CHAPTER ONE
INTRODUCTION

1.1 Background

Today's business practices have evolved to incorporate environmental protection measures in all stages of product development, as there are pressing needs to maintain and improve the quality of the environment. This necessitates a paradigm shift in management from environmental appraisal to prevention (Pun and Hui, 1999).

As a result of this ever-increasing global consciousness of environmental protection and conservation, the process of establishing environmentally related standards, regulations and policies has accelerated. International organisations have written treaties calling for better global business conduct, and non-governmental organisations (NGOs) are appealing to governments and businesses alike to change course towards environmental sustainable practices. As a result, there is now tremendous pressure on industries to establish their own environmental management systems (EMS).

Companies are beginning to realise that environmental issues need to be addressed for a number of reasons, including: consumer pressure, potential cost savings, legislation and ethics and have taken their first step towards transforming the nature of their processes and products to be proactive in environmental management. Maxwell *et al.* (1997) argue that such organisations will discover that well-formulated environmental strategies can lead to a number of advantages such as better quality, reduced costs, increased profitability, improved image and the opening of new markets. Further, studies have shown that in the business world, environmental performance and economic performance are positively linked, and corporate social responsibility and business are tightly interwoven. Over 80 per cent of Fortune 500 firms have written environmental charters. Many have also joined

industry alliances to pool resources and share risk in responding to the environmental pressures in their industry (Maxwell *et al.*, 1997).

Large multi-national corporations (MNCs) are in general at the forefront of appreciating that improving environmental practice and its management is good for business (Tsai and Child, 1997). Dechant and Altman (1994) report that contemporary environmentalism has become an integral part of organisational strategy. The authors list companies like Johnson & Johnson, Proctor and Gamble, IBM, Olin, Colgate-Palmolive which have set examples on how to integrate environmentalism into the business planning and operations in a manner that translates to bottom line profit. Efforts of these businesses demonstrate the growing shift in corporate environmental thinking from a mindset in which the environment is viewed primarily as a compliance with regulation to one that includes it as an overall part of strategic management, affecting decisions on product development, future procurement, technology and total quality programme. It is argued that a company without an environmental management system is going to lose out to a rival that has one (Hutchinson, 1992).

In all parts of an organisation a systems approach to attaining the goals of the enterprise is most likely to be successful. Failure to meet such goals is often a result of an ineffective system or alternatively, gaps in the system allowed mistakes and errors to occur. In environmental terms, at the core of the systems approach is the role of EMS which ensures that environmental performance is improved over time (Welford, 1996).

The prime focus of an EMS is to prevent adverse environmental effects and improve environmental performance by institutionalising various environmental programmes and practices such as initiating environmental-related performance measures and developing green technologies, processes and products. Therefore, EMS has been widely regarded as one of the tools to facilitate the implementation of corporate environmental sustainability by achieving improvements in environmental performance (Welford, 1996).

There are several EMS standards currently adopted by different regions and countries (Subhash, 1996). Environmental regulatory bodies and regulated organisations are seeking more efficient programmes to monitor and improve environmental performance. The early 1990s saw significant developments in the area of EMS. The British standards for EMS, BS7750 was introduced in 1992 and revised in 1994. Concurrently, the work on the European Union's environmental standard for companies began, and led to the launch of the Eco-Management and Audit Scheme (EMAS) in 1993 (Ritchie and Hayes, 1998).

In 1993, the ISO established a Technical Committee (TC 207) to develop and produce a set of unified, voluntary standards for environmental management that could be accepted and implemented worldwide. The ISO 14000 series (comprising ISO 14001, 14004, 14010, 14011 and 14012) which were published in 1996 have been developed to help any company in any country to meet the goal of 'sustainable development' and to provide guidance for developing a comprehensive approach to environmental management and for standardising key environmental tools of analysis such as labelling and life cycle assessment.

1.2 Objective and Significance of the Study

The primary objective of the study is to identify the critical decision criteria involved in the adoption of the ISO 14001-based Environmental Management System (EMS) in the oil and gas sector in Malaysia and to assess the level of effectiveness in implementing the system, to attain sustainable corporate environmental sustainability and competitiveness. In meeting these objectives, an empirical study was carried out using the analytical hierarchy process (AHP) approach which was performed to investigate the relative weights and priorities of these decision criteria and benefits.

The significance of the study is to demonstrate that an AHP decision model can be developed to assist organisations study ISO 14001 EMS adoption problems and issues. The decision model may be used to carry out follow-up studies which include the cost/benefit analysis and further investigation of the priorities among the critical criteria and elements of the ISO 14001 EMS implementation. Although derived based on the Malaysia oil and gas industry, the study can be tailored to different business needs and circumstances of EMS adoption and implementation. The collated findings of this empirical study may also be contrasted against other business circumstances and be used to address other business constraints and deficiencies.

1.3 Scope of the Study

The scope of the evaluation was narrowed to the oil and gas industry in Malaysia for two main reasons. Firstly, research indicates that the oil and gas industry has a direct significant impact on the environment and thus would be found on the extreme end of the spectrum of polluting industries with other less damaging businesses such as retailers and the service sector found on the other end (Welford, 1996). Thus, there is a heavier responsibility on the oil and gas industry to ensure strict control of environmental issues. In the 1970s and 1960s, there have been a number of large-scale industrial disasters which spurred global concerns about oil and gas, and the petrochemical industrial sectors – events such as the chemical disaster in Bhopal, India, the radiation release in Chernobly, USSR, the oil spill by Exxon Valdex off the coast of Alaska and the fire at a chemical warehouse in Basel, Switzerland.

Secondly, the petrochemical industries are larger establishments and thus have the financial leverage to be in the forefront for the implementation of environmental management systems. This is clearly obvious in Malaysia where the forerunners in the implementation of the ISO-14001 EMS are the oil and gas, and petrochemical companies. Most of the oil and gas, and related industries located within the petrochemical hub of Kertih (Terengganu) and

Gebeng Industrial Estate (Pahang) including Petronas, BP, Ethylene-Malaysia are ISO 14001 certified. Based on the consulting experience of ENVIRON, a US-based environmental and engineering consulting firm, implementation of the EMS in this industrial sector was observed to structured and systematic, with due importance given to all aspects of the system (ENVIRON, 2002). The industry is observed to be one of the more proactive and environmentally conscious sectors of the business community, creating a "pull' factor for others to follow. Thus, the attempt to build a decision model for EMS adoption would be more meaningful if the industry selected was one that was generally successful in implementing the EMS.

1.4 Limitations of the Study

The building of the AHP decision model has certain limitations in the process. For instance, where "clear thinking" is insufficient to make a decision, additional research and data gathering are required. Besides, it is tempting to make a premature decision since the AHP allows a problem to be solved with whatever amount of information is available. Thus, caution must be exercised when gathering information that is pertinent to the problem. One way is to ensure that sufficient basic information has been obtained so that informed judgements can be rendered (Saaty, 1980, 1990).

1.5 Organisation of the Study

In satisfying the research objectives of the study, the study is organised in five main chapters. The study begins with this introductory chapter which provides an overview of the study, its objectives and scope. This is followed by the chapter on the literature review on the following concepts which form the basis of this study: sustainable development, corporate environmental sustainability which is gaining increased consciousness in this new

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millennium, environmental management systems and standards, and the AHP methodology which can be used as a decision support tool.

Chapter Three describes the methodology of this research study including the structure of the questionnaire, the sample breakdown and the data processing which involves the use of a computer software, Expert Choice™. The following section, Chapter Four details the analysis of the research findings and presents the interpretation. In the final chapter of this research project, Chapter Five, the conclusions drawn from the study findings and recommendations for the future direction of the research are described.