As can be seen from Appendix J these questions were strongly related to the themes explored in the quantitative survey and aimed to investigate the presence or absence of corporate environmental systems within the companies, the different activities or practices applied in the company, the attitudes and beliefs of the respondents towards the application of environmental policies and practices in their own company and the factors that they, as part of the management, believe to be the drivers and barriers to the adoption of environmental policies and practices. However, the conversations were loose enough to allow respondents to add their comments.

The questions developed for this interview were linked to those in the earlier questionnaire but included additional questions that would elaborate on the issues covered. This would allow the researcher to gain a greater insight into the company's operations, as well as allowing the researcher to test the accuracy of the responses received from the quantitative study. Before conducting the interviews the researcher consulted with experts in the field to get feedback on the validity of the questions.

The feedback of the experts was incorporated by adding some questions and additional sub-questions and eliminating others. The questions of the interview were then translated into Arabic so that the interview could be conducted in Arabic, if needed, according to the abilities and wishes of the respondents.

Overview of the content of the interview

The interviews covered 23 main questions that attempted to investigate the the presence or the absence of the following points in each of the six companies taken as case studies:

1. a policy statement on environmental matters
2. designated staff that deal with environmental matters
3. an appointed environmental advisors
4. an environmental committee
5. education and training on environmental matters
6. environmental, social responsibility or sustainability reporting
7. documented procedures
8. an environmental management system (certified or not certified)
9. verification or accreditation relating to environmental performance
10. engagement in supply chain management
11. contacts with environmental or community groups on environmental issues
12. methods of reporting to board, staff, shareholders, the community on the company's environmental performance.
13. The environmental activities of the company or plants.
14. The methods used to monitor and audit the environmental impacts of the company's operations
15. The initiatives that the company has undertaken to reduce environmental impacts
16. The different methods used to reduce environmental impacts on the society.
17. Use of training, consultation and incentives, etc. as means for encouraging staff members to believe in environmental issues

18. The future plans of the company for the development/improvement of their environmental management system
19. The effect of globalization of trade through the WTO
20. The personal belief of the respondents of the importance of developing corporate environmental management in private Saudi companies.
21. The reasons behind the uptake of corporate environmental management in the respondents' company.
22. The respondents' opinion concerning the situation in Saudi Arabia in terms of environmental support
23. The actions that need to be taken by private Saudi companies to encourage the adoption and development of corporate environmental management

The analysis entailed adjusting the framework with the new evidence and issues that had been raised from the first stage of the study to allow for new facts, ideas and planning to collect new evidence. In addition, the findings of this study touch upon issues like the involvement of WTO, in order to cover the issues highlighted in the conceptual model that weren't directly addressed in the questionnaire.The next chapter 12 discusses the results of this stage.

CHAPTER 12 QUALITATIVE STUDY OUTCOMES

The finding of the qualitative study is presented below under a number of headings that represent the different areas covered in the interviews.

12.1 Overview of responses

The interviews yielded around 20 hours of recordings. To be able to give an overview of the discussions and the main comments of the interviewees, a table was created that summarizes the responses of all three respondents to each statement given in detail in Appendix L. This table has been further summarized by depicting the opinion of two respondents (out of three), who either agreed or disagreed or were noncommittal to the interview questions, in order to show the general trend. The detailed Table in Appendix L is referred to in case all three respondents differed in their responses.

Environmental statements

Respondents from companies A, B and C indicated that they had environmental policy statements while those from companies D, E and F confessed that they did not. However while company C respondents indicated that although they did have such a statement, it was actually in existence as a result of the company's activities (offering environmental services) rather than any particular enthusiasm about 'greening' the company itself. Respondents from companies D, E and F said that they were asked by external bodies like the government or public to adhere to some environmental criteria to ensure the success of their operations and services, but that this had not translated into any corporate mission statement.

Table 12.1 Summary of responses to major questions

Questions	A n=3	B n=3	C n=3	D n=3	E n=3	F n=3
1 - Published policy statement on environmental matters	✓	✓	✓	x	x	X
2- A senior manager with responsibility for environmental issues	✓	✓	O	x	x	X
3- any designated staff to deal with environmental matters	✓	✓	O	x	x	X
4-- an appointed environmental advisor	✓	✓	O	x	x	X
5- an environmental committee	x	✓	✓	x	x	X
6- education and training on environmental matters	✓	✓	O	x	x	X
7- environmental, social responsibility or sustainability reporting	✓	✓	✓	x	x	X
8- documented procedures	✓	✓	✓	✓	✓	X
9- environmental management system (certified or not certified	✓	✓	✓	✓	✓	X
10- verification or accreditation relating to environmental performance	x	x	✓	✓	x	X
11- engagement in supply chain management	o	x	✓	x	o	X
12- contacts with environmental or community groups on environmental issues	x	x	X	x	x	X
13- methods of reporting to board, staff, shareholders, the community on the company's environmental performance	✓	✓	✓	✓	✓	X
14 . the environmental activities of the company or plants	✓	✓	✓	✓	x	X
15 the methods used to monitor and audit the environmental impacts of the company's operations	✓	✓	✓	x	x	X
16- the initiatives that the company has undertaken to reduce environmental impacts	✓	✓	✓	✓	x	X
17- the different methods used to reduce environmental impacts on the society	x	x	✓	✓	x	X
18- use of training, consultation and incentives, etc … as means for encouraging staff members to believe in environmental issues	✓	✓	✓	x	x	X
19- the future plans of the company for the development/improvement of their environmental management system	✓	✓	✓	✓	✓	X
20- the effect of globalization of trade through the WTO	0	0	0	0	✓	✓
21- The personal belief of the respondents of the importance of developing corporate environmental management in private Saudi companies	✓	✓	✓	✓	✓	X
22- The reasons behind the uptake of corporate environmental management in the respondents' company.	+	+	+	+	+	+
23- . the respondents' opinion concerning the situation in Saudi Arabia in terms of environmental support	x	x	X	x	x	X
24- the actions that need to be taken by private Saudi companies to encourage the adoption and development of corporate environmental management	+	+	+	+	+	+

Key:

✓ **Two of the three interviewees satisfied with the performance of the company or his environment concerning the point discussed/aware of the issue discussed**

x Two of the three interviewees not satisfied with the performance of the company/not aware of the issue(s) discussed/not supportive of the issue

o Two were Neutral (positive nor negative)

+ Refer to table in appendix L as all three responses are different

Environmental management systems

To consider if any of the companies had environmental management systems, and to consider the effectiveness and the corporate support for them, the respondents were asked the following:

12. If they had a senior manager responsible for environmental issues
13. Designated staff to deal with environmental matters
14. Appointed environmental advisors
15. If they had an environment committee

Representatives from companies A & B all indicated that they had a full department undertaking these tasks with staff and advisors all assigned to these tasks. Company A reported to have an international team, while company B had a Saudi based team.

Representatives from Company C did not indicate the presence or absence of such staff because they found it difficult to differentiate between the environmental services they offered as a company and their own environmental profile. None of the respondents from Companies D, E and F indicated the presence of such staff in their organisations.

When asked if their companies offer education and training on environmental matters, representatives of companies A & B were positive about it, while representatives from D, E and F stated that the training is very limited if not absent. On the other hand representatives of company C gave a mixed response by being neutral to question 6 but unanimously agreeing with almost a similar one posed in question 18 (see Appendix L).

Reporting

When asked about systems for reporting on all operations and especially on environmental, social responsibility or sustainability issues, all companies, except companies B and F, all stated that they have a system of reporting. However, all representatives varied in their views of the strength and reliability of their company systems. When asked about the methods of reporting to board, staff, shareholders, and the community on the company's environmental performance, the representatives responses varied from reporting through written reports sent through mail and email (or even brochures and magazines) among companies A, B, C, D and E. Company F did not have any method of reporting at all.

Some other issues explored are described below.

Only one company (A) said that they engaged in **green supply chain** management whereas the other companies did not have any such management system in place.

When the interviewees were asked about the **presence or absence of a certified system** that verifies or accredits their company's environmental performance, companies A and B representatives stated their companies apply the system by their international

mother company which is as strict and as valuable as standards like ISO 14001. Company C, due to its work in the field of environmental services, has adopted ISO 14001, company D stated that they have adopted ISO 9001 which is only related to the quality standards applied to the management of the institution. Representatives of companies E and F replied that they had neither an international or national certified system to follow.

Concerning the question on the companies' **contacts with environmental or community groups** on environmental issues, all the companies' representatives stated they do not have any such contacts. Thus, generally it was clear that there is a lack of connection between the organizations and the local community, particularly environmental groups.

When asked about **the environmental activities of the company**, all the responses from the representatives from companies A and B indicated their companies are adhering to environmentally safe activities, yet they were very critical of the performance of the neighbouring companies and the community which they felt were not at all concerned with environmental issues. Representatives from company C believed that their environmental activities are primarily affected by the nature of the services offered by their company which is directly related to offering environmental services (e.g. getting rid of wastes from hospitals). Companies D and E had less environmental related activities, while company F representatives expressed that the activities given to them are dictated by the administration and hence they are not concerned with environmental issues because their administration is not. Therefore they stressed the influence of company's regulations and directives. Due to this, companies A, B, C and D seemed to have some methods to monitor and audit the environmental impacts of the

company's operations, yet with varied degrees, while companies E and F lacked such methods. Again, representatives of company F thought that it is not their duty to introduce such ideas into the company or to develop methods to monitor and audit environmental impacts. In turn, the initiatives that these companies have undertaken to reduce environmental impacts are non-existent. This is the opposite of companies A and B whose representatives mentioned a great number of examples of initiatives undertaken by their companies. Representatives of companies C and D also mentioned some initiatives but these were not perceived as effective as those expressed by the representatives of companies A and B. They were not that positive when they were asked if their companies helped in reducing the environmental impacts on their society as they were aware that their companies activities were mainly concerned with the operations within the company itself rather than their effect on the larger community, especially because no strict regulations are in place or implemented at the moment to guard against such environmental problems.

When asked about the **use of training, consultation and incentives**, as means for encouraging staff members to engage in environmental issues, the representatives of companies A and B agreed on that issue, but stated that although training is provided, the effect is limited. The problem is even more prevalent in the other companies with representatives reporting a lack of such opportunities, or training limited to the development of administrative and managerial skills and safety and security issues.

Representatives from all companies, except company F, indicated that their companies have **future plans for the development/improvement of their environmental management systems**. Representatives of company F thought that it is not the focus of their activities and they do not think it will be picked up as they believed

that increasing income is the most important force as they are an industrial and construction companies. Company C stated that they are working on getting the ISO certification and hope to get it.

When asked about the **effect of globalization of trade through the WTO** there were a lot of opposing viewpoints. Some did not think it would affect their companies, while others indicated that it is absolutely important as they thought that their companies will soon be facing international competition and hence they need to prepare for that by adopting high quality standards in their operations and activities including environmental ones.

Despite the fact that all the respondents, except those representing company F, expressed a personal belief of the importance of developing corporate environmental management in private Saudi companies, they varied a great deal in the degree of importance they placed on this issue. It was clear that, on the whole, the top managers were more concerned than lower management and those whose position was more related to the environment were much more supportive of developing corporate environmental management in their companies. Some thought of it as a national issue, while others considered it to be an ethical issue.

The reasons behind the uptake of corporate environmental management in the respondents' companies revolved around the presence of policies and regulations, mainly by the company itself, or its mother company, or by the government. Some, as the case with companies C and D, considered that the main reason in their case was the nature of the operations of their companies which offered environmental services (collection and disposal of hospital and solid wastes). In some cases (company A&B) the main reason was purely individual interest or the pressure to protect the image of the parent company.

Two respondents from companies E and F were very much concerned about the costs of running an environmental system and stated that this is the reason for not taking it up.

All the respondents shared the opinion that the situation in Saudi Arabia as well as other Arab countries, is not positive concerning the uptake of environmental measures and agreed that they all needed support and encouragement to achieve it.

Suggestions of respondents

Some suggestions were made that participants thought would help the situation. These included the following:

1. Set and implement governmental and company regulation and policies to ensure that all companies and individuals adopt environmental measures and set strict environmental management systems.
2. Set clear missions and objectives in the company to have environmental departments responsible for adhering to environmental policies and regulations.
3. Have country wide awareness campaigns as all people must believe in the adoption of environmental measures to have individuals supporting such measures at all levels
4. Develop effective training programs for employees to support uptake of environmental management systems
5. Acquire international certifications like ISO 14001
6. Be ready to spend money on developing the company environmentally

However there was a great deal of variation in the opinions of the companies with, predictably, companies A and B suggesting more strict regulatory systems than the

others, while companies like E & F weren't very vocal about their support on these suggestions.

Having dealt with the responses given in the interview generally, they are now assessed by comparing and contrasting the companies categorised in each of the three categories.

12.2 The Proactive

Both companies A and B are industrial joint ventures that produce a variety of daily products that are well known in the country. They are branches of mother companies which are based in USA (Company A) and Europe (Company B). There were many similarities in the comments of the representatives of both companies.

Representatives of the two companies A and B stated that their companies had missions, visions and policy statements that show that they are concerned with environmental issues. However, the comments of the representatives of the two companies also seemed to indicate that the adoption of these environmental directives are the result of the adoption of these trends by the mother company as publicized and practiced in USA and Europe. They also emphasized that the measures taken are related to making sure that the companies' products are healthy and safe for use by customers. They also ensured that the work environment is healthy and safe for all employees. In addition, their companies have a structure that shows that there are positions that take care of health, safety and environmental issues. Advisors are also sent by the mother company from time to time to train and advise management on such issues and procedures. A regular reporting system on environmental accidents is also available to ensure that workers in all branches are aware of such incidents and how they need to be handled if they ever occur again. However, it was noticed that most of the comments by

the respondents revolved around the idea of producing environmentally safe products, having environmentally safe company operations, and ensuring healthy and safe work environments, all of which they believed will help sell their products and keep them compliant with international and national legislation. This suggests that the company managers at different levels are largely driven by the economic value of considering environmental issues rather than any intrinsic value of good practice.

Company A does not have ISO14001. However, the representatives of this company indicated that they do not need to do so as they are following the international standards of their mother company which is very strict and that they are very systematic in applying these standards and hence their excellent reputation in the international, regional and local markets is well established. Company B has had ISO14001 accreditation since 2002 and they have renewed it annually.

Concerning the training opportunities given in relation to environmental education, both companies deliver training programs to their employees regularly either locally or internationally by sending them abroad to attend conferences and international meetings. They also contribute locally to giving lectures concerning environmental issues related to their operations and productions. However, they feel that such external opportunities are not yet that wide. Also, their relations with environmental groups in the community or internationally is almost non existent.

Representatives of both companies stated that there is a system for reporting on the general operations of the company, daily, weekly and monthly including the environmental aspects of these jobs. However, the reporting system on environmental matters is not publicized to all people in the business community, shareholders or even all workers, as it is mainly directed to top management and the board only.

The respondents from the two companies, A and B, stated that they are trying all the time to run their operations using environmentally safe equipment and procedures. These actions have led to minimizing operations expenditure, reducing wastes and using renewable energies to run some operations in their plants. However, such environmental activities are internal only and not publicized to the wider community.

It was clear that the respondents from top management of the two companies were much more aware of the importance of recognizing the responsibility of their companies to environmental issues than respondents from lower down in the company hierarchies. They expressed their belief that protecting the environment is an ethical matter that is necessary to provide and maintain a healthy environment for the next generation.

All the representatives of both companies believed that private Saudi companies are lagging behind in terms of their concern for the environment due to lack of knowledge and awareness on the part of the local community of the dangers lying ahead. The absence of consumer pressure as well as governmental and legal pressure was seen as a barrier to more comprehensive and effective corporate environmental management in Saudi Arabia. Although laws for protecting the environment are set by the government, they believe that the enforcement of such laws is poor, and as a result many private companies do not adhere to the regulations. These findings confirm those reported in the quantitative analysis in chapter 10.

Concerning the driving factors behind the adoption of corporate environmental management systems, the representatives stated that the main factors were:

- Adherence to the regulations and systems of auditing set by the mother company to protect its reputation and market internationally
- Compliance to international certification standards like ISO 14001
- Governmental laws and legislations, even if they are not yet enforced.

When asked about the actions that need to be taken by private Saudi companies to encourage the adoption and development of corporate environmental management, the representatives of both companies stated that the wider community needs to be educated first about the importance of environmental issues, then companies would adopt or develop environmental standards and make them part of their missions and work out policies and implementation procedures to achieve these objectives. Many of them thought that there is a need for reinforcing these standards, laws and regulations by the government using fines to make sure that all people and companies adhere to them.

The outcome of the interviews support the fact that companies A & B are aware of the importance of the environmental impact of their industries and how it is necessary to adhere to environmental policies and practices. They are complying with good environmental practices due to the policies of their mother companies which are clearly aware of the economic value of good corporate environmental practice and demonstrated social responsibility. The results suggest these two companies do reflect the top levels of environmental performance in Saudi Arabia. However, it is also clear that while these two companies are performing at high levels in the Kingdom, they would not be seen as pioneering in other parts of the world. Therefore, it would be appropriate to describe them as Potentially Proactive, as it reflects the relatively progressive yet limited behaviours of these companies.

12.3 The concerned

Although both companies C and D represent this middle category, there are some interesting differences in the opinions given by their representatives and hence they will be discussed in turn.

Company C is a unique case as it is one of a small number of companies working in the area of handling and treating dangerous wastes. Thus all the operations of the company are related to protecting the environment. The company has eight headquarters that cover all of Saudi Arabia and eight plants for handling and treating different types of waste. Therefore, when the top management were asked if the company has a mission and policy statements related to the environment, it was stated that there are ones that are available to all people and announced everywhere since the founding of the company around 10 years ago. Concerning the question whether the company has a specific department or job positions that are concerned with environmental issues, the answer was that there is not a department as such or specific members as such, but that every member of the company is engaged with environmental concerns as part of the nature of the operations of the company- handling and treating medical and industrial wastes. The top management also stated that the management staff members are experts on environmental issues. Therefore they are qualified enough to undertake this task within and outside the company. They are also provided training to upgrade their performance regularly. Also the company hires consultants whenever needed to handle environmental cases and problems. For quality assurance of the safety of the companies' operations, the department of inspection and follow-up supervises these operations and reports to the general manager. For them, the members of this department are the ones who are concerned with making sure that all operations and actions of the company are carried out in environmentally safe manner. The middle and lower management stated that there

is no specific environmental department or a committee for that purpose of laying down standards for environmental procedures to be followed up. Advisors and consultants are hired from well-known institutions like national universities and consultation firms whenever needed to help in solving problems or setting policies or giving training to staff and the community. However, these do not show in the overall structure of the company as they are not permanently based there.

Concerning training opportunities, all the representatives of company C stated that internal training to staff members takes place regularly. New staff members are trained to maintain safety measures in handling and treating wastes to ensure that no staff members are affected negatively. Training is also conducted for clients on issues related to handling and treating wastes. However, one of the lower level managers stated that training the community is sometimes problematic due to the level of openness of the public to receiving and accepting training on environmental issues.

When asked if the environmental procedures are documented regularly, the representatives stated that they have daily, weekly, monthly, quarterly and annual reports to submit. However, these are all administrative reports. They are not mainly focused on environmental issues.

The representatives of company C stated that the company has the international certification of the ISO14001 for environmental management and ISO 9001 for quality management. Due to these international certifications, they are required to maintain a certain level of performance environmentally and in terms of management. They are also seeking to get ISO 18001 which is concerned with the quality of industrial and health care management. This is more important for their type of services. On the other hand, the company is accountable to the Presidency of Meteorology and Environment and

therefore their operations are adhering to the general environmental regulations and implementation rules. Not all members of the company will be aware of the content or the requirements of these standardized certifications as only experts and management are aware of these requirements to be able to fulfil them.

When asked about the involvement of the company in environmental groups, the top manager stated that he is a proactive member in environmental groups like the Saudi Environmental Society and is a keen supporter of environmental protection. To him, environmental support is humane, ethical and a national duty. He also showed evidence that he believes members of the company should all share ideas in improving the overall performance of the company, including the environmental aspects of it. The comments of the middle and lower management did not reflect the same level of strength of commitment – none of them were Saudi, but they were aware of the importance of environmental issues and the three aspects referred to by the top management especially as they represent the motto of the company.

Concerning the methods and initiatives used to reduce environmental impacts on society, the top management gave a number of examples that showed the company has adopted methods that are environmentally safe and also reduce the costs of their operations. For example using plastic bags of different textures and colors for different types of wastes and minimizing the use of specific types of energy. However, no mention was made, of the adoption of methods that are environmentally beneficial but that are costly.

When asked about the future plans of the company for the development/improvement of their environmental management system, the

representatives stated that they should be working on getting their existing ISO certifications expanded so that more aspects of their operations were covered.

All the representatives of company C agreed that private Saudi companies still need to develop awareness of the importance of environmental issues. For them, their company needs to develop in that way since its services are related to the environment. The top manager sees it part of a national duty and an ethical issue that must be done by their headquarters which represents the mother company for all the other branches around the Kingdom.

To be able to encourage private Saudi companies to adopt and develop corporate environmental management, the three representatives of company C referred to the need to have a public campaign that aims to raise the awareness of people in general about the importance of protecting the environment.

Representatives also suggested offering incentives to companies that consider environmental issues as well as setting policies that levy a fine on those companies that break laws and regulations. They also stated that studies are needed to generate data about the effect of different industries on the environment and set auditing systems that help guide private companies to implement environmental regulations and policies.

Company D, will now be discussed, which is a group of companies that offer services in the areas of hotel, travel and tourism. It is a completely different type of private company that has a different perspective on its mission and role in the community/market. It was clear from the beginning that the top management, though showing a personal interest in the environment, with a clear idea about its importance, still considered that the nature of their business operations does not necessitate the need

to consider its environmental impacts (unlike industrial companies). Due to the nature of the services offered, the representatives of company D, stated that the vision, mission and objectives of the company does not include any reference to the impact of the business on the community or the role of the company in relation to the environment. In addition, no specific members or department is set specifically for the purpose of supervising environmental issues. They also do not have any consultants or committees set for that purpose. No training programs are offered for that purpose, nor are any reports produced to that effect. However, the group issues quarterly reports on the financial status of the company. If the company is working within its budget, no further reports are required. If there is a problem, further exceptional reports are required. The representatives of the group of the companies kept stating that due to the nature of the company, offering hotel, travel and tourism services, they are not directly concerned with environmental issues. However, the general manager states that he personally feels that this is a very important issue that concerns him personally. He referred to some individual initiatives on his part to preserve the environment in his series of hotels. These include initiatives minimizing the use of drinking water, and water for laundry, minimizing the use of paper in keeping records of clients and communicating internally within different members of the group of companies. The top management mentioned their attempt to make contracts with suppliers who provide environmental friendly products like soap, shampoos, and cleaning fluids. All this shows that the top management is very well aware of this issue and the general manager himself stated that it is essential to consider these environmental issues in his company as well as other private companies. He also agrees that private Saudi companies on the whole are not aware of the importance of considering environmental issues and having and applying an environmental management system. He sees that there is a lack of data about the effect of the industry on the environment as well

as a lack of information about the financial implications of damaging the environment. The representatives also believed that the public sector is not active in this area. He and other representatives of the company therefore see that there must be interference from the government to ensure that environmental regulations are implemented in creative ways to force private companies to consider their environmental impact on the community. They also suggested having campaigns and training sessions for the whole community about environmental issues that will raise the awareness of the public, including company owners. The representatives of company D, showed personal interest in the environment but they still felt that the nature of their company, being a services company that is clean by nature, not an industrial one, does not place the preservation of the environment as a top priority for them.

In general, the two companies C and D appear as aware companies, though they may not be considered absolute compliers. For company C, the issue of environment is essential as the nature of its operation is to control environmental pollution. For company D, the situation is perceived adversely as the management feels that the operations of their business does not have a direct negative impact on the environment and hence therefore, it is not a need to comply to related rules and regulations.

These discussions do confirm the labelling of the middle category as Concerned. However there is clearly some debate about the accuracy of Company C's categorization. Company C is clearly more proactive in that it has the top international recognition in terms of its accreditation to ISO14001. However, representatives of Company C display similar dissonance as those from Company D – they are concerned about the environment but somehow do not connect with the need to embrace the environmental imperative within the behaviours of their own companies.

12.4 The Inactive

Both companies E and F are holding companies that provide services to the community in the areas of handling daily operations like gathering home wastes and planning and building houses. They are branches of a local mother company that is well known to the public and which has many other companies that produce daily products like food.

Representatives of the two companies E and F stated that their companies had no missions, visions or policy statements that show that they are concerned with environmental issues. However, they kept saying that it is "understood" that if they are involved in handling home wastes or planning and building homes that they would be considering the environment. They do not, nevertheless, have within their company structure, a department, unit or positions that are mainly concerned with handling environmental issues either within the company or within the community in relation to their company's daily operations. They do not have specific external advisors to train and advise management on such issues and procedures. Although they have a reporting system on a monthly basis on the regular operations, they do not have a regular reporting system on environmental accidents and issues happening in their different branches.

It was noticed that most of the comments by the respondents of companies E and F attempted to play down the need to consider the environmental effect of their company's operations on the environment. One of the managers stated that it would have been important to consider the environmental aspects of our operations if we were an industrial company, which we are not. Another respondent stated that in the area of construction, consideration of the environment is not a marketing tool and that it is too early for that. . Another comment passed by one respondent was that they thought it is

difficult to think of environmental issues while there are still problems in the infrastructure and as problems related to infrastructure are handled, it will be easier to focus attention on environmental issues. This shows an out-dated perception of environmental management as well as a misguided viewpoint that argues that the nature of their company's operations does not touch on environment.

Neither company E nor F engaged with international standards like ISO14001. They have other certifications for quality assurance, but none related to environmental management. Concerning the training opportunities given in relation to environmental education, neither company deliver training programs to their employees either locally or internationally. They only train employees on the operations run by the company. Their relations with environmental groups in the community or internationally is non-existent. The respondents from the two companies, E and F, stated that they are supposed to run their operations using environmentally safe equipment and procedures. However, this is not being employed systematically. Such environmental activities may be done individually only.

It was clear that top management either does not yet consider environmental issues as important or perceives the cost of corporate environmental management as too high. Interestingly all the representatives of both companies believed that private Saudi companies are lagging behind in terms of their concern for the environment due to lack of knowledge and awareness on the part of the local community, the municipalities and other companies. The absence of governmental support was mentioned as an issue as was the perceived high costs of initiating environmental policies and practices. They proposed bringing international partners who can support such projects and added that

the government needs to exert legal pressure to ensure that all companies adhere to environmental laws.

Concerning the factors that the representatives considered to be behind the adoption of corporate environmental management systems, they stated that in order for this to happen two main points need to be considered; adherence to the regulations and laws set by the government and the governmental support of environmentally safe projects. These will encourage private companies to embrace environmental management even if the costs are significant.

When asked about the actions that need to be taken by private Saudi companies to encourage the adoption and development of corporate environmental management, the representatives of both companies stated that the community needs to be educated first about the importance of environmental issues, then companies would develop environmental objectives, adopt or develop environmental standards and make them part of their missions and work out policies and implementation procedures to achieve these objectives. Many of them thought that there is a need for reinforcing these standards, laws and regulations by the government, represented by the Presidency of Meteorology and Environment, using fines to make sure that all people and companies adhere to them.

The outcome of these interviews with F and E show that these companies are not very positive about the issue of considering the environmental impact of their operations due to many difficulties they are or will be facing in implementing environmental policies and practices. They may be needing to comply with environmental practices in future once the government enforce such regulations, but they do not yet see it profitable to their companies and hence it may not be possible to do so without the financial support of the public sector.

These findings support the categorization of these two companies in the lowest performing group. Additionally, they displayed an attitude of being inactive and sometimes unaware or opposing. Although these two companies appear resistant to the concept, there are signs that they are beginning to understand that these issues will become increasingly important and that they will have to engage with them in the near future.

Conclusions

Overall the results of these companies have shown that, as hypothesised, the internationally-based companies do better regarding environmental initiatives and performance. The local companies (E and F) were near enough oblivious to the importance of the initiative and uptake of such initiatives. The service sector of tourism and travel, company D, are informed and care but feel that the environmental initiative doesn't directly affect them. However, findings related to company C were of special interest. Even though it specializes with the treatment of hazardous waste, it was surprising that they didn't feel particularly strongly about being environmentally responsible The above analysis helped understand some of the barriers that influenced the attitude of the respondent companies towards the issue of environmental management, It also more or less confirmed the findings of the quantitative research reported in chapter 10.management.

In the next chapter 13 an overall discussion of the quantitative and qualitative surveys related to the hypothesis and some conclusions that highlight important findings is undertaken.

CHAPTER 13 Overall Discussion and Conclusions

This research aimed to explore the uptake of corporate environmental policies and practices within a sample of private businesses in Saudi Arabia. It sought to identify the characteristics of private Saudi companies that would affect their uptake of corporate environmental policies and practices. The research also aimed to identify the internal and external drivers and barriers that affect levels of uptake of corporate environmental policies and practices. No previous studies were made in this country concerning the factors that affect the uptake of environmental management in private business organizations or the drivers and obstacles facing the attempts to establish environmental management systems in companies. The only studies that were made in Saudi Arabia were in relation to the study of policies implemented in Saudi Arabia (e.g. (Al-Gilani and Filor, 1997; Al-Gilani, 1999) which investigated the current framework for national environmental policies (as part of the fifth, sixth and seventh development plans) and the difficulties they face in terms of their implementation. Another study measured the levels of satisfaction of the uptake of ISO 9000 (Magd, 2006). Although these studies did not include level of public and business awareness of environmental issues and environmental business sustainability, they referred to the Saudi Environmental Awareness Project (SEAP) (Al-Gilani, 1999). Which was the first organized plan to educate the public about environmental issues and problems? Though the project had wide media coverage and lasted for two months, its lasting effects were limited and never documented. According to the researchers, there is *"no clearly structured strategy for environmental awareness"* (p 259). Hence, they proposed a reformed national framework for the environmental policies in Saudi Arabia. Despite these studies until now there has

been no information about the level of awareness of firms and companies, large or small, their attitudes and implementation of environmental policies in the Kingdom.

Two surveys, (quantitative and qualitative) were undertaken to bridge this gap in knowledge. This chapter discusses some of the main findings from these two studies and conclusions drawn from them, followed by a review of the hypotheses set earlier in chapter 7. Chapter 14 outlines the contributions of this research, its limitations and recommendations both for businesses, government and further research.

13.1 Environmental performance in Saudi Private Enterprises

The environmental performance of Saudi private businesses was assessed by using two measures in the quantitative survey stage; Environmental management initiatives (EI) and Corporate Environmental Management (CEM)

Environmental management initiatives

The results suggest that there is actually quite a lot of activity going on regarding environmental initiatives

The most 'popular' environmental initiative, was that their company is working towards accreditation to ISO 14001 where nearly 85% respondents choose 'yes' The existence of a 'clear written environmental mission statement in the company was indicated in the affirmative by 64% of the respondents while 51.7% stated that their company employed 'influential environmental officers to enhance environmental performance'. This was surprising since none of the 176 companies' administrative structures provided evidence of such a role. This might suggest that if these officers do exist then they are not that prominent in the corporate hierarchy. In the same order 47.7% of respondents declared that their company 'carried out regular environmental audits' and

also have a ‘board member who is responsible for environmental issues'. This is also surprising when we consider the much lower responses to the question on ISO14001. Only 30% of respondents stated that their companies have been accredited to ISO14001. Although this is seemingly a small percentage, it does suggest that at least 53 companies in Saudi Arabia have met these international standards. This is slightly suspicious since a survey in 2006 suggested that only 20 companies in the whole of Saudi Arabia had accreditation (**www.ecology.or.ip/isoworld).**

Although there is a possibility that in recent years there has been a renewed interest in achieving this standard this is not supported by this survey which found that 85% of companies in the sample are still only working towards it ISO accreditation..

13.2 Corporate Environmental Management (CEM)

This measure yielded a total CEM performance score and three subscores for organizational support OS, Environmental operations EO, and Environmental responsibility ER. These are discussed separately.

Organisational Support

The statements used to explore this theme attempted to investigate the attitude and vision of management regarding environmental policies and actions. For example, statements asked whether the organization, represented by the top management, has a clear vision of the importance of environmental policies, ensures that environmental issues are being addressed in the most important operations and projects of the company, and whether these are included in the company’s strategic plans. The results showed that more than 52% of respondents agreed to a large extent that their top management cared about the issue of preventing any environmental incidents and complied with environmental laws and legislations set by the government. Around 44% of the

respondents agreed to a large extent that enhancing environmental performance will improve the image of the company. A large number of respondents (39%) also felt that the top management sees enhancing environmental performance as profitable in the long run..

The statements that the respondents ranked the lowest were largely concerned with in-house rewards and training. Only 16% agreed to a large extent that their organization links the evaluation of the performance of its employees to their contributions to improving the environmental performance of the company, 17% that it regularly raises the employees' awareness of environmental issues through training, 19% that it allocates enough resources for environmental training and 20% that it gives incentives to employees and managers who enhance environmental activities.

The pattern of these responses suggests that Saudi companies are most concerned about environmental risk management and compliance to regulations. The image of the company is also an issue, but there doesn't seem to be real deep rooted commitment to environment for its own sake. Many of the findings can be related back to the findings of previous researchers such as Tinsley (2002) and Mark et al. (2000). Low levels of top management commitment, lack of credible environmental plans, lack of communication with employees on environmental issues, and a lack of resources and incentives can all be barriers to the introduction of corporate environmental management. It would seem that despite some promising signs regarding legislation and accident avoidance, many companies in Saudi Arabia still lack effective green policies that would increase stakeholder pressures (NGOs, CSR and consumer awareness) that would encourage pro-active corporate environmental management.

Environmental Operations

The environmental operations of the companies were investigated in this theme to know the practical measures of environmental management undertaken by each company.

The statements included reference to whether the companies design their operations in ways that minimize the use of different types of environmental resources including energy, water, paper and other raw materials. They also explored whether companies ensure that their activities minimize the amount of emissions that contaminate air, water or land and whether they generally use ways of designing, manufacturing and distributing products that do not have any harmful environmental impacts. Other statements concerned waste, recycling, supplier policies, and transparency.

The statement that most respondents agreed on was that their companies ensure that their activities minimize the amount of emissions of contaminants to water. This is largely because water is a rare resource in the country, and might suggest that companies are more aware of the need to protect it. The second and third highest scoring statements concerned attempts to ensure that company activities minimize the amount of emissions of contaminants to land and air. Other positively rated statements all revolved around the use of operations that minimize resource use and avoid emissions to land, water and air.

The statements that the respondents agreed the least with related to whether companies considered the costs of their environmental impacts, the transparency of company behaviour and the use of objective measures to assess corporate environmental performance. Companies do not seem to place a great deal of importance on requiring suppliers to meet certain environmental requirements, the need to use recycling materials, or the need to develop alternatives to harmful environmental practices.

The results imply that company environmental activities are mainly confined to minimizing the amount of harmful emissions of contaminants and minimizing the amount of energy, waste and raw materials. Most companies don't appear to consider the costs of the environmental impacts of their products, or openly give information about the environmental impacts of their operations, or objectively measure the level of their company's environmental performance. Few recognize their potential power to control their suppliers and most do not attempt to encourage them to be greener. This is unsurprising given that few companies themselves design, manufacture or distribute their products in ways that minimize impacts on the environment.

The findings for this theme complement those for organizational support - companies are limited in their understanding of the outside effect their business operations have on the environment and the main environmental actions taken by them are primarily concerned with minimizing the amount of materials needed for running business operations and preventing the spread of contaminants in air, water or land, possibly for fear of penalties or closure.

Environmental Responsibility

The third theme of CEM attempted to explore the environmental responsibility of the companies. The statements in this theme referred to the company's environmental data management in terms of its level of accuracy, availability and timeliness. The statements also addressed the companies' aptitude for improving their end products, their manufacturing technologies and strategies for waste management.

Results suggest that companies consider the improvement of their end products as their main role followed by the improvement of their manufacturing technology. However, there is a high possibility that respondents felt easier about giving positive

responses. The more specific statements relating to availability and accuracy of information, received less positive results. The least positively rated issue is about publishing regularly information about their environmental performance.

Therefore, it appears that Saudi private companies are more concerned with manufacturing products or offering services, rather than being concerned with considering their activities in the light of their social responsibility of protecting the environment. Hence, reporting on the environmental performance is not considered essential, never mind being regular, accurate or timely.

13.3 Overall Discussion

The results of this first survey of Saudi Arabian corporate environmental management are clearly very interesting. At first glance it would seem that companies in the Kingdom are actually reasonably active in this area, with many reporting good policies and practices. However, there is a real concern over the accuracy of results and a few anomalies point to over-reporting of leading to a strong suspicion that respondents were painting unrealistically green pictures of their companies. Although a closer analysis of the results showed that a good number of respondents were actually quite critical of their companies and did not seem to be consistently responding positively there was some evidence of respondents ‘over egging’ their companies’ performance therefore the responses need to be treated cautiously,

One important aspect of this survey is the relative levels of activity. Clearly there are some companies that are making real efforts and similarly there are companies that have almost completely failed to engage with the environmental agenda, but the vast majority of companies are doing something. However, even the better performing companies are demonstrating a dominantly compliant stance. Most environmental

policies and practices that scored highly seem to have been put into place for damage limitation reasons. Few companies in the survey seemed to look beyond their own operations. The responses to the questionnaire tend to suggest that Saudi companies are not yet fully implementing environmental management systems that aim to really protect the environment. It would seem that they are primarily concerned with protecting their financial business interests and are motivated to engage with policies that will help prevent environmental incidents and disasters in order to avoid extra costs or penalties.

Generally then, it seems that Saudi Arabia's corporate environmental management is lagging behind companies operating in some areas of the world, and that this survey paints a picture reminiscent of that found in the UK, for example, in the early 1990s.

In order to find out more about the reasons for this relatively poor performance, the data was also explored to determine the role of company characteristics in environmental management performance.

Past studies have indicated that larger companies tend to be the first to engage with environmental management, largely as a result of their wider responsibilities and as a reflection of the wider implications for these companies should something go wrong. Another factor linked to this has been the ownership of companies. Big multi-national companies with western owners tend to have more advanced environmental management policies and practices than others (Utting, 2005). This in part reflects various push factors that encourage responsible environmental behaviours including trading bloc membership (e.g. the EU has some of the world's strongest environmental legislation), and stakeholder pressures from customers, NGOs and environmental pressure groups. It has also been found that certain industry sectors are more likely to demonstrate good

environmental behaviours than others. Typically manufacturing and heavy industry companies are more likely to be advanced in this area than companies in the service sector.

A large number of statistical tests were undertaken to see if similar patterns were apparent within the Saudi Arabian sample. The nine Environmental Initiatives were cross-tabulated with company characteristics and subjected to chi square tests.

It was found that size of the enterprise (categories on the basis of number of employees), was significantly associated with 6 of the nine initiatives. The ones found not significant are: ***My company uses Life Cycle Analysis to assess the environmental impact of the product*** where 33% said yes ***My company has an environmental marketing program*** (35% said yes) and 47% said yes to ***My company hires external experts to consult them on environmental issues***. This suggests that those initiatives that are related to having ISO 14001 or even working towards it are not influenced by size of the enterprise

On the contrary the variable of ownership of the enterprise (Saudi or Saudi nonsaudi) was significantly associated with the first two statements that were found not significant in their association with size. Both size and origin of the enterprise were found significantly associated with the statement ***My Company appoints influential environmental officers to enhance environmental performance*.** This indicates that ownership of the company does influence the uptake of environmental initiatives that are known to be an outcome of ISO 14001. Type of enterprise (industry or service) was found to have no significant effect on the uptake of all but one of the environmental initiatives that referred to ***appointing influential environmental officers to enhance environmental performance.***

With regard to the relationship between the nine environmental initiatives and the measure of corporate environmental management (CEM) and its submeasures of organizational support OS, environmental operations EO, and environmental responsibility ER. It was found that except for one all the initiatives related with significance to CEM and all its submeasures ***My company is working towards accreditation to ISO 14001*** is the only statement that did not relate to CEM and any of its submeasures obviously because 85% of the companies reported working towards it.

Although only a few tests resulted in the identification of positive relationships, a pattern is beginning to emerge - Saudi businesses are beginning to engage with the environmental agenda, but largely in response to external pressures. Internally focused Saudi owned and Saudi based businesses are largely immune to many of the typical push factors for proactive environmental performance. Although there are some environmental laws and regulations, they are not particularly progressive and tend to be poorly enforced. The general public in the Kingdom is not that well informed about environmental issues and NGOs and environmental pressure groups are in their infancy. Thus, there are few pressures driving these companies to improve their environmental performance. The findings tentatively suggest that companies in the Kingdom owned by non-Saudis do appear to have a more progressive approach, possibly due to external pressures from international stakeholders, including buyers and suppliers. Similarly large companies seem to be better equipped to manage their environmental responsibilities and this may be due to similar pressures.

The responses of the respondents in the qualitative stage reflected more or less the three categories of companies that they represented; the inactive/unaware, the concerned/inactive and the potentially proactive (ICP). On the other hand, most of their

responses confirmed the quantitative results (chapter 10). Some highlights of the findings are briefly discussed below.

Companies A and B (potentially proactive) are compliers as they showed a reasonable level of awareness of the importance of running their operations in environmentally safe manners, mainly for economic purposes and to ensure safe and healthy environment for their workers and clients. In addition, they are open to assume a social role as a responsible institution. They are strict compliers to laws and regulations that does not come from complying to local governmental regulations, but from complying to the regulations and rules enforced by the mother company which adopts international laws and regulations. This confirmed that there was an over response in the quantitative survey as 30% stated they are accredited to ISO 14001 while 85% reported working towards it. Nevertheless, a good EMS is considered no guarantee of environmental performance improvements as none of the companies reported that they have a position for environmental issues in the quantitative stage. Companies A & B confirmed this as they also do not have any structural support for environmental management or plans for adopting international stanadards for their environmental management.

Representatives of companies C and D, categorized as the concerned inactive showed that they are aware of the importance of considering environmental issues for several reasons; the nature of their business operations which necessitate protecting the environment to gain profit, the marketing value of acquiring international certifications like that of ISO 14001, and the possible reduction of costs if some environmentally related procedures are taken into consideration. These companies are, however, far from being strict compliers to environmental practices and policies with one of them (C)

having adopted ISO 14001 but still they did not show clear indications of environmental performance nor reported it in a clear and accurate way. This means that while adopting an EMS is a significant first step (only 2.5% of companies achieve improvement with an 'inadequate' EMS) actual environmental performance also needs to be monitored to be successful (Maier and Vanstone, 2005).

This situation was also observed with companies E and F (inactive /unaware) that though aware of the existence of environmental regulations, do not assume any social role in protecting the environment, even if their operations (as with E) are related to protecting the environment. They may believe as individuals that this is something to consider, but for them it is to be done by the enforcement of governmental regulations and laws and governmental financial support. Private institutions, find it very difficult and costly to consider such environmental actions and practices. They are at a stage that only considers the economic value of the projects and not the effect it may have on the surrounding environment. All this confirms the results of the quantitative study and sheds more light on the specific reasons why companies are taking such stands.

Thus, while developed countries have achieved a lot of progress in the field of environment accounting developing countries particularly in the Arab world are still in their early stages. Corporate decision-makers are aware of the importance of environment protection, environmental laws, philosophy of top management, and alignment with parent company. However, this awareness was not reflected in their involvement and reporting.

Discussion related to Hypotheses

The conceptual model of the study in chapter 7 generated a list of hypotheses related to the internal and external drivers that influenced the uptake of CEM policies.

Some of these are simple to answer by referring to statistical analysis while others are more difficult to address and require consideration of the results of both the quantitative survey and the qualitative survey. These results related to hypotheses of the study (summarized in Table 13) will now be considered and evidence will be explored from both stages of the study in order to either accept or reject them. Firstly, the assumptions related to the demographic variables are discussed followed by examining other internal and external drivers/barriers that have been found to significantly affect the environmental management performance of Saudi private enterprises.

Table 13.1 Summary of Hypotheses

Hypotheses	Result
Foreign branches that work under their names in Saudi Arabia with a saudi, and those owned locally by Saudis will not differ in the uptake of environmental management policies and practices.	√
There will be no difference in the uptake of environmental management polices due to size of companies in terms of number of employees	X
There is no difference between manufacturing and service enterprises in the uptake of environmental management	√
The necessity of preventing environmental accidents will not significantly influence the level of corporate environmental management performance in Saudi Arabia.	√
Consumer awareness will not influence the adoption of environmental management performance in Saudi corporate private sector.	√
A lack of investment in environmental projects will not influence good environmental management as an internal barrier.	√
Stakeholder pressure is not an important driver for CEM performance in Saudi Arabia.	√
Corporate Social Responsibility will not influence the level of environmental performance of private companies in Saudi Arabia.	√
Role of the state will not influence the level of environmental performance adopted by the corporate companies in SA.	X
Lack of environmental awareness amongst staff will not have a significant effect on environmental performance among Saudi private sector.	X
There will be no difference in CEM performance due to quality revolution.	√
There will be no significant difference in CEM performance due to scientific innovations.	√
Pioneers within a company will not influence the adoption of good environmental management performance.	√
Senior management support does not influence the adoption of corporate environmental management performance	√
The need to develop new markets will not influence the adoption of good environmental policies and procedures.	√
Companies that perceive the need to engage with environmental issues will not influence the uptake of good environmental management practices.	√
Globalisation will not influence the uptake of corporate environmental engagement	√

Foreign branches that work under their names in Saudi Arabia, and those owned locally by Saudis will not differ in the uptake of environmental management policies and practices.

An important factor that drives private companies to take up CEM is related to the pressure that some stakeholders have on them. Some previous studies like the EIRIS study, (Maier and Vanstone, 2005) showed that many Japanese companies were compelled to adopt ISO 9000 to capture buyers from foreign companies. For example foreign branches of multi-national organisations are often pressurized to raise the quality of their products as well as their business operations to meet the international standards followed by their parent companies. The results are contradictory and it's not easy to either accept or reject theses hypotheses. For example, the idea that non-Saudi based companies (Saudi plus foreigner) would apply the same standards of environmental performance as their mother company seems debateable if we consider the results of the quantitative survey where T Tests showed no significant differences in the performance of Saudi and Non-Saudi based companies on the corporate environmental management CEM scale as a whole and its three sub-measures. However, this variable (Saudi or Saudi Nonsauadi) was significantly associated with three of the nine environmental initiatives; use of Life Cycle Analysis to assess the environmental impact of the product, having an environmental marketing program, and appointing influential environmental officers to enhance environmental performance.

Although, the quantitative survey did not identify a significant difference between Saudi and Saudi &non Saudi companies the qualitative analysis on the other hand, indicated that those representing a branch of a foreign company were more proactive in engaging with corporate environmental management policies and actions. This suggests

that international connections are drivers for good environmental management because they have a well developed environmental management system, tend to use tools such as LCA, environmental auditing, and environmental marketing, as well as appointing employees whose job is to preserve the environment and protect it from the company's harmful operations. They require its branches all over the world apply the same environmental standards These findings concur with previous research (Tien *et al.*, 2002).

Despite the fact that the two top performing companies (A&B) in the qualitative stage have clearly been influenced by their parent companies. The key point here is that the driver for environmental engagement came for outside the Kingdom. However, this doesn't translate into whole-hearted support for the policies and actions in Saudi plus nonsaudi companies. Some of the respondents accepted their responsibilities but did not fully support the measures. Therefore, although these drivers exist within the companies themselves, there doesn't seem to be any evidence that they were external drivers of change in that they encouraged other companies to engage in it. In the rest of the companies in the qualitative study such regulations were not applied at all.

The respondents of Companies C, D, E & F which were all owned by Saudis, though aware of the existence of environmental regulations, do not assume any social role in protecting the environment, even if their operations are related to protecting the environment. Emphasis is more on the the economic value of the projects and not the effect it may have on the surrounding environment. This attitude was also deduced from the analysis of responses to CEM statements in chapter 9 that Saudi private companies seem to be still confined to environmental risk management and compliance to regulations and superficial concern to protect the image of the company rather than really

being committed to the social responsibility role they need to take as leading institutions in the society. The survey reported that the respondents agreed the least with the statement that *the organization links the evaluation of the performance of its employees to their contributions to improving the environmental performance of the company* (15.9%), that *it regularly raises employees' awareness of environmental issues through training* (17%), *allocates enough resources to environmental training* (19%) and *gives incentives to employees and managers who enhance environmental activities* (19.9%). Ownership of the company (Saudi or Saudi plus NonSaudi), was found not related to adopting any of the nine environmental initiatives. Also no significant differences were found between the companies' owned by Saudi or Saudi plus Non- Saudi on CEM, Thus, although ownership of the company, in terms of Saudi or foreign based (Saudi plus non Saudi) has an effect on the level of compliance to international environmental regulations but locally such standards are not strictly adopted or audited. In this study therefore the results are clearly in line with the assumption that there is no difference between Saudi and Saudi nonsaudi owned companies in adopting environmental policies.

There will be no difference in the uptake of environmental management polices due to size of companies in terms of number of employees

The quantitative survey found that size of the enterprise (categories on the basis of number of employees), was significantly associated with 6 of the nine initiatives. The ones found not significant with are:

- *My company uses Life Cycle Analysis to assess the environmental impact of the product.*
- *My company hires external experts to consult them on environmental issues.*
- *My company has an environmental marketing program.*

This suggests that those initiatives that are related to having ISO 14001 or even working towards it are not influenced by size of the enterprise

Overall the size of the company does not seem to have an impact on CEM of Saudi companies. However, it emerged important in the sub-measure of Environmental Operations and Environmental Responsibility where it was found that companies that have less than 300 employees differed significantly wherein they tend to have less environmental responsibility than companies that have more than 300 employees. On the other hand, none of the companies' representatives in the qualitative study considered size as a factor that has an effect on the uptake of environmental policies and practices. However, it is possible that size was secondary to the fact that the two companies in the best performing category were part of international organizations that are considered very large indeed. The companies representing the concerned and inactive categories employed less than 300 people. These results could be attributed, to a certain extent, to the method of determining the size of the company which was only based on number of employees and not on all the other criteria (e,g, investment, turnover, profits etc.) due to lack of information from the companies themselves and the Saudi chamber of commerce. The qualitative study therefore did reveal that larger companies could afford to address their environmental responsibilities, even if the respondents did not themselves acknowledge this point. The two low performing companies both had very low employee numbers and the respondents from those companies did stress the lack of financial resources for progressing their environmental efforts. Although, it seemed that large size companies tend to be more environmentally responsible, the issue could not be resolved adequately in the interviews themselves. This is indeed a little surprise as the evidence from previous studies had suggested that this was likely to be one of the most clear cut hypotheses(Tien *et al.*, 2002; Ytterhus, 2004) Therefore, although it remains a factor that

needs more exploration the evidence from both the quantitative and qualitative studies tends towards rejecting the hypothesis.

There is no difference between manufacturing and service enterprises in the uptake of environmental management

Sector of the company may be a decisive factor in its uptake of corporate environmental management. This is because companies that are part of the industrial sector, are more likely to have direct negative impacts on the environment and hence would be more likely to take up environmental policies and actions. Private companies that are working as part of the services sector are less likely to take up environmental policies and actions. A significant association was found between type of enterprise and CEM as well as with one of the nine initiatives of appointing influential environmental officers to enhance environmental performance. Moreover, a significant relationship was found between the type of enterprise and the ICP type of engagement with CEM. Here, 37% were inactive 'I' and from the service sector compared to 25% in the industrial sector while 48% that showed some concern 'C' in CEM were more from industrial against 30% service. However, no significant differences were found between the two sectors in corporate environmental performance. This is not consistent with general trends found in many previous international studies (e.g. (Burns, 2000; Howarth, 2000; Howarth and Melton, 2001; Tien *et al.*, 2002; Ytterhus, 2003; Da Silva and De Medeiros, 2004). Most of these previous studies found that the sector the company operates in has an effect on the level of commitment of the company to implement environmental measures, with industrial companies engaging most proactively. In the qualitative study the respondents of service type clearly expressed that due to the nature of the services offered, the vision, mission and objectives of the company does not include any reference to the impact of the

business on the community or the role of the company in relation to the environment. Basically, this is attributed to the fact that environmental management is not considered as an important issue if it does not affect the sustenance of a business in Saudi Arabia, irrespective of its sector. Moreover, Saudi Arabia has always been a service orientated society catering to the local needs until it ventured into petro-chemical products and industry at an international level in the past three decades with the establishment of SABIC (Saudi Basic industries) in 1976. Thus, the service sector tends to still nurture the belief that they are not directly responsible for environmental protection policies. The manufacturing businesses on the other hand, tend to widen their scope and venture into the international arena. From these rather confounding results it may be concluded that there is no difference in CEM performance due to the type of enterprise.

The necessity of preventing environmental accidents will not significantly influence the level of corporate environmental management performance in Saudi Arabia.

The issue of environmental accidents as a driver of change has been explored many times in the literature. The fact that many major incidents have lead to improved legislation and transparency is a fact widely documented. In the quantitative survey nearly all (30%) of the enterprises categorized as proactive agreed (see chapter 10) and more than half of those categorized as inactive disagreed that *In my company top management is concerned with preventing any incidents that may be caused by environmental hazards.* The responses to *In my company top management is willing to stop production if environmental or health considerations demand it* were also in the same line suggesting that most of the sample companies (in the quantitative survey) found as inactive because they still do not consider environment or health as a responsibility of each business to prevent environmental hazards. This could be due to

the fact, observed in the qualitative stage, that all the enterprises involved in the service sector do not consider themselves directly responsible for environmental factors and hence are indifferent to this or even opposing it.

On the other hand the fact that in Saudi Arabia, no major environmental incident has occurred, or perhaps none has been reported and this may go some way towards explaining the relatively poor levels of environmental management in companies in the country. However, it is also clear, from both of the surveys and case studies undertaken as part of this research, that it is the fear of accidents that acts a primary driver for environmental management. This is perhaps a positive sign, since the prevention of incidents is at the heart of good environmental management, but perhaps, and this is a rather provocative statement, a really bad environmental incident is what Saudi Arabia needs if it is to fully engage with the global environmental agenda. Of course no-one would really wish for such an incident but if we look at the impact such events have had in the past, it is clear that they have a major role in pushing change. One of the reasons for this is that when a major accident happens, everyone, including the general public, knows about it. This leads to greater environmental awareness amongst the population, which in turn, has led to pressures on governments and industries to 'clean up their acts.

Therefore, it is clear preventing environmental accidents is not, as yet, a driver for adopting environmental management policies.

Three following three hypotheses relate to the influence of stakeholders on the uptake of environmental management policies.

Consumer awareness will not influence the adoption of environmental management performance in Saudi corporate private sector.

A lack of investment in environmental projects will not influence good environmental management as an internal barrier.

Stakeholder pressure is not an important driver for CEM performance in Saudi Arabia.

Local NGOs and environmental groups are considered as stakeholder groups who push for greater engagement of the business world in environmental projects.. The literature review has already identified this to be the case and has provided a number of examples where this pressure has resulted in improved corporate environmental performances. However, as no environmental projects are undertaken by nongovernment agencies in Saudi Arabia therefore it was expected that this factor will generally not be a driver for the uptake of environmental policies of private companies..

In the quantitative survey *In my company top level managers are involved in environmental projects* was found to be significantly associated with the ICP levels of CEM. It emerged as an important characteristic of nearly all those enterprises considered proactive on CEM. At the same time it was certainly not perceived as a characteristic by a majority of those found inactive (23% out of 30%). On the other hand, in the qualitative stage, in response to the question on the companies' contacts with environmental or community groups on environmental issues, all the companies' representatives stated they do not have any such contacts. Generally, it was clear from the interviews that there is a lack of connection between the organizations and the local community because environmental projects are not a common phenomena in this part of the world. This, as because the NGOs in Saudi Arabia are mostly governmental organizations dealing with charities dedicated to only economic and social issues. Therefore, environmental issues are not a priority and the absence of NGOs is an external

barrier to awareness and education of environmental issues in the business sector of Saudi Arabia in particular and the society in general. This lack of awareness is, of course, linked to the fact that the concept of NGOs is not well understood in Saudi Arabia. Therefore, they are unlikely to 'rock any boats' either figuratively or literally and will do little to influence public or business opinion. Moreover, the post effects of the 9/11 terrorist attacks further limited individual companies from getting involved in any activity not related directly to their business.

Corporate Social Responsibility will not influence the level of environmental performance of private companies in Saudi Arabia.

Although CSR is not firmly established in Saudi Arabia, it is anticipated that those companies that are a part of larger, international organisations, or those that work with these, will be encouraged or even required to address the issues it raises. Corporate Social Responsibility (CSR), is an essential concept that integrates business operations with social and environmental concerns on a voluntary basis. It is seen as the paradigm for change taking a much broader view of corporate behaviour and thus has become an essential tool for achieving Corporate Environmental Management (CEM).

The practice of CSR however is subject to much debate and criticism. As discussed earlier in chapter 2 critics concerned with corporate hypocrisy and insincerity generally suggest that better governmental and international regulation and enforcement, rather than voluntary measures, are necessary to ensure that companies behave in a socially responsible manner with a broader perspective than their own immediate, short-term profits. Western countries that have been more progressive with CEM are now beginning to embrace CSR while developing nations (e.g. Saudi Arabia) are still

struggling with CEM. The absence and indifferent attitude towards CSR in SA could also be attributed to the closed nature of Saudi society and a non-transparent corporate sector.

Therefore, this hypothesis could not be adequately investigated

Role of the state will not influence the level of environmental performance adopted by the corporate companies in SA.

This is singled out in many previous studies (Kirkland and Thompson, 1999; Holt, 2003; Luken and Hesp, 2003) as one of the most important external drivers for corporate environmental behaviour. Strong legislation, strictly enforced is increasingly being seen as a key driver of environmental responsibility in all aspects of society. If governments support and encourage good environmental behaviour by giving incentives or enforcing legislations and fines, companies normally respond positively. This might simply be to protect their business from fines and other punishments should they transgress, but recent evidence suggests that companies working in a supportive framework of legislation begin to recognise the positive aspects of good environmental practices in terms of cost-savings, reputation enhancement and competitive advantage (Horn, 2007). However, as observed by Faure and Niessen (2006) it is equally evident that the lack of environmental legislation from the state and the poor enforcement of any such legislations and laws are major barriers to good environmental management.

The role of the state was linked to the statement *In my company the top management complies with the environmental laws and legislations set by the government.* A significant association (Table 10.12) was found between the responses to this statement and levels of CEM where almost all (29% of 30%) respondents in the proactive category agreed. The inactive (30%), however, in CEM were divided on this

issue by an equal number agreeing and disagreeing while a high percentage (27% of 40%) of the environmentally concerned/inactive agreed. This was perhaps because the respondents did not want to commit that the company is violating Governmental laws and regulations.

Another statement that explored the same theme was My *company believes that to ensure prevention of environmental problems in future the private sector should support the environmental laws and policies re-enforced by governmental and academic institutions.* This was also found to be significantly associated with the category that described their environmental management performance. Within those (30%) placed in the inactive CEM 16% of them disagreed, while almost all in the proactive agreed and 28% (out of 40%) in the concerned category agreed. Overall, the fact that quite a sizable percentage either does not agree or is noncommittal might suggest a poor attitude of the companies towards laws and legislation as a barrier to adopting CEM policies in Saudi Arabia.

Respondents in the qualitative stage also revealed the need to implement governmental and company regulation and policies to ensure that all companies and individuals adopt environmental measures and set strict environmental management systems. The findings of both surveys therefore clearly indicate that the lack of enforcement of laws and legislation are a barrier to adopting CEM policies in Saudi Arabia.

While it is clear that there are various barriers to good environmental management, perhaps the most crucial one of all is that when companies do not perceive the need to engage with environmental issues they will also not develop good

environmental management practices. This is clearly a major problem that emerged in the qualitative study but one that needs little discussion.

Lack of environmental awareness amongst staff will not have a significant effect on good environmental performance among Saudi private sector.

Lack of knowledge and environmental awareness can be a major internal barrier to enhanced environmental performance. If the staff is not aware of the need to behave responsibly then it is unlikely that they will engage with good practice. This is one of the key reasons why internal pioneers are so important. Past studies have found that low levels of awareness are problematic and that good environmental practice often starts with environmental awareness campaigns (Tinsley, 2002).

Lack of Investment (in terms of time or money) in staff development was assessed in terms of how much the company invests in training and developing environmental management in its staff. Most of the inactive enterprises in the quantitative survey disagreed with the statement *My company is regularly raising employee awareness of environmental issues through training sessions* and *My company offers incentives to employees and managers who enhance environmental activities* while most of the enterprises found proactive agreed. The qualitative survey also supported the above findings where allocation of resources was often seen as poor by respondents, with many not agreeing that 'top management provide enough resources'. Thus, where there is no investment, it is likely that performance will be poor, even if there are good intentions (Tinsley, 2002). Nevertheless, it may be mentioned here that Saudi Arabia is mostly dependent on foreigners working on contractual basis for specialist or skilled jobs. Therefore, investing in such temporary staff may not benefit the company in the long run.

However, the process of Saudization (replacing foreigners with Saudis) that has been initiated some years back will perhaps change the situation.

Therefore, rejecting the hypothesis it may be concluded that lack of environmental awareness amonst the staff is an internal barier influencing the uptake of environmenta management policies

There will be no difference in CEM performance due to quality revolution.

The last two decades have witnessed what is commonly called the quality revolution, during which businesses became more focused on quality in services and products. The revolution was both started and supported by the advent of quality management systems such as ISO 9000 and this new systematic approach to business has paved the way for the uptake of environmental management systems such as ISO 14001.

The objective of ISO 9000 is to provide an effective quality system reflecting a company's practice for producing goods and services that conform to requirements (Van Der Wiele *et al.*, 2005). Many diverse opinions on ISO 9000 in different developed countries have emerged but little empirical research has been undertaken in developing countries (Magd *et al.*, 2003). Therefore, there remains a need for a reliable base in developing nations for ISO 9000 certification including Saudi Arabia. Despite the findings of (Magd, 2006) that Saudi Arabia has benefited from ISO implementation, it is suggested that the quality revolution has not broadened out into environmental matters as has been the case in other countries. This is largely because the quality revolution is itself still in its infancy in the Kingdom.

The importance of quality revolution for driving environmental management in Saudi Arabia has not been comprehensively explored, and was not an issue that emerged during the course of this study.

There will be no significant difference in CEM performance due to scientific innovations.

This issue was addressed primarily in the qualitative study, where the main opinion was that scientific innovations have been important for many industries in Saudi Arabia but that it is not an important influence for driving environmental management. Although Saudi Arabia is apparently at the forefront of much of the innovations surrounding environmental management, (e.g. it is a world leader in Solar Energy research), these developments do not seem to be internalised amongst the companies operating in the Kingdom. So, although there are innovations aplenty in Saudi Arabia, they are not significant drivers of environmental engagement more or less accepting the hypothesis. However, it must be acknowledged that this particular issue required a different approach and was not core to this research.

Pioneers within a company will not influence the adoption of good environmental management performance.

It has already been stated that general levels of public awareness are low. This research also aimed to find out if this meant that there were few environmental pioneers within the business world in Saudi Arabia. Product pioneers have proven to be catalysts for change in certain industries in other parts of the world(Simon et al., 2002) it was speculated that this was unlikely to be the case in Saudi Arabia. In the qualitative survey addressed the issue of product pioneers within companies and found that at least two of

the eighteen people interviewed were acting in that role to some extent. Certainly, they were pushing the environmental agenda within their companies but there was little evidence to suggest that they were exerting any pressures external to their own immediate sphere of influence. Therefore, as neither of the surveys found any evidence to suggest that there were product pioneers in SA, this lack seems to be a barrier to the uptake of environmental policies.

Senior management support does not influence the adoption of corporate environmental management performance

Previous studies (Tinsley, 2002; Zutshi *et al.*, 2003) have shown that the commitment of top management has a major positive effect on the environmental performance of the company. If top management is committed to introduce and implement policies and procedures that are environmentally safe, they are more likely to help in improving environmental management in the company. It was expected that the Saudi companies whose senior management is committed will help in introducing and implementing good practice. The support and commitment of top management is considered an essential factor for the development of proactive environmental strategies on the basis of two arguments: (1) the resources required for the implementation of environmental practices will be more easily available if the person responsible for these resources supports the plans and (2) many environmental initiatives require the collaboration and coordination of different departments and divisions and this is easier to manage when such initiatives are endorsed from the top. In this sense, Hunt &Auster (1990), and Berry & Rondinelli (1998) consider top management support as a key element for the implementation and success of proactive environmental strategies. One of the reasons that senior management may want to support good environmental practice is

that they perceive that having a good environmental track record will give them a competitive advantage. In the quantitative survey responses to two related statements *In my company top management feels that environmental performance will enhance the image of the company* and In *my company the top management ensures that environmental issues are being addressed in the most important company's operations* were perceived as untrue by most of those labelled as inactive and found to be true by almost all 28% of those found environmentally proactive (30%).

This issue was also explored in the qualitative study. Only two of the 18 respondents mentioned this as a reason and they were from the two top performing companies in the sample of six. It would seem that companies engaging in good environmental management can see that it works well for them. Alternatively, respondents from companies in the poor performing groups did not mention this at all, and it is likely that for companies working only in the domestic market, the notion of increasing competitiveness through good environmental practices is positively outlandish. Such companies tend only to perceive the costs of such endeavours. Thus, accepting the hypothesis it can be concluded that if senior management in Saudi private sector is keen on environmental management then it is more likely that it will be taken seriously and will be addressed in the company's operations.

The need to develop new markets will not influence adoption of good environmental policies and procedures.

This is pertinent to the companies that operate in international markets but much less so for companies of SA with only domestic horizons. Although this survey revealed no findings specific to this issue, it would seem that those companies in Saudi Arabia

which operate internationally (e g. Saudi Arabian basic industries corporation (SABIC) are indeed the ones with more progressive approaches to environmental management.

Companies that perceive the need to engage with environmental issues will not influence the uptake of good environmental management practices.

It has been established very clearly by ANOVA results that high, medium and low uptake of environmental initiatives such as ISO, environmental auditing, hiring experts, LCA etc. has a significant effect on an enterprise being environmentally Proactive, Concerned or Inactive. This was also observed in the qualitative survey where it was a recurring point. Many respondents (particularly from the concerned and inactive groups) stated that even if they recognize the environmental impacts of their company they are unlikely to do anything unless they have to. That is, until they is a need, such as to avoid transgressing laws and regulations, or to open new markets, most respondents would apparently not do anything. This should then lead very nicely into a conclusion on the poor general state of environmental management in Saudi which is attributed to the lack of enforcement of environmental laws and legislations. Therefore, the hypothesis is rejected.

Lastly, it was expected that **Globalisation will not influence the uptake of corporate environmental engagement**

Since companies operating in developing economies become subject to pressures from businesses working in the westernised (and typically more environmentally conscious) world. The qualitative study found that non Saudi based companies are relatively environmentally proactive although they have no substantial evidence of taking up CEM measures. Nevertheless, as expected the effect of globalization is not evident in Saudi

corporate sector. However, the Saudi economy is now becoming more fully exposed to these pressures through their membership of the World Trade Organisation (WTO) in 2004. Saudi Arabia will be expected to allow branches of foreign companies to be based in Saudi Arabia which will mean that Saudi companies will have to work or compete with foreign companies that are likely to be more advanced in their corporate environmental policies. Foreign Direct Investment (FDI) is generally considered as a driving force in the integration of developing countries into the globalization process that closes the technological gap. However, unlike most developing countries oil rich SA is not likely to compete for financial investments from Multi National Companies (MNCs) or FDI for investment. Nevertheless, as observed by Warhurst (2005)new multi-stakeholder convened global governance frameworks are evolving that are encouraging businesses of the future to re-invent themselves as a 'force for positive good' in society. This involves going beyond the paradigm of simply 'doing no harm', and way beyond previous expectations of business as being only about shareholder value (Warhurst, 2005). This prediction is supported by examples drawn from the practice of global companies that are already innovating to fulfil this wider role. Moreover, the concept of sustainable development spawned the emergence of the 'triple bottom line' concept Elkington, (1998), which lies at the heart of corporate responsibility and corporate citizenship. Central to this is the need to measure and report on a company's performance with respect to economic prosperity, social justice and environmental quality, drawing especially on the ideal of 'doing no harm' and the 'polluter pays' principle. 'Triple bottom line' thinking also led to the idea of stakeholder as well as shareholder 'accountability' and to the need for greater 'transparency' in terms of disclosing performance and risk. As a result of these factors, the conservative attitudes of Saudi

private businesses that focus primarily on shareholder profits may be inappropriate in both the present and future contexts.

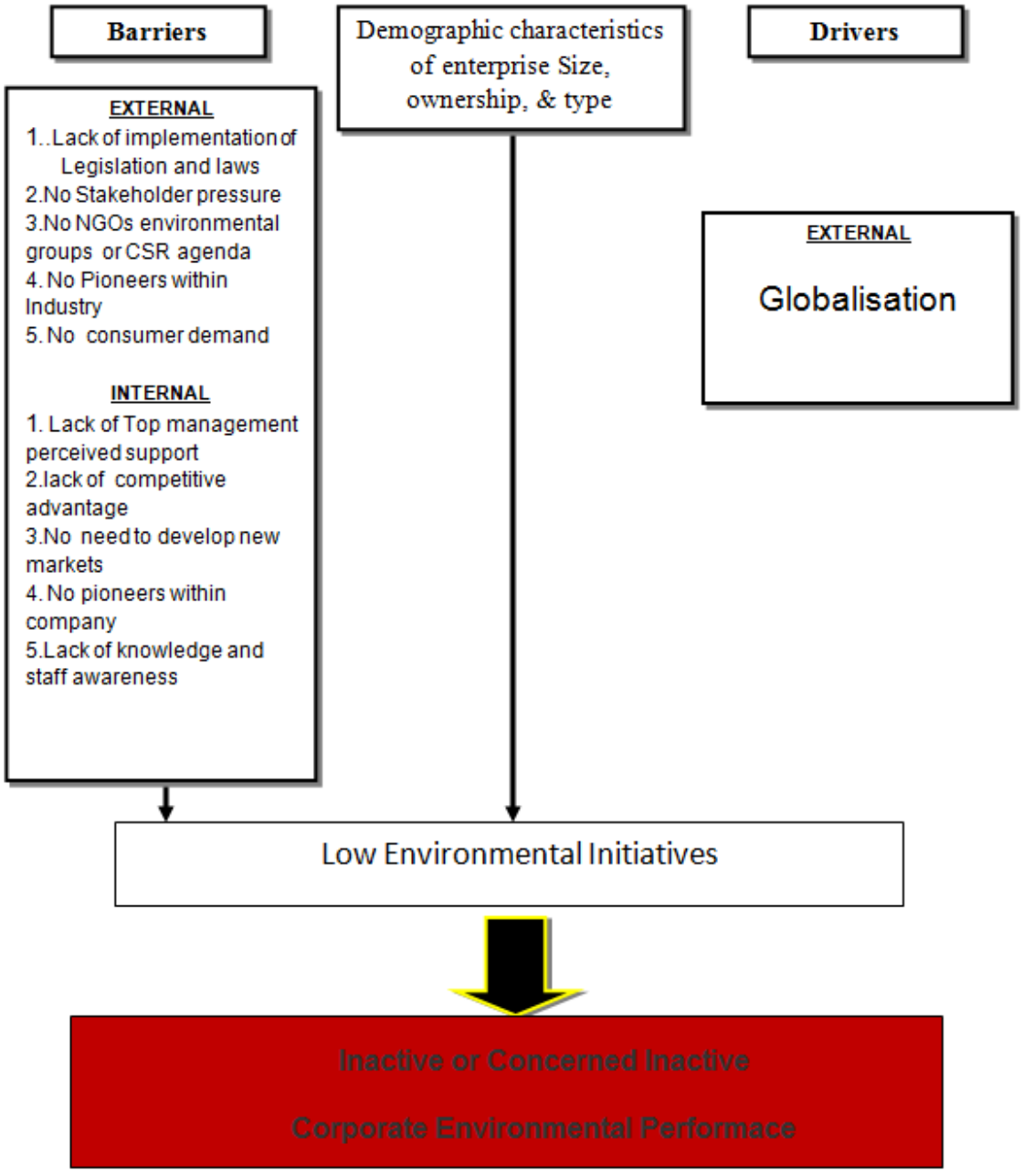

Figure 13.1 Corporate Environmental Situation in Saudi Arabia

Overview of the Saudi situation

Saudi Arabia has an oil-based economy with strong government controls over major economic activities. The petroleum sector accounts for roughly 75% of budget

revenues, 45% of GDP, and 90% of export earnings. About 40% of GDP comes from the private sector. Roughly 5.5 million foreign workers play an important role in the Saudi economy, particularly in the oil and service sectors. High oil prices have boosted growth, government revenues, and Saudi ownership of foreign assets. The government is encouraging private sector growth - especially in power generation, telecommunications, natural gas exploration, and petrochemicals - to lessen the kingdom's dependence on oil exports and to increase employment opportunities for the swelling Saudi population. A relatively significant action undertaken by the Saudi government, before joining the WTO, was to reduce import taxes from 13 to 5 per cent since the year 2002. This step has put additional pressure on local Saudi businesses who are already suffering from fierce competition from foreign companies. High-quality products from international manufacturers to the Saudi markets will pressurize the entire Saudi industrial sector to raise its quality standards to an international level whilst maintaining competitive pricing policies, and these pressures may, in turn, then pressurise companies to engage more comprehensively with the environmental and CSR agendas.

It may be mentioned here that in order to provide an exploratory overview of Saudi business environment, the survey did not focus on any particular industry. The main objective of the present survey was to identify drivers and barriers to engaging Saudi private businesses in environmental management. The most striking finding was, perhaps, the general lack of interest in environmental issues among the large majority of local companies. The unwillingness of most companies to participate in the survey has hampered the compilation of a statistically relevant sample on one hand and on the other an over response to project a positive image in the quantitative survey. The latter problem was overcome to some extent by undertaking an indepth qualitative study of six enterprises explicitly focussing on a more pro-active approach towards environmental

issues. The results confirmed that many companies are willing to engage in environmental projects if they perceive them as adding business value and help them to perform better in their core business. However, the majority of Saudi companies are either not aware of these potential benefits or unable to gain an advantage through improved environmental management.

Figure 13 shows the Saudi situation on the uptake of environmental management policies as found at the time of the study. It depicts that private companies in Saudi Arabia tend to be inactive or merely concerned about corporate environmental performance due to external barriers such as nonexistence of Membership of blocs, Quality revolution, Science and technology, Stakeholder pressure, NGOs and Environmental Groups, CSR Agenda, Pioneers within type of Industry. The internal barriers include Top management support, Perceived competitive advantage, Need to develop new markets and Pioneers within a company.

The respondents in the qualitative study mainly attributed this to the lack of government support and enforcement of legislation, societal attitudes and lack of awareness about the environmental issues, and a corporate culture that lacks resources and support within the companies while focusing only on monetary benefits. Most of those enterprises found inactive or merely concerned with CEM stated that only legal pressures will induce them to take up environmental activities. This reactive approach towards environmental management renders legislation as the key driver for engaging with environmental management. As observed by Studer, Welford & Hills (2005) the findings of the study also suggest that fundamental improvements in environmental performance in SA will be difficult to achieve while voluntary environmental activities are considered as costly, endangering competitiveness and detracting resources from their

core business. A comparatively low public awareness, education and empowerment of local consumers about environmental problems in SA are barriers that certainly influence corporate culture and attitudes of managers and employees in the long term. Various authors have therefore suggested that regulation may be the most appropriate mechanism in order to improve the environmental performance of firms (Tilley, 1999a; Rossi *et al.*, 2000), a position that is also strongly supported by this study. Moreover, pressures resulting from more stringent corporate policies and new environmental regulations in multinational corporations such as the European Union are also likely to affect the environmental performance of enterprises in SA.

However, the situation in some developed countries considered to be more environmentally aware is still far from ideal. A fairly recent study conducted to provide a snapshot of environmental management in the UK(Dahlmann *et al.*, 2008) found that a majority of firms are undertaking efforts to reduce their environmental impacts, yet economic considerations such as cost and risk reductions and achieving compliance with environmental legislation dominate firms' environmental behaviour. Especially small and medium-sized firms appear to rely on relatively short-term planning horizons, which ultimately prevent them from becoming more proactive in their environmental outlook. The study concluded that despite the growing salience of many environmental challenges, businesses fail to employ more proactive environmental strategies, suggesting that more has to be done at policy level to stimulate the incentives involved with adopting such an approach.

On the other hand somewhat similar conclusions were also drawn by Studer, (Studer *et al.*, 2005)who analysed key barriers and incentives to environmental change in Hongkong. The approach of businesses towards environmental management was found

to be predominantly reactive, with legislation as the key driver for engaging them with environmental change. Inadequate government policy and support, societal attitudes and corporate culture all contribute significantly to the comparatively poor development of corporate environmental management among Hong Kong companies. As long as voluntary environmental activities are regarded as costly and unnecessary 'extras' that endanger their competitiveness and detract resources from their core business without offering any tangible benefits, fundamental improvements in their environmental performance will be difficult to achieve.

Pacheco and Wehrmeyer (2003), highlight the drivers and obstacles that influenced the environmental performances of a company in Mexico among manufacturing and service companies. The obstacles found are similar to the present Saudi study and include: The lack of economic or human resources to perform environmental activities; the separation of the environmental function from the rest of the organization; the lack of awareness of Mexican companies about their environmental impacts; the lack of environmental pressures companies experience and foresee in the short term. On the other hand, the main drivers were environmental policies/legislation and globalization.

The findings of the study are also in line with the conclusions of Jahamani (2003) who looked at environmental management in Jordan and UAE and found that low levels of environmental awareness, the need for better environmental laws, poor levels of top management commitment, and generally low environmental protection awareness in society, were barriers to progress and that a key driver was the need to align with the stronger environmental policies of a parent company.

13.4 Conclusions

In summary, government policy, societal attitudes and corporate culture are equally important factors for the poor uptake of voluntary environmental initiatives among Saudi private companies. The situation in SA being no different from most developing countries upholds the suggestions of Studer et al. (2006) that an improvement of the current situation would require pro-active steps from all stakeholders that include tougher environmental legislation while maintaining the current high level of implementation and enforcement, a bigger role for business associations in building relationships between business and government and raised efforts to improve environmental education, and specifically the education, training and other support targeted at owners and managers. Finally, the corporate attitude towards environmental problems reflected in the study supports the view of El-Sayed Selim (2004)that most enterprises in Arab countries consider the state as the major reference point in dealing with the environmental problem. The essential tools for addressing environmental concerns, according to them, is improved State management and control, and better coordination between various state organizations. Furthermore, Arabic literature focuses mainly on the technical issues related to the environment and does not frame them within its conceptualization of social or national sustenance. Thus, even if Saudi Arabia imports most of the technological inputs, to be part of the world economy, the qualitative study has clearly revealed that Saudi enterprises need to create a 'social' 'absorptive' or endogenous capability to be able to assimilate and take advantage of technological inputs. This is based on the idea that the competitiveness of firms is not only a reflection of successful management and technological practices, but also stems from the strength and efficiency of a national economy's productive structure, the collective learning process associated with innovation and the proper use of human capital(Oecd, 2007) .

The current research fulfilled its objectives in attempting to identifying levels of environmental engagement among a range of private Saudi businesses. It has examined the characteristics of businesses that may affect the uptake of good corporate environmental management and has explored the driving and hindering factors that may affect companies' adoption of environmental policies and procedures. It has also identified the levels of environmental performance of a number of private Saudi companies based on the responses of their managers and employees. This has been done through a quantitative study (questionnaire survey) and a qualitative study. Both studies gave interesting findings about the levels of awareness of those working in private Saudi companies and their attitudes to environmental practices. It also helped to shed light on the barriers that make many companies reluctant to take up such environmental practices in Saudi Arabia. Despite all the interesting findings of the research it has also shown that there is still a need for further research and work in the area of corporate environmental management so that the specific issues faced by businesses in this country can be truly understood. The next chapter discusses some limitations and recommendations of the study

CHAPTER 14 Research Implications and Recommendations

Saudi Arabia has seen radical economic growth in the past decade. However, and as is evident from the findings of this research, there is a great lack of both information and awareness regarding the impact of this growth on the environment. This study is considered breaking ground as it is the first comprehensive research of its kind in the Kingdom of Saudi Arabia. It provides both academic and empirical basis towards developing corporate sustainable environmental management in this part of the world. Sustainable development cannot be achieved without substantial cooperation and involvement of businesses. Besides helping raise some awareness and responsibility among the sample companies regarding this issue the academic contribution of the research was:

- Providing primary information regarding the low uptake of environmental management initiatives and policies among Saudi private businesses.

- Identifying the internal and external barriers in the corporate sector that influenced Low uptake of environmental policies that include; lack of organized information according to the characteristics of the company, lack of implementation of environmental laws and regulations, lack of plans to develop organizational capabilities to incorporate environmental missions and agendas.

Some practical implications of these findings are:

- First step in transforming today’s Saudi businesses into sustainainable organizations

- Systematic development of CSR and the role of Stakeholders (NGOs, Consumer awareness and Product pioneers).

- Exchange of information relating to the best sustainable environmental practices for Saudi corporate sector.

- Develop effective suitable strategies for petrochemical industries according to WTO requirement.

Although this research is breaking ground in many ways, it still has its limitations. Firstly, the number of the companies and respondents in this study was limited by the number of collected and valid questionnaires. Hence, because of the limited sample used, although the findings of this study clearly establish the lack of knowledge and right attitudes of private Saudi companies to the adoption and implementation of corporate environmental systems, care should be taken in generalizing the results to other developing countries. The limited sample also had a huge number of responses from the Western region of Saudi Arabia and hence care should be taken that these results must not be applied equally to the different regions of the country. Moreover, it would have been beneficial if the study's scope could have been widened to include more types of companies that have different areas of activities.

The study attempted to identify different company characteristics that have an influence on their company's adoption of sound environmental policies and procedures. These factors were limited to the size, type (activity), origin of the company and the nationality of the owner of the company. Other factors investigated included the structure

of the company (relating to a person responsible for environmental matters), the gender and position of the respondent, the location of the company. However, due to the limited responses given and sometimes incomplete data given on such aspects, it was found that such factors are not adequate for analysis and hence the decision was taken not to consider them in the final stage of the research. In the future, we believe that future researchers may need to widen the scope of the survey to be able to consider these factors. In particular it would be interesting to investigate if there is a difference in the attitudes of respondents depending on the difference between private companies located in different regions in Saudi Arabia.

The current research identified the levels of environmental performance as perceived by representatives of a sample of private Saudi companies. It did not investigate the actual environmental performance carried out by the companies by studying actual audits or reports done. This is not yet possible due to the limited implementation of complete and sound environmental management systems in many of the companies explored. However, this preliminary investigation it is hoped will lead to exploring in more detail the systems used by potentially proactive companies to use them as models for less active ones. It will be also useful to investigate the types of systems that were adopted by such companies. It was interesting to find out that some of these potentially proactive companies do not use international standards and tools like ISO 14000 and LCA, yet they have in place other effective systems that are applied by their parent companies. It will be beneficial to get a glimpse of such systems that have been adopted and localized to the environment of Saudi Arabia to help other companies know about these effective systems.

It was found in the qualitative study that there are a number of demographic features and barriers that affect the adoption of environmental policies and procedures by private Saudi companies. Moreover, it was observed that most of the private Saudi companies are perhaps becoming more aware of the importance of implementing environmental management systems but they are not yet willing to invest in that area. Therefore, they are considered aware and concerned about environmental issues, but they are not active in implementing them. The reasons for that stance are many including the costs of the adopting environmental systems, the lack of management support, and the lower sense of environmental responsibility from the institution on the whole as well as the fact that the operations of the company may not be felt to have direct effect on the environment or are too difficult to change. On the other hand, it was found that a very few number of companies are potentially proactive in their implementation of environmental policies and procedures. However, most of these companies are enforcing these policies due to their relation to a parent company that applies such measures, or due to their area of activity which forces them to apply such measures to avoid accidents and incidents and lower their wastes and emissions to avoid fines. As a result these companies have their own environmental initiatives like having environmental missions and objectives, having staff members dedicated to environmental issues, adopting systems like ISO 14000 and tools like LCA. In addition, a few companies were found to be opposing and completely ignorant of the value of having environmental practices. Their management were mostly concerned with raising profit and hence they were against any extra measures that are thought to be costly and unnecessary.

Taking all the above into consideration, it is recommended that;

1. The government should exert more effort to enforce environmental laws and have a strict supervisory system that enforces fines.
2. The government needs to have an intensive country wide campaign to raise the awareness of the public of the value of preserving the environment
3. The government should have a business focused campaign raising awareness in the corporate context. This should be supported by environmental advice centres for businesses.
4. Government should give incentives to companies that prove to be proactive by having a system that measures the level of the company's performance based on their environmental performance.
5. Successful managers should be elected as environment champions and should be paid to visit other companies in order to facilitate the implementation of good environmental policies
6. Mandatory country-wide awareness raising training for mangers should be rolled out
7. Mandatory environmental education at schools to graduate a generation that believes in the value of the environment.

Realizing that they have some responsibilities in this field, the business sector in the Western world has seen a significant "mainstreaming" of environmental concerns. There has also been a continuous development of techniques and schemes that businesses can adopt in order to improve their environmental performance. This period has also seen the emergence of environmental management systems that are allied to internationally recognized standards. However, environmental management systems in Saudi Arabia

will not cure environmental problems by themselves. They will place new demands on the planning, management, and communication skills within the Saudi companies requiring synchronized development of other information systems within an organization. Such progress does not yet seem so apparent in Saudi Arabia. Despite the

Saudi government's recognition of environmental problems, there is, in fact, very little evidence of environmental awareness or behaviour among businesses in the country. This research has attempted to fill the gap in knowledge that it is expected will help Saudi Arabian businesses consider, if and how, they will respond to the environmental challenge.

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Appendix A - Ceres Companies

Ceres Companies as of 2009

American Airlines
Anvil Knitwear, Inc.
APS
Aspen Skiing Company
Aveda Corporation
Bank of America Corporation
Baxter International Inc.
Ben & Jerry's Homemade, Inc.
Better World Club
Blue Egg
Blue Wave Strategies
BP
Brighter Planet
Carbon Credit Corp.
Care2.com
Catholic Healthcare West
Cenveo
Anderson Lithograph
Citi
Clif Bar & Company
Coca-Cola Company
Cone, Inc.
Consolidated Edison
CRedit 360
Curtis Packaging
Dell Inc.
DOMANI Sustainability Consulting
eBay
EcoPhones
EILEEN FISHER
Energy Management, Inc.
Exelon
First Affirmative Financial Network
First Environment
Ford Motor Company
Gap Inc.
General Mills
General Motors Corporation
Green Mountain Coffee Roasters
Green Mountain Energy Company
Green Mountain Power Corporation
Haley & Aldrich
Interface, Inc.
ITT Corporation
Jones Lang LaSalle
Kinetix
Levi Strauss & Co.
Louisville & Jefferson County Metropolitan Sewer District
McDonald's Corporation
National Grid plc
Native Energy
Natural Logic, Inc.
Nike, Inc.
Northeast Utilities
PepsiCo
PG&E Corporation
Piper Jaffray
Concept A
Plug Power
PPL Corporation
PRIZIM, Inc.
Promotional Product Solutions (PPS)
RecycleBank
Recycled Paper Printing, Inc.
Saunders Hotel Group
Seventh Generation
State Street Coffee
State Street Corporation
Sun Microsystems
Suncor Energy Inc.
Sunoco, Inc.
SustainAbility
Sustainable Business Institute

The Body Shop International PLC	The CarbonNeutral Company	The Timberland Company	Vancouver City Savings Credit Union	Wainwright Bank
	The L.P. Thebault Company	Time Warner	Virgin America	William McDonough + Partners
				YSI, Inc.

Appendix B -*Saudi Arabia Business Groups*

2007/2008

See Full Directory list at
www.the-saudi.net/saudi-arabia-directory

RANK 1995	Company	ASSETS	ACTIVITIES	LEGAL STATUS	CHIEF EXECUTIVE	TELEPHONE	FAX
1	Saudi Basic Industries Corp (SABIC)	41438	Industry	Joint stock	Ibrahim ibn Salamah	01-401-2033	401-204
2	Dallah Al-baraka	36168	Diversified	Limited liability	Saleh Kamel	02-671-0000	669-468
3	Saudi Arabian Airlines (SAUDIA)	19837	Services	Government	Dr. Khaled Bin Bakr	02-686-0000	686-455
4	Saudi Aramco Mobil Refinery Co.	5682	Industry	Limited liability	Ali Tahel Al Dabbagh	04-396-4000	396-094
5	Arabian Oil Company	4723	Oil	Limited liability	Takashi Kataoka	03-76-0555	766-238
6	Consolidated Contractors Int'l, Co., SAL	2859	Diversified	Limited liability	Said Tawfiq Khoury	01-465-0311	464-596

7	National Commercial Bank	69458	Banking	Partnership	Mohamed Salim bin Mahfouz	02-644-6644	644-6644
8	Saudi American Bank	43605	Banking	Joint stock	Abdulaziz H. Al Gosaibi	01-477-4770	
9	Riyadh Bank	53895	Banking	Joint stock	Omran M.A. Al Omran	01-401-3030	404-2707
10	Saudi Consolidated Electric Co. (East)	27244	Services	Services	Suleiman A. Al-Qadi	03-357-2300	858-6601
11	Alsuwaiket Trade & Contr Group	704	Diversified	Limited liability	Mubarak Alsuwaikeet	03-357-9780	857-2904
12	Arab National Bank	30500	Banking	Joint stock	Elie El Hadj	01-402-9000	402-7747
13	Saudi Consolidated Electric Co. (Central)	28438	Services	Joint stock	Abdul Aziz AbdulWahed	01-403-2222	405-3123
14	Saudi Consolidated Electric Co. (West)	16021	Services	Joint stock	Mahmoud Abdullah Taibah	02-651-1008	653-4139
15	Al-Rajhi Banking & Investment Corp.	28878	Banking	Joint stock	Saleh Abdulaziz AlRajhi	01-405-4244	403-2969
16	AlFaisalia Group	W	Diversified	Sole proprietor	Muhammad Abdulrahman Al-Ariefy	02-643-6026	
17	Al Bank Al Saudi Al Fransi	24163	Banking	Joint stock	Henri Guillemain	01-404-2222	404-2311

18	Saudi Cable Company	1568	Industry	Joint stock	Muhammad Jokhdar	02-669-4060	669-3935
19	A.A. Turki Group (ATCO)	W	Diversified	Sole proprietor	Abdulrahman Ali-AlTurki	03-833-5588	833-9881
20	Al Seif Group	W	Diversified	Limited liability	Khaled bin Museed Al-Seif	01-454-9191	454-2759
21	The Saudi British Bank	27109	Banking	Joint stock	Rondell Lee Shaw	01-405-0677	405-0660
22	Riyadh Cable	962	Industry	Limited partner	Hamdi S. Al-Zaim	01-498-3947	498-1428
23	Jeraisy Group of Establishments	1512	Diversified	Sole proprietor	Abdulrahman Al-Jeraisy	01-462-4000	462-5171
24	National Shipping Co. Saudi Arabia	3066	Services	Joint stock	Abdullah A. AlShuraim	01-478-5454	477-8036
25	Suleiman A. AlRajhi & Sons Co.	2017	Diversified	Joint liability	Khalid AlSuleiman AlRajhi	06-391-1555	391-1403
26	Saudi Hollandi Bank	14984	Banking	Joint stock	Sulaiman A. Al-Suhaimy	01-406-7888	403-1104
27	Savola	1819	Industry	Joint stock	Adel Fakieh	02-647-7333	648-4119
28	Jamjoom Corp for Commerce & Industry	549	Diversified	Holding	Abdul Faffar Jamjoom	02-647-7333	648-4119

29	Aggad Investment Group	698	Diversified	Limited partnership	Omar A. Aggad	01-476-7911	476-7895
30	Alhamrani & Alsuleiman United Co.	1131	Trading	Partnership	Muhammad A. Alhamrani	02-669-6690	660-0927
31	Almarai	W	Agribusiness	Limited liability	Prince Sultan ibn Muhamad	01-462-0088	462-4418
32	Saudi Cement Co.	2306	Industry	Joint stock	Abdulaziz Shuwail	03-834-4500	834-5460
33	Saudi Cairo Bank	18096	Banking	Joint stock	Wahib Bin Zagar	02-660-8820	661-3044
34	Mahmood Saeed Collective Co.	1218	Diversified	Partnership	Abdul Khaliq N. Saeed	02-636-0020	637-9093
35	Al Bayan Group Holding Co., Ltd.	460	Diversified	Limited liability	Mohamed Al Hamad	01-477-2440	476-5777
36	National Co. for Cooperative Insurance	800	Services	Joint stock	Mousa Al Rubaian	01-482-6969	488-1719
37	Al-Subei for Money Exchange & Trade	1500	Trading and finance	Partnership	Ibrahim A. Al-Subei	02-672-2288	672-5924
38	United Saudi Commercial Bank	10378	Banking	Joint stock	Maher G. Al-Aujan	01-478-4200	478-3197
39	Arab Supply & Trading Corp (ASTRA)	1195	Diversified	Sole proprietor	Soubaih N. Masri	04-422-0400	428-1584

40	Isam Khairi Kabbani Group	403	Diversified	Limited partners	Isam Kabbani	02-667-2000	665-8079
41	Saudi Research & Marketing Group	90	Holding	Limited liability	Ahmed bin Salman	01-441-0101	441-9569
42	Alhamrani Group of Companies	800	Diversified	Partnership	Muhammad Alhamrani	02-682-7777	683-6085
43	Saudi Catering & Contracting	893	Diversified	Sole proprietor	Raji Chafic Abouhaidar	01-477-3713	478-0267
44	Yamama Saudi Cement Co.	1666	Industry	Joint stock	Saud bin Muhammad Al Dabalan	01-405-8288	403-3292
45	Saddik & Muhammad Attar Co.	89	Trading & services	Partnership	Sami Attar	02-648-0033	647-0826
46	Eastern Province Cement Co.	1197	Industry	Joint stock	Abdulaziz Al Jamal	03-827-3330	827-1923
47	Haji Hussein Alireza & Co., Ltd.	W	Trading	Limited liability	Hussein Ali Alireza	02-642-3509	642-6435
48	Alpha Trading & Shipping Agencies, Ltd.	W	Trading	Limited liability	Abdulkader Al Fadi	02-647-4242	647-9191
49	Ali Zaid al Quraishi & Bros.	242	Diversified	Partnership	Ali Zaid Al Quraishi	02-697-1036	697-2938

50	Mohamad Al Mojil Group	1065	Sole proprietor-ship	Partnership	Mohamad H. AlMojil	03-842-1111	842-5612
51	Petromin Lubricating Oil Company	650	Industry	Joint stock	Eng. Ali Barasheed	02-661-3333	661-3322
52	Southern Province Cement Co.	668	Industry	Joint stock	Amer S. Bargan	07-227-1500	227-1407
53	Trading & Industrial Group Ltd.	600	Diversified	Holding	Hashim S. Hashim	02-653-1680	651-9168
54	Belieli Saudi Heavy Industries	270	Industry	Limited liability	Rodolfo Beileli	03-341-9304	341-0463
55	Rolaco	270	Diversified	Limited liability	AbdulAziz Al Suleiman	02-651-8028	653-4280
56	Bin Zehefa Est.	352	Diversified	Sole proprietor	Ali Saad Zehefa	07-223-5523	222-0613
57	Taher Group	W	Holding	Limited liability	Khalid A. Taher	02-653-1975	653-1912
58	National Titanium Dioxide Co., Ltd. (CRISTAL)	856	Industry	Limited liability	Talal A. AlShair	02-651-9883	651-8757
59	National Pipe Co., Ltd.	495	Industry	Limited liability	Eiji Mikami	03-857-7150	857-0963

60	SAPTICO	1469	Services	Joint stock	Abdulaziz Abdulrahman	01-454-5000	454-1200
61	National Gas and Industrialization Co.	1081	Industry	Joint stock	Abdullah Al Noaim	01-401-4806	401-4088
62	Aluminum Products Co., Ltd. (ALUPCO)	373	Industry	Limited liability	Abdul Kareem AlYousuf	03-857-0184	857-8311
63	Al Tayyar Travel Group	94	Services	Sole proprietor	Nasser Ageel Al Tayar	01-463-3133	465-6049
64	Abdullah A.M. Al Khodari Sons	130	Diversified	Limited partnership	Fawaz A. Al Khodari	03-895-2840	898-6855
65	A.W. Aujan and Bros.	275	Trading & industry	Partnership	Adel Abdulrahman AlAujan	03-857-0777	857-7923
66	National Agricultural Development (NADEC)	1474	Agri-business	Joint stock	Muhammad AlBabtain		405-5522
67	The Saudi Investment Bank	6598	Banking	Joint stock	Saud Saleh AlSaleh	01-477-8433	477-1374
68	Abdullah Mohd. Bahlas Est.	W	Trading & industry	Sole proprietor	Jameel Abdullah Bahlas	02-665-4996	667-4652
69	Abdulrahman Algosaibi G.T.B.	948	Trading	Sole proprietor	Fayez F. Algosaibi	01-479-3000	477-1374

70	Abdul Ghani El-Ajou Group	880	Trading & industry	Group	Abdul Ghani El-Ajou	01-404-1717	405-9052
71	Yanbu Cement Co.	1377	Industry	Joint stock	Mishal bin AbdulAziz	02-653-4584	653-1420
72	Alshamrany Industrial Group	185	Diversified	Partnership	Masfer O. AlShamrani	03-843-1109	843-4430
73	Arabic Computer Systems, ltd.	70	Trading	Limited liability	Mohamed R. Al-Ballaa	01-476-3777	476-3196
74	Al Azizia Panda United Inc.	135	Trading	Joint stock	AlWaleed bin Talal bin AA	01-464-4992	463-3348
75	Arabian Cement Company, Ltd.	82	Industry	Joint stock	Muhammad Najeeb Khidr	02-682-8270	682-9989
76	National Factory for Air Conditioners Co. WLL	W	Industry	Limited partnership	AbdulAziz Al Essa`	01-498-3730	498-5715
77	Tihama for Ad. Public Relations & Marketing	141	Services	Joint stock	Ghazi A. Jameel	02-644-4444	651-2228
78	Al Babtain Group	457	Diversified	Limited liability	AbdulAziz I. Al Babtain	01-241-1222	241-0228
79	Hoshanco	312	Diversified	Sole proprietor	Ahmed Al-Hoshan	01-476-6800	

80	Saudi Tourist & Travel Bureau, Ltd.	95	Services	Limited liability	Saud Abdullah Al Faisal	02-644-3005	643-5811
81	SPIMACO	1606	Industry	Joint stock	Dr. Abdullah Abdulkader	01-477-4481	477-3961
82	Saudi Consolidated Electric Co. (South)	10844	Services	Joint stock	Muhammad Abdullah Al Azura	07-227-1111	227-1627
83	Al Huseini & Al Yahya Trading Co.	127	Trading	Limited liability	Abdulrahman Al Huseini	02-647-8888	648-6666
84	Sumama Co.	215	Diversified	Limited liability	Nasser Al Mutawa	01-463-4005	463-1651
85	Arabian Agricultural Services Co. (ARASCO)	117	Diversified	Limited liability	Ibrahim N. Al-Hezami	01-465-2551	464-5375
86	M.S. Suwaidi Est. for Contracting	W	Diversified	Sole proprietor	Jamil M. Nase	03-667-0304	667-1270
87	ABB Electrical Industries Co., Ltd.	310	Industry	Limited liability	Faraj AlZarba	01-498-0088	498-5487
88	Hussein Al Ali Est.	W	Diversified	Sole proprietor	Hussein Al Ali	03-586-6023	586-2044
89	Saudi Fisheries Company	286	Agri-business	Joint stock	Nasser O.Al Saleh	03-857-3979	857-2493

90	Carrier Saudi Arabia	108	Diversified	Limited liability	Aftab Khan	01-491-1333	
91	Arabian Gulf Oil Co., Ltd.	131	Industry	Limited liability	Mohamed Ali AlHamrani	02-691-6240	691-5731
92	Arabian Gulf Oil Co., Ltd. For Plastic Industries	396	Industry	Limited liability	Mahmoud Abdullah Mahdi	02-680-1416	687-3275
93	Al Ruwaite Contracting Est.	269	Contracting	Sole proprietor	Saleh Mohamed AlRuawite	01-464-7847	465-5801
94	Muhammad Assad Aldrees & Sons Co.	400	Diversified	Partnership	Abdul Mohsen Aldrees	01-476-3875	476-3875
95	Golden Grass Inc.	80	Diversified	Limited liability	Turki ibn Faisal AlRasheed	01-478-3024	478-4630
96	Hail Agriculture Development Co.	702	Agri-usiness	Joint stock	Ahmed Suleiman AlTurki	06-533-1130	533-4937
97	Arabian Auto Agency	363	Trading	Limited liability	Zeid M. Sudairi	02-699-5595	669-2359
98	Saudi Gold Co.	W	Industry	Limited liability	Abdulaziz A.J. AlRaee	01-498-0416	498-1272
99	Al Jazira Bank	3965	Banking	Joint stock	Abdul Aziz M. Al-Abdul Kader	02-651-8070	653-2478

100	Arabian Drilling Co.	204	Services	Limited liability	Suleiman M. AlAmry	03-857-6060	857-7114

Appendix C-1 English version of the questionnaire

Dear Contributor,

I am Samia Magbool. A lecturer at King AbdulAziz University. I am now undertaking the task of finishing my PhD at Huddersfield University, UK. The aim of my study is to investigate Corporate Environmental Management in top private companies in Saudi Arabia. As part of fulfilling the requirements for my degree, I am conducting a field research to evaluate the factors that help private institutions in applying sound corporate environmental management.

Your help is needed to complete the attached questionnaire as clearly and directly as possible. Your identity and comments revealed in this questionnaire are highly confidential. Any information you will supply will be strictly used for the academic purposes of the present research endeavor.

Thank you so much for accepting to share in this field research and for your valuable contribution.

Yours'

Mrs. Samia Magbool

Questionnaire

Company details

Name of the Company: .....

Number of Employees: .....

Company Location/s: .....

Company Owner and Nationality: .....

Company Origin: .....

Company's Web Site: .....

Respondent's details

Position/Title of Questionnaire Respondent: .....

Gender of respondent male □ female □

Age of respondent .....

Nationality of respondent Saudi □ non Saudi □

A. Company's Profile

Please answer the following questionnaire by ticking the most appropriate answer:

What is the main area of your company's activity?

1. What is the type of your company?
   a. General partnership □
   b. Limited partnership □
   c. Joint venture □
   d. Joint stock company □
   e. Partnership limited by shares □
   f. Limited liability partnership □
   g. Company with variable capital □
   h. Co-operative company □
   i. Registered branch of a foreign company □
   j. Others .....

2. What is the main area of your company's activity?

   a. Oil industry □
   b. Construction industry □
   c. Beverages and foods □
   d. Textile industry □
   e. Services □
   f. Imports and Exports □
   g. Manufacturing business □
   h. Automotive □
   i. Plastic □
   j. Printing □
   k. Others .....

3. Does your company have a specific administrative structure?

   a. Yes □
   b. No □
   c. I do not know □

If "yes", please describe briefly this structure*.

.....

.....

.....

.....

.....

* Please supply any documents on that structure (if available).

B. Company's Activities

PART ONE

1. My company has clear written environmental mission statements. Yes □ No □

2. My company has a board member who is responsible for environmental issues. Yes □ No □

3.	My company is accredited to ISO14001.	Yes □	No □
4.	My company is working towards accreditation to ISO 14001.	Yes □	No □
5.	My company uses Life Cycle Analysis to assess the environmental impact of the product.	Yes □	No □
6.	My company hires external experts to consult them on environmental issues.	Yes □	No □
7.	My company has an environmental marketing program.	Yes □	No □
8.	My company carries out regular environmental audits.	Yes □	No □
9.	My company appoints influential environmental officers to enhance environmental performance.	Yes □	No □

PART TWO

Indicate how far you agree with the following statements by circling the relevant number with 1= meaning that you do not agree with the statement at all, 2= you agree to a small extent, 3= you agree to a moderate extent, 4= you agree to a large extent and 5= you agree to a great extent.

		1	2	3	4	5
10	My company offers incentives to employees and managers who enhance environmental activities.	□	□	□	□	□
11	In my company the top management has a clear vision of the importance of environmental policies.	□	□	□	□	□
12	In my company the top management complies with the environmental laws and legislations set by the government.	□	□	□	□	□
13	In my company the top management has helped to establish internal environmental strategies to develop environmental performance.	□	□	□	□	□
14	In my company the top management includes in its strategic plans environmental strategies.	□	□	□	□	□

15	In my company the top management ensures that environmental issues are being addressed in the most important company's operations.	□	□	□	□	□
16	In my company top level managers are involved in environmental projects voluntary	□	□	□	□	□
17	In my company top management allocates sufficient resources to implement certain environmental projects.	□	□	□	□	□
18	In my company top management is concerned with preventing any incidents that may be caused by environmental hazards.	□	□	□	□	□
19	In my company top management considers the environmental challenge to be the most important in the present century.	□	□	□	□	□
20	In my company top management feels that to obtain more profit the company will have to re-think its strategies to cater for environmental concerns.	□	□	□	□	□
21	In my company top management is willing to stop production if environmental or health considerations demand it.	□	□	□	□	□
22	In my company top management feels that environmental performance will enhance the image of the company.	□	□	□	□	□
23	My company believes that preventing pollution is profitable in the long run.	□	□	□	□	□
24	My company believes that to ensure prevention of environmental problems the non government organizations should support the environmental laws and policies re-enforced by governmental and academic institutions.	□	□	□	□	□
25	In my company top management encourages employees to handle environmental problems.	□	□	□	□	□
26	My company encourages employees to offer suggestions on improving environmental performance.	□	□	□	□	□
27	In my company the evaluation of the performance of employees is linked to their contribution to improving the environmental	□	□	□	□	□

performance of the company.

28	In my company employees are trained to become environmentally responsible beings.	□	□	□	□	□
29	My company is regularly raising employee awareness of environmental issues through training sessions.	□	□	□	□	□
30	My company allocates enough resources for training its employees on environmental issues	□	□	□	□	□
31	In my company products are designed in ways that minimize adverse impacts on the environment.	□	□	□	□	□
32	My company manufactures products in ways that minimize impacts on the environment.	□	□	□	□	□
33	My company distributes products in ways that minimize the impact on the environment.	□	□	□	□	□
34	My company ensures that it minimizes the amount of waste resulting from its activities.	□	□	□	□	□
35	My company ensures that its activities minimize the amount of energy used.	□	□	□	□	□
36	My company ensures that its activities minimize the amount of water used.	□	□	□	□	□
37	My company ensures that its activities minimize the amount of paper consumed.	□	□	□	□	□
38	My company ensures that its activities minimize the amount of raw materials used.	□	□	□	□	□
39	My company ensures that its activities minimize the amount of emissions of contaminants to air.	□	□	□	□	□
40	My company ensures that its activities minimize the amount of emissions of contaminants to water.	□	□	□	□	□

41	My company ensures that its activities minimize the amount of emissions of contaminants to the land.	□	□	□	□	□
42	My company promotes the re-use of waste using the most environmentally safe procedures available.	□	□	□	□	□
43	My company promotes the recycling of waste using the most environmentally safe procedures available.	□	□	□	□	□
44	My company identifies activities that are environmentally harmful and provides alternatives that minimize these harmful effects.	□	□	□	□	□
45	In my company suppliers are educated about environmental requirements set by the company.	□	□	□	□	□
46	My company requires that all suppliers meet certain environmental criteria before sourcing materials from them.	□	□	□	□	□
47	My company uses objective measures to assess the company's level of environmental performance.	□	□	□	□	□
48	My company assesses the cost of the environmental impacts of the product.	□	□	□	□	□
49	In my company information about its environmental performance is openly available.	□	□	□	□	□
50	In my company information about the environmental aspects of its activities is accurate.	□	□	□	□	□
51	In my company information about its environmental aspects is timely.	□	□	□	□	□
52	In my company information about the environmental performance of the company is published regularly.	□	□	□	□	□
53	My company is keen on improving its manufacturing technology.	□	□	□	□	□
54	My company is always improving its end products.	□	□	□	□	□
55	My company has very effective strategies for improving waste	□	□	□	□	□

management.

You have completed your questionnaire. Your time and effort is appreciated. Your answer is an important part for this project. If you would like to get the results of this survey please leave contact details below.

Name ---------- Phone: ----------

Fax ---------- E-mail ----------

P.O.BOX ----------

Thanks again for your help. All answers will be treated confidentially.

Appendix C-2 Arabic version of the questionnaire

عزيزي المشارك

السلام عليكم ورحمة الله وبركاته

حيث أنني أقوم بدراسة ميدانية لمرحلة الدكتوراه من جامعة هزرفيلد البريطانية أرجو التكرم بجزء من وقتكم للإجابة على الاستبيان المرفق ، علما أن تعاونكم سيكون له عظيم الأثر في إضافة نتائج جيدة لهذا البحث ، ولا يفوتني أن أؤكد لكم أن جميع البيانات في هذا الاستبيان ستعالج بسرية تامة ، وسوف تظهر في الرسالة على هيئة أرقام وتحليلات ، دون الإشارة أو الرمز لأي شخص معين ، كما أن لكم حرية الاختيار في ذكر الاسم من عدمه

آمل في تفضلكم بمراعاة الدقة في إجاباتكم مقدرة لكم تشجيعكم للعلم وطلابه

الباحثة

سامية سليمان مقبول

استمارة استقصاء

معلومات عن الشركة

اسم الشركة: ----------

عدد العاملين فيها: ----------

مقر الشركة: ----------

ملكية الشركة وجنسيتها: ----------

منشأ الشركة: ----------

الموقع الإليكتروني للشركة: ----------

معلومات عن المشاركين فى الإستقصاء

المسمي الوظيفي :

النوع : **ذكر** □ **أنثي** □

العمر :

الجنسية: **سعودي** □ **غير سعودي** □

معلومات خاصة بشركتكم

رجاء وضع علامة صح أمام الإجابة المناسبة:

1- أي من الأنواع التالية شركتكم؟

أ- شركة ذات مسؤولية عامة □

ب- شركة ذات مسؤولية محدودة □

جـ شركة مضاربة □

د- شركة مضاربة بالأسهم □

هـ شركة ذات توصية بسيطة □

و- شركة ذات رأس مال عامل قابل للتعديل □

ز- شركة توصية بالأسهم □

حـ شركة مساهمة □

ط- فرع لشركة أجنبية □

ي- أخرى ..... أذكرها □

□

2- **ما هو النشاط الرئيسي لشركتكم ؟**

أ- صناعات بترولية □

□

ب- صناعات إنشائية □

□

جـ أطعمة ومشروبات □

□

د- صناعة أقمشة □

□

هـ خدمات □

□

و- استيراد وتصدير □

□

ز- أعمال صناعية □

□

حـ صناعة سيارات □

□

ط- بلاستيك □

□

ي- طباعة □

□

ك- أخري .....أذكرها □

3- هل لدي شركتم هيكل إداري خاص بها؟

أ نعم □

ب لأ □

جـ لا أعرف □

في حالة الإجابة بنعم الرجاء التفضل بوصف ذلك الهيكل التنظيمي بإيجاز.

* الرجاءالتفضل بإرفاق نسخة توضح الهيكل التنظيمي لشركتكم أن وجد.

.

أنشطة الشركة

الجزء الأول:

أرجو التكرم بالإجابة على هذه الجزئية بالتأشير على المربع" نعم" في حالة الموافقة أو التأشير على المربع "لا" في حالة عدم الموافقة.

1- شركتي لديها هدف بيئي واضح ومكتوب. نعم □ لا □

2- في شركتي هناك عضو مسئول عن قضايا البيئة. نعم □ لا □

3- شركتي حاصلة علي شهادة الأيزو14001 نعم □ لا □

4- تعمل شركتي للحصول على شهادة الأيزو 14001 نعم □ لا □

5- تستخدم شركتي تحليل دورة حياة السلعة لتقييم التأثير البيئي لمنتجاتها. نعم □ لا □

6- تستعين شركتي بخبراء من خارج الشركة لاستشارتهم في القضايا البيئية. نعم □ لا □

7- لدى شركتي برنامج تسويقي بيئي. نعم □ لا □

8- تقوم شركتي بمراجعة بيئية دورية. نعم □ لا □

9- تعين شركتي مسئولين بصلاحيات لدعم الأداء البيئي في الشركة. نعم □ لا □

الجزء الثاني :

في هذه الجزئية أرجو التكرم بالإجابة باختيار أي رقم من 1الى 5 حيث يعبر المقياس عن مدى تدرج الإجابة على النحو التالي :

رقم 1= عدم الموافقة التامة

رقم 2 = الموافقة بشكل بسيط

رقم 3 = الموافقة بشكل متوسط أو معتدل

رقم 4 = الموافقة بشكل أكبر

رقم 5 = يعني الموافقة بشكل تام

5 4 3 2 1

10- تقدم شركتي حوافز للموظفين والمدراء الذين يدعمون الأنشطة البيئية.	□	□	□	□	□	
11- في شركتي الإدارة العليا لديها رؤية واضحة لأهمية السياسات البيئية.	□	□	□	□	□	
12- في شركتي الإدارة العليا تخضع للأنظمة والقوانين الحكومية المتعلقة بالبيئة.	□	□	□	□	□	
13- في شركتي تقوم الإدارة بالمساعدة في وضع خطط إستراتيجية داخلية للبيئة لمساندة الأداء البيئي.	□	□	□	□	□	
14- في شركتي تقوم الإدارة العليا بتضمين استراتيجيات للبيئة ضمن الخطط الإستراتيجية للشركة.	□	□	□	□	□	
15- في شركتي تقوم الإدارة العليا بالتأكد من تضمين المفهوم البيئي في عملياتها المهمة.	□	□	□	□	□	
16- في شركتي يشارك المدراء في المستويات العليا في مشاريع بيئية.	□	□	□	□	□	
17- في شركتي يخصص المدراء في الإدارة العليا موارد كافية لتطبيق خطط بيئية خاصة.	□	□	□	□	□	
18- في شركتي تهتم الإدارة العليا بمنع أي حدث يسبب كارثة بيئية.	□	□	□	□	□	
19- في شركتي تعتبر الإدارة العليا التحدي البيئي أهم الأشياء التي تواجه القرن الحالي.	□	□	□	□	□	
20- في شركتي ترى الإدارة العليا أن الحصول على الربح يكون عن طريق زيادة الاهتمام بالبيئة.	□	□	□	□	□	
21- في شركتي لا تمانع الإدارة العليا بوقف إنتاجها إذا كان له تاثير سلبي على البيئة والصحة.	□	□	□	□	□	
	□	□	□	□	□	
22- في شركتي تشعر الإدارة العليا أن الأداء البيئي يحسن من صورة الشركة في المجتمع.	□	□	□	□	□	
23- تؤمن شركتي بأن محاربة التلوث مربح على المدى الطويل.	□	□	□	□	□	

24- تؤمن شركتي أن ضمان منع المشاكل البيئية في المستقبل يكون عن طريق تعضيد القطاع الخاص للقوانين حماية البيئة الصادرة من الحكومة والمؤسسات الأكاديمية.	□	□	□	□	□	□
25- تشجع شركتي موظفيها على مواجهة المشاكل البيئية.	□	□	□	□	□	□
26- تشجع شركتي موظفيها تقديم اقتراحات لتحسين الأداء البيئي.	□	□	□	□	□	□
27- في شركتي يتم ربط تقييم الأداء الوظيفي للموظفين بمدي مساهمتهم في تحسين الأداء البيئي للشركة.	□	□	□	□	□	□
28- في شركتي ينم تدريب الموظفين ليكونوا مسئولين عن البيئة.	□	□	□	□	□	□
29- تقوم شركتي بزيادة الوعي البيئي لموظفيها دوريا عن طريق دورات تدريبية.	□	□	□	□	□	□
30- في شركتي تخصص الإدارة العليا موارد كافية لتدريب موظفيها على المسائل المتعلقة بالبيئة.	□	□	□	□	□	□
31- في شركتي تصمم المنتجات بالشكل الذي يقلل أي تأثير عكسي على البيئة.	□	□	□	□	□	□
32- في شركتي تصمم المنتجات بالشكل الذي يقلل أي تأثير على البيئة.	□	□	□	□	□	□
33- في شركتي يتم توزيع المنتجات بطريقة تقلل تأثيرها على البيئة.	□	□	□	□	□	□
34- في شركتي يتم التأكد من تخفيض المخلفات الناتجة عن النشاط الذي تقوم به.	□	□	□	□	□	□
35- في شركتي يتم التأكد من أن نشاطها يقلل من الطاقة المستخدمة.	□	□	□	□	□	□
36- في شركتي يتم التأكد من أن نشاطها يقلل من الماء المستخدم.	□	□	□	□	□	□
37- في شركتي يتم التأكد من أن نشاطها يقلل من كمية الورق المستخدم.	□	□	□	□	□	□
38- في شركتي يتم التأكد من أن نشاطها يقلل من كمية المواد الخام المستخدمة.	□	□	□	□	□	□

39- في شركتي يتم التأكد من أن نشاطها يقلل من كمية الإنبعاثات الملوثة للهواء.	□	□	□	□	□	
40- في شركتي يتم التأكد من أن نشاطها يقلل من كمية الانبعاثات الملوثة للماء.	□	□	□	□	□	
41- في شركتي يتم التأكد من أن نشاطها يقلل من كمية الانبعاثات الملوثة لليابسة.	□	□	□	□	□	
42- في شركتي يتم تشجع إعادة استخدام النفايات باستخدام العمليات البيئية المتاحة الأكثر أمانا.	□	□	□	□	□	
43- في شركتي يتم تشجع تدوير النفايات باستخدام العمليات البيئية المتاحة الأكثر أمانا.	□	□	□	□	□	
44- في شركتي يتم تحديد الأنشطة المؤذية للبيئة كما يتم تحديد بدائل لتقليل هذا الأذى.	□	□	□	□	□	
45- في شركتي يتم توعية الموردين بالمتطلبات البيئية الموضوعة من قبل الشركة.	□	□	□	□	□	
46- في شركتي يتم تحديد معايير بيئية محددة للموردين قبل الاستيراد منهم.	□	□	□	□	□	
47- في شركتي يتم استخدام إجراءات تهدف لتقييم مستوى الأداء البيئي فيها.	□	□	□	□	□	
48- في شركتي يتم تقييم تكلفة التأثير البيئي لمنتجها.	□	□	□	□	□	
49- في شركتي المعلومات عن الأداء البيئي في متناول الجميع.	□	□	□	□	□	
50- في شركتي المعلومات عن السمات البيئية لمنتجها صحيحة.	□	□	□	□	□	
51- في شركتي المعلومات عن السمات البيئية لمنتجها حديثة.	□	□	□	□	□	
52- في شركتي تنشر المعلومات عن أدائها البيئي بشكل منتظم.	□	□	□	□	□	
53- في شركتي حرص علي تحسين تقنية الإنتاج.	□	□	□	□	□	

54- في شركتي تحسين مستمر لمنتجها النهائي. □ □ □ □ □

55- في شركتي استراتيجيات فعالة لتحسبين إدارة النفايات. □ □ □ □ □

أقدر لكم الجهد والوقت الذي بذلتموه للإجابة عن هذا الاستقصاء مع التأكيد بان تعاونكم يمثل جزء هام لإكمال هذا المشروع ، وإذا رغبتم في الحصول على نتيجة هذا الاستقصاء أرجو تدوين المعلومات المطلوبة أدناه:

الاسم: الهاتف:

الفاكس: ص. ب. :

البريد الإليكتروني:

أكرر شكري وتقديري مع التأكيد أن جميع المعلومات ستعالج بسرية تامة.

Appendix D-Validity of the questionnaire

Research Objectives and Questions

The main objective of the research is:

To assess the uptake of environmental policies and practices within a sample of private businesses in Saudi Arabia. For this to be achieved, the following will be explored:

Levels of environmental awareness among business managers and employees

The company characteristics (e.g. type, size, company sector) that might relate to their ability to engage with corporate environmental policies and practices.

Internal and external drivers and barriers affecting the ability of companies to position corporate environmental policies and practices in their strategies

The Hypotheses

1. Private companies that are a branch of a foreign company are more likely to take up environmental policies and actions than locally owned companies.
2. Private companies that have Saudi owners are less likely to take up environmental policies and actions.
3. Private companies that have Saudi origin are less likely to take up environmental policies and actions.
4. The larger the company, the more likely it will be proactive in taking up environmental policies and initiatives.
5. Private companies that are part of the industrial sector are more likely to take up environmental policies and actions than those in the service sectors
6. Globalisation has encouraged Saudi companies to engage with environmental management
7. The role of the state in this case is a significant barrier to the uptake of good environmental management.
8. The lack of environmental business advice in Saudi Arabia acts as a barrier to proactive environmental management
9. The quality revolution has nor been a significant driver of environmental management in Saudi Arabia
10. Scientific innovations are important for driving the uptake of good environmental practices in Saudi Arabia.
11. The necessity of preventing environmental accidents is a key driver of corporate environmental management in Saudi Arabia
12. The lack of Saudi based NGOs will be a barrier to the uptake of corporate environmental management policies and practices

13. The CSR agenda will encourage companies to adopt good environmental policies and
14. The absence of pioneers in Saudi Arabia is likely to be a barrier to good corporate environmental management
15. Low consumer environmental awareness is an external barrier to good corporate environmental management
16. Senior management support is an internal driver of good corporate environmental management
17. Perceived potential competitiveness can act as an internal driver of good environmental management
18. The greater private companies feel the need to develop new markets the more likely that they will adopt good environmental policies and procedures
19. Companies that have a committed environmental pioneer or champion, will be more likely to be proactive with regard to their environmental performance
20. Companies with low levels of environmental awareness amongst staff will perform relatively poorly with regard to environmental management
21. A lack of investment will act as an internal barrier to good environmental managemen.
22. Companies that do not perceive the need to engage with environmental issues will not develop good environmental management practices

Sample of the study

The main objective of the study required a sizable sample of private enterprises to draw reliable inferences about the nature and trend of environmental management in the Kingdom of Saudi Arabia

Questionnaire

The questionnaire was divided into two sections

The first section to cover the Demographic information

The second part to measure the corporate managerial behavior and attitude toward taking up corporate environmental management in Saudi private enterprises it conceits two parts.

Part 1

To measure *Environmental Initiative* which has specific missions statements and objectives related to the environment, complying to governmental regulations on environmental issues and the taking up of EMSs like ISO 14000 or working towards receiving it. It refers to organizational change designed to deal with environmental

issues, including environmental policy, targets, organization, management system, environmental accounting, auditing and employee training. Environmental policy and objectives are set up to address some fundamental issues, such as the level of responsiveness or the range of responsibility the company will take.

It consisted of 'yes' and' no' responses to nine different areas that indicate what environmental initiatives an enterprise is presently applying.

Irrelevant	Relevent with chang	relevant	
		√	My company has clear written environmental mission statements.
		√	My company has a board member who is responsible for environmental issues.
		√	My company is accredited to ISO14001
		√	My company is working towards accreditation to ISO 14001.
		√	My company uses Life Cycle Analysis to assess the environmental impact of the product
		√	My company hires external experts to consult them on environmental issues
		√	My company has an environmental marketing program.
		√	My company carries out regular environmental audits.
		√	My company appoints influential environmental officers to enhance environmental performance

Part 2

To measure Corporate environmental management (CEM): The questions in this section were designed to assess the overall attitude of an enterprise towards environmental management. It consists of three submeasures; Organizational Support, Organizational Operations and Organizational Responsibility. The five point Likert scale of response was used here. The sub-measures were designed to give three sub-scores and a combined composite score.

Organizational Support

This theme is about the level of commitment senior management gives to their organization and will indicate the level of support that is provided for environmental actions. The issues covered in this theme are primarily about the perceived attitude and behaviours of senior , or 'top', management with regard to a range of environmentally related issues. These include accident prevention, compliance with legislation, health and safety practices, support for employees, allocation of resources, training initiatives, employee incentives and the profitability of good environmental management and the importance of the image of the company. These various issues had all been identified in the literature as important and relevant to the role of senior management

Irrelevant	Relevant with change	relevant	
		√	My company offers incentives to employees and managers who enhance environmental activities
		√	In my company the top management has a clear vision of the importance of environmental policies.
		√	In my company the top management complies with the environmental laws and legislations set by the government
		√	In my company the top management has helped to establish internal environmental strategies to develop environmental performance
		√	In my company the top management includes in its strategic plans environmental strategies.
		√	In my company the top management ensures that environmental issues are being addressed in the most important company's operations.
		√	In my company top level managers are involved in environmental projects voluntary
		√	In my company top management allocates sufficient resources to implement certain environmental projects.
		√	In my company top management is concerned with preventing any incidents that may be caused by environmental hazards.

		√	In my company top management considers the environmental challenge to be the most important in the present century.
		√	In my company top management feels that to obtain more profit the company will have to re-think its strategies to cater for environmental concerns.
		√	In my company top management is willing to stop production if environmental or health considerations demand it.
		√	In my company top management feels that environmental performance will enhance the image of the company.
		√	My company believes that preventing pollution is profitable in the long run.
		√	My company believes that to ensure prevention of environmental problems the non government organizations should support the environmental laws and policies re-enforced by governmental and academic institutions.
		√	In my company top management encourages employees to handle environmental problems.
		√	My company encourages employees to offer suggestions on improving environmental performance.
		√	In my company the evaluation of the performance of employees is linked to their contribution to improving the environmental performance of the company.
		√	In my company employees are trained to become environmentally responsible beings.
		√	My company is regularly raising employee awareness of environmental issues through training sessions.
		√	My company allocates enough resources for training its employees on environmental issues

2ed: Environmental *Operations:* This theme relates to the specific operations undertaken by a company with regard to the environment. Although many organizations use similar practices to manage their environmental responsibilities, there is great discrepancy in the actual implementation of these actions. This theme attempts to identify the main areas of activity that an organisation might be expected to engage with if they were hoping to ease their environmental impacts. This theme therefore includes actions to limit waste, water, energy, and other resources. It also covers product design and pollution minimisation. Efforts of the company to educate suppliers and to communicate their environmental performance with stakeholders are also part of this them**e.**

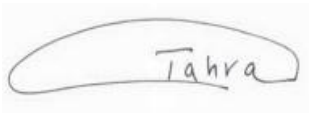
irrelevant	Relevant with change	relevant	
		√	In my company products are designed in ways that minimize adverse impacts on the environment.
		√	My company manufactures products in ways that minimize impacts on the environment.
		√	My company distributes products in ways that minimize the impact on the environment.
		√	My company ensures that it minimizes the amount of waste resulting from its activities.
		√	My company ensures that its activities minimize the amount of energy used.
		√	My company ensures that its activities minimize the amount of water used
		√√	My company ensures that its activities minimize the amount of paper consumed.
		√	My company ensures that its activities minimize the amount of raw materials used.
		√	My company ensures that its activities minimize the amount of emissions of contaminants to air.
		√	My company ensures that its activities minimize the amount of emissions of contaminants to water.
		√	My company ensures that its activities minimize the amount of emissions of contaminants to the land.
		√	My company promotes the re-use of waste using the most environmentally safe procedures available.

		√	My company promotes the recycling of waste using the most environmentally safe procedures available.
		√	My company identifies activities that are environmentally harmful and provides alternatives that minimize these harmful effects.
		√	In my company suppliers are educated about environmental requirements set by the company.
		√	My company requires that all suppliers meet certain environmental criteria before sourcing materials from them.
		√	My company uses objective measures to assess the company's level of environmental performance.
		√	My company assesses the cost of the environmental impacts of the product.

3ed : Environmental Responsibility This theme therefore explores more general issues about a company's willingness to improve technology and its products and how the company is prepared to publicly demonstrate its responsibility. Corporate responsibility must span across four distinct domains: legal, social, economic and technological. Saudi organizations have a commitment towards society and the environment; responsibility to improve their productions to suit the needs of their customers and their responsibility towards the stakeholders of reporting in a timely and accurate manner the outcome of their business operations including their effect on the environment.

Irrelevant	Relevant with change	relevant	
		√	In my company information about its environmental performance is openly available.
		√	In my company information about the environmental aspects of its activities is accurate.
		√	In my company information about its environmental aspects is timely.
		√	In my company information about the environmental performance of the company is published regularly.
		√	My company is keen on improving its manufacturing technology.

		√	My company is always improving its end products.
		√	My company has very effective strategies for improving waste management.

Name: Tahara Alaa ALdeen Signature 

Part 1

To measure *Environmental Initiative* which has specific missions statements and objectives related to the environment, complying to governmental regulations on environmental issues and the taking up of EMSs like ISO 14000 or working towards receiving it. It refers to organizational change designed to deal with environmental issues, including environmental policy, targets, organization, management system, environmental accounting, auditing and employee training. Environmental policy and objectives are set up to address some fundamental issues, such as the level of responsiveness or the range of responsibility the company will take.

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		√	My company carries out regular environmental audits.
		√	My company appoints influential environmental officers to enhance environmental performance

Part 2

To measure Corporate environmental management (CEM): The questions in this section were designed to assess the overall attitude of an enterprise towards environmental management. It consists of three submeasures; Organizational Support, Organizational

Operations and Organizational Responsibility. The five point Likert scale of response was used here. The sub-measures were designed to give three sub-scores and a combined composite score.

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This theme is about the level of commitment senior management gives to their organization and will indicate the level of support that is provided for environmental actions. The issues covered in this theme are primarily about the perceived attitude and behaviours of senior , or 'top', management with regard to a range of environmentally related issues. These include accident prevention, compliance with legislation, health and safety practices, support for employees, allocation of resources, training initiatives, employee incentives and the profitability of good environmental management and the importance of the image of the company. These various issues had all been identified in the literature as important and relevant to the role of senior management

Irrelevant	Relevant with change	relevant	
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		√	In my company the top management includes in its strategic plans environmental strategies.
		√	In my company the top management ensures that environmental issues are being addressed in the most important company's operations.
		√	In my company top level managers are involved in environmental projects voluntary
		√	In my company top management allocates sufficient resources to implement certain environmental projects.

		√	In my company top management is concerned with preventing any incidents that may be caused by environmental hazards.
		√	In my company top management considers the environmental challenge to be the most important in the present century.
		√	In my company top management feels that to obtain more profit the company will have to re-think its strategies to cater for environmental concerns.
		√	In my company top management is willing to stop production if environmental or health considerations demand it.
		√	In my company top management feels that environmental performance will enhance the image of the company.
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		√	My company believes that to ensure prevention of environmental problems the non government organizations should support the environmental laws and policies re-enforced by governmental and academic institutions.
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		√	My company encourages employees to offer suggestions on improving environmental performance.
		√	In my company the evaluation of the performance of employees is linked to their contribution to improving the environmental performance of the company.
		√	In my company employees are trained to become environmentally responsible beings.
		√	My company is regularly raising employee awareness of environmental issues through training sessions.

		√	My company allocates enough resources for training its employees on environmental issues

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		√	My company ensures that its activities minimize the amount of energy used.
		√	My company ensures that its activities minimize the amount of water used
		√√	My company ensures that its activities minimize the amount of paper consumed.
		√	My company ensures that its activities minimize the amount of raw materials used.
		√	My company ensures that its activities minimize the amount of emissions of contaminants to air.
		√	My company ensures that its activities minimize the amount of emissions of contaminants to water.
		√	My company ensures that its activities minimize the amount of emissions of contaminants to the land.

		√	My company promotes the re-use of waste using the most environmentally safe procedures available.
		√	My company promotes the recycling of waste using the most environmentally safe procedures available.
		√	My company identifies activities that are environmentally harmful and provides alternatives that minimize these harmful effects.
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		√	My company requires that all suppliers meet certain environmental criteria before sourcing materials from them.
		√	My company uses objective measures to assess the company's level of environmental performance.
		√	My company assesses the cost of the environmental impacts of the product.

3ed : Environmental Responsibility This theme therefore explores more general issues about a company's willingness to improve technology and its products and how the company is prepared to publicly demonstrate its responsibility. Corporate responsibility must span across four distinct domains: legal, social, economic and technological. Saudi organizations have a commitment towards society and the environment; responsibility to improve their productions to suit the needs of their customers and their responsibility towards the stakeholders of reporting in a timely and accurate manner the outcome of their business operations including their effect on the environment.

Irrelevant	Relevant with change	relevant	
		√	In my company information about its environmental performance is openly available.
		√	In my company information about the environmental aspects of its activities is accurate.
		√	In my company information about its environmental aspects is timely.
		√	In my company information about the environmental

			performance of the company is published regularly.
		√	My company is keen on improving its manufacturing technology.
		√	My company is always improving its end products.
		√	My company has very effective strategies for improving waste management.

Name: Huda saif aldain Burhan : Signature

Appendix E- Factor Analysis

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
B28	.842				
B29	.840				
B30	.803				
B17	.779				
B16	.760				
B27	.755				
B10	.711				
B15	.709				
B13	.705				
B14	.666				.434
B19	.657				.427
B47	.652		.464		
B11	.643				.514
B25	.637			.503	
B20	.627				
B26	.626			.510	
B45	.562		.529		
B44	.560	.453	.445		
B33	.465		.410	.462	
B36		.837			
B41		.804			
B38		.759			

B42		.751			
B40		.733			
B34		.718		.453	
B35		.689			
B37		.686			
B39		.634			
B43	.490	.581			
B54		.513	.439		
B55		.488	.431		
B50	.422		.656		
B52	.518		.641		
B48	.570		.606		
B51	.488		.605		
B46	.547		.571		
B49	.517		.555		
B53		.528	.551		
B32			.535	.475	
B22				.670	
B23				.644	
B21				.642	
B24		.460		.558	
B31	.417		.478	.535	
B12					.678
B18					.667

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 10 iterations.

Component Transformation Matrix

Component	1	2	3	4	5
1	.628	.496	.405	.354	.264
2	-.681-	.717	.043	.141	.020
3	-.113-	-.201-	-.473-	.521	.672
4	.346	.447	-.735-	-.372-	-.037-
5	-.092-	.009	.265	-.667-	.691

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Appendix F- Reliability

Scale: Organizational Support

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.966	21

Scale: Environmental Operations

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.967	19

Scale: Environmental Responsibility

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.859	6

Scale: Corporate Environmental Management (CEM)

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.982	46

Appendix G- Stepwise Regression analysis

Regression

Stepwise regression was applied as there are multiple predictors of the EI scale (given below). It aimed to identify which items (total 9 items) of EI are good predictors of performance on CEM as the outcome variable (See Appendix G for details)

1. My company has clear written environmental mission statements.
2. My company has a board member who is responsible for environmental issues.
3. My company is accredited to ISO14001 OR
4. My company is working towards accreditation to ISO 14001.
5. My company uses Life Cycle Analysis to assess the environmental impact of the product.
6. My company hires external experts to consult them on environmental issues.
7. My company has an environmental marketing program.
8. My company carries out regular environmental audits.
9. My company appoints influential environmental officers to enhance environmental performance.

1. Appling the stepwise method for the dependent Variable of Organizational Support with EI items given above as independent or predictor Variables:

The results showed that the following statements are most important in determining Organizational Support (in order of importance).

1 *My company has clear written environmental mission statements.*

6 *My company hires external experts to consult them on environmental issues.*

9 *My company appoints influential environmental officers to enhance environmental performance.*

The above statements were found significant with p-value <0.001 and the coefficient of determination R-square (that tells how the selected variables explains the dependent variable) equals 0.347, which means that these three variables explain about 35% of the dependent variable.

2. Appling the stepwise method for the dependent Variable of Environmental Operations with independent Variables EI items mentioned above. The results showed that the following statements are most important in determining Environmental Operations /Processes/Activities (in order of importance)

9 My company appoints influential environmental officers to enhance environmental performance.

1 My company has clear written environmental mission statements.

5 My company uses Life Cycle Analysis to assess the environmental impact of the product.

This was significant with p-value <0.001 and the coefficient of determination R-square equals 0.336, which means that these three variables explains about 34% of the dependent variable.

3. Appling the stepwise method for the dependent Variable of Environmental Responsibility with Independent Variables same as above. The results showed that the following statements are most important in determining Environmental Responsibility (in order of importance) found significant with p-value <0.001 and the coefficient of determination R-square equals 0.253, which means that these three variables explains about 25% of the dependent variables.

9	**My company appoints influential environmental officers to enhance environmental performance.**
1	**My company has clear written environmental mission statements.**
5	**My company uses Life Cycle Analysis to assess the environmental impact of the product.**

Appling the stepwise method for the dependent Variable of an average of the three factors of CEM and Independent Variables the same as above. The results showed that the following statements are most important in determining overall CEM (in order of importance). The model was significant with p-value <0.001 and the coefficient of determination R-square equals 0.337, which means that these three variables explains about 34% of the dependent variable.

9	**My company appoints influential environmental officers to enhance environmental performance.**
1	**My company has clear written environmental mission statements.**
5	**My company uses Life Cycle Analysis to assess the environmental impact of the product.**

Appendix H -The Raw scores of each company on total CEM

Companies categorized as Inactive

Ser. No.	Company	Score
1	16	97
2	19	110
3	21	97
4	27	104
5	35	84
6	47	106
7	49	109
8	51	120
9	53	54
10	55	115
11	57	95
12	59	90
13	62	119
14	63	46
15	64	70
16	68	93
17	74	68
18	76	105
19	77	68
20	78	77
21	80	102
22	91	117
23	95	124
24	98	48
25	103	112
26	104	98

27	**107**	**57**
28	**108**	**108**
29	**116**	**46**
30	**117**	**46**
31	**131**	**93**
32	**132**	**53**
33	**134**	**94**
34	**135**	**50**
35	**136**	**116**
36	**138**	**93**
37	**139**	**107**
38	**141**	**58**
39	**146**	**120**
40	**148**	**91**
41	**149**	**120**

Companies categorized as Concerned

Ser. No.	Company	Score
1	**1**	**176**
2	**3**	**172**
3	**7**	**173**
4	**13**	**157**
5	**14**	**126**
6	**20**	**172**
7	**22**	**164**
8	**23**	**172**
9	**24**	**155**
10	**30**	**125**
11	**32**	**134**
12	**33**	**179**

13	**34**	**151**
14	**39**	**135**
15	**40**	**133**
16	**41**	**140**
17	**42**	**139**
18	**45**	**139**
19	**46**	**179**
20	**48**	**162**
21	**50**	**150**
22	**54**	**146**
23	**56**	**174**
24	**58**	**186**
25	**60**	**139**
26	**65**	**181**
27	**67**	**147**
28	**69**	**137**
29	**75**	**167**
30	**79**	**156**
31	**83**	**134**
32	**84**	**136**
33	**86**	**145**
34	**88**	**185**
35	**89**	**182**
36	**92**	**177**
37	**93**	**174**
38	**94**	**174**
39	**97**	**129**
40	**99**	**153**
41	**100**	**145**
42	**101**	**156**
43	**102**	**154**
44	**105**	**159**
45	**106**	**159**
46	**112**	**175**

47	**114**	**182**
48	**115**	**168**
49	**118**	**156**
50	**121**	**158**
51	**123**	**164**
52	**133**	**147**
53	**137**	**186**
54	**140**	**137**
55	**142**	**136**
56	**147**	**166**
57	**150**	**169**
58	**151**	**169**
59	**152**	**126**
60	**153**	**139**
61	**154**	**157**
62	**156**	**167**
63	**157**	**157**
64	**160**	**163**
65	**161**	**127**
66	**163**	**128**
67	**165**	**149**
68	**167**	**178**
69	**168**	**127**
70	**169**	**157**

Companies categorized as Proactive

Ser. No.	Company	Score
1	2	208
2	4	200
3	5	200
4	6	190
5	8	230
6	9	191
7	10	216
8	11	216
9	12	189
10	15	210
11	17	188
12	18	192
13	25	226
14	26	230
15	28	218
16	29	218
17	31	221
18	36	204
19	37	216
20	38	189
21	43	214
22	44	192
23	52	214
24	61	211
25	66	215
26	70	205
27	71	201
28	72	211
29	73	212
30	81	213
31	82	214
32	85	190

33	**87**	**194**
34	**90**	**226**
35	**96**	**187**
36	**109**	**208**
37	**110**	**202**
38	**111**	**215**
39	**113**	**113**
40	**119**	**203**
41	**120**	**187**
42	**122**	**197**
43	**124**	**221**
44	**125**	**222**
45	**126**	**197**
46	**127**	**212**
47	**128**	**230**
48	**129**	**206**
49	**130**	**218**
50	**143**	**200**
51	**144**	**198**
52	**145**	**220**
53	**164**	**225**

Appendix (I-1 to I-22) Tables of results related to Data Analysis

Chi. Square test of association to determine the degree of relationship

between the Company Ownership and (CEM)

Corporate Environmental Management (CEM)		Company Origin		Total
		Saudi	Non Saudi	
I	Count	47	6	53
	Expected Count	49.1	3.9	53.0
	% within Corporate Environmental Management (CEM)	88.7%	11.3%	100.0%
	% within Company Origin	28.8%	46.2%	30.1%
	% of Total	26.7%	3.4%	30.1%
C	Count	65	5	70
	Expected Count	64.8	5.2	70.0
	% within Corporate Environmental Management (CEM)	92.9%	7.1%	100.0%
	% within Company Origin	39.9%	38.5%	39.8%
	% of Total	36.9%	2.8%	39.8%
P	Count	51	2	53
	Expected Count	49.1	3.9	53.0
	% within Corporate Environmental Management (CEM)	96.2%	3.8%	100.0%
	% within Company Origin	31.3%	15.4%	30.1%
	% of Total	29.0%	1.1%	30.1%
Total	Count	163	13	176
	Expected Count	163.0	13.0	176.0
	% within Corporate Environmental Management (CEM)	92.6%	7.4%	100.0%
	% within Company Origin	100.0%	100.0%	100.0%

Corporate Environmental Management (CEM)		Company Origin		Total
		Saudi	Non Saudi	
I	Count	47	6	53
	Expected Count	49.1	3.9	53.0
	% within Corporate Environmental Management (CEM)	88.7%	11.3%	100.0%
	% within Company Origin	28.8%	46.2%	30.1%
	% of Total	26.7%	3.4%	30.1%
C	Count	65	5	70
	Expected Count	64.8	5.2	70.0
	% within Corporate Environmental Management (CEM)	92.9%	7.1%	100.0%
	% within Company Origin	39.9%	38.5%	39.8%
	% of Total	36.9%	2.8%	39.8%
P	Count	51	2	53
	Expected Count	49.1	3.9	53.0
	% within Corporate Environmental Management (CEM)	96.2%	3.8%	100.0%
	% within Company Origin	31.3%	15.4%	30.1%
	% of Total	29.0%	1.1%	30.1%
Total	Count	163	13	176
	Expected Count	163.0	13.0	176.0
	% within Corporate Environmental Management (CEM)	92.6%	7.4%	100.0%
	% within Company Origin	100.0%	100.0%	100.0%
	% of Total	92.6%	7.4%	100.0%

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.217[a]	2	.330
Likelihood Ratio	2.266	2	.322
Linear-by-Linear Association	2.194	1	.139
N of Valid Cases	176		
a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 3.91.			

Appendix (I-2)

Chi. Square test of association to determine the degree of relationship

Between the Company Size and (CEM)

Corporate Environmental Management (CEM)		Company Size			Total
		Less than 100	100 and less than 300	300 or more	
I	Count	15	16	22	53
	Expected Count	11.1	18.4	23.5	53.0
	% within Corporate Environmental Management (CEM)	28.3%	30.2%	41.5%	100.0%
	% within Company Size	40.5%	26.2%	28.2%	30.1%
	% of Total	8.5%	9.1%	12.5%	30.1%
C	Count	15	20	35	70
	Expected Count	14.7	24.3	31.0	70.0
	% within Corporate Environmental Management (CEM)	21.4%	28.6%	50.0%	100.0%
	% within Company Size	40.5%	32.8%	44.9%	39.8%
	% of Total	8.5%	11.4%	19.9%	39.8%
P	Count	7	25	21	53
	Expected Count	11.1	18.4	23.5	53.0
	% within Corporate Environmental Management (CEM)	13.2%	47.2%	39.6%	100.0%

	% within Company Size	18.9%	41.0%	26.9%	30.1%
	% of Total	4.0%	14.2%	11.9%	30.1%
Total	Count	37	61	78	176
	Expected Count	37.0	61.0	78.0	176.0
	% within Corporate Environmental Management (CEM)	21.0%	34.7%	44.3%	100.0%
	% within Company Size	100.0%	100.0%	100.0%	100.0%
	% of Total	21.0%	34.7%	44.3%	100.0%

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.197[a]	4	.126
Likelihood Ratio	7.110	4	.130
Linear-by-Linear Association	.767	1	.381
N of Valid Cases	176		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.14.

Appendix (I-3)

Chi. Square test of association to determine the degree of relationship

Between the Company Type and Organizational Support

Organizational Support		Company Type		Total
		Industry	Service	
I	Count	27	26	53
	Expected Count	29.5	23.5	53.0
	% within Organizational Support	50.9%	49.1%	100.0%
	% within Company Type	27.6%	33.3%	30.1%
	% of Total	15.3%	14.8%	30.1%
C	Count	44	27	71
	Expected Count	39.5	31.5	71.0
	% within Organizational Support	62.0%	38.0%	100.0%
	% within Company Type	44.9%	34.6%	40.3%
	% of Total	25.0%	15.3%	40.3%
P	Count	27	25	52
	Expected Count	29.0	23.0	52.0
	% within Organizational Support	51.9%	48.1%	100.0%
	% within Company Type	27.6%	32.1%	29.5%
	% of Total	15.3%	14.2%	29.5%
Total	Count	98	78	176
	Expected Count	98.0	78.0	176.0
	% within Organizational Support	55.7%	44.3%	100.0%
	% within Company Type	100.0%	100.0%	100.0%
	% of Total	55.7%	44.3%	100.0%

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.918[a]	2	.383
Likelihood Ratio	1.928	2	.381
Linear-by-Linear Association	.012	1	.913
N of Valid Cases	176		
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 23.05.			

Appendix (I-4)

Chi. Square test of association to determine the degree of relationship

Between the Company Ownership and Organizational Support

Organizational Support		Company Origin		Total
		Saudi	Non Saudi	
I	Count	47	6	53
	Expected Count	49.1	3.9	53.0
	% within Organizational Support	88.7%	11.3%	100.0%
	% within Company Origin	28.8%	46.2%	30.1%
	% of Total	26.7%	3.4%	30.1%
C	Count	68	3	71
	Expected Count	65.8	5.2	71.0
	% within Organizational Support	95.8%	4.2%	100.0%
	% within Company Origin	41.7%	23.1%	40.3%
	% of Total	38.6%	1.7%	40.3%
P	Count	48	4	52
	Expected Count	48.2	3.8	52.0
	% within Organizational Support	92.3%	7.7%	100.0%

	% within Company Origin	29.4%	30.8%	29.5%
	% of Total	27.3%	2.3%	29.5%
Total	Count	163	13	176
	Expected Count	163.0	13.0	176.0
	% within Organizational Support	92.6%	7.4%	100.0%
	% within Company Origin	100.0%	100.0%	100.0%
	% of Total	92.6%	7.4%	100.0%

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.243[a]	2	.326
Likelihood Ratio	2.264	2	.322
Linear-by-Linear Association	.514	1	.474
N of Valid Cases	176		
a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 3.84.			

Appendix (I-5)

Chi. Square test of association to determine the degree of relationship

Between the Company Size and Organizational Support

Organizational Support		Company Size			Total
		Less than 100	100 and less than 300	300 or more	
I	Count	13	19	21	53
	Expected Count	11.1	18.4	23.5	53.0
	% within Organizational Support	24.5%	35.8%	39.6%	100.0%
	% within Company Size	35.1%	31.1%	26.9%	30.1%
	% of Total	7.4%	10.8%	11.9%	30.1%
C	Count	19	19	33	71
	Expected Count	14.9	24.6	31.5	71.0
	% within Organizational Support	26.8%	26.8%	46.5%	100.0%
	% within Company Size	51.4%	31.1%	42.3%	40.3%
	% of Total	10.8%	10.8%	18.8%	40.3%
P	Count	5	23	24	52
	Expected Count	10.9	18.0	23.0	52.0
	% within Organizational Support	9.6%	44.2%	46.2%	100.0%
	% within Company Size	13.5%	37.7%	30.8%	29.5%
	% of Total	2.8%	13.1%	13.6%	29.5%
Total	Count	37	61	78	176
	Expected Count	37.0	61.0	78.0	176.0
	% within Organizational Support	21.0%	34.7%	44.3%	100.0%
	% within Company Size	100.0%	100.0%	100.0%	100.0%
	% of Total	21.0%	34.7%	44.3%	100.0%

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.693[a]	4	.104

Appendix (I-6)

Chi. Square test of association to determine the degree of relationship

Between the Company Type and Environmental Operations

Environmental Operations		Company Type		Total
		Industry	Service	
L	Count	27	27	54
	Expected Count	30.1	23.9	54.0
	% within Environmental Operations	50.0%	50.0%	100.0%
	% within Company Type	27.6%	34.6%	30.7%
	% of Total	15.3%	15.3%	30.7%
C	Count	44	25	69
	Expected Count	38.4	30.6	69.0
	% within Environmental Operations	63.8%	36.2%	100.0%
	% within Company Type	44.9%	32.1%	39.2%
	% of Total	25.0%	14.2%	39.2%
P	Count	27	26	53
	Expected Count	29.5	23.5	53.0
	% within Environmental Operations	50.9%	49.1%	100.0%
	% within Company Type	27.6%	33.3%	30.1%
	% of Total	15.3%	14.8%	30.1%
Total	Count	98	78	176

	Expected Count	98.0	78.0	176.0
	% within Environmental Operations	55.7%	44.3%	100.0%
	% within Company Type	100.0%	100.0%	100.0%
	% of Total	55.7%	44.3%	100.0%

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.017[a]	2	.221
Likelihood Ratio	3.041	2	.219
Linear-by-Linear Association	.012	1	.914
N of Valid Cases	176		
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 23.49.			

Appendix (I-7)

Chi. Square test of association to determine the degree of relationship

Between the Company Ownership and Environmental Operations

Environmental Operations		Company Origin		Total
		Saudi	Non Saudi	
I	Count	49	5	54
	Expected Count	50.0	4.0	54.0
	% within Environmental Operations	90.7%	9.3%	100.0%
	% within Company Origin	30.1%	38.5%	30.7%
	% of Total	27.8%	2.8%	30.7%
C	Count	64	5	69
	Expected Count	63.9	5.1	69.0
	% within Environmental Operations	92.8%	7.2%	100.0%
	% within Company Origin	39.3%	38.5%	39.2%

	% of Total	36.4%	2.8%	39.2%
P	Count	50	3	53
	Expected Count	49.1	3.9	53.0
	% within Environmental Operations	94.3%	5.7%	100.0%
	% within Company Origin	30.7%	23.1%	30.1%
	% of Total	28.4%	1.7%	30.1%
Total	Count	163	13	176
	Expected Count	163.0	13.0	176.0
	% within Environmental Operations	92.6%	7.4%	100.0%
	% within Company Origin	100.0%	100.0%	100.0%
	% of Total	92.6%	7.4%	100.0%

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.510[a]	2	.775
Likelihood Ratio	.509	2	.775
Linear-by-Linear Association	.504	1	.478
N of Valid Cases	176		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 3.91.

Appendix (I-8)

Chi. Square test of association to determine the degree of relationship

Between the Company Type and Environmental Responsibility

Environmental Responsibility		Company Type		Total
		Industry	Service	
I	Count	28	29	57
	Expected Count	31.7	25.3	57.0
	% within Environmental Responsibility	49.1%	50.9%	100.0%
	% within Company Type	28.6%	37.2%	32.4%
	% of Total	15.9%	16.5%	32.4%
C	Count	45	24	69
	Expected Count	38.4	30.6	69.0
	% within Environmental Responsibility	65.2%	34.8%	100.0%
	% within Company Type	45.9%	30.8%	39.2%
	% of Total	25.6%	13.6%	39.2%
P	Count	25	25	50
	Expected Count	27.8	22.2	50.0
	% within Environmental Responsibility	50.0%	50.0%	100.0%
	% within Company Type	25.5%	32.1%	28.4%
	% of Total	14.2%	14.2%	28.4%
Total	Count	98	78	176
	Expected Count	98.0	78.0	176.0
	% within Environmental Responsibility	55.7%	44.3%	100.0%
	% within Company Type	100.0%	100.0%	100.0%
	% of Total	55.7%	44.3%	100.0%

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.190[a]	2	.123
Likelihood Ratio	4.234	2	.120
Linear-by-Linear Association	.030	1	.862
N of Valid Cases	176		
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 22.16.			

Appendix (I-9)

Chi. Square test of association to determine the degree of relationship

Between the Company ownership and Environmental Responsibility

Environmental Responsibility		Company Origin		Total
		Saudi	Non Saudi	
I	Count	52	5	57
	Expected Count	52.8	4.2	57.0
	% within Environmental Responsibility	91.2%	8.8%	100.0%
	% within Company Origin	31.9%	38.5%	32.4%
	% of Total	29.5%	2.8%	32.4%
C	Count	64	5	69
	Expected Count	63.9	5.1	69.0
	% within Environmental Responsibility	92.8%	7.2%	100.0%
	% within Company Origin	39.3%	38.5%	39.2%
	% of Total	36.4%	2.8%	39.2%
P	Count	47	3	50
	Expected Count	46.3	3.7	50.0
	% within Environmental Responsibility	94.0%	6.0%	100.0%
	% within Company Origin	28.8%	23.1%	28.4%

	% of Total	26.7%	1.7%	28.4%
Total	Count	163	13	176
	Expected Count	163.0	13.0	176.0
	% within Environmental Responsibility	92.6%	7.4%	100.0%
	% within Company Origin	100.0%	100.0%	100.0%
	% of Total	92.6%	7.4%	100.0%

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.302[a]	2	.860
Likelihood Ratio	.303	2	.859
Linear-by-Linear Association	.300	1	.584
N of Valid Cases	176		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 3.69.

Appendix (I-10)

Chi. Square test of association to determine the degree of relationship Between the Company Size and the ICP categories of Environmental Responsibility

Environmental Responsibility		Company Size			Total
		Less than 100	100 and less than 300	300 or more	
I	Count	19	12	26	57
	Expected Count	12.0	19.8	25.3	57.0
	% within Environmental Responsibility	33.3%	21.1%	45.6%	100.0%
	% within Company Size	51.4%	19.7%	33.3%	32.4%
	% of Total	10.8%	6.8%	14.8%	32.4%
C	Count	11	25	33	69
	Expected Count	14.5	23.9	30.6	69.0
	% within Environmental Responsibility	15.9%	36.2%	47.8%	100.0%
	% within Company Size	29.7%	41.0%	42.3%	39.2%
	% of Total	6.2%	14.2%	18.8%	39.2%
P	Count	7	24	19	50
	Expected Count	10.5	17.3	22.2	50.0
	% within Environmental Responsibility	14.0%	48.0%	38.0%	100.0%
	% within Company Size	18.9%	39.3%	24.4%	28.4%
	% of Total	4.0%	13.6%	10.8%	28.4%
Total	Count	37	61	78	176
	Expected Count	37.0	61.0	78.0	176.0
	% within Environmental Responsibility	21.0%	34.7%	44.3%	100.0%
	% within Company Size	100.0%	100.0%	100.0%	100.0%
	% of Total	21.0%	34.7%	44.3%	100.0%

Chi. Square test of association to determine the degree of relationship between the Company Size and the categorize of Environmental Responsibility

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	**12.454a**	**4**	**.014**
Likelihood Ratio	**12.305**	**4**	**.015**
Linear-by-Linear Association	**.684**	**1**	**.408**
N of Valid Cases	**176**		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.51.

Appendix (I-11)

T-test to measure difference in (CEM) and its sub measures due to Company Ownership)

Group Statistics

Company Owner		N	Mean	Std. Deviation	Std. Error Mean
Organizational Support	Saudi Only	171	70.04	23.666	1.810
	Saudi & Non Saudi	5	60.20	29.987	13.410
Environmental Operations	Saudi Only	171	61.78	22.306	1.706
	Saudi & Non Saudi	5	53.00	21.319	9.534
Environmental Responsibility	Saudi Only	171	19.96	7.185	.549
	Saudi & Non Saudi	5	18.40	8.989	4.020
Corporate Environmental Management	Saudi Only	171	151.78	50.387	3.853
	Saudi & Non Saudi	5	131.60	57.605	25.762

Independent Samples Test

	Levene's Test for Equality of Variances	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Organizational Support	Equal variances assumed	.527	.469	.910	174	.364	9.841	10.812
	Equal variances not assumed			.727	4.147	.506	9.841	13.532
Environmental Operations	Equal variances assumed	.687	.408	.868	174	.386	8.778	10.110
	Equal variances not assumed			.906	4.260	.413	8.778	9.686
Environmental Responsibility	Equal variances assumed	.397	.529	.477	174	.634	1.565	3.281
	Equal variances not assumed			.386	4.151	.719	1.565	4.057
Corporate Environmental Management	Equal variances assumed	.059	.809	.880	174	.380	20.184	22.942
	Equal variances not assumed			.775	4.181	.480	20.184	26.048

Appendix (I-12)

Corporate Environmental Management (CEM) * In my company top management feels that to

obtain more profit the company will have to rethink its strategies to cater for environmental concerns

Corporate Environmental Management (CEM)		In my company top management feels that to obtain more profit the company will have to rethink its strategies to cater for environmental concerns			Total
		1	2	3	
I	Count	43	3	7	53
	Expected Count	19.6	8.7	24.7	53.0
	% within Corporate Environmental Management (CEM)	81.1%	5.7%	13.2%	100.0%
	% within In my company top management feels that to obtain more profit the company will have to rethink its strategies to cater for environmental concerns	66.2%	10.3%	8.5%	30.1%
	% of Total	24.4%	1.7%	4.0%	30.1%
C	Count	19	21	30	70
	Expected Count	25.9	11.5	32.6	70.0
	% within Corporate Environmental Management (CEM)	27.1%	30.0%	42.9%	100.0%
	% within In my company top management feels that to obtain more profit the company will have to rethink its strategies to cater for environmental concerns	29.2%	72.4%	36.6%	39.8%
	% of Total	10.8%	11.9%	17.0%	39.8%
P	Count	3	5	45	53
	Expected Count	19.6	8.7	24.7	53.0
	% within Corporate Environmental Management (CEM)	5.7%	9.4%	84.9%	100.0%
	% within In my company top management feels that to obtain more profit the company will have to rethink its strategies to cater for environmental concerns	4.6%	17.2%	54.9%	30.1%
	% of Total	1.7%	2.8%	25.6%	30.1%
Total	Count	65	29	82	176
	Expected Count	65.0	29.0	82.0	176.0
	% within Corporate Environmental Management (CEM)	36.9%	16.5%	46.6%	100.0%
	% within In my company top management feels that to obtain more profit the company will have to rethink its strategies to cater for environmental concerns	100.0%	100.0%	100.0%	100.0%
	% of Total	36.9%	16.5%	46.6%	100.0%

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	86.601[a]	4	.000
Likelihood Ratio	89.257	4	.000
Linear-by-Linear Association	69.101	1	.000
N of Valid Cases	176		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.73.

Appendix (I-13)

(CEM) * In my company the top management has a clear vision of the importance of environmental policies

Corporate Environmental Management (CEM)		In my company the top management has a clear vision of the importance of environmental policies			Total
		1	2	3	
I	Count	38	8	7	53
	Expected Count	14.8	7.8	30.4	53.0
	% within Corporate Environmental Management (CEM)	71.7%	15.1%	13.2%	100.0%
	% within In my company the top management has a clear vision of the importance of environmental policies	77.6%	30.8%	6.9%	30.1%
	% of Total	21.6%	4.5%	4.0%	30.1%
C	Count	10	17	43	70
	Expected Count	19.5	10.3	40.2	70.0
	% within Corporate Environmental Management (CEM)	14.3%	24.3%	61.4%	100.0%
	% within In my company the top management has a clear vision of the importance of environmental policies	20.4%	65.4%	42.6%	39.8%
	% of Total	5.7%	9.7%	24.4%	39.8%
P	Count	1	1	51	53
	Expected Count	14.8	7.8	30.4	53.0
	% within Corporate Environmental Management (CEM)	1.9%	1.9%	96.2%	100.0%
	% within In my company the top management has a clear vision of the importance of environmental policies	2.0%	3.8%	50.5%	30.1%
	% of Total	6%	6%	29.0%	30.1%
Total	Count	49	26	101	176
	Expected Count	49.0	26.0	101.0	176.0
	% within Corporate Environmental Management (CEM)	27.8%	14.8%	57.4%	100.0%
	% within In my company the top management has a clear vision of the importance of environmental policies	100.0%	100.0%	100.0%	100.0%
	% of Total	27.8%	14.8%	57.4%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	96.466[a]	4	.000
Likelihood Ratio	104.306	4	.000
Linear-by-Linear Association	80.453	1	.000
N of Valid Cases	176		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.83.

Appendix (I-14)

Relationship between levels of (CEM) * In my company the top management Complies with the environmental laws and legislations set by the government

Corporate Environmental Management (CEM)		In my company the top management complies with the environmental laws and legislations set by the government			Total
		1	2	3	
I	Count	22	8	23	53
	Expected Count	8.7	7.5	36.7	53.0
	% within Corporate Environmental Management (CEM)	41.5%	15.1%	43.4%	100.0%
	% within In my company the top management complies with the environmental laws and legislations set by the government	75.9%	32.0%	18.9%	30.1%
	% of Total	12.5%	4.5%	13.1%	30.1%
C	Count	7	15	48	70
	Expected Count	11.5	9.9	48.5	70.0
	% within Corporate Environmental Management (CEM)	10.0%	21.4%	68.6%	100.0%
	% within In my company the top management complies with the environmental laws and legislations set by the government	24.1%	60.0%	39.3%	39.8%
	% of Total	4.0%	8.5%	27.3%	39.8%
P	Count	0	2	51	53
	Expected Count	8.7	7.5	36.7	53.0
	% within Corporate Environmental Management (CEM)	.0%	3.8%	96.2%	100.0%
	% within In my company the top management complies with the environmental laws and legislations set by the government	.0%	8.0%	41.8%	30.1%
	% of Total	0%	1.1%	29.0%	30.1%
Total	Count	29	25	122	176
	Expected Count	29.0	25.0	122.0	176.0
	% within Corporate Environmental Management (CEM)	16.5%	14.2%	69.3%	100.0%
	% within In my company the top management complies with the environmental laws and legislations set by the government	100.0%	100.0%	100.0%	100.0%
	% of Total	16.5%	14.2%	69.3%	100.0%

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	48.011[a]	4	.000
Likelihood Ratio	52.539	4	.000
Linear-by-Linear Association	40.521	1	.000
N of Valid Cases	176		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.53.

Appendix (I-15)

CEM levels * My company believes that ensure prevention of environmental problems in future the private sector should support the environmental laws and policies re-enforced by governmental and academic institutions

Corporate Environmental Management (CEM)		My company believes that ensure prevention of environmental problems in future the private sector should support the environmental laws and policies re-enforced by governmental and academic institutions			Total
		1	2	3	
I	Count	28	6	19	53
	Expected Count	10.5	6.9	35.5	53.0
	% within Corporate Environmental Management (CEM)	52.8%	11.3%	35.8%	100.0%
	% within My company believes that ensure prevention of environmental problems in future the private sector should support the environmental laws and policies re-enforced by governmental and academic institutions	80.0%	26.1%	16.1%	30.1%
	% of Total	15.9%	3.4%	10.8%	30.1%
C	Count	7	14	49	70
	Expected Count	13.9	9.1	46.9	70.0
	% within Corporate Environmental Management (CEM)	10.0%	20.0%	70.0%	100.0%
	% within My company believes that ensure prevention of environmental problems in future the private sector should support the environmental laws and policies re-enforced by governmental and academic institutions	20.0%	60.9%	41.5%	39.8%
	% of Total	4.0%	8.0%	27.8%	39.8%
P	Count	0	3	50	53
	Expected Count	10.5	6.9	35.5	53.0
	% within Corporate Environmental Management (CEM)	.0%	5.7%	94.3%	100.0%
	% within My company believes that ensure prevention of environmental problems in future the private sector should support the environmental laws and policies re-enforced by governmental and academic institutions	.0%	13.0%	42.4%	30.1%
	% of Total	0%	1.7%	28.4%	30.1%
Total	Count	35	23	118	176
	Expected Count	35.0	23.0	118.0	176.0
	% within Corporate Environmental Management (CEM)	19.9%	13.1%	67.0%	100.0%
	% within My company believes that ensure prevention of environmental problems in future the private sector should support the environmental laws and policies re-enforced by governmental and academic institutions	100.0%	100.0%	100.0%	100.0%
	% of Total	19.9%	13.1%	67.0%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	61.502[a]	4	.000
Likelihood Ratio	64.852	4	.000
Linear-by-Linear Association	50.475	1	.000
N of Valid Cases	176		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.93.

Appendix (I-16)

Relationship between levels of CEM * In my company top management is concerned

With preventing any incidents that may be caused by environmental hazards

Corporate Environmental Management (CEM)		In my company top management is concerned with preventing any incidents that may be caused by environmental hazards			Total
		1	2	3	
I	Count	22	11	20	53
	Expected Count	8.1	5.1	39.8	53.0
	% within Corporate Environmental Management (CEM)	41.5%	20.8%	37.7%	100.0%
	% within In my company top management is concerned with preventing any incidents that may be caused by environmental hazards	81.5%	64.7%	15.2%	30.1%
	% of Total	12.5%	6.3%	11.4%	30.1%
C	Count	5	5	60	70
	Expected Count	10.7	6.8	52.5	70.0
	% within Corporate Environmental Management (CEM)	7.1%	7.1%	85.7%	100.0%
	% within In my company top management is concerned with preventing any incidents that may be caused by environmental hazards	18.5%	29.4%	45.5%	39.8%
	% of Total	2.8%	2.8%	34.1%	39.8%
P	Count	0	1	52	53
	Expected Count	8.1	5.1	39.8	53.0
	% within Corporate Environmental Management (CEM)	.0%	1.9%	98.1%	100.0%
	% within In my company top management is concerned with preventing any incidents that may be caused by environmental hazards	.0%	5.9%	39.4%	30.1%
	% of Total	0%	6%	29.5%	30.1%
Total	Count	27	17	132	176
	Expected Count	27.0	17.0	132.0	176.0
	% within Corporate Environmental Management (CEM)	15.3%	9.7%	75.0%	100.0%
	% within In my company top management is concerned with preventing any incidents that may be caused by environmental hazards	100.0%	100.0%	100.0%	100.0%
	% of Total	15.3%	9.7%	75.0%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	60.044[a]	4	.000
Likelihood Ratio	63.183	4	.000
Linear-by-Linear Association	49.961	1	.000
N of Valid Cases	176		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.12.

Appendix (I-17)

Relationship between levels of CEM) * In my company top management is willing to Stop production if environmental or health considerations demand it

Corporate Environmental Management (CEM)		In my company top management is willing to stop production if environmental or health considerations demand it			Total
		1	2	3	
I	Count	33	8	12	53
	Expected Count	14.2	7.8	31.0	53.0
	% within Corporate Environmental Management (CEM)	62.3%	15.1%	22.6%	100.0%
	% within In my company top management is willing to stop production if environmental or health considerations demand it	70.2%	30.8%	11.7%	30.1%
	% of Total	18.8%	4.5%	6.8%	30.1%
C	Count	11	17	42	70
	Expected Count	18.7	10.3	41.0	70.0
	% within Corporate Environmental Management (CEM)	15.7%	24.3%	60.0%	100.0%
	% within In my company top management is willing to stop production if environmental or health considerations demand it	23.4%	65.4%	40.8%	39.8%
	% of Total	6.3%	9.7%	23.9%	39.8%
P	Count	3	1	49	53
	Expected Count	14.2	7.8	31.0	53.0
	% within Corporate Environmental Management (CEM)	5.7%	1.9%	92.5%	100.0%
	% within In my company top management is willing to stop production if environmental or health considerations demand it	6.4%	3.8%	47.6%	30.1%
	% of Total	1.7%	.6%	27.8%	30.1%
Total	Count	47	26	103	176
	Expected Count	47.0	26.0	103.0	176.0
	% within Corporate Environmental Management (CEM)	26.7%	14.8%	58.5%	100.0%
	% within In my company top management is willing to stop production if environmental or health considerations demand it	100.0%	100.0%	100.0%	100.0%
	% of Total	26.7%	14.8%	58.5%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	69.412[a]	4	.000
Likelihood Ratio	72.146	4	.000
Linear-by-Linear Association	56.067	1	.000
N of Valid Cases	176		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.83.

Appendix (I-18)

Corporate Environmental Management (CEM) * In my company top management feels that environmental performance will enhance the image of the company

Corporate Environmental Management (CEM)		In my company top management feels that environmental performance will enhance the image of the company			Total
		1	2	3	
I	Count	23	18	12	53
	Expected Count	8.1	8.7	36.1	53.0
	% within Corporate Environmental Management (CEM)	43.4%	34.0%	22.6%	100.0%
	% within In my company top management feels that environmental performance will enhance the image of the company	85.2%	62.1%	10.0%	30.1%
	% of Total	13.1%	10.2%	6.8%	30.1%
C	Count	3	9	58	70
	Expected Count	10.7	11.5	47.7	70.0
	% within Corporate Environmental Management (CEM)	4.3%	12.9%	82.9%	100.0%
	% within In my company top management feels that environmental performance will enhance the image of the company	11.1%	31.0%	48.3%	39.8%
	% of Total	1.7%	5.1%	33.0%	39.8%
P	Count	1	2	50	53
	Expected Count	8.1	8.7	36.1	53.0
	% within Corporate Environmental Management (CEM)	1.9%	3.8%	94.3%	100.0%
	% within In my company top management feels that environmental performance will enhance the image of the company	3.7%	6.9%	41.7%	30.1%
	% of Total	6%	1.1%	28.4%	30.1%
Total	Count	27	29	120	176
	Expected Count	27.0	29.0	120.0	176.0
	% within Corporate Environmental Management (CEM)	15.3%	16.5%	68.2%	100.0%
	% within In my company top management feels that environmental performance will enhance the image of the company	100.0%	100.0%	100.0%	100.0%
	% of Total	15.3%	16.5%	68.2%	100.0%

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	78.256[a]	4	.000
Likelihood Ratio	80.295	4	.000
Linear-by-Linear Association	60.735	1	.000
N of Valid Cases	176		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.13.

Appendix (I-19)

(CEM) * In my company the top management has helped to establish internal environmental strategies to develop environmental performance

Corporate Environmental Management (CEM)		In my company the top management has helped to establish internal environmental strategies to develop environmental performance			Total
		1	2	3	
I	Count	41	9	3	53
	Expected Count	17.5	9.9	25.6	53.0
	% within Corporate Environmental Management (CEM)	77.4%	17.0%	5.7%	100.0%
	% within In my company the top management has helped to establish internal environmental strategies to develop environmental performance	70.7%	27.3%	3.5%	30.1%
	% of Total	23.3%	5.1%	1.7%	30.1%
C	Count	17	19	34	70
	Expected Count	23.1	13.1	33.8	70.0
	% within Corporate Environmental Management (CEM)	24.3%	27.1%	48.6%	100.0%
	% within In my company the top management has helped to establish internal environmental strategies to develop environmental performance	29.3%	57.6%	40.0%	39.8%
	% of Total	9.7%	10.8%	19.3%	39.8%
P	Count	0	5	48	53
	Expected Count	17.5	9.9	25.6	53.0
	% within Corporate Environmental Management (CEM)	0%	9.4%	90.6%	100.0%
	% within In my company the top management has helped to establish internal environmental strategies to develop environmental performance	0%	15.2%	56.5%	30.1%
	% of Total	0%	2.8%	27.3%	30.1%
Total	Count	58	33	85	176
	Expected Count	58.0	33.0	85.0	176.0
	% within Corporate Environmental Management (CEM)	33.0%	18.8%	48.3%	100.0%
	% within In my company the top management has helped to establish internal environmental strategies to develop environmental performance	100.0%	100.0%	100.0%	100.0%
	% of Total	33.0%	18.8%	48.3%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	95.502[a]	4	.000
Likelihood Ratio	112.882	4	.000
Linear-by-Linear Association	87.934	1	.000
N of Valid Cases	176		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.94.

Appendix (I-20)

Corporate Environmental Management (CEM) * In my company top level managers are involved in environmental projects

Corporate Environmental Management (CEM)		In my company top level managers are involved in environmental projects			Total
		1	2	3	
I	Count	41	7	5	53
	Expected Count	19.3	8.7	25.0	53.0
	% within Corporate Environmental Management (CEM)	77.4%	13.2%	9.4%	100.0%
	% within In my company top level managers are involved in environmental projects	64.1%	24.1%	6.0%	30.1%
	% of Total	23.3%	4.0%	2.8%	30.1%
C	Count	23	19	28	70
	Expected Count	25.5	11.5	33.0	70.0
	% within Corporate Environmental Management (CEM)	32.9%	27.1%	40.0%	100.0%
	% within In my company top level managers are involved in environmental projects	35.9%	65.5%	33.7%	39.8%
	% of Total	13.1%	10.8%	15.9%	39.8%
P	Count	0	3	50	53
	Expected Count	19.3	8.7	25.0	53.0
	% within Corporate Environmental Management (CEM)	.0%	5.7%	94.3%	100.0%
	% within In my company top level managers are involved in environmental projects	.0%	10.3%	60.2%	30.1%
	% of Total	.0%	1.7%	28.4%	30.1%
Total	Count	64	29	83	176
	Expected Count	64.0	29.0	83.0	176.0
	% within Corporate Environmental Management (CEM)	36.4%	16.5%	47.2%	100.0%
	% within In my company top level managers are involved in environmental projects	100.0%	100.0%	100.0%	100.0%
	% of Total	36.4%	16.5%	47.2%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	94.716[a]	4	.000
Likelihood Ratio	110.720	4	.000
Linear-by-Linear Association	84.239	1	.000
N of Valid Cases	176		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.73.

Appendix (I-21)

Relationship between levels of CEM) * In my company employees are

Trained to become environmentally responsible beings

Corporate Environmental Management (CEM)		In my company employees are trained to become environmentally responsible beings			Total
		1	2	3	
I	Count	45	5	3	53
	Expected Count	23.5	9.0	20.5	53.0
	% within Corporate Environmental Management (CEM)	84.9%	9.4%	5.7%	100.0%
	% within In my company employees are trained to become environmentally responsible beings	57.7%	16.7%	4.4%	30.1%
	% of Total	25.6%	2.8%	1.7%	30.1%
C	Count	30	20	20	70
	Expected Count	31.0	11.9	27.0	70.0
	% within Corporate Environmental Management (CEM)	42.9%	28.6%	28.6%	100.0%
	% within In my company employees are trained to become environmentally responsible beings	38.5%	66.7%	29.4%	39.8%
	% of Total	17.0%	11.4%	11.4%	39.8%
P	Count	3	5	45	53
	Expected Count	23.5	9.0	20.5	53.0
	% within Corporate Environmental Management (CEM)	5.7%	9.4%	84.9%	100.0%
	% within In my company employees are trained to become environmentally responsible beings	3.8%	16.7%	66.2%	30.1%
	% of Total	1.7%	2.8%	25.6%	30.1%
Total	Count	78	30	68	176
	Expected Count	78.0	30.0	68.0	176.0
	% within Corporate Environmental Management (CEM)	44.3%	17.0%	38.6%	100.0%
	% within In my company employees are trained to become environmentally responsible beings	100.0%	100.0%	100.0%	100.0%
	% of Total	44.3%	17.0%	38.6%	100.0%

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	92.784[a]	4	.000
Likelihood Ratio	100.249	4	.000
Linear-by-Linear Association	80.100	1	.000
N of Valid Cases	176		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.03.

Appendix (I-22)

Relationship between levels of CEM * My company is regularly raising employee Awareness of environmental issues through sessions

Corporate Environmental Management (CEM)		My company is regularly raising employee awareness of environmental issues through sessions			Total
		1	2	3	
I	Count	47	3	3	53
	Expected Count	24.1	9.9	19.0	53.0
	% within Corporate Environmental Management (CEM)	88.7%	5.7%	5.7%	100.0%
	% within My company is regularly raising employee awareness of environmental issues through sessions	58.8%	9.1%	4.8%	30.1%
	% of Total	26.7%	1.7%	1.7%	30.1%
C	Count	29	20	21	70
	Expected Count	31.8	13.1	25.1	70.0
	% within Corporate Environmental Management (CEM)	41.4%	28.6%	30.0%	100.0%
	% within My company is regularly raising employee awareness of environmental issues through sessions	36.3%	60.6%	33.3%	39.8%
	% of Total	16.5%	11.4%	11.9%	39.8%
P	Count	4	10	39	53
	Expected Count	24.1	9.9	19.0	53.0
	% within Corporate Environmental Management (CEM)	7.5%	18.9%	73.6%	100.0%
	% within My company is regularly raising employee awareness of environmental issues through sessions	5.0%	30.3%	61.9%	30.1%
	% of Total	2.3%	5.7%	22.2%	30.1%
Total	Count	80	33	63	176
	Expected Count	80.0	33.0	63.0	176.0
	% within Corporate Environmental Management (CEM)	45.5%	18.8%	35.8%	100.0%
	% within My company is regularly raising employee awareness of environmental issues through sessions	100.0%	100.0%	100.0%	100.0%
	% of Total	45.5%	18.8%	35.8%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	82.482[a]	4	.000
Likelihood Ratio	90.590	4	.000
Linear-by-Linear Association	72.890	1	.000
N of Valid Cases	176		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.94.

Appendix J- Interview Questions in English & Arabic

1. Does your company have a corporate environmental management system?

Yes/No

2. If the answer to question 1 is "yes", what do you consider to be the reasons behind the uptake of corporate environmental management system in your company?

a. following governmental laws and legislations

b. having supportive top management who believe in CEM

c. adhering to international certification standards (e.g. ISO 14001 requirements)

d. company activities necessitate that environmental issues must be considered

e. consideration of the stakeholders demands

f. competitive advantage

g. others
……
……..

3. If your answer to question 1 is "yes", what do you think are the incentives that helped your company develop the CEM?

a. top management support

b. evaluation of performance based on adherence to environmental issues

c. benefits are given to those who support CEM and environmental social responsibility

d. others

……
……

4. If your answer to question 1 is "no", what do you consider to be the challenges that prevent your organization from taking up corporate environmental management systems?

a. lack of governmental encouragement

b. lack of support of top management

c. company not being interested in getting international certification

d. cost of considering the environmental effect of the company's activities

e. stakeholders are not concerned with environmental issues

f. considering these issues does not help the company compete with others

g. others

……
……

5. If your answer to question 1 is "no", what do you think are the incentives that your company must consider to persuade it to take up CEM?

a. enhance top management support

b. base evaluation of employees' performance on adherence to environmental issues

c. provide benefits to those who support CEM and environmental social responsibility

d. others

……
……

6. Do you personally believe that it is necessary to develop corporate environmental management systems in private Saudi Arabian companies? Why?

……
……

7. Do you think that private Saudi companies are lagging behind concerning the up take of corporate environmental management in comparison to companies in the developed world? Why?

……
……

8. What do you think Saudi companies should do to help in taking up and developing corporate environmental management systems?

……
……

Interview Questions in Arabic

إسم الشركة .....

عدد الموظفين .....

نوع الشركة.....

نشاطها .....

منشأها .....

جنسية المالك .....

منصب المستجاب .....

العمر ----------

النوع ----------

هل تمتلك الشركة أي من التالي

هل هناك سياسة معلنة ومكتوبة متعلقة بشؤون البيئة

هل من المكن رؤيتها ، ماذا تتضمن ، من كتبها ومتي نشرت ولمن ، هل الموظفين على علم بها ، هل هناك أهمية لنشرها للموظفين ، هل تقوم الشركة ببعض العمليات وفقا لهذه السياسة

ما هي هذه العمليات

ب- هل هناك موظف في الإدارة العليا مسؤول عن البيئة

متي تم تعيينه

جـ - هل هناك أشخاص معينين مسؤولون عن شؤون البيئة في المنظمة

هل هم معينون رسمي أو متطوعين

ما هو عملهم

هل تؤمن بأهمية العمل الذي يقومون به

لماذا

منذ متي يقومون بهذا العمل

ما هي الأعمال الأخرى التي يقومون بها ؟

هل عندكم مستشار معين لشؤون البيئة

هل تعيينه رسمي أم تطوعي

هل تعتقد أن وجود مثل هذه الوظيفة فعال لمباشرة الشؤون الخاصة بالبيئة

هل تلاحظ اهتمامهم بالشؤون المتعلقة بالبيئة

منذ متي تم تعيينهم

ما هي الأعمال التي يقومون بها بجانب مسؤوليتهم عن شؤون البيئة

هل لديكم لجنة مسؤولة عن شؤون البيئة

ممن تتشكل اللجنة

هل تتكون من أعضاء ممثلين لجميع الأقسام في الشركة

متي تم تشكيلها

هل هناك قرارات انبثقت من أعمال تلك اللجنة

متي تجتمع

ما هو عمل هذه اللجنة هل هناك توصيف لأعمال هذه اللجنة

هل لدي شركتكم برامج تدريبية لشؤون البيئة

ما نوع هذه البرامج

هل تقام بصفة مستمرة

من السؤول عن عمليات التدريب

من هي الأقسام الغير مسؤولة

لماذا

من يختار لعمليات التدريب

هل لهذا التدريب أهمية

ما هي الجزئيات التي تشملها عملية التدريب

هل تصدر شركتكم تقارير عن التنمية المستدامة

هل من الممكن الاطلاع على نوع هذه التقارير

هل من الممكن للعامة الإطلاع على هذا النوع من التقاري

هل من السهولة الحصول عليها

كيف تنشر للناس

على موقع الشركة على الإنترنت مثلا

إذا لم يكن لديكم تقارير

ما هو السبب

هل تكتب التقرير عندما يكون لديك شيء جيد للنشر

أو لأن نشاطكم قليل في هذا لمجال

هل تقومون بتوثيق الإجراءات لديكم

ما هي الأشياء التي تقومون بتوثيقها

جميع الأقسام تتبع نفس خطوات التوثيق

جميع الموظفين لديهم علم بخطوات التوثيق هذه

هل لديكم نظام للإدارة البيئة سواء بشهادة أو بدون

ما هو النظام المتبع لديكم

متي وأنتم تستخدمون هذا النظام

هل وجدتم فروق في الأداء الوظيفي بسبب تطبيقكم لهذا النظام

من هو وراء تقديم هذا النظام ليكم في المنظمة

هل الموظفين واعون على هذا النظام ومتطلباته

هناك جهة رسمية اعتمدت أداءكم البيئي

ما هي هذه الجهة

هل أنتم أعضاء في سلسلة الموردين والموزعين لملتزمين بالمعايير البيئية

مثل من

المنتجات التي لديكم والتي تتأثر بهذا الاتفاق

هل هناك صعوبة لضم سلسلة الموزعيين والموردين لهذا التحالف بينكم

هل لديكم علاقات مع لجان مسؤولة عن التسويق وتقديم التقارير

مع من لديكم علاقات

من يحدد هذه العلاقات

ما هو أمد تلك العلاقة

متي بدأت والسبب

الفائدة التي جنبتموها من وراء ذلك

هل لديكم اتصالات بأي مجموعات محلية مهتمة بشؤون البيئة

مثل

من المسؤول عن توطيد هذه العلاقة

زمن هذه العلاقة

متي بدأت

لماذا

ما تأثيرها على أدائكم

ما هي طرق تقديم تقارير دورية لكل من

الموظفين - مجلس الإدارة – حملة الأسهم – المحيط عن الأداء البيئ للشركة

ما هي هذه الطرق

لماذا تقدم

متي

من يقدمها

ما هي فعاليتها

هل لها تأثير على فعالية أداءكم البيئي

النشاط البيئي في شركتكم أدي إلي

خفض التكلفة الكلية

كيف

بمقدار تقريبا

ماهي التكلفة التي تأثرت أكثر

ساعدت على تحسين نوعية منتجاتكم

ساعدت في تحسين سمعة شركتكم

ساعدت في تقديم أو تطوير منتج أحسن

خفضت مخلفات أثناء عمليات الإنتاج

استفادت من تخفيف تكاليف تحصل أثناء عمليات الانتاج

زادت من احتمال بيع المنتجات وتسويقها في الأسواق الخارجية

حصلت على تقدير من الحكومة

الحصول على الدعم الحكومي

تهدف إلى تخفيف التلوث البيئي (هواء ، ماء ، تربة)

خفض مصروفات العمليات

تحسين استخدام الطاقة

استخدام آلات خارجية لتخفيض الأثر البيئي

إحلال نتجات صديقة للبيئة مكان المنتجات التي تؤثر على البيئة

إعادة تدوير النفايات الناتجة من عمليات الانتاج

استخدام طاقة يمكن تكرار استخدامها

ملاحظة ومراجعة التأثير البيئي لشركتكم تستخدمون

تشييك جوهري لتأثير عملياتكم مثل تخفيض المخلفات الطاقة المستخدمة فرصة إعادة التشكيل

مراجعة رسمية لتأثير عمليات الشركة على البيئة

تقييم بيئي للمشاريع أو منتج جديد

معايير بيئية تلتزمون بها عند الشراء من الموردين

خطوات بيئية مكتوبة تغطي عمليات الشركة

خطط بيئية احتمالية لنواتج ومخلفات العمليات في منظمتكم

إذا تبنت شركتكم مبادأة تخفيض التأثير البيئي ما هو الدافع الرئيسي لهذه المبادأة

احداث تغيير مثير في إدارة الموارد

تخفيض تكلفة الموارد

خفض التكاليف التخلص من النفايات

خفض الضغط من المستهلكين وعائق التسويق

ناحية أخلاقية أو شخصية من الإدارة

متطلبات الشركة الأم

ضغط من البنوك أو من شركات التأمين أو من حملة الأسهم

متطلبات الأمن والسلامة

أخري

إلى أي مدي يتم الأتي في شركتكم

إعادة التصميم للمنتج

إعادة التصميم للعمليات

التفكيك

التدوير

إعادة البناء

إعادة التصنيع

التغليف القابل للإرجاع أو الإعادة

خلق سوق للنفايات

إعادة تصميم المنتج

إعادة تصميم المواقع أو الموارد

التحالف والاندماج

إنتاج منتجات صديقة للبيئة

تحسين نوعية المنتج والخدمة

الانصياع للقوانين الحكومية

تأسيس بيئة آمنة للعمل

فرض تطبيق منتجات نظيفة

هل تستخدم أي من التالي في شركتكم

تدريب الموظفين

تدريب الموظفين يحتوي على شؤون البيئة

تشجيع الموظفين على تقديم الاقتراحات المتعلقة بشؤون البيئة وإدارتها

استشارة الموظفين في تطوير ومراقبة برامج بيئية

إشراك الموظفين في لجان البيئة

محفزات على الآداء البيئي الجيد

ما هي الخطط المستقبلية لتطوير وتحسين الأداء البيئي في شركتكم

هل تعتقدون أن انضمام المملكة لمنظمة التجارة العالمية له تأثير على شركتكم لتحسين أداءكم البيئي

لماذا

كيف

هل تعتقد شخصيا أنه من المفروض تطوير الأداء البيئي المؤسسي في قطاع الأعمال السعودي

لماذا

ما هي الأسباب في نظركم الذي يجعلكم تتبنوا إدارة البيئة في شركتكم

اتباع القوانين الحكومية

للحصول على شهادات المعايير الدولية

الحصول على الدعم من الإدارات المؤيدة للأداء النيئ

نشاط المنظمة يتطلب الاهتمام بالشؤون البيئية

لأنه جزء من مسؤوليات أي منظمة خاصة القطاع الخاص

أخري

هل تعتقد أن الشركات السعودية متأخرة في الإهتمام بالبيئة وتطبيق الإدارة البيئية مقارنة بالدول المتقدمة

ما هو السبب في رأيكم ؟؟؟؟

غياب تشجيع من الحكومة

الشركات السعودية ليس لديها الرغبة في الحصول على الشهادات الدولية

غياب الدعم من القيادات العليا في المنظمة

التكاليف الناتجة من تطبيق الإدارة البيئية

ليس لها تأثير تنافسي على المنظمات الأخرى

ليس هناك اهتمام من حملة الأسهم بالمواضيع الخاصة بالبيئة

أخرى

ما الذي يجب المنظمات السعودية عمله في نظركم للمبادأة في تطوير الإدارة

الإدارة البيئية المؤسسي

وضع أهداف تتسق وأدبيات العمليات لتقييم والوصول إلى مستوى آداء بيئي محدد في حالة البحث عن تطوير مناسب

تشجيع التخطيط البيئي من خلال النشاط المؤسسي (الحصول على المواد الخام حتي يتم توزيع المنتج

تقديم الكثير من الموارد بما فيها التدريب للوصول إلى الهداف المرجوة

تأسيس عمليات واجراءات إدارية لمراجعة الأداء البيئي لتحديد الفرص التي تطور النظام ونتائج الأداء البيئي

تطوير مفهوم الإلتزام بين الموظفين لحماية البيئة مع التحديد الواضح للمسؤوليات والسلطات

بناء شبكة اتصال فعالة داخلية وخارجية

تشجيع المتعاملين على بناء إدارة بيئية

تحديد القوانين الحكومية والعناصر البيئية الخاة بمنتجات المنظمة وخدماتها واأنشطتها لتحديد التأثير البيئي وكذلك الأولويات والأهداف

أخرى

Appendix K- Sample Responses to Interview questions

Sample of the Responses and Comments Received from Interviewees for the Qualitative Study, Translated into English

Company A	Questions
Company has published environmental policies, environmental department and is looking for projects that implement their social responsibility in that area. As it has been stated we get the policies and then we translate and then circulate. The most important objective is to have zero environmental accidents (including recycling- we sell our things to another company to handle this). We have the program of H, S and E. We have teams that have roles and expectations that we have to be up to. For example, segregation of wastes. Safety coordinators for every department. They have trainings and specific expectations. We have written objectives for the protection of the environment. We have a department for this and managers who handle this issue. We ca offer you a copy of these written objectives which are set by the department. Environmental Science Department which is under External Relations Department. Since it is a global company that has branches in 80	**Does your company have any of the following:** **a. a published policy statement on environmental matters** **If yes, please state;** - Where is it? - What does it say? - Who introduced it? - When was it introduced? - Why was it introduced? - Does the workforce know about it? - Is it important to your work to know about it? - Does the company carry out certain operations due to this policy statement? If yes, what exactly?

countries. Every country has a local office that handles these local issues. All the members of the company are aware that the company is interested in protecting the environment, but not each person has a responsibility. The mother company has set these policies and we follow the same standards. But we follow all the local regulations and standards as well because this is a priority for us. We also have our company's regulations. The regulations of the mother company's regulations are very strict. Locally there are some efforts and regulations by the government, but they talk about some aspects only of the operations. The regulations of the mother company are far stricter (established since 1837). All branches must follow the same standards, but maybe requirements will vary from one country to another based on the needs in the country in itself. My role is to make sure that the 1. packages are complying to internationally acceptable. 2. All safety measures to evaluate the operations. 3. Clearnace Tracking of new products (CT).	

4. Specifications set by us 5. Some instructions by the Ministry of Health to be followed. 6. Sometimes it is the municipality which send These appear in their overall written objectives on their web site and other leaflets. They are introduced by the mother company in USA that controls that local branch in Saudi Arabia. They have a plant manager and 3 team managers who set the rules and they deploy it and then these are then implemented by sub managers and teams The workforce knows about these policies through the internal documents coming down from the mother company and through weekly meetings with staff. They have people responsible for keeping the standards set by the mother company. They also hire consultants to ensure that the produced products follow the standards of the mother company and which including not harming the environment.	

The standards applied are not the Saudi ones but they follow the international standards of the mother company. They have an external auditor who comes from the mother company every year to make audits. Environment system is under Health, Safety and Environment Department. Each plant has its own occupational health leader who receives the mother company strategies and then deploy and implement them. It depends on the line of production (e.g. beauty care materials are not like baby care products) So, but there are key elements that are test yearly, every 3 months, monthly. Score cards are sent monthly to make these measures to implement. This plant fall under the Family and Baby Care. Managers receive these score cards and then follow the standards and implement.	
Leaders of the factory are 4 Plant manager and 3 ' managers who set the internal policies. They spread the policies and strategies in a separate meeting outside the company at the beginning of each year. These are There are also weekly meetings for top management and then modular meetings for each leader in each department (weekly) I am responsible for that in the company for almost 18 years now in the	**b. A senior manager with responsibility for environmental issues** **If yes, please state;** - **How were he/they appointed?**

KSA and the Gulf. He is the only one in his department in addition to two assistants, but above him is another department that has 10 members who is remotely related to this.	
Only this year Saudi Arabia have sent to plants legal compliance standards to ask plants to check if they are locally complying or not. They are not an easy list at and they will be bringing an international auditor to check these. His role is to make sure that the plants are following the standards or not. How? By looking at all the score cards of all the departments. All the employees they read and sign reading these standards. Each company has staff members who are responsible for this.	**c. any designated staff to deal with environmental matters** **If yes, please state;** - Were they enforced on them or did they volunteer? - What is their job exactly? - Do you believe that this position is effective in handling environmental issues? Why? - Are they interested in the environment? - How long have they been doing this job? - What other duties do they have to do?
Yes, I am the one responsible for this task. I am responsible for doing the training for all people in the plant. I am appointed by the HR here in Saudi Arabia not from the mother company.	**d. an appointed environmental advisor** **If yes, please state;**

The mother company has set a complete system for this department which is applied by us.	- Were they enforced on them or did they volunteer? - What is their job exactly? - Do you believe that this position is effective in handling environmental issues? Why? - Are they interested in the environment? - How long have they been doing this job? - What other duties do they have to do?
We have a department for that purpose. We do not have a committee for that really because there is no sponsorship for that.	**e. an environmental committee** **If yes, please state;** - Who is on it? - Does the committee reflect the whole company? - How long has it been in existence? - What decisions has it made? - How often does it meet? - What is the specific job of the committee and what are its duties?
We have training done on the basis of skill blocks according to the nature of the job. Employees have key blocks that are given by computerized systems (e-learning). All employees receive	**f- education and training on environmental matters**

training periodically and they check their understanding who should achieve 85% to be considered trained or otherwise they need to repeat the training. We have awareness training on yearly basis on issues like environmental protection for all staff. Before employing new people they get this training and yearly we have refreshment trainings. Daily there are tasks that may be added to the expectations of the employees and hence training is provided for that purpose. We have yearly training for safety coordinators. We have policies that even contractors also have yearly training. We have 5 areas for training to cover as set by the mother company; Solid wastes Solid materials Emissions Noise outside Hazardous materials	- What type of training has been offered? - Are they regular? - Who is involved in this training? Who is not? Why? - How are they selected for training? _ Is it important? - Which areas are covered in such trainings?

We have systems, locations, checklists on a map to get the emission places and how they should be dealt with and we have environmental inspections weekly, monthly, quarterly and semi annually, annually, etc…They also set the action if there is something out of limit. They give us a complete checklist and we follow them. We have regular meetings and we have to have 100% accuracy and coverage of monitoring for all operations. We have contracted external experts whom we invite to give lectures in places like CBA and King Fahd Hospital. But unfortunately not many people attend. We develop with the international company measures that fit the local needs. We do local studies and sponsor them to get the results that will help improve the environment locally. Exchanging information by sending local experts to international conferences. The plants have tarining especially for the plant in Damam as their products have great environmental impact, hence they have for sure training on these issues. Jeddah plant does not have the same need.	

The manager receives all reports that are set globally which report environmental incidents. The HS & E leader can circulate this to be aware of it and sometimes if the issue is big we can stop the plant to discuss it and get it erected. We communicate through emails, posters, screens and daily boards. New issues are announced by the mangers and then we have training to leaders and then have meetings with and training for the lower management then we have meeting with the 4 teams ad they in turn have meetings in the morning, afternoon or evening to pass these instructions and then we handle trainings later. All these are added on the expectations for each employee. We have reports which are highly confidential. We do not do training outside. Not all issues are to be publicly released or open to all other departments. On "need to know" basis, data will be available. For example, if I have the need to know the secret formula that are very confidential, I call the general office internationally and get the ability to access the technical centers on in the region (in Germany or Belgium). We have reports for sustanibility could	**g. environmental, social responsibility or sustainability reporting** - Can I see your reports? - Are they publicly available? _ Can the public easily access them? - How are they publicized? - If no reports are given, why do not they report? - Will you report because you are not that active?

be publicly released, but not all issues.	
Handling environmental complaints. The procedure is similar to handling any complaint. Go back to the specific department, make an investigation, set an implementation plan to resolve the issue and then implement it. We have all of the procedures on a shared folder. Standard Operating Procedures so we document everything. The procedures are set and all staff are aware of this.	**h. documented procedures** - What do you document? - Is the process of documentation followed by all departments? - Are all the members of staff knowledgeable about this process?
We do not have to as our company has a system that is highly advanced and far more efficient than any other international certified systems. One-to-one meetings to discuss issues with the HS&E leader are held to modify and add new procedures and policies handed down to us any the mother company. Later, the HS & E leader handles implementation of these new policies and their plans for implementation. Communications about these issues happen by email and we have documents which read and written, others are read only and others which are confidential. Our obsolete files are destroyed every 3	**i. an environmental management system (certified or not certified)** - Which system is used? - How long has it been used? - How did it make a difference? - Who was behind introducing this system? Why was it introduced? - Are all employees aware of this system?

years. If I have a newsletter I pass it to all employees I pass to these, if to be distributed to managers only, we do so too. For emergency procedures, HR are responsible for that. The leader for each team is responsible for locating all his members and checking their presence in the safely designated areas. This is done through yearly training for all staff. We have our own system on a shared folder and we have an emergency plan. We have specific actions which we do in case of an emergency. We update that yearly. Some parts are not available to all, but there are some that are open to all. We have auditing for our operations. The third party audit will be implemented for the first time in 6 months time. This is the first time. He is the one who provides the training, but he receives his training from the mother company. Yes, I can report on accidents or dangerous conditions. Also make sure that whoever comes in is suitably	

trained before we give that person any dangerous materials. All this is due to the training that I have received through my job here. Programs for the environment are for all departments. I am in the construction area and this is important for me. We do not need to take the ISO as we already have applied these standards for over than 50 years. The ISO is still only 10 years old. New companies may seek these certifications not us. Since 1960 we have our internal system but we do not need to go to other systems. It is event updated every year. The department of Environmental Protection. It is central and goes down to all the branches and departments.	
Internal audit is yearly done and the external can be done every two to three years. Sometimes we have an external audit. For the legal compliance we will have this done. We do not have such certificates relating to this locally. Maybe in the plants they have something they get from external visitors. Suppliers have to comply with all specifications, including environmental specifications. He must get a qualification certification. All suppliers would like to be committed to get their contract with our reputable company.	**j. - verification or accreditation relating to environmental performance** - Who accredits your company's performance?
	k. engagement in supply chain management

	- Can you give me a list of all your suppliers who follow these requirements? - Which products or services are affected by this? - Was it easy or difficult to get them to participate? Why?
We do not have contacts with outside bodies. Only HR does that for us.	**l. contacts with environmental or community groups on environmental issues** - Who do you have relations with? - Who indicted these relations? - How long have you had these relations? - When did this start? - Why? - What effects do you believe they have on your company's performance?
We had a gap in some procedures after the audit we have erected it. We have some expectations for the whole program. The owner signs these and then we implement. What authority do you have?	**m. - methods of reporting to board, staff, shareholders, the community on the company's environmental performance**

Safety is first and hence I have the authority to ensure safety. The results always show if we are doing right or not. We have a shared folder open to all people to consult these documents and there are managers who monitor our work.	
For example they have procedures to lessen the impacts (e.g. baby pambers).	**2. b. the environmental activities of the company or plants**
	3. the methods used to monitor and audit the environmental impacts of the company's operations a. informal check of environmental impacts of company operations (e.g. waste minimization, energy use, recycling opportunities) b. formal audit of environmental impacts of company operations c. environmental assessments (e.g. of a project or new product) carried out d. environmental criteria applied when purchasing materials/supplies e. written environmental guideline covering company operations f. environmental contingency plan in place (e.g. for spills & discharges)

	g. informal check of environmental impacts of company operations (e.g. waste minimization, energy use, recycling opportunities) h. formal audit of environmental impacts of company operations i. environmental assessments (e.g. of a project or new product) carried out j. environmental criteria applied when purchasing materials/supplies k. written environmental guideline covering company operations l. environmental contingency plan in place (e.g. for spills & discharges)
We have procedures to check all materials coming into the plant. We have specifications for our supplier department to pass to the supplier to ensure that all materials coming in are fine environmentally. Things related to emissions, sewage systems, etc …	**4. d. the initiatives that the company has undertaken to reduce environmental impacts** a. Resource management act stimulated b. to reduce resources cost (energy, water, raw materials) c. to reduce disposal cost (sold waste, hazardous waste, trade waste) d. customer pressure (market niche) e. ethical /personal concern of management or employees f. pressure from banks, insurers or shareholder g. parent company requirements h. health & safety requirements

	Others
	5. the different methods used to reduce environmental impacts on the society. - What are these methods? - Why were the introduced? - When were they introduced? - Who introduced them? - How effective are they? - Do you think they have an effective on your company's performance?
Incentives companies have received certificates locally for their performance. They compete with other companies and plants.	**6. use of training, consultation and incentives, etc … as means for encouraging staff members to believe in environmental issues** a. staff training management b. staff training includes environmental issues c. staff suggestions encouraged to identify and manage environmental issue d. consultation with employee in developing and monitoring environmental programs e. staff involvement in environmental committee f. incentives for good

	environmental performance
	7. the future plans of the company for the development/improvement of their environmental management system
	8. h. the effect of globalization of trade through the WOT
The respondent believes very strongly that environmental issues are very important. We live with other creatures which we need to protect from our own developed system like the sewage system which is very destructive. We should start implementing certain procedures that will have valuable results for all of us in the future. This is missing in the Arab world. I enjoy breathing the fresh air abroad and hope this also happens here in the Arab world. We will enjoy ourselves and make others enjoy themselves too. Having green every where is also very good as it has impact on the employee. This will make him more creative. Like his colleague he feels that it is due to cost ad probably lack of awareness and then we need to see the resources locally and then set the plans for implementation. As a Muslim and human being I believe in the importance of protecting the environment because our prophet has	**9. the personal belief of the respondents of the importance of developing corporate environmental management in private Saudi companies.**

stated that. Our mother company has set regulations that go along with I personally believe in and hence I do not need any one to tell me that I should. There is a growing interest in the environment nowadays. But the local regulations are not available to implement these environmental procedures. We as a company we can do products that are recycled, but the municipality does not a process to do it this way. School visits are made to students to see the processes without affecting the process. Safety for workers is a priority.	
It is the mother company's policies. The clients now look for these issues.	**10. the reasons behind the uptake of corporate environmental management in the respondents' company.** a. following governmental laws and legislations b. adhering to international certification standards (e.g. ISO 14001 requirements) c. having supportive top management who believe in CEM d. company activities necessitate that environmental issues must be considered e. It is part of the environmental responsibility of any institution especially business companies

To apply any system you need to have two things; - The system itself and people who believe in applying this system. Still the Arab world people are not willing to spend a lot of money to save the environment as all are interested in profit and do not have long-term understanding of the future impact of the waste products poured I the environment everywhere. New diseases may develop due to this. All business men must believe in the value of this to agree that this support. From the religious point of view, we as Muslims believe that our religion has stated that we should do good for others like I like it to be done to me. Whatever evil I do to other I will be done by.	**11. the respondents' opinion concerning the situation in Saudi Arabia in terms of environmental support** a. lack of governmental support b. company not being interested in getting international certification c. lack of support of top management d. cost of considering the environmental effect of the company's activities e. considering these issues does not help the company compete with others f. stakeholders are not concerned with environmental issues g. others
What about the role of the government and the level of awareness of the Arab people? I have a problem with a plant next to my plant. He has a tank for gasoline and a generator that is next to my plant which is more like a bomb waiting to explode and the plant does not have any idea of the dangers of this. We also had an area next to us that was a bad sight for all, but our administration agreed to clean it for a VIP visit. Next to us are other places in this industrial area which many of us are not good at all and they	**12. the actions that need to be taken by private Saudi companies to encourage the adoption and development of corporate environmental management** a. set objectives with a disciplined process of evaluating and achieving target environmental performance levels while seeking improvements where appropriate b. encourage environmental planning throughout the full range of the organization’s activities, from raw

Even people who we get from the Far East to work as drivers come with ideas and beliefs that are difficult to change even after training. So what to you think is the problem? If the manager says to the owner I need to spend a lot of money to do some procedures, always there will be a discussion on how to do it with lower cost. This for sure will not produce environmental friendly procedures. I have an idea that a certain supervisory organization that audits all plants for their environmental procedures is set and its laws are set collectively by top experts. This organization will have regular audits and can give notices to plants that they will visit them with checklists to check. If the plants are not implementing effective environmental procedures they give a 15 days to redo re-do the audit. They can also have the authority to stop the operation of this company if needed. New ones and already working companies need to set the environmental system and these are to be supported by the owner and managers who in turn set the policies and organizational procedures to follow these. Does the government support? Only for fires and so on or quality issues. etc … All the world,not only Saudi Arabia,	materials acquisition to product distribution c. provide resources, including training, to achieve targeted performance levels on an on-going basis d. establish a management process to review and audit the CEM and to identify opportunities for improvement of the system and resulting environmental performance. e. develop management and employee commitment to the protection of the environment, with clear assignation of accountability and responsibility. f. establish and maintain appropriate communications with relevant internal and external parties. g. encourage contractors and suppliers to establish an CEM. h. identify the legislative requirements and environmental aspects of the organization's products, services and activities to determine impact, significance, priorities, and objectives others

needs to consider these issues for our future and the future our sons ad daughters. At home, this is important for me. Saudi is still backward because clients are not still aware. Regulations are limited and are not applied strictly. Increase the level of the awareness of the clients and private companies. Start with school students as they grow old it becomes more difficult. They may work with the Ministry of Education to add a new school subject to raise environmental awareness. The company may be involved in sponsoring such projects and establish labs to measures the levels of noise pollution and other types of pollution. There is a club that we have established that has labs that is for scientific activities for creative students.	

Company A	Questions
Company has published environmental policies, environmental department and is looking for projects that implement their social responsibility in that area. As it has been stated we get the policies and then we translate and then circulate. The most important objective is to have zero environmental accidents (including recycling- we sell our things to another company to handle this). We have the program of H, S and E. We have teams that have roles and expectations that we have to be up to. For example,	**Does your company have any of the following:** **f. a published policy statement on environmental matters** **If yes, please state;** - Where is it?

segregation of wastes. Safety coordinators for every department. They have trainings and specific expectations. We have written objectives for the protection of the environment. We have a department for this and managers who handle this issue. We ca offer you a copy of these written objectives which are set by the department. Environmental Science Department which is under External Relations Department. Since it is a global company that has branches in 80 countries. Every country has a local office that handles these local issues. All the members of the company are aware that the company is interested in protecting the environment, but not each person has a responsibility. The mother company has set these policies and we follow the same standards. But we follow all the local regulations and standards as well because this is a priority for us. We also have our company's regulations. The regulations of the mother company's regulations are very strict. Locally there are some efforts and regulations by the government, but they talk about some aspects only of the operations. The regulations of the mother company are far stricter (established since 1837). All branches must follow the same standards, but maybe requirements will vary from one country to another based on the needs in the country in itself.	- What does it say? - Who introduced it? - When was it introduced? - Why was it introduced? - Does the workforce know about it? - Is it important to your work to know about it? - Does the company carry out certain operations due to this policy statement? If yes, what exactly?

My role is to make sure that the 1. packages are complying to internationally acceptable. 2. All safety measures to evaluate the operations. 3. Clearnace Tracking of new products (CT). 4. Specifications set by us 5. Some instructions by the Ministry of Health to be followed. 6. Sometimes it is the municipality which send These appear in their overall written objectives on their web site and other leaflets. They are introduced by the mother company in USA that controls that local branch in Saudi Arabia. They have a plant manager and 3 team managers who set the rules and they deploy it and then these are then implemented by sub managers and	

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Leaders of the factory are 4 Plant manager and 3 groups managers who set the internal policies. They spread the policies and strategies in a separate meeting outside the company at the beginning of each year. These are There are also weekly meetings for top management and then modular meetings for each leader in each department (weekly) I am responsible for that in the company for almost 18 years now in the KSA and the Gulf. He is the only one in his department in addition to two assistants, but above him is another department that has 10 members who is remotely related to this.	**g. A senior manager with responsibility for environmental issues** **If yes, please state;** - **How were he/they appointed?**
Only this year Saudi Arabia have sent to plants legal compliance standards to ask plants to check if they are locally complying or not. They are not an easy list at and they will be bringing an international auditor to check these. His role is to make sure that the plants are following the standards or not. How? By looking at all the score cards of all the departments. All the employees they read and sign reading these standards. Each company has staff members who	**h. any designated staff to deal with environmental matters** **If yes, please state;** - Were they enforced on them or did they volunteer? - What is their job exactly? - Do you believe that this position is effective in handling environmental issues? Why? - Are they interested in the environment?

are responsible for this.	- How long have they been doing this job? - What other duties do they have to do?
Yes, I am the one responsible for this task. I am responsible for doing the training for all people in the plant. I am appointed by the HR here in Saudi Arabia not from the mother company. The mother company has set a complete system for this department which is applied by us.	**i. an appointed environmental advisor** **If yes, please state;** - Were they enforced on them or did they volunteer? - What is their job exactly? - Do you believe that this position is effective in handling environmental issues? Why? - Are they interested in the environment? - How long have they been doing this job? - What other duties do they have to do?
We have a department for that purpose. We do not have a committee for that really because there is no sponsorship for that.	**j. an environmental committee** **If yes, please state;** - Who is on it? - Does the committee reflect the whole company? - How long has it been in existence? - What decisions has it made?

	- How often does it meet? - What is the specific job of the committee and what are its duties?
We have training done on the basis of skill blocks according to the nature of the job. Employees have key blocks that are given by computerized systems (e-learning). All employees receive training periodically and they check their understanding who should achieve 85% to be considered trained or otherwise they need to repeat the training. We have awareness training on yearly basis on issues like environmental protection for all staff. Before employing new people they get this training and yearly we have refreshment trainings. Daily there are tasks that may be added to the expectations of the employees and hence training is provided for that purpose. We have yearly training for safety coordinators. We have policies that even contractors also have yearly training. We have 5 areas for training to cover as	**f- education and training on environmental matters** - What type of training has been offered? - Are they regular? - Who is involved in this training? Who is not? Why? - How are they selected for training? _ Is it important? - Which areas are covered in such trainings?

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Not all issues are to be publicly released or open to all other departments. On "need to know" basis, data will be available. For example, if I have the need to know the secret formula that are very confidential, I call the general office internationally and get the ability to access the technical centers on in the region (in Germany or Belgium). We have reports for sustainability could be publicly released, but not all issues.	
Handling environmental complaints. The procedure is similar to handling any complaint. Go back to the specific department, make an investigation, set an implementation plan to resolve the issue and then implement it. We have all of the procedures on a shared folder. Standard Operating Procedures so we document everything. The procedures are set and all staff are aware of this.	**h. documented procedures** - What do you document? - Is the process of documentation followed by all departments? - Are all the members of staff knowledgeable about this process?
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We had a gap in some procedures after the audit we have erected it. We have some expectations for the whole program. The owner signs these and then we implement. What authority do you have? Safety is first and hence I have the authority to ensure safety. The results always show if we are doing right or not. We have a shared folder open to all people to consult these documents and there are managers who monitor our work.	**m. - methods of reporting to board, staff, shareholders, the community on the company's environmental performance**
For example they have procedures to lessen the impacts (e.g. baby pambers).	**2. b. the environmental activities of the company or plants**
	3. the methods used to monitor and audit the environmental impacts of the company's operations m. informal check of environmental impacts of company operations (e.g. waste minimization, energy use, recycling opportunities)

	n. formal audit of environmental impacts of company operations o. environmental assessments (e.g. of a project or new product) carried out p. environmental criteria applied when purchasing materials/supplies q. written environmental guideline covering company operations r. environmental contingency plan in place (e.g. for spills & discharges) s. informal check of environmental impacts of company operations (e.g. waste minimization, energy use, recycling opportunities) t. formal audit of environmental impacts of company operations u. environmental assessments (e.g. of a project or new product) carried out v. environmental criteria applied when purchasing materials/supplies w. written environmental guideline covering company operations x. environmental contingency plan in place (e.g. for spills & discharges)
We have procedures to check all materials coming into the plant. We have specifications for our supplier department to pass to the supplier to ensure that all materials coming in are fine environmentally.	**4. d. the initiatives that the company has undertaken to reduce environmental impacts** b. Resource management act stimulated b. to reduce resources cost (energy, water, raw materials)

Things related to emissions, sewage systems, etc …	i. to reduce disposal cost (sold waste, hazardous waste, trade waste) j. customer pressure (market niche) k. ethical /personal concern of management or employees l. pressure from banks, insurers or shareholder m. parent company requirements n. health & safety requirements Others
	5. the different methods used to reduce environmental impacts on the society. - What are these methods? - Why were the introduced? - When were they introduced? - Who introduced them? - How effective are they? - Do you think they have an effective on your company's performance?
Incentives companies have received certificates locally for their performance. They compete with other companies and plants.	**6. use of training, consultation and incentives, etc … as means for encouraging staff members to believe in environmental issues** g. staff training management h. staff training includes

	environmental issues i. staff suggestions encouraged to identify and manage environmental issue j. consultation with employee in developing and monitoring environmental programs k. staff involvement in environmental committee **l.** incentives for good environmental performance
	7. the future plans of the company for the development/improvement of their environmental management system
	8. h. the effect of globalization of trade through the WOT
The respondent believes very strongly that environmental issues are very important. We live with other creatures which we need to protect from our own developed system like the sewage system which is very destructive. We should start implementing certain procedures that will have valuable results for all of us in the future. This is missing in the Arab world. I enjoy breathing the fresh air abroad and hope this also happens here in the Arab world. We will enjoy ourselves and make others enjoy themselves too. Having green every where is also very good as it has impact on the employee. This will make him more creative. Like his colleague he feels that it is due to cost ad probably lack of awareness and then we need to see the resources locally and then set the plans for implementation.	**9. the personal belief of the respondents of the importance of developing corporate environmental management in private Saudi companies.**

As a Muslim and human being I believe in the importance of protecting the environment because our prophet has stated that. Our mother company has set regulations that go along with I personally believe in and hence I do not need any one to tell me that I should. There is a growing interest in the environment nowadays. But the local regulations are not available to implement these environmental procedures. We as a company we can do products that are recycled, but the municipality does not a process to do it this way. School visits are made to students to see the processes without affecting the process. Safety for workers is a priority.	
It is the mother company's policies. The clients now look for these issues.	**10. the reasons behind the uptake of corporate environmental management in the respondents' company.** a. following governmental laws and legislations b. adhering to international certification standards (e.g. ISO 14001 requirements) c. having supportive top management who believe in CEM

	d. company activities necessitate that environmental issues must be considered e. It is part of the environmental responsibility of any institution especially business companies
To apply any system you need to have two things; - The system itself and people who believe in applying this system. Still the Arab world people are not willing to spend a lot of money to save the environment as all are interested in profit and do not have long-term understanding of the future impact of the waste products poured I the environment everywhere. New diseases may develop due to this. All business men must believe in the value of this to agree that this support. From the religious point of view, we as Muslims believe that our religion has stated that we should do good for others like I like it to be done to me. Whatever evil I do to other I will be done by.	**11. the respondents' opinion concerning the situation in Saudi Arabia in terms of environmental support** a. lack of governmental support b. company not being interested in getting international certification c. lack of support of top management d. cost of considering the environmental effect of the company's activities e. considering these issues does not help the company compete with others f. stakeholders are not concerned with environmental issues g. others
What about the role of the government and the level of awareness of the Arab people? I have a problem with a plant next to my plant. He has a tank for gasoline and a generator that is next to my plant which is more like a bomb waiting to explode and the plant does not have any idea of the dangers of this. We also had an area next to us that was	**12. the actions that need to be taken by private Saudi companies to encourage the adoption and development of corporate environmental management** i. set objectives with a disciplined

a bad sight for all, but our administration agreed to clean it for a VIP visit. Next to us are other places in this industrial area which many of us are not good at all and they Even people who we get from the Far East to work as drivers come with ideas and beliefs that are difficult to change even after training. So what to you think is the problem? If the manager says to the owner I need to spend a lot of money to do some procedures, always there will be a discussion on how to do it with lower cost. This for sure will not produce environmental friendly procedures. I have an idea that a certain supervisory organization that audits all plants for their environmental procedures is set and its laws are set collectively by top experts. This organization will have regular audits and can give notices to plants that they will visit them with checklists to check. If the plants are not implementing effective environmental procedures they give a 15 days to redo re-do the audit. They can also have the authority to stop the operation of this company if needed. New ones and already working companies need to set the environmental system and these are to be supported by the owner and managers who in turn set the policies	process of evaluating and achieving target environmental performance levels while seeking improvements where appropriate j. encourage environmental planning throughout the full range of the organization's activities, from raw materials acquisition to product distribution k. provide resources, including training, to achieve targeted performance levels on an on-going basis l. establish a management process to review and audit the CEM and to identify opportunities for improvement of the system and resulting environmental performance. m. develop management and employee commitment to the protection of the environment, with clear assignation of accountability and responsibility. n. establish and maintain appropriate communications with relevant internal and external parties. o. encourage contractors and suppliers to establish an CEM. p. identify the legislative requirements and environmental aspects of the organization's products, services and activities to determine impact, significance, priorities, and objectives others

and organizational procedures to follow these. Does the government support? Only for fires and so on or quality issues. etc … All the world,not only Saudi Arabia, needs to consider these issues for our future and the future our sons ad daughters. At home, this is important for me. Saudi is still backward because clients are not still aware. Regulations are limited and are not applied strictly. Increase the level of the awareness of the clients and private companies. Start with school students as they grow old it becomes more difficult. They may work with the Ministry of Education to add a new school subject to raise environmental awareness. The company may be involved in sponsoring such projects and establish labs to measures the levels of noise pollution and other types of pollution. There is a club that we have established that has labs that is for scientific activities for creative students.	

Interviewee

1: Black - Technical Support and Engineering Module Manager

2: Blue - HS&E- Occupational Health Leader

3: Red – Director of Academic Relations (Middle)

4: Orange - Lower level management

Appendix L - Graphic Representation of the interview Responses and Comments

18 Interviewees from 6 Companies

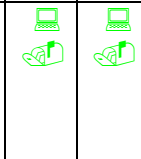
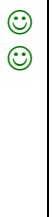
	A 1	A 2	A 3	B 4	B 5	B 6	C 7	C 8	C 9	D 10	D 11	D 12	E 13	E 14	E 15	F1 6	F1 7	F1 8
Does your company have any of the following: **- Published policy statement on environmental matters**	☺ ☺	☺ ☺	☺ ☺	☺ ☺	☺ ☺	☺ ☺	☺ ☺ ☺ ☠	☺ ☺ ☺ ☠	☺ ☺ ☺ ☠	☹ ☹	☹ ☹	☹ ☹	☹ ☹ ☠	☹ ☹ ☠	☹ ☹ ☠	☹ ☠	☹ ☹ ☠	☹ ☠
k. A senior manager with responsibility for environmental issues	☺	☺ ☺	☺	☺	☺	☹	☺ ☺	☹	☺	☹	☹	☹	☹	☹	☹	☹	☹	☹

	☺	☺ ☺ ☺ ☺	☺ ☺ ☺	☺	☺	☹	☺ ☺	☹	☺	☹	☹	☹ ☹ ☹						
c- any designated staff to deal with environmental matters	☺ ☺	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺	☺ ☺	☺ ☺	☺ ☺	☺ ☺ ☺ ☺	☺ ☺	☺ ☺ ☺	☹ ☹	☹ ☹	☹ ☹ ☹ ☹	☹	☹	☹	☹	☹	☹

d. an appointed environmental advisor	☺☺	☺☺	☺☺☺☺	☺	☺	☹	☺☺☺☺☺☺	☺☺	☺☺	☹☹	☹☹	☹	☹	☹	☹	☹	☹	☹
e. an environmental committee	☹	☹☹	☹☹	☺☺	☺☺	☹	☺☺☺☺	☺☺		☹☹	☹	☹☹	☹	☹	☹	☹	☹	☹
f. education and training on environmental matters	☺☺☺☺☺☺	☺☺☺☺☺☺	☺☺☺☺☺	☺☺	☺☺	☺☺	☺☺☺☺☺☺	☺☺		☹	☹	☹☹☹	☹	☹	☹	☹	☹	☹

			☺															
g. environmental, social responsibility or sustainability reporting	☺ ☺	☺ ☺	☺ ☺ ☺ ☺	☺	☺	☺	☺ ☺ ☺	☺	☺ ☺	☹ ☹	☹ ☹	☹ ☹	☹	☹	☹	☹	☹	☹
h. documented procedures	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺ ☺	☺	☺	☺	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺	☺ ☺	☺ ☺	☹	☹	☹
i. an environmental management system (certified or not certified)	☺ ☺	☺ ☺	☺ ☺	☺	☺	☺	☺ ☺	☺ ☺	☺ ☺	☹ ☹	☹ ☹	☹ ☹	☺ ☺	☺ ☺	☺ ☺	☹	☹	☹

j. - verification or accreditation relating to environmental performance																		
k. engagement in supply chain management																		
l. contacts with environmental or community groups on environmental issues																		

m. - methods of reporting to board, staff, shareholders, the community on the company's environmental performance																											
2. the environmental activities of the company or plants																									
3. the methods used to monitor and audit the environmental impacts of the company's operations																									

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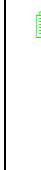
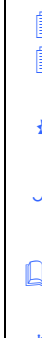
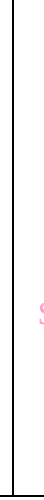
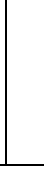
4. the initiatives that the company has undertaken to reduce environmental impacts	☺☺☺☺☺☺☺☺	☺☺☺☺	☺☺☺☺☺☺☺☺	☺☺☺	☺☺☺	☺☺☺	☺☺☺☺	☺☺☺☺	☺☺☠	☺☺☺☺☺	☺☺☺☺☺	☺☺☺☺☺	☹☹	☹☹	☹☹	☹	☹	☹
5. the different methods used to reduce environmental impacts on the society.	☹☹	☹☹	☹☹	☹☺	☹	☹	☺☺☺☺	☺☺☺☺	☺☺	☺☺☺☺☺☺☺	☺☺☺☺☺☺☺	☺☺☺☺☺☺☺	☹☹	☹☹	☹☹	☹	☹	☹
6. use of training, consultation and																		

incentives, etc … as means for encouraging staff members to believe in environmental issues	☹ ☹	☹ ☹	☺ ☺ ☺ ☺	☺ ☺ ☹ ☹	☹		☺ ☺ ☺ ☺	☺ ☺ ☺ ☺	☺ ☺ ☺ ☺	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹	☹	☹
7. the future plans of the company for the development/improvement of their environmental management system	☺ ☺ ☺ ☺	☺ ☺ ☺ ☺	☺ ☺ ☺ ☺	☺ ☺	☺ ☺		🗎 🗎 🗎	🗎 🗎 🗎	🗎 🗎 🗎	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺	☺ ☺ ☺	☺ ☺ ☺	☹	☹	☹
8. h. the effect of globalization of trade through the WTO	😐	😐	😐	😐	😐				☺ ☺	☹ ☹	☹ ☹	☹ ☹	☺ ☺	☺ ☺ ☺	☺ ☺ ☺	☺	☺	☺
9. the personal belief of the respondents of the importance of developing corporate environmental management in	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺ ☺ ☺	☺ ☺ ☺ ☺	☺ ☺ ☺ ☺	☺ ☺ ☺ ☺	☹	☹	☹

private Saudi companies.																		
10. the reasons behind the uptake of corporate environmental management in the respondents' company.																		
11. the respondents' opinion concerning the situation in Saudi Arabia in terms of environmental support																		

12. the actions that need to be taken by private Saudi companies to encourage the adoption and development of corporate environmental management																			

☺ Interviewee satisfied with the performance of the company or his environment concerning the point discussed/aware of the issue discussed

☹ Interviewee not satisfied with the performance of the company/not aware of the issue(s) discussed/not supportive of the issue

😐 Neutral feelings (either positive or negative)

🗐 Policies and regulations

☑ Need for campaigns to help in corrections/personal beliefs

🖱 Use technology to reduce use of paper

☼ Raising awareness and delivering knowledge

💻 Computerized system and shared folders are used

📣 Regular mail and notices are used to alert employees

🗁 Documents are kept or reports are written

🕮 Training programs delivered

⚐ Have clear environmental objective/mission

❶ Shows individual interest

🗞 Reading materials like magazines, brochures, etc …

🗎 Acquire certifications like ISO, etc…

☠ Essential activity of the company

✍ Study environmental problems, their causes and find solutions first

✋ For safety reasons

$ Costs needed or costs offered

Symbols repeated show the level of the commitment of the company or the importance of the issue as felt by the interviewee