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**Environmental Management in Multinational
Oil and Gas Exploration and Production Corporations
in Latin America**

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A MASTERS DEGREE PROJECT SUBMITTED TO
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ABSTRACT

Environmental Management in Multinational Oil and Gas Exploration and Production Corporations in Latin America

The development and implementation of strategic environmental management within multinational oil and gas exploration and production (E&P) corporations operating in Latin American countries as well as in Latin American countries themselves is not yet well addressed. This Masters Degree Project (MDP) identifies factors such as driving forces and barriers that affect the development and implementation of environmental management policies and practices. It also identifies other factors such as the political, social, economic and cultural differences between developed and Latin American countries that potentially affect the process of developing and implementing strategic environmental management in this field.

A literature review and a critical examination of existing models and factors affecting the development and implementation of strategic environmental management in Latin American countries are used to develop a model for both multinational oil and gas E&P corporations operating in Latin American countries and for Latin American countries themselves. This MDP identifies the main environmental management issues to be improved within Latin American countries as: environmental structure, environmental regulations, and human resources. It also identifies the main environmental management issues for multinational corporations as stakeholders, cultural differences, driving forces and barriers.

The two models proposed in this MDP are subject to change since the factors affecting the development and implementation of these models change over time. These models will also differ depending on the host country where they are to be applied.

Keywords: environmental management, environmental management tools, driving forces, barriers, Latin American countries, sustainable development, globalization, foreign direct investment.

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Chapter 1: Introduction

1.1 Background

There is growing interest in the area of corporate environmental management since companies are beginning to realize that environmental issues need to be addressed for a number of reasons, including: consumer pressure, potential cost savings, legislation and ethics (Welford,1998:9). Not only will this help companies to comply with environmental regulations but it will also help to improve businesses' performance. Corporate environmental management practices are considerably stronger than they used to be, with more companies integrating environmental responsibilities into their operations. However, unless environmental concerns are integrated into corporations' profit focus, they will necessarily have second-class status (Frankel,1998:14).

Current trends of globalization and the liberalization of trade are forcing companies around the world to compete with each other (Lemaire,1995:1). The complex interaction among environmental management components plays an essential role within corporations' development and performance, requiring a good understanding of strategy as well as implementation of environmental policies. Kirkland and Thompson (1999, In Press) have identified eight main components in designing, implementing and operating an environmental management system (see **figure No. 1**).

The international oil industry will need to raise production by over 40% by the year 2010 in order to satisfy the growing world demand for energy. This will require an investment "totaling tens of billions of dollars". In 1994, Latin America and the Caribbean accounted for 12.8% of total world oil production. Between 1975 and 1994 the region's oil reserves quadrupled to 14% of the world total. Based on this data and on analyses of trends in foreign direct investment by the United States in the international oil industry, the Economic Commission for Latin America and the Caribbean (ECLAC) concludes that, in the coming years, "a large increase in foreign investment can be predicted in the oil and gas sector in Latin America" (Online: <http://www.eclac.cl/english/news/Cronicaseng/icc96154.html>, Oct/10/98).

The emerging economies in Latin America are facing fundamental changes not only with the implementation of new economic policies but also with the transformation of their political, social and cultural patterns. Although there are many different politic trends,

democracy has existed in these countries for many years, and therefore, the political situation can be considered stable. Socially, there are still strong differences among social classes, but governments and international funding organizations have started to include social programs within their projects and investments. Latin America is also a mixture of many cultures, with different languages, races, customs, and religions, that make the interaction and understanding between them and other countries more complex. Current trends of globalization and technological advance are also making this interaction among different cultures more dynamic.

Because of the complexity of the situation, corporations investing in Latin America will require a good understanding of all factors affecting the various environmental management components if these are to be successfully implemented. This understanding will help to ensure not only good business performance, but long term profitability.

1.2 Objectives

The main objectives of this Masters Degree Project are:

- a) to determine optimum environmental management guidelines for selected countries in Latin America and multinational oil and gas corporations operating in these countries.
- b) to determine requirements for environmental management imposed by governments in selected Latin American countries.
- c) to determine environmental management practices followed by multinational oil and gas corporations presently operating in Latin America countries.
- d) to make recommendations to improve environmental management practices in both multinational oil and gas corporations and Latin America governments.

A case study involving the operations of one multinational petroleum producer was chosen based on the availability of information in a selected country of Latin America. Canadian Petroleum Occidental Ltd., a Canadian multinational operating in Colombia provided me with information to carry out this case study.

1.3 Methodology

The methodology followed to develop this Masters Degree Project includes a literature review, interviews and questionnaires, professional experience, analysis of data, intervention and change, and a case study.

1.3.1 Literature Review

A comprehensive literature review was carried out to gain insights and to obtain an understanding of environmental management tools; environmental driving forces; environmental barriers; the social, cultural, political and economic situation in Latin America; and the behavior of multinational corporations.

An initial review of the literature was done using CLAVIS on-line system at the University of Calgary (UofC). This system was searched for the key words of environmental management, environmental strategies within corporations, environmental driving forces and barriers, multinational corporations, and Latin America. Information related to these topics came primarily from textbooks, journals, periodicals, and MDPs produced within the Faculty of Environmental Design.

To complement this library research, additional information sources were contacted. These included professional associations (Society of Petroleum Engineers (SPE), The Society of Management Accountants of Canada (SMAC)); and regulatory agencies (Environmental Protection Agency (EPA), Canadian Association of Petroleum Producers (CAPP), The International Petroleum Industry Environmental Conservation Association (IPIECA)). Publications were also obtained directly from the United Nations Environment Program (UNEP), and from the Netherlands Oil & Gas Exploration and Production Association (NOGEPA).

Information regarding environmental regulatory issues and the hydrocarbon sector in selected Latin American countries was obtained during field research in September, 1997 and August, 1998. Valuable information and insights were also obtained from literature published by OLADE (Latin America Energy Organization) and from books, journals, and papers provided by Professor Al

Lucas, in the Faculty of Law (UofC), by Lila Barrera, OLADE's consultant and by Magdalena Muir, Professor at the Faculty of Continuing Education (UofC). Readings from the course Environmental Law in Latin America, taught by Professor Al Lucas at OLADE's headquarters in Quito, were also used.

Internet searches were also utilized. Published papers on selected topics were found at the home-pages of the United Nations Environmental Programme (UNEP), EPA, ECLAC, the World Bank, International Monetary Fund, Organization for Economic Cooperation and Development (OECD), and independent authors' publications. A variety of books, papers, and journals were provided by Dr. Dixon Thompson from his personal collection.

1.3.2 Interviews and Questionnaires

Key informants were selected based on their knowledge and experience of Multinational corporations and Latin America. These individuals included researchers and practitioners from universities, multinational corporations, Latin America government officials, international organizations and independent consultants.

In order to gain an understanding of how multinational corporations are focusing the development and implementation of their environmental policies and practices, senior and middle environmental managers from three different multinational oil and gas corporations (Shell Canada Limited, Trans-Canada Pipeline, and Canadian Occidental Petroleum Limited) were interviewed. Semi-structured questionnaires were used to carry out these interviews. The conceptual framework was obtained by interviewing researchers at The UofC (Dr. Dixon Thompson, Dr. Harrie Vredenburg, Ms. Magdalena Muir), the National Engineering University in Lima, Perú (Professor Victor Cataño), the National University San Antúnez de Mayolo (UNASAM) in Huaráz, Perú (Professor Edme Landeo, Vice-President), and the Escuela Politécnica Superior del Litoral (ESPOL), in Guayaquil, Ecuador (Dr. Alfredo Barriga). Both informal and semi-structured interviews were developed as a result.

Key informants were interviewed to strengthen the knowledge base and to gain valuable insights about selected countries in Latin America. Topics covered

include environmental management within governments and the social, political, cultural and economic situation of these countries. Key informants included official government representatives, researchers, environmental managers from multinational corporations and common people. For example, Dr. Amilkar Acosta, a Colombian Senator, Dr. Alfredo Barriga (Escuela Politécnica Superior del Litoral: ESPOL), Professor Edme Landeo (UNASAM), and three multinational oil and gas corporations managers (Canadian Petroleum in Colombia, Occidental Petroleum in Ecuador, and Shell Prospecting and Development in Perú). Informal and semi-structured questionnaires were used to accomplish these objectives.

The information obtained regarding multinational corporations and Latin America countries were used to develop the proposed environmental management model.

1.3.3 Professional Experience

My professional background working for a multinational oil and gas corporation for five years as reservoir, production and completion engineer, and dealing with people in Latin American countries in both government and private sectors provided me with guidelines to arrange appointments and formulate questionnaires about environmental management for the different stages of the oil and gas industry. My experience includes close communication with management level.

1.3.4 Analysis of Data

Since the majority of the data collected is qualitative (i.e. interviews, description of human and organizations activities), the analysis was carried out using strategies recommended by Robson (1993:377-384). For example, exploring data, chronologies, and key events. The exploration of this data was carried out through a literature review. Chronologies and key events were used to develop the case study. Other techniques such as feedback procedures with practitioners and researchers, professional experience, and knowledge gained in EVDS courses were used to develop models for environmental management for both Latin America countries and multinational oil and gas corporations operating in the region. These models represent the conclusion of my research and they

may be subject to a critique and further comments. Since these models represent a dynamic process, they will vary over time, mainly influenced by worldwide trends and environmental policies being implemented within Latin America countries.

1.3.5 Intervention and Change

This methodology helps to assist in deciding on some kind of change. In the case of an existing system or practice, how might it be improved or made more effective? (Robson,1993:430). Five of seven steps presented by Robson (1993:437) were used to develop an environmental model for selected Latin America countries and Multinationals operating in these countries. These steps are:

- developing a need for change
- diagnosis of problem
- examination of alternatives goals and formulation of plans for action
- development of innovations based on plans for action
- generalizing and stabilizing the change

This methodology was used to adapt current environmental management models to the Latin American situation.

1.3.6 Case Study

“The Case study is a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence” (Robson,1993:5). According to the different types of case studies identified by Robson (1993:147), I will use Studies of organizations and institutions.

Canadian Occidental Petroleum Limited (CanadianOxy), a Canadian multinational with operations around the world, agreed to provide me with information for my research topic. CanadianOxy is currently operating in Colombia as Canadian Petroleum Colombia Limited.

CanadianOxy is in the exploration stage at three different oil fields. Due to the current social and political situation in Colombia CanadianOxy is facing an interesting situation, where environmental management is playing a key role with regard to its success in its investments. Full cooperation in materials, interviews and access to its library was provided both in Calgary, where its headquarters is located, and in Bogota, Colombia.

1.4 Limitations of the Research

The main limitations found during the development of this project were:

- a) Contacting multinational oil and gas corporations currently operating in Latin America countries. Those who were contacted, mostly Canadian multinationals, are in exploration. Therefore, only their environmental management practices corresponding to this stage of their operations were reviewed;
- b) Interviews with government officials. Although I went to selected countries in Latin America on two occasions, it was difficult to arrange appointments due to the short time I spent in these countries, and because they were extremely busy; and,
- c) Contacting people in the stakeholder group. Due to the limited time available not many people could be interviewed. Their points of view were therefore obtained through a literature review.

1.5 Document Overview

This MDP is divided into 7 chapters:

Chapter 1: Describes the purpose, objectives and the different methodologies used to develop this MDP, as well as the limitations found during this process.

Chapter 2: Presents the different environmental management elements such as environmental management tools, environmental driving forces, and barriers to environmental management, and describes how these elements are affecting the development and implementation of environmental policies and practices within multinational corporations in Latin American countries.

Chapter 3: Addresses the nature and role of multinational corporations, and provides an overview of current globalization trends and foreign direct investments. This chapter also describes strategic environmental management presently used by multinational corporations and a general overview of multinational oil and gas E&P corporations.

Chapter 4: Provides an overview of the Latin America situation, including social, economic, political, and economic issues, and how the globalization has influenced the development of new economic policies oriented to trade liberalization as well as to open new markets to foreign direct investments. This chapter also describes current environmental management followed by selected Latin American countries in the hydrocarbon sector.

Chapter 5: Proposes an environmental management model for selected Latin American countries as well as for multinationals investing in the hydrocarbon sector in these countries. These models are based on experience gained by some multinational corporations operating in Latin America, current environmental practices followed by others, and trends in development of environmental, economic and social policies.

Chapter 6: Presents a case study. Describes the environmental policies and practices followed by CanadianOxy in both Canada and Colombia, a very sensitive environmental area in Latin America.

Chapter 7: Provides conclusions and recommendations.

Chapter 2: Environmental Management

2.1 Introduction

This chapter will define and describe environmental management and its interrelated elements: environmental management tools, environmental driving forces and barriers to environmental management. These three elements are dynamic since their degrees of applicability and enforcement are constantly changing (i.e. international agreements, environmental regulations, voluntary compliance programmes, stakeholders involved). The dynamics and interaction among these elements must be well understood in order to address the issues associated with them.

The risks of investment for oil and gas companies working in the exploration and production stages is high. For example, 76% of exploration wells and 27% of production wells drilled in the U.S. in 1991 were dry holes (Pearce II and Robinson, 1997: Section B-34). A sound understanding and careful application of the environmental management elements are required in order to reduce other risks such as stakeholder pressures and concerns, international pressures, social and economic instability, etc.

Latin America, a potential oil and gas source for the next century, is facing new social, political and economic challenges. Any company investing in these countries should carefully understand the dynamics and interrelation of environmental management elements in order to reduce investment risks and ensuring long-term profitability.

2.2 Definition

Environmental Management can be defined in many ways. Two common definitions are:

- a) the setting, achieving of goals, assessing performance and providing feedback to protect the environment and conserve resources (Thompson, 1997:221).
- b) a systematic approach to environmental care in all aspects of business (UNEP, 1995:1-1).

This MDP will deal with these two definitions as applied to multinational oil and gas corporations as well as to Latin American governments, including:

- a) developing strategic environmental behavior
- b) setting targets and goals
- c) assessing risks and setting priorities
- d) monitoring performance for necessary adjustments through assessing environmental indicators and feedback

There are many ways to approach the implementation of environmental management. In order to organize the different environmental issues or factors affecting the implementation of sound environmental management, these are grouped into the following elements:

- a) environmental management tools
- b) environmental driving forces
- c) barriers to environmental management

In order to gain a sound understanding of the elements that influence the process of setting corporate and government's environmental policies and practices, a detailed description of each of these is given below.

2.3 Environmental Management Tools

The use of sets of environmental management tools such as environmental impact assessment, risk assessment, and environmental audits allows institutions to anticipate and avoid problems in a proactive rather than reactive way (Thompson, 1997:246). In addition, when properly managed, these tools can provide companies with a competitive advantage by improving their public image, implementing cost savings programmes, and gaining new markets. The following sets of environmental management tools were identified in the literature by researchers, institutions and organizations, and are currently being applied in decision making processes:

Kirkland, L. and Thompson, D.: *(Business Strategy and the Environment: Vol 8, 1999: In Press).*

1. list of driving forces
2. list of barriers

3. strategic environmental planning
4. Environmental programmes (policies, goals, objectives)
5. environmental management structure
6. environmental policy statements
7. environmental impact assessment
8. environmental site assessment
9. environmental audits
10. product and technology assessment
11. life cycle assessment and life cycle costing
12. environmental indicators and reporting
13. risk management
14. purchasing guidelines
15. economic instruments
16. accounting practices
17. education and training
18. ergonomics
19. information management systems
20. joint implementation
21. the natural step
22. ecological management
23. Geographic Information Systems

Welford, R.: *(Corporate Environmental Management: Part 2,1998).*

1. environmental management systems
2. environmental policies
3. environmental guidelines and charters
4. environmental auditing
5. life cycle assessment
6. environmental performance
7. environmental reporting

Hodge, R.: *(Business Responses to Sustainable Development: Project Implications,1998).*

1. social impact assessment
2. environmental impact assessment

3. pollution prevention
4. environmental management systems
5. life cycle analysis
6. design for the environment
7. hazard evaluation
8. total cost assessment
9. eco-efficiency

Netherlands Oil and Gas E&P Association (NOGEPA): *(Environmental Care Systems Guide, 1990).*

1. environmental policy statement
2. environmental programme
3. integration of environmental care system within the management system
4. information, education and training
5. process management measurements and registration
6. inspection
7. internal and external reporting
8. environmental audits

Environmental Management Systems such as ISO 14000 (International Standards Organization), BS 7750 (British Standards) , CSA Z750 (Canadian Standards Authority) have identified their own sets of management tools (Welford, 1998:35-92). Some of these are currently being used by multinational oil and gas E&P corporations as well as by Latin American countries to address environmental management policies and practices.

According to KPMG Environmental Services Inc. survey on Canadian environmental management, in 1994 (KPMG, 1994), 69% of Canadian companies claimed to have an environmental management system in place, but only 3% of those companies had all of the vital components of an EMS. In 1996 (KPMG, 1996), a similar survey showed that 64% of Canadian companies claimed to have an environmental management system in place, while only 15% had an EMS.

An awareness of the use of their environmental management tools, the forces driving their development, and the barriers to implement action, highlighted the need to explore these tools in a new scenario and to formulate models for their successful development

and application in Latin America. Based on the author's five years of experience in the oil and gas industry, the literature review and case study reviewed for this MDP, the following elements are deemed to be most important for the oil and gas industry in Latin America:

1. strategic environmental planning
2. environmental management structure
3. environmental policy
4. environmental impact assessment
5. environmental audit
6. environmental reports
7. environmental indicators
8. product and technology assessments
9. life cycle assessment
10. life cycle costing
11. new systems of accounting
12. economic instruments
13. education and training
14. risk management

In the following section, a brief description of each of the above environmental management tools is provided to illustrate their use by multinational corporations.

2.3.1 Strategic Environmental Planning

Strategies are the major longer-term decisions about what a corporation, government, or institution wants to achieve and how this will be accomplished (Thompson,1997:229). Strategic Planning has to do with decisions early in the development of plans, policies, and programmes, before specific projects, products, or actions are implemented (Thompson,1997:229). Due to their longer time horizons, strategic plans are made with no certainty with the result that accurately forecasting what will happen far into the future is difficult. Strategic planning is ends-oriented, establishing corporate ends without focusing on the means. Finally, strategic plans involve major commitments of present and future resources, and therefore, they tend to have an irreversible impact. It is a proactive rather than a reactive process.

At this point, it is useful to mention four examples of strategic environmental plans. Two of these were carried out by two multinational oil and gas corporations starting to operate in Latin America, and two by Latin America governments:

- CanadianOxy in Colombia: environmental programmes are being implemented from the beginning of the exploration phase. Social programmes and environmental concerns are playing important roles within their decision making processes (CanadianPetroleum,1997)
- Shell Prospecting and Development in Peru: public consultation has been carried out. Environmental strategic plans were designed in order to safeguard their investment (Jones,1997:87).
- The Colombian government has signed a five year cooperation project with the Canadian International Development Agency (CIDA) to improve the country's environmental policies and practices for the mining and petroleum industries. This project, called the *Canada-Colombia Project on Energy, Mines and Environment*, is being carried out by the Canadian Energy Research Institute (CERI).
- The Peruvian government has signed a five year cooperation project with CIDA to improve the country's environmental policies and practices in the hydrocarbon sector. This project, called the *Perú Petroleum Regulatory Assistance Project*, is being carried out by the Canadian Institute for Petroleum Industry Development (CIPID).

2.3.2 Environmental Management Structure

An environmental management structure is the organization of decision-making and the flow of information within a corporation or institution. It is the formal and informal system for gathering and processing information, reporting, and making decisions. To be successful such a structure must be fully integrated with the rest of the management structure and effectively linked to the external elements which affect the institution. For example, a corporate environmental

strategy cannot be implemented successfully unless top management supports its implementation and demonstrates a consistent commitment to the concept (Thompson,1997:230). There must also be open lines of communication between Health, Safety and Environment (HSE) executives and senior management, middle management, and employees (Epstein,1995:8).

Organizations can vary widely in both their structure and the roles played by individuals within that structure, yet have equally effective environmental management systems (Cascio, Woodside and Mitchell,1996:118). Given that the environmental policies and practices followed by a corporation play a key role in the decision-making process for new investments, the acquisition of new markets, and maintaining competitiveness, the environmental management structure and responsibility is very important within multinational oil and gas corporations.

In order to avoid gaps appearing in a company's environmental management system, it is necessary to allocate a number of well-defined tasks, responsibilities and powers within the group. The mere statement that the company "will be responsible for environmental matters" without any further specification or reference will not do (KPMG,1993:8a).

2.3.3 Environmental Policy

The ISO 14001 defines an environmental policy as a "statement by the organization of its intentions and principles, in relation to its overall environmental performance which provides a framework for action and for the setting of its environmental objectives and targets" (Cascio, Woodside, and Mitchell,1996:99). The Canadian Standard Association (CSA) states that such a policy establishes an overall sense of direction and sets the parameters of action for an organization. The responsibility for setting this policy rests with those with proprietary interest in the organization or their delegates (i.e. a board of directors). The CSA also states that the organization's management is responsible for implementing the policy and for providing input to its formulation and modification. According to the CSA, an environmental policy should include the following elements (Epstein,1995:9):

- **The Organization's Mission:** the reason an organization exists, the societal need it fulfills, and its fundamental business focus

- **The Organization's Vision:** the state to which the organization aspires
- **Core Values and Beliefs:** part of the culture and ethical position of the organization
- **Stakeholder Requirements:** refers to the expectations of shareholders, customers, lenders, regulators, policy makers, employees, consumers, community, and environmental groups
- **Guiding Principles:** serve to focus the actions of the organization and can provide an ethical position in areas of importance to the organization and its stakeholders.

KPMG suggest that an environmental policy statement has a dual purpose. First of all, in the company or organization itself, to clarify the policy pursued and to ensure employee involvement. Secondly, to demonstrate to third parties how environmental matters feature in the whole of the company's operations (KPMG,1993:1a). Thompson (1997:231) states that environmental policies should be regularly reviewed, updated, and re-endorsed by senior management.

2.3.4 Environmental Impact Assessment

Environmental impact assessment (EIA) is defined by the Organization for Economic Cooperation and Development (OECD) as a process for examining, analyzing, and assessing proposed activities in order to minimize environmental degradation and maximize the potential for environmentally sound and sustainable development (OECD,1995:20). The United Nations Environmental Programme (UNEP) defines EIA as a formal study process used to predict and mitigate the environmental consequences of a proposed major development project.

The purpose of an EIA, according to The Conference Board of Canada, is to:

- Support the goals of environmental protection and sustainable development
- Integrate environmental protection and economic decision making at the earliest stages of planning
- Predict the environmental, social, economic and cultural consequences of a proposed activity and to assess plans to mitigate any resulting adverse impacts

- Involve the public, proponents and Government departments and agencies in the review of proposed activities

An EIA is one of the oldest, most fully developed of the environmental management tools (Thompson, 1997:232). EIA is a management tool for officials and managers who must make important decisions about development projects. While economic and engineering studies provide the basis for designing robust and economically viable projects, EIA is now seen as an equally important design tool.

According to UNEP, it is extremely risky to undertake, finance, or approve a major project without first assessing its environmental consequences. The following are the important principles, followed by UNEP, in managing an EIA:

- Focus on the main issues of the project
- Involve the appropriate persons or groups
- Link information to decisions about the project
- Present clear options for the mitigation of impacts and for sound environmental management
- Provide information in a form useful to the decision-makers

In 1991, the World Bank has published (World Bank, 1991: Volumes I, II, and III) an Environmental Assessment Sourcebook divided into three volumes. These include:

- Volume I: Policies, Procedures and Cross-Sectoral Issues
- Volume II: Sectoral Guidelines; and,
- Volume III: Guidelines for Environmental Assessment of Energy and Industry Projects

This sourcebook is designed to assist those involved in environmental assessment. For example, by providing borrowing countries with Bank Policy on EIA and describing the parts of the project that are of particular concern to the Bank. Particular emphasis is placed on those operations with major potential for negative environmental impacts such as new infrastructure, dams and highways. It is the policy of the World Bank that all projects funded by the Bank must meet the environmental requirements outlined in this sourcebook.

2.3.5 Environmental Audit

Environmental Audit as defined by the International Chamber of Commerce in 1989, is a management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organization, management systems, and equipment are performing with the aim of helping to safeguard the environment. This evaluation is undertaken through facilitating management control of environmental practices and by assessing compliance with company policies, which would include regulatory requirements (Tan and Hartog, 1992:86).

Oil & gas exploration and production activities are subject to various local regulations and permits that limit their impact on the environment. For example, regulations that limit the level of effluent discharges as well as air emissions and waste disposal (Tan and Hartog, 1992:86). The Society of Management Accountants of Canada states that environmental audits are often conducted in response to broader pollution control legislation (Epstein, 1995:20). An environmental audit makes good sense for companies who want to organize their activities in order to identify and minimize the environmental problems they face (Cotton and Cobb, 1994:17:3).

The Society of Management Accountants of Canada has identified a number of environmental audits that vary with the type of business being audited, the reason for the audit, and the depth and breadth of the audit. The environmental audit types identified include the following seven types (Epstein, 1995:22-24):

1. **Compliance Audit:** This is the most common environmental audit. Environmental laws can impose joint and several liability, retroactive liability, and civil and criminal penalties for non-compliance. This audits includes a detailed, site-specific audit of current, past, and future operations.
2. **EMS Audit:** This is a crucial component of any environmental audit. Focusing on management systems can identify the typical underlying causes of non-compliance with environmental regulations. An environmental audit verifies the existence and use of appropriate on-site management systems to reduce the environmental impact of the project or operation.

3. **Due Diligence Audit:** This audit assesses the environmental risks and liabilities of land or facilities before a real estate acquisition or business divestiture. These audits are important because both sellers and buyers need to know the extent of any liability due to environmental contamination.
4. **Treatment, Storage and Disposal Facility Audit:** Current regulations often require that hazardous material be tracked from “cradle to grave”. Although companies that produce hazardous waste material may contract with other companies to store, treat, or dispose of this material, companies are still liable for any environmental damage that may be caused by the “handling” company.
5. **Pollution Prevention Audit:** This audit is designed to avoid or minimize the creation of pollutants and waste at the source rather than at the “end of pipe”. Pollution prevention can be identified throughout the production process.
6. **Environmental Liability Accrual Audit:** This addresses the issues of “probably and estimable” in determining environmental liabilities to be accrued for financial reporting.
7. **Product Audit:** A number of some companies perform audits on specific products and their distribution to determine whether more should be done to make these products environmental friendly and to confirm that product and chemical restrictions are met. This audit also assesses packaging materials for their recyclability or recoverability.

In the course of business transactions, from the sale of assets or shares, to the lease of a facility, environmental audits are increasingly being used by vendors, purchasers, landlords, tenants, lenders and mortgagees to identify, evaluate and allocate environmental risks (Cotton and Cobb, 1994:17:3). For example:

“Environmental audit is a very important tool to be able to verify that your policies, your management structure and all the components of your environmental management system are in place and are working ... environmental audit is a business improving tool and due diligence insurer tool as well”. (Gary J. Mann, Manager, EH&S, Wascana Energy. A subsidiary of CanOxy).

There are three recognized stages to an environmental audit (Bhargava and Welford,1998:129-131). They are:

1. Pre-Audit

- a) Planning the audit scope, providing a framework for setting goals and objectives, developing strategies and scheduling the audit process
- b) Selecting members of the audit team (this will consist of people chosen for their expertise not only in environmental matters but also having knowledge of the industry)
- c) Getting to know the industry and company to be audited. A useful strategy is to use pre-survey questionnaires submitted to management
- d) Questionnaires may also be sent to a representative sample of the workforce asking about key issues such as communications, planning and working conditions

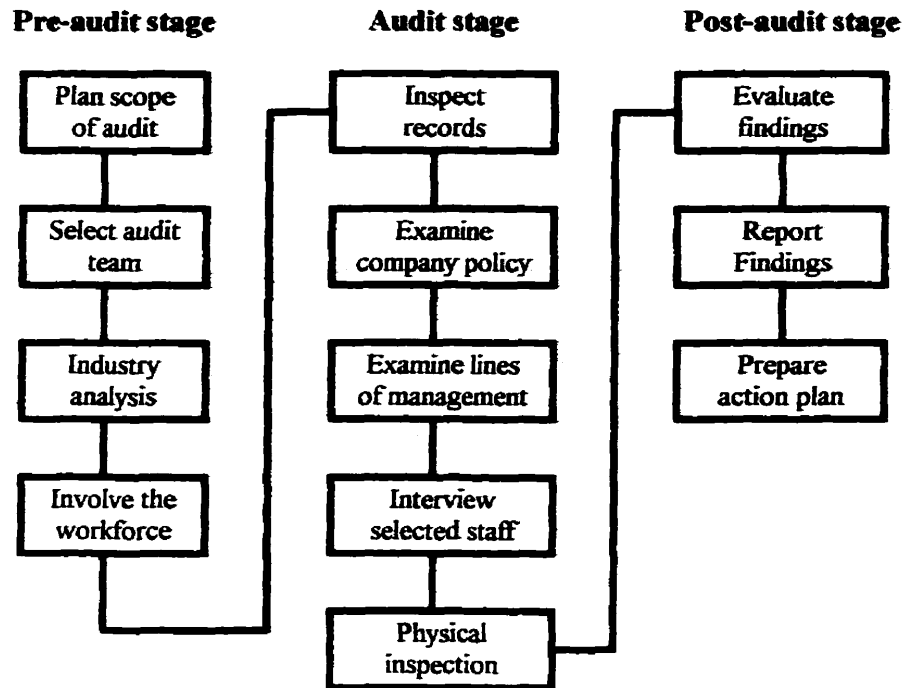
2. Audit

- a) An inspection of records kept by the company
- b) The examination of inspection and maintenance programmes and the company's own policy on what to do in the event of spills and other accidents
- c) The examination of lines of management and responsibility, competence of personnel, and systems of authorization
- d) A confidential interview of selected staff at all levels of operation with a view of collecting information
- e) A physical inspection of the plant, working practices, office management systems, and surrounding areas

3. Post-Audit

- a) Confirming that there is sufficient evidence on which to base and justify a set of findings, and evaluating the audit information and observations
- b) Reporting the audit findings in written form and in discussion with the management of the audited company
- c) This will often result in the development of an action plan to address deficiencies

Fig 2-2. Stages of an Environmental Audit



Adapted from Bhargava and Welford's (1998:129).

2.3.6 Environmental Reports

Environmental reports are systematic, objective reports of the state of the environment, or an institution's or corporation's impact on the environment and consumption of resources. This type of report must show trends and be linked to goals and objectives. Thompson (1997:244) states that environmental reports are critical in establishing baselines for the development or adjustment of policies, as well as establishing trends for environmental impact assessments.

Internal and external environmental reporting procedures were identified by a review of existing literature as well as current government and industry practices. According to the Netherlands Oil and Gas E&P Production Association (NOGEPA,1990:18), the purpose of internal reporting is to inform senior and

middle management of problems as well as progress in environmental plans. On the other hand, whereas external reporting provides the authorities and third parties (neighbours, environmental organizations, etc.) with information on the functioning of the Company's EMS. Even though standardized environmental reporting procedures have yet to be established, numerous organizations have been working diligently to develop a format that would be useful to the producers of the reports and useful to the various users. According to NOGEPa, internal and external reports should include the following points:

Internal report

- Progress and results of the initiated actions
- The functioning of the environmental management system
- Results of measurements and registrations
- Problem areas
- Incidents/accidents
- Complaints
- Contacts with the authorities

External report

- The Company's environmental policy statement
- The main features of the Company's environmental management systems
- The environmental programme and the implementation of activities
- An overview of existing permits and applications for new permits
- Description of the main features of the production process
- Developments within the Company relevant to the environment
- Internal information and training
- Important measurement and registration data concerning emissions to air, water and soil
- Incidents/accidents
- Important results and conclusions of internal inspections and audits
- Overview of complaints
- Contacts with the authorities

2.3.7 Environmental Indicators

Environmental indicators are specific measurements of the quality of the environment, the stresses on it, or effectiveness of steps taken to reduce those stresses. These indicators used in preparing environmental reports and assisting managers. For a broader picture of performance, indicators are collected to describe the state of the environment or to report on an organization's overall environmental performance (Thompson,1997:242).

Thompson concludes that the characteristic of good indicators and the requirements for corporate environmental reports should include the following factors:

- A discussion of the EMS
- Quantified performance data
- Results of environmental initiatives provided
- Inclusion of good news and bad news
- Complete reporting of fines, accidents, spills, or excesses
- Published environmental policies
- Established targets
- Environmental audit information
- Results of waste management programmes
- Inclusion of a prepaid comment card
- Information on community relations
- Information on worker health and safety
- Description of research and development
- Issues clearly defined

2.3.8 Product And Technology Assessments

Product and technology assessment are efforts to predict and then reduce the adverse environmental, health, and safety impacts of products and technologies (Thompson,1997:239). Thompson states that concern about waste, recycling, reuse, and proper disposal is rapidly increasing as consumers and government demand lower-impact products. The Society of Management Accountants of

Canada (SMAC) states that Design for the Environment (DfE) is emerging as the term describing the philosophy of integrating environmental considerations into the design process and it takes into consideration (Epstein,1995:29):

- The production process: raw materials use, energy consumption, pollution prevention, solid waste
- Designing for pollution prevention
- Designing for resource conservation
- Designing for disposal: landfill issues, incineration issues;
- Designing for non-disposal

Thompson (1997:240) has identified a numbers of activities that incorporate elements of product and technology assessment and set precedents. These include:

- Safety and emissions regulations for automobiles
- Health and safety requirements for children's toys, clothing, car seats, etc.
- Regulations governing drugs and food additives
- Regulations governing the scale and use of pesticides

By designing corporate environmental strategies and policies that are oriented toward environmental planning rather than compliance, companies can substantially reduce environmental impacts through process and product designs. Companies are recognizing that, by focusing on process and product design rather than on pollution control and cleanup, they can significantly increase future profitability (Epstein,1995:31).

The are important implications of product and technology assessment for oil and gas companies. For example, in order to reduce greenhouse gas emissions these companies are implementing the use of the "best practical technology" for minimizing emissions. In general, this process is based on technology which has already been identified, although perhaps not yet fully developed (Callaghan,1992:98-103).

New trends in corporate environmental management show that product

recycling and takeback are cost-effective and even profitable (online: www.cutter.com/envibusi/reports/prodstew.htm, Oct/05/98). A number of countries are advancing this new technology. For example, the German Federal Government issued a Packaging Ordinance in June 1991. The main thrust of this regulation is the requirement that packaging must be taken back by its manufacturers or retailers and reintroduced into a material recycling chain. Due to this regulation, recycling of packaging was increased dramatically in Germany. According to the Waste Age Magazine packaging consumption in the country declined by 500,000 tonnes between 1991 and 1992.

2.3.9 Life Cycle Assessment

Life cycle assessment (LCA) is the evaluation of a particular material or activity from raw materials to final disposal, other wise called the “cradle-to-grave” approach (Mohin,1994:313). LCA addresses environmental problems and degradation at the source, it tries to prevent problems rather than create problems for remediation at some future time (Mohin,1994:313). According to SMAC, the primary objectives for most organizations in carrying out a LCA are:

- To provide as complete a picture as possible of the interactions of activities with the environment
- To contribute to understanding the overall and interdependent nature of the environmental consequences of human activities
- To provide decision-makers with information that defines the environmental effects of these activities and identifies opportunities for environmental improvements

Thompson states that the main difficulty in performing a LCA is the availability of appropriate data bases for the environmental stress associated with the use of various materials, processes, and recycling and disposal options. The literature has identified four steps to develop a LCA. These are:

1. **Determining the Goals and Scope:** the first step is to identify which issues are pertinent to the particular study product/activity, in each of its life-cycle stages, and to identify specific environmental vulnerabilities

2. **Inventory Analysis:** the second step quantifies energy and raw material inputs and air, water and waste outputs associated with each phase in the product life-cycle from raw materials acquisition to disposal
3. **Impact Assessment:** this step characterizes the effects (e.g. ecological, health, economic, esthetic) and significance of the pollutants identified in an inventory analysis. This is usually accomplished by completing an assessment matrix in which relevant impacts are qualified
4. **Improvement Analysis:** this final step evaluates the options for reducing the environmental impact of the product/activity or process, considering its environmental vulnerabilities and strengths

2.3.10 Life Cycle Costing

Life cycle costing (LCC) attempts to determine amortized capital cost and the operation and maintenance costs of efforts to reduce environmental damage to conserve resources. LCC is used to assess the cost effectiveness of opportunities identified by LCA (Thompson,1995:322). To successfully implement a corporate environmental strategy, decision-makers require precise information about the environmental costs of the company's products, processes, and activities (Epstein,1996:4).

Organizations define environmental costs depending on how they intend to use the information and the scale and scope of them. The U.S. Environmental Protection Agency (EPA) and the Global Environmental Management Initiative (GEMI) provide frameworks for identifying environmental costs. There are four main costs identified by these groups. These are (Epstein,1996:5):

1. **Conventional Company Costs:** include costs typically recognized in investment analysis and appraisal such as capital equipment and raw materials
2. **Potentially Hidden Costs:** result from activities undertaken to a) comply with environmental law (i.e. regulatory costs), and b) go beyond compliance (i.e. voluntary programmes)

3. **Contingent Costs:** are costs that may or may not be incurred in the future, such as the cost of remedying and compensating for future accidental pollution
4. **Image/Relationship Costs:** are costs incurred to affect the subjective perception of stakeholders, such as the costs of annual environmental reports and community relations activities

The SMAC has identified the following five tools and techniques that can help companies define the activities, processes, and products that cause environmental costs:

- allocation of environmental costs
- life-cycle assessment
- hierarchical cost analysis
- activity-based costing
- quantification and monetization of externalities and full environmental cost accounting

2.3.11 Accounting Practices

New systems of accounting attempt to take into consideration those factors of environmental liability or degradation and resource depletion which have hitherto been considered as externalities. Thompson (1997:245) states that new systems of accounting include three different but somewhat related aspects that are currently confused in terms and methodologies:

- Efforts to identify and account for direct, internal environmental costs and liabilities under current accounting practices. Revenues and benefits must also be identified
- Efforts to identify all external, but quantifiable, environmental costs and to internalize them (full cost accounting)

- Efforts to replace the gross domestic product (GDP) with a more realistic measures of national economic well-being and progress by introducing measurements of environmental degradation and resource depletion

Bennett and James (1997:113-127) have identified the following potential benefits of environmental management accounting:

- Demonstrating the income statement and/or balance sheet impact of environmental-related activities
- Identifying cost reduction and other improvement opportunities
- Prioritizing environmental actions
- Guiding product pricing, mix and development decisions
- Enhancing customer value
- Future-proofing investment and other decisions with long-term consequences
- Assessing the eco-efficiency and/or sustainability of a company's activities

2.3.12 Economic Instruments

Economic instruments are efforts to alter the prices of resources and of goods and services in the marketplace via some form of government action that will affect the cost of production and/or consumption (Schmidheiny,1995:19). These instruments include deposit-return systems, effluent and emission fees, tradable emission and effluent fees, disposal fees, and recycling credits, fee-bates, subsidies, grants and tax exemptions and credits, user pay pricing consumption taxes, etc (Thompson,1997:244). The growing interest in the use of economic instruments comes from the following four needs:

- To provide continuous rewards and incentives for continuous improvements
- To use markets more effectively in achieving environmental objectives
- To find more cost-effective ways for both government and industry to achieve these same objectives
- To move from pollution control to pollution prevention

2.3.13 Education And Training

Education and training are instruments designed to secure expertise, motivation and commitment of all company employees. The UNEP (1995:3.6-1) states that an effective and ongoing education and training programmes are necessary for all levels of the enterprise as it implements environmental management systems. To gain new commitment to environmental management, the following criteria should be addressed:

- Employees need to be aware of the environmental issues that the enterprise is facing and how their actions can influence the environmental performance of their enterprise
- Managers need to be aware of the importance of good environmental management and control
- Managers and employees with environmental responsibilities need to have a detailed technical knowledge to ensure that legal and business requirements and standards are met

Because the tools are constantly being improved on the basis of the continuous improvement model, education and training programme for employees in corporations, government, and other institutions will be essential (Thompson,1997:245). The benefits of education and training can be quickly lost if employees feel that these programmes are carried out in a vacuum or that higher managers, at whatever level, are not interested in their attempts to apply new found knowledge and understanding (UNEP,1995:3.6-7). NOGEP (1990) has identified the following subjects that may be treated in order to enhance the knowledge, motivation and commitment of employees towards environmental care:

- The environmental policy and the importance of a sound environmental policy
- Introduction of the Company's environmental management system
- Internal standards, procedures and instructions

- Environmental legislation
- Environmental problems in general
- Specific Company's environmental problems
- Technical and organizational measures to prevent or minimize emissions
- Environmental care on the job

2.3.14 Risk Management

The concept of risk management, which is closely related to the Precautionary Principle, involves assessing an environmental risk or potential environmental impact and making decisions based on that assessment (OECD,1995:17). Risk management systems are required to inform management about the company's EH&S risks, their relative importance, and how they are being managed. A risk management system also ensures that the company has set priorities and allocated resources to quickly address the more serious risks (Epstein,1995:19).

Risk management deals with hazards that threaten a community or population and the probability that the hazardous event will occur. Society is moving from a dominance of "old-type" risks imposed by nature, such as plagues, floods, and earthquakes, to "new-style" risks, which are "manufactured" through developments in science and technology. In today's society, environmental risks are among the top concerns voiced about the future. Companies are increasingly required to demonstrate that they conduct their business in an environmentally and socially responsible manner (Wilkinson,1997:936).

Every day, businesses make decisions that involve managing environmental risks. For example the selection of a new pipeline route. Risk decisions involve complex value-laden judgments (e.g., determining an acceptable level of risk in terms of safety and how safe is "safe"). Although there are often sound scientific methods for assessing the risks and uncertainties of the individual elements required to make a decision, there is no scientific method for determining the right answer. Instead, all relevant factors concerning the levels of risks (impacts on public health and the environment) and the possible benefits (wealth and job creation and improved lifestyle) must be weighed and balanced within a semi-subjective process (Wilkinson,1997:937). Risk Management therefore includes the following six basic components:

- Risk identification
- Risk analysis
- Risk control or mitigation
- Risk communication
- Risk perception
- Emergency response

2.4 Environmental Driving Forces

The implementation of environmental policies and practices within both Latin American countries and multinational oil and gas E&P corporations are being pushed by many environmental driving forces. The following general driving forces were identified in the literature review conducted for this research:

Dixon Thompson: (Environmental Management, 1997)

1. Environmental laws and enforcement
2. Civil liabilities
3. Banks and investors
4. Employee concerns
5. Customer requirements
6. Insurance companies
7. Stakeholders
8. Environmental non-governmental organizations
9. International standards
10. Industry and institutional associations

Thompson includes this list of driving forces as an environmental management tool due to its role in starting action, identifying benefits and designing EMS (1999: In Press).

Kirkland, L. and Thompson D.: (Forces Driving Environmental Management in Oil and Gas Companies, 1997).

1. Liability (criminal and civil)
2. Regulatory regimes (including voluntary)

3. Industry and professional standards
4. Financial requirements
5. Accounting practices
6. Corporate image
7. Requirements by partners
8. Cost effectiveness

KPMG: (Canadian Environmental Management Survey, 1994, 1996).

1. Compliance with regulations
2. Board of Directors' Liability
3. Employees
4. Cost savings
5. Customer requirements
6. Insurers' requirements

Thompson(*) and OLADE Students: (Environmental Management course, 1998).

(*): Professor Thompson teaches an Environmental Management course at OLADE's headquarters (Organización Latino Americana de Energía) in Quito, Ecuador within a cooperation project between OLADE and The University of Calgary. During a class exercise in 1998, the graduate students in the course identified the following list of driving forces for Latin America:

1. International agreements
2. Balance of payment / currency exchange rate
3. Markets
4. Public opinion / awareness
5. Foreign aid
6. Investors
7. Regulation and enforcement
8. Cost savings
9. Environmental insurance markets In Latin America
10. ISO 14000
11. Compliance

12. International standards.
13. The bank
14. Civil liability

The literature does not provide significantly information in identifying specific driving forces for the oil and gas industry in Latin America. From the above sets of environmental driving forces and adding those identified through interviews with industry and government representatives in selected countries in Latin America, the following are demonstrated to be the most important for the oil and gas industry in Latin America:

1. Lending institutions
2. Regulatory requirements
3. Insurance companies
4. Demands of sustainable development
5. Markets
6. Stakeholders
7. Voluntary environmental programmes
8. Investors
9. Environmental liability
10. Environmental non-governmental organizations
11. Industry associations
12. Public concerns
13. International standards
14. International agreements

I will now provide with a brief description of each of the above environmental driving forces to understand why and how multinationals are implementing EMS.

2.4.1 Lending Institutions

International financial institutions and bankers know that under certain circumstances they may be held responsible by society through the legal systems for the environmental wrongs of their borrowers. For example, multilateral banks have come under fire from international environmental interest groups for funding development projects resulting in the destruction of large areas of tropical forest

in Brazil (Little,1996:2). To limit this risk, lending institutions are now beginning to consider eco-efficiency in their lending decisions on the assumption that countries and companies with poor environmental performance pose a high financial risk (Schmidheiny and Zorraquin,1996:XXIII).

The importance of multilateral development banks (MDBs) has not gone unnoticed by the advocates of environmental protection. For instance, the 1987 Bruntland Report underlined the need for development banks' participation in the implementation of sustainable development (Casas,1993:7). For Latin American governments, external investment in strategic development programmes such as energy projects are critical due to the requirements of large amount of capital and the need to share the risks with others. This is particularly true in countries with high political risks. Lending institutions such as the World Bank, International Monetary Funds, and the Inter-American Development Bank, have established environmental requirements for lending funds. Under these conditions, borrowing countries and companies will have to develop and implement environmental programmes within their projects.

2.4.2 Regulatory Requirements

Increasing numbers of environmental regulations (i.e. command and control) are forcing companies to change their practices. The risks of failing to comply with these regulations have taken on new meaning in countries where penalties are large and enforcement is effective. For example, large civil penalties are now common in North America and Europe. Penalties for environmental infraction have even moved beyond civil litigation to criminal sanctions that affect directors, officers, and employees throughout the organization (Epstein,1995:7).

In Canada, oil & gas companies have to meet the requirements of the Canadian Environmental Protection Act (CEPA) and provincial regulations. In the United States, companies must comply with various environmental regulations, including the requirements of the Clean Air Act (CAA), the Clean Water Act (CWA), and the Resource Conservation and Recovery Act (RCRA), among others.

The oil and gas industry in Latin America is being regulated by new government bodies created in the early 1990. For example:

- Ecuador established an environmental division within its Ministry of Energy and Mines, and placed the responsibility for environmental regulations of the petroleum industry in the hands of that office (known as DINAMA) (Little,1996:2).
- Colombia and Venezuela have formed environmental ministries with broad responsibilities, including administration of environmental regulation of the petroleum industry (Little,1996:2).

Companies are now taking action to comply with environmental regulations. In some countries such as Canada, professional bodies have developed guidelines to deal with regulations. For example, the Society of Management Accountants of Canada recommends five actions (Epstein,1995:7-8). These are: ensuring top management commitment and support; developing a corporate environmental policy statement; preparing an environmental action plan; creating an environmental management system; and, establishing an environmental audit programme

2.4.3 Insurance Companies

Insurers have already suffered direct financial damage from environmental problems. A well known example of this fact is that claims against general liability policies for damages from asbestos exposure and hazardous waste dumping in the United States have been estimated to cost the insurance industry \$2 trillion (Schmidheiny and Zorraquin,1996:XXIII). This experience is being used by insurers to require more environmental management to all activities, projects, and businesses that they are involved with.

Due to the privatization of many state properties in Latin America countries, as well as deregulation and price liberalization, governments may find it necessary to hold an insurance policy that covers environmental liability. This would include insurance against exposures, direct and indirect damages or consequential losses in private and public sectors, especially in high-technology, environmental and services (Thompson and OLADE Students,1998). Under these conditions, companies and governments will require the implementation of strong environmental management practices in order to ensure projects.

2.4.4 Demands of Sustainable Development

In 1987, the World Commission on Environment and Development (the "Brundtland Commission") defined sustainable development as a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations (WCED, 1987:46). Development as such would thus meet the needs of the present without compromising the capacity of future generations to meet their own needs (IISS, 1994:14).

This concept was presented in the World Commission's report, *Our Common Future*. This report identified several environmental trends that threaten to radically alter the planet, and many species upon it, including humans. Environmental deterioration identified in this report includes rapid loss of productive dry land that was being transformed into desert; rapid loss of forest; global warming caused by increases in greenhouse gases; loss of the atmosphere's protective ozone shield due to industrial gases; and, the pollution of surface water and ground water.

The United Nations Conference on Environment and Development, generally known as the Earth Summit, was held in Rio de Janeiro in June of 1992 in response to *Our Common Future*. Five documents were signed at Rio that will be implemented in the years ahead and that will keep sustainable development in the center of international affairs. They are: the Treaty on Climate Change; the Treaty on Biodiversity; the Convention on Forest Principles (proposed); the Rio Declaration; and Agenda 21. Several nations have also initiated significant national sustainable development programme. Included among the more active nations in Agenda 21 implementation efforts are the Netherlands, Canada, and the United States.

An increasing number of corporations are realizing that long-term economic growth is only possible if this growth is environmentally sustainable (Epstein, 1995:43). These companies also recognize that a competitive advantage can be achieved through a conscientious examination of processes and products.

They also understand that reducing environmental impacts often increases long-term corporate profitability through higher production yields and improved product quality.

Sustainable business development requires corporations to operate in a different framework. In April 1991, 700 industrialists met at the Second World Industry Conference on Environmental Management. These participants adopted 16 principles as guidelines for creating sustainable corporations. Since this meeting, the top management of several hundred companies, government organizations, and industry associations have endorsed these principles (Epstein, 1995:43-50).

2.4.5 Markets

The global economy is undergoing a period of rapid transformation. Globalization and trade liberalization are increasingly causing foreign firms to compete with each other. In addition, since the early 1990's an increasing number of companies are investing in the emerging markets of Asia and Latin America. For example, the Asia Pacific region and Pacific Latin America countries represent a market of US\$5.5 trillion, with a combined population of almost 2 billion. These emerging markets are also taking steps to increase their market access to foreign competition (Lemaire, 1995:6). In order to succeed in this market, companies must implement sound environmental management. If Latin American companies want to compete internationally and to gain new markets, they will have to comply with international market requirements such as the ISO 14000. Under these conditions, Latin American countries must encourage their companies to implement environmental management practices.

2.4.6 Stakeholders

In order to achieve success in their operations, multinational oil and gas companies must build solid relations with all their stakeholders. This can be accomplished in a number of ways. These include ensuring regular and open communications with stakeholders, and respecting the public's right to participate in decision making where public interests are concerned. Other proven methods include striving to achieve the highest ethical relations with stakeholders and a fair distribution of benefits, and seeking partnerships opportunities with

recognized and respected local, national or international agencies for the delivery of programmes. The implementation and successful development of policies and practices to achieve these goals require a comprehensive environmental management system.

The different stakeholder groups associated with the oil and gas industry can be divided into five groups (IPIECA,1995:8). These groups include the oil industry (employees and shareholders), governments (national, state, local, inter-governmental organizations, the UN system, bilateral agencies, development banks), host communities (indigenous people, employees, suppliers, customers, community activists, neighbours, local business, media), business partners (venture partners, suppliers, contractors, customers, bankers, competitors, trade unions), non-governmental organizations (environmental groups, universities, research institutes), and industry associations.

There is a recognition that MNCs clearly benefit from being responsive to the needs of key stakeholders and by practicing greater economic, social and environmental responsibility in developing countries (Loizides and Khoury,1996:2).

2.4.7 Voluntary Environmental Programmes

Private codes of environmental management practice have begun to emerge as a major force in corporate environmental programmes. Examples of these codes include the Chemical Manufacturers Association's (CMA) Responsible Care program, the Coalition for Environmentally Responsible Economies (CERES) principles, the International Chamber of Commerce's (ICC) Business Charter for Sustainable Development, and the international environmental management standard, ISO 14000 (Nash and Ehrenfeld,1996:16). There are a number of motivations that drive companies to sign on to a private code of environmental management practice (Nash and Ehrenfeld,1996:42-43):

- Companies have tended to attract the most attention from regulators, environmental groups, and the news media. As a result, they have been the most interested in distinguishing themselves as environmental leaders.

- For companies operating in many locations, these codes offer a way to ensure consistency across local, state, and even national jurisdictions. Finally,
- Companies with environmental problems may also feel a particular compulsion to become active in private codes because of their public image.

Although many companies have adopted voluntary programmes, it seems that not all of them are convinced of their advantage. Terry Davies, director of Resources For the Future (RFF's) Center for Risk Management, after conducting a study for the Global Environmental Management Initiative, concludes that programmes designed to convince business to reduce pollution voluntarily often have not achieved much beyond good intentions. Davies also states that it is difficult to create strong voluntary incentives for industry action without legislative change.

2.4.8 Investors

Investors are beginning to look at the environmental costs and potential environmental liabilities of companies and how these affect share performance (Schmidheiny and Zorraquin:XXII). Interest in environmental issues is growing due to the possibility of losses in investments as a result of poor environmental management. These losses can come from two identified sources: environmental regulations and consumer behaviour. Environmental regulations are still under development in Latin America. It is important for investors to know what the fines, penalties, and possible civil and criminal liabilities are as well as cleanup costs (see next section). Consumer behavior refers to the fact that consumers will prefer products which come from firms with good environmental practices.

2.4.9 Environmental Liability

Environmental liability is one of the primary driving forces in the implementation of sound environmental policies and practices. Directors of companies, managers, and other professionals may be liable for the environmental performance of their company (Kirkland and Thompson,1997:171). The Alberta Environmental Protection and Enhancement Act (Sep.01.93) provides for an expansive liability net that may apply to a wide range of individuals. Such individuals may face potential liabilities in the form of clean-up or preventative orders, tickets, fines and even jail terms.

Modern environmental statutes are intended to force corporate officers to police the environmental activities of their company. In recent years, numerous corporate executives have been prosecuted for the environmental problems of their companies. This processes has resulted in numerous convictions and fines, as well as some jail terms. Individuals may also be required to pay pollution clean up costs out of their personal assets (ICD,1991:11). In addition, the liability for remediation of contaminated sites is attached to current and previous owners, persons who produced or transported substances and caused the substances to be dealt with so that the site became contaminated, and any class of persons designated as responsible by the regulations (Lucas,1995:77). Two examples serve to illustrate the importance of these facts to oil & gas companies:

In 1993 a \$1.5 billion class action lawsuit was filed in federal court in New York against Texaco, on behalf of Ecuadorian indigenous and colonist residents who have been adversely affected by the company's Oriente operations. Texaco was accused of negligence, public and private nuisance, strict liability and trespass. The plaintiffs sued in New York because Texaco's corporate headquarters is there, and they allege that a substantial part of the company's harmful acts and omissions took place there (Kimerling,1996:65). The suit, based on Common Law, was filed under the Alien Tort Victims Act which allows non-American citizens to file for damages caused by U.S. entities. The fact that the action was accepted should have a significant impact on industry behavior and risk assessing strategies (Thompson and OLADE Students,1998).

A section of a mine tailings pond operated by a Canadian based mining company, Boliden Ltd., failed April 26, 1998 spilling waste soil containing toxic metals including zinc, lead, and cadmium along a 20 mile section of the Guadiamar River in Spain, contaminating the aquifers feeding the Donana wildlife reserve, and ruining 6,000 hectares of nearby farmland. The mining company and its insurance companies clean up, restoration, and reparation costs will exceed an estimated \$10 million. In addition, the mine will lose several millions of dollars more in revenue from what it would have earned if the mine had remained open. It is currently closed for an indefinite time while the tailings pond dam walls are repaired and reinforced.

2.4.10 Environmental Non-Governmental Organizations

Since the 1980's, the number and scope of environmental non-governmental organizations (ENGOS) has grown tremendously. There is growing awareness that these ENGOS are integral to world environmental politics. For example, foreign affiliates of Greenpeace grew from five in 1979 to 24 in 1992, and affiliates of Friends of the Earth grew from 25 in 1981 to 51 in 1992 (Princen and Finger, 1994). David Kaimowitz (1996:22) believes that "the emergence of strong environmental movements in the developed countries is partly due to the existence of important groups in those countries with high enough incomes to concern themselves not only with day-to-day survival but also with the quality of life in a broader sense".

As the NGOs movement has grown, some groups have increased their strength by combining forces. Coalitions have formed within several countries (e.g. Bolivia's League in Defense of the Environment, Guatemala's Conservation Federation) and across national borders (e.g. the Tropical Rain Forest Network for the Amazon region). NGOs have been extremely successful in generating a new political constituency for environmental protection and conservation. Throughout Latin American region, government agencies responsible for environmental management have been strengthened (Augsburger, 1992).

NGOs such as Greenpeace, the Rainforest Action Network, and the Pesticide Action Network have successfully organized international campaigns to publicly pressure Latin American governments to take specific policy measures such as prohibiting the importation of toxic wastes and banned pesticides and taking steps to reduce deforestation and the extinction of plant and animal species (Kaimowitz, 1996:22). The major international NGOs either working directly in Latin America or financing the activities of local environmental organizations are:

- Conservation International : <http://www.conservation.org/>
- The Nature Conservancy : <http://www.tnc.org/>
- The International Union for
the Conservation of Nature
and Natural Resources (IUCN) : <http://www.iucn.org/>
- The World Wildlife Fund : <http://www.worldwildlife.org/>

Globally, petroleum companies continue to run into public opposition to projects and operations, often stemming from initiatives by NGOs or local community groups. Such operations or projects can make or break companies. Cases in point include the Arctic National Wildlife Refuge, Point Arguello, Brent spar, Shell Nigeria, Unocal/Thailand's Myanmar-Thailand pipeline, and BP Colombia to name just a few of the more publicized industry efforts (OGJ,1997:38). A number of ENGOs have become increasingly sophisticated at using the Internet. For example:

Sierra Club	:	http://www.sierraclub.org/
Friends of the Earth	:	http://www.xs4all.nl/~foeint/
Greenpeace	:	http://www.greenpeace.org/

Although ENGOs are increasingly acting “against” business activities and pushing governments to take actions to protect the environment, new “directions” in the role of environmental organizations are also appearing. These new groups are realizing that in order to achieve their goals, they must work together with businesses, environmentalists, and governments. Vredenburg and Westley (1991) have identified four forms of collaboration between business and environmentalists that fit this new trend. These are: a) multiparty roundtables, b) join ventures, c) strategic bridging, and d) mediation. Benefits of these forms of collaborations include that stakeholders can be identified and develop a common language; norms and values governing ongoing interaction can be established; and authority, responsibility, and resources can be allocated.

2.4.11 Industry Associations

Industry associations play a key role in ensuring that their members comply with sound environmental management practices. These groups have an established code of practices within their organizations for better environmental performance. Major industry associations include the Chemical Manufacturers Association (CMA): Responsible Care Programme (<http://www.cmahq.com/>); the Canadian Association of Petroleum Producers (CAPP) (<http://www.capp.ca/>); the International Chamber of Commerce (ICC): Sustainable Development Principles (<http://www.iccwbo.org/>).

Other associations are continuously publishing guidelines, researches, case studies and recommendations for better environmental practices, among these are the Society of Petroleum Engineers (SPE): Journal of Petroleum Technology (<http://www.spe.org/>); the International Petroleum Industry Environmental Conservation Association (IPIECA) (<http://www.ipieca.org/>); The Society of Management Accountants of Canada (<http://www.cma-canada.org/>); and the Organization for Economic Co-operation and Development (OECD): Environmental Principles and Concepts (<http://www.oecd.org/>)

2.4.12 Public Concerns

The public is concerned about the state of the environment, confused as to whom to believe, and disillusioned with governmental attempts at all levels to deal with the problems of pollution and ecological degradation (Worcester, 1994:8-27). In the 1980s, business became more aware of the growth in public concern over environmental issues. In his article entitled Environmental sustainability and business: Recognizing the problem and taking positive action (Williams and Haughton, 1994:38) Peter Roberts states that greater public concern arose from the growth of a common awareness that the uncontrolled growth of economic activity carries with it considerable direct and indirect implication for the environment.

Public concern has increased in great part due to two big industrial accidents. The first involved the release of methyl-isocyanate from the Union Carbide plant at Bhopal, India, which killed 3,000 people. The second in 1986 was when the nuclear power plant at Chernobyl in the former USSR released large quantities of radioactive material into the environment. This radioactive cloud passed throughout most western Europe, causing more than 10,000 deaths from radiation-induced cancers (Smith, 1993:4,10).

In 1993, the Gallup International Institute, a non-profit education and research institute based in Princeton, New Jersey, USA published a survey entitled *Health of the Planet*. This survey was conducted in 24 major nations around the world, representing approximately 40 percent of the world's population, and was designed to assess environmental and economic development concerns. The main findings were that people are very concerned about air pollution, water

pollution, contaminated soil, loss of species, loss of rain forest, global warming, and the loss of ozone regardless of the state of development or economies (Gallup, 1993).

Adverse environmental impacts occur at every stage of oil development. The most acute impacts are caused primarily by contamination and deforestation (Kimerling,1996:64). The general public is very concerned about these impacts. In Latin America, multinational oil and gas corporations have caused severe damage to the environment. For example, Texaco in its Ecuadorian operations (Kimerling,1996:65). New oil and gas projects in Latin American countries are being developed in areas where companies have to deal with high environmental risks and strong concerns from the communities or indigenous people (OGJ,1997:38).

2.4.13 International Standards

International Standards and guidelines influence the oil and gas activities in South America. The World Bank, Inter-American Development Bank (IDB), International Finance Corporation (IFC), Andean Development Corporation (ADC), and Overseas Private Investment Corporation (OPIC) have all issued forms of financial assistance to help advance certain petroleum activities in South America. Each of these groups is committed to ensuring that the environmental assessment procedures set forth in a three-volume "Sourcebook" issued by the World Bank are followed before funding is released (Little,1996:18).

2.4.14 International Agreements

There are several types of benefits that countries can realize from active involvement in global environmental agreements making (Susskind,1994:44): The first is being able to shape international policy so that it responds to domestic priorities. A second benefit of participation is the chance to set a precedent or strike a deal that will be helpful later on. Thirdly, national leaders can increase their domestic popularity by demonstrating leadership on the world stage. Finally, recent international agreements have offered financial compensation to developing countries.

There are growing pressures, both at the international and domestic levels, for nations to sign new environmental agreements. Such pressures are the product of intense public campaigns by non-governmental groups, international environmental organizations, multilateral lending agencies, and even national business organizations that find global “harmonization” of environmental regulations advantageous. The number of countries signing international environmental agreements has increased significantly since the Rio Earth Summit in 1992 (Susskind, 1994:45).

Some of the most important international agreements are:

- Convention on Wetlands of International Importance especially as waterfowl habitat (RAMSAR) (1971)
- Convention for the Protection of the World Cultural and Natural Heritage (1972)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (1973)
- Convention for the Prevention of Marine Pollution from Land-Based Sources (1974)
- United Nations Convention on the Law of the Sea (1982)
- World Charter for Nature (1982)
- International Tropical Timber Agreement (1983)
- Vienna Convention for the Protection of the Ozone Layer (1985)
- Montreal Protocol on Substances that Deplete the Ozone Layer (as amended, 1990)
- Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal (1989)
- Convention on Environmental Impact Assessment in a Transboundary Context (1991)
- Rio Earth Summit (1992): Agenda 21.

2.5 Barriers to Environmental Management

The implementation of environmental policies and practices within both Latin American countries and multinational oil and gas E&P corporations has been slowed by many

barriers. The following barriers to the implementation of environmental management policies and practices were identified in the literature:

Thompson and OLADE Students: (Environmental Management course, 1998)

1. Multiple stakeholder with multiple interests.
2. Terrorism
3. Markets
4. Other priorities
5. Complacency/satisfaction with current practices
6. Lack of awareness
7. Costs
8. Lack of education, skills and knowledge
9. Confusion on issues
10. Conflicting economic interests
11. Corporate / institutional culture
12. Lack of recognition of the need for an EMS
13. No one responsible
14. Lack of technology, information and economic resources
15. Role of interdisciplinary work
16. Lack of political stability
17. No enforcement

Kirkland, L.: (MDP: Introducing EMS to Corporations, 1997)

1. Avoidance of the unknown
2. Distrust of or unfamiliarity with management
3. Lack of concerns about environmental issues
4. Lack of studies and explanations on how to implement an ems
5. Lack of identification of specific environmental drivers affecting a company
6. Assigning higher priority to issues other than environmental performance
7. Approaching environmental issues on a reactive rather than proactive basis
8. Application of inappropriate solutions
9. The ems not being compatible with the corporate culture
10. Union resistance
11. Lack of mechanisms for communication between practitioners
12. The need for better tracking of environmental costs.

Thompson has included the list of barriers to the implementation of environmental management as an environmental management tool since this will help to identify sources of problems and set priorities (1999:In Press). The existing literature does not provide much in identifying barriers to the implementation of environmental management in the oil and gas industry in Latin America. From the above sets of barriers and adding those identified through interviews with industry and government representatives in selected countries in Latin America, the following barriers are identified as currently the most important for the oil and gas industry in Latin America:

1. Lack of political and public awareness
2. Inadequate skills and personnel
3. Corporate/institutional culture
4. Lack of enforcement
5. National priorities
6. Lack of recognition of the need for an ems
7. Avoidance of the unknown
8. Multiple stakeholders with conflicting interests

I will now provide with a brief description of each of the above barriers in order to understand the difficulties faced by governments and corporations in their attempt to implement an EMS.

2.5.1 Lack of Political and Public Awareness

Since publication of the Brundtland Report "Our Common Future" in 1987 and the Rio conference in 1992, environmental concern has become a global issue. However, in Latin American countries, environmental protection policies are still in the early stages of development and implementation. For example, awareness about environmental practices is poor among people in both public and private sectors. A lack of awareness of environmental problems and of their effects on development leads political leaders focusing on immediate and highly visible problems. This results in short-term solutions, rather than focusing attention on, and dealing with more appropriate long-term solutions (Lampietti and Subramanian,1995:36). The significant social and economic (the other two elements addressed by sustainable development) problems in Latin American countries make it difficult to focus or properly address environmental protection issues.

2.5.2 Inadequate Skills And Personnel

The lack of training courses in environmental issues at all educational levels is a common problem in Latin American countries. In recent years, however, a number of Latin American universities and institutions have begun to implement environmental programmes at undergraduate and graduate levels (e.g. National Engineering University-Peru in 1992, OLADE-Ecuador in 1996). Other universities are in the process of implementing such programmes (e.g. the National University of San Antunez de Mayolo in Ancash-Peru in partnership with The University of Calgary). Lampietti and Subramanian (1995:36) have stated that "inadequate skills and personnel are an institutional problem in Latin American countries, it is often caused by insufficient incentives within the public sector. The availability of sufficiently well qualified staff and the ability of the public service to recruit, motivate, and retain them are the main causes". To deal with this problem, most multinational oil and gas corporations are sending experts from their headquarters to Latin America. For example, Occidental-Perú, and Amoco-Ecuador (OGJ,1997:37-42). Other multinationals have hired local people for their environmental departments; sending them for training in their headquarters (e.g. Oxy-Perú), while others have hired local people with expertise from other companies such as Canadian Petroleum Ltd.. Within government bodies, this lack of expertise is also well known, the result of this is that environmental departments in some countries (such as Colombia and Perú) are being strengthened.

2.5.3 Corporate / Institutional Culture

Culture refers to the identifiable set of assumptions, social habits, and behavior traits that characterize a given group of people (Plas,1996:91). Corporate and institutional culture is also a barrier due to individuals either not changing their current practices or changing them slowly. Plas has stated that "many of our cultural attitudes and assumptions haven not been able to change as fast as the demands and possibilities, one of the biggest victims of this situation has been organizational leadership" (1996:90).

An appropriate corporate culture is essential to ensure the support of strategic environmental management focusing on sustainable development, and will likely

require many managers to change their existing attitudes (Online http://usd.ca/business/dev_cul.htm: Oct/08/98). For example, executives may feel their sole responsibility is to maximize the wealth of the enterprise's owners. As a result, these individuals have difficulty understanding the sustainable development concept and accepting it as a legitimate business objective. Certain managers may not be used to identifying the need for "nature conserving" practices and technologies (such as energy efficiency and waste recycling). Some managers may also never have explicitly considered the effect of their actions on any stakeholder group other than company shareholders. Yet others may resist changing the way in which their performance is measured to one that rewards successful sustainable development implementation. Managers of multinational corporations may not think about reallocating certain business activities and redesigning their support programmes to ensure that these contribute positively to sustainable development in poorer countries. Finally, some managers may not recognize the changes that need to be made to their promotion and reward systems.

2.5.4 Lack Of Enforcement

Tom Tietenberg (1996:30) has stated that "governments are not universally able to assure compliance with environmental laws. Latin American and Caribbean countries are no exception. In many countries apparently tough environmental laws may be accompanied by little or no enforcement". The OECD (1993:24-25) has identified five reasons why command-and-control regulations (enforcement) do not work in developing countries. Firstly, environmental regulations in developing countries (like in the developed countries) stipulate terms of imprisonment and/or fines for non-compliance or violations. However, for cultural reasons, many developing societies, most notable in Asia, are not given to litigation. Secondly, it is virtually impossible to monitor hundreds of thousands of scattered small-scale operations, which individually generate little pollution but taken together account for the bulk of pollution in the country. Even if this monitoring was technically possible, it makes no sense economically. Thirdly, there is a mismatch between high regulation, monitoring and enforcement costs and budgetary, manpower and administrative constraints. Most developing countries are overly centralized with the control of this central government diminishing in proportion to the distance from the center. Fourthly, fines are set at levels that are too low to deter violators. Fifthly, there is a lack of expertise

within government officials. Finally, flaw of command-and-control regulations is the rent-seeking behavior which they elicit. In other words, violators find it in their interest to pay a fraction of the stipulated fine as a bribe to the enforcement official who, being grossly underpaid, is often all too willing to accept it.

From these six reasons it is obvious why enforcement does not work or at least is not well addressed in developing countries. Only the first reason does not apply uniquely to Latin American countries.

2.5.5 National Priorities

Latin American countries are facing such monumental social and economic problems that addressing environmental issues properly is extremely difficult. For example, Colombia must deal with guerrilla and paramilitary movements. Recent conflict in 1995 between Ecuador and Perú resulted in these countries having to expend millions of dollar to purchase armaments. This expenditure in turn resulted in a reduction in social and economic programmes. Recent natural disasters such as “Fenomeno del Niño” and hurricanes such as “Mitch” have also caused tremendous negative effects on the Latin American economy. Venezuela and Mexico have been adversely affected by the reduction in oil price since the economies of these two countries are highly dependent on oil production. Bolivia, Ecuador, and Perú also suffer from having large settled population in rural areas with less or sometimes no infrastructure.

In response to the problems mentioned above, Latin American countries are forced to spend significant money. International financial institutions are providing economic resources for these purposes, mainly oriented to social programmes. In this case, it is understandable why environmental issues are not national priorities within Latin American countries. However, a number of these countries (such as Colombia and Perú) in cooperation with the government of Canada, have established or are in the processes of establishing sound environmental management in the energy and mining sector.

2.5.6 Lack of Recognition of the Need for an EMS

Kirkland and Thompson (1999, In Press) have stated that unfamiliarity with EMS is a significant impediment to the introduction of this method. For example, 13 of

32 companies surveyed by Kirkland in 1997, had not heard of an EMS prior to being interviewed. A survey of Canadian companies carried out by KPMG in 1996 reveals that 57% of 426 respondents did not have an EMS or deal with environmental issues. Kirkland and Thompson (1999, In Press) also state that "the belief that current environmental practices within an organization are adequate may also be a barrier to EMS introduction. Some managers may be very optimistic about their companies' environmental performance and believe that this performance need not to be improved upon". A recent study carried out by Sharma and Vredenburg (1998) demonstrates that even companies with an EMS in place can be classified as proactive and reactive companies depending on how they approach their environmental strategies.

Kirkland and Thompson (1999, In Press) have identified five stages in dealing with the implementation of EMSs within MNCs, these are: a) unaware of EMS, b) aware and ignoring EMSs, c) postponing dealing with EMSs, d) starting EMS development, and e) using an EMS on a continual improvement basis.

2.5.7 Avoidance of the Unknown

There is a reluctance among companies to implement an EMS. An executive interviewed by Kirkland in 1997 expressed what seems to be a common feeling: "I don't want to be on the cutting edge - let somebody else make the mistakes first". EMS introduction is also assumed to be most difficult in organizations that have little prior knowledge about EMSs, environmental management, or management in general (Kirkland and Thompson, 1999: In Press).

The degree to which companies are implementing their environmental strategies depends on their capabilities for learning and innovation. Sharma and Vredenburg 1998 paper Proactive Corporate Environmental Strategy and the Development of Competitively Valuable Organizational Capabilities presents the following definitions and/or statements concerning capabilities for learning and innovation:

- Organizational learning is defined as "the development of insights, knowledge, and associations between past actions, the effectiveness of those actions, and future actions."

- Changes in the business environment that motivate exploration of alternative organizational routines, technologies, environments, and objectives may lead to higher order learning.
- Higher order learning involves the development of different interpretations of new and existing information, as a result of developing new understandings of surrounding event.
- While environmental change provides an opportunity for a firm to be the first mover, the likelihood of a firm benefiting in a sustained manner from the first mover status will depend upon the development of these capabilities.

Companies who are currently adopting environmental strategies are realizing the advantages of them. The following two hypotheses arise from the development of new capabilities and organizational change (Sharma and Vredenburg, 1998:742-743):

- The greater the degree to which a company adopts proactive environmental responsiveness strategies, the greater the likelihood that firm-specific organizational capabilities will emerge.
- The greater the degree to which firm-specific organizational capabilities emerge within a company, the greater the likelihood of competitive benefits flowing from these capabilities.

2.5.8 Multiple Stakeholders with Conflicting Interests

As previously identified, the oil and gas industry involves the participation of many stakeholders such as local land owners, community groups, environmental groups, regulators, suppliers, buyers, contractors and partners. Many of these stakeholders do not see environmental issues in the same way. "It is therefore important to identify those external stakeholders and to design and implement an EMS that will handle those interests effectively and efficiently" (Kirkland and Thompson, 1999:In Press). This situation is further complicated by the fact that some Latin American countries, the stakeholders also involve guerrillas and paramilitary groups that are actively present in areas where oil and gas companies are operating.

Chapter 3: Multinational Oil and Gas E&P Corporations

3.1 Introduction

This chapter provides a brief description of multinational corporations, their current trends (investment, globalization, policies), and how and why they are implementing environmental policies. The purpose of this is to provide a framework for the development of Chapter 5, which deals with the design and implementation of an environmental management model for multinational oil and gas corporations operating in Latin America.

Confusion exist regarding the terminology that should be used to describe a company with global operations. The terms multinational enterprise (MNE), multinational corporation (MNC) and transnational corporation (TNC) are usually used for this purpose. While the literature makes no distinction between MNE and TNC, TNC is defined as “a company that is headquartered in one country but controls productive facilities and sales outlets in other countries. Its operations involve flows of capital, goods, services, and managerial and technical personnel among its subsidiaries” (Berry, Conkling, and Ray, 1997:4). However, a distinction exists between MNC and TNC. According to Murray Boddin in his book *The Myth of the Good Corporate Citizen* (1998), the multinational corporation is characterized by its multiple national identities, established complete operations in the countries in which it does business (including production, marketing, financing, distribution and sales), and developing this largely with local labor and locally recruited management. The transnational corporation exists when a corporation’s operation are integrated “around vertically integrated supplier networks”. Whereas the multinational corporation makes an effort to create a local identity, the transnational is motivated to do just the opposite: to eliminate as much as possible any consideration of national identity or local corporate “citizenship”. For the purpose of this MDP, the term multinational corporation is used to refer to oil and gas companies with operations abroad since new trends show a combination of both MNC and TNC concepts in defining their operations and strategies.

Because of their control over world trade and investment, MNCs are major environmental actors. All types of businesses have direct environmental impacts as producers, managers, and distributors of goods and services. These impacts include pollution generated by the chemical, iron and steel, petroleum, agriculture, and paper

industries. According the United Nations Centre on Transnational Corporations (UNCTC) in a publication titled *Climate Change and TNCs* (1992) the major areas in which MNCs are involved and contribute significantly to global environmental problems are:

- a) Fossil fuel production: when fossil fuels are burned for energy production carbon dioxide is produced. Methane is released in the production process by venting and flaring of natural gas at oil wells. MNCs produce more than 50 per cent of world fossil fuels.
- b) Transportation: transportation accounts more than 30% of global energy use, mainly due to fossil fuel consuming road vehicles, which are produced by MNCs.
- c) Electricity generation: approximately one third of all fossil fuels are consumed in the generation of electricity. Although electricity-generating plants are controlled by national enterprises, MNCs play an important role in the design of generating equipment and plans.
- d) Production of energy-intensive metals: the production of aluminium, copper and steel accounts for at least seven per cent of total global commercial energy consumption.
- e) CFCs and other ozone-depleting chemicals: CFCs are anthropogenic chemicals that cause stratospheric zone depletion and are greenhouse gases (GHG's). MNCs are the primary producers and intermediate consumers of CFCs and related compounds.
- f) Inorganic nitrogen fertilizer production: this contributes to greenhouse gas emissions by energy consumption in production, and by direct emissions of the greenhouse gas nitrous oxide during their use.

MNC's are the principal actors changing the global economy due to their high volume of foreign direct investment (FDI) and increasing international trade. The numbers of MNCs are growing. There are 7000 MNCs in 1969, 24000 in 1994 and approximately 37000 in 1997 around the world. Most of these companies are headquartered in the world's richest nations. MNCs control approximately one third of all private sector assets and account for a quarter of the goods produced in the world's market economies. The International Labor Office estimates that MNCs employ approximately 65 million people a staggering 3% of the world total. In the developed world, this figure rises to 10% (Berry, Conkling and Ray, 1997:4).

MNCs have developed their own organizational form in order to compete efficiently in the marketplace. The parent company usually is in the country of principal ownership.

A notable exception is Royal Dutch Shell which is 60% Dutch owned and 40% British with headquarters in both The Hague and London (Shell Canada Limited: 1995 Annual Report, p.65). At the beginning, MNCs headquarters management and staff were natives of the home country bringing into their home offices talented people from their overseas operations from time to time. Within an MNC the headquarters company generally controls its worldwide operations, with the management group at home responsible for strategic planning (Berry, Conkling, and Ray, 1997:7).

The international integration of a MNC can be vertical or horizontal. For instance, in a manufacturing MNC which is vertically integrated, a branch in one country sends partially manufactured subassemblies or intermediate products to another affiliate elsewhere for further processing or for final assembly. Finished products then go to all affiliates for sale in their own national markets. In a horizontally integrated manufacturing MNC, each branch makes a particular line of finished products, the choice depending on its comparative advantage, which are then shared these with all other units of the enterprise.

3.2 Globalization And Multinational Corporations

Globalization is the result of advances in communication technology, global political trends and global environmental concerns and involves social, cultural, economic, and environmental factors. Dobbin (1998:8) concludes that while globalization benefits the top 15 to 20% of the world's populations and has produced thousands of millionaires and hundreds of billionaires, billions of people are completely excluded from this wealth. Because they are excluded, the lives of these people are profoundly affected by globalization. Statistics show that the top 200 MNCs have sales of 28.3% of the world's GDP, employing only 18.8 million people. This equates to less than three-quarters of 1 percent of the world's workforce (2.6 billion). Of the 100 largest economies in the world (governments and corporations), 51 are now corporations. For instance, Wal-Mart, number twelve on the list, is larger than 161 countries. In other words, the company's gross revenue is greater than the total wealth, or gross domestic product, of any of these countries (Dobbin, 1998:10).

3.2.1 Foreign Direct Investment and the MNCs

Foreign investment can be divided into public and private, with private investment further subdivided into portfolio and direct investment. All of these

forms of investment represent capital flow from one country to another. However, not all capital flows are investments. For instance, foreign aid is a capital flow but does not generate payment of interest, dividends or repayment of principal (Petrochilos,1989:6). In portfolio investment foreign investors are interested in the higher return of capital. In this case, the capital moves from low-interest areas to higher-interest areas. Other factors influencing portfolio investment include: government decisions in lending countries, the level of import from lending countries, and the credit worthiness of the debtor countries. Portfolio investment is not exclusively for private investors: international institutions and agencies also participate in this type of investment. Depending on the ability of the borrowing countries, these institutions and agencies provide them with flexible schedules for interest and amortization payments.

Portfolio investment had been almost the exclusive instrument of foreign investment in the nineteenth century and certainly the predominant one up to the First World War. Even after the Second World War, this kind of investment was negotiated for reconstruction and development. However, foreign direct investment (FDI) has acquired significant importance during the post-war period. This type of investment involves production abroad by subsidiaries of parent companies or in combination with local enterprise. The defining characteristic of direct investment is that it involves foreign control of the subsidiary (Petrochilos,1989:6).

FDI has also acquired importance because it is accompanied by technology, managerial and technical skills and improved marketing techniques. FDI is generally classified according to the foreign investor and to the host country. From the point of view of the investor, the expansion of the firm into another country through the transfer of capital, management, technology or other knowledge can take the following forms:

- **horizontal investment:** involving the production abroad of the same line of products as at home
- **vertical investment:** by moving abroad one or more stages in the firm's production process towards the sources of raw materials or forwards nearer the consumer through the acquiring of outlets
- **conglomerate diversification**

From the point of view of the host country, FDI can be divided into:

- **import-substitution:** involves the production in the host country of those products that used to be imported
- **export-increasing:** represents the seeking of new sources of inputs, such as raw materials and the production of intermediate as well as final products
- **government-initiated investment:** occurs following a deliberate policy by the host country's government

The trends of FDI show that in 1960 U.S. MNCs accounted for nearly half of the world total (47.1%) and nearly triple the holdings of British firms (18.3%), which ranked second. Dutch and Swiss companies made up most of the remaining one-third (10.3% and 3.4% respectively). However, MNCs from other countries have recently emerged, shrinking the dollar share of U.S. MNCs to only a third of the world total in 1985 (35.1%). British MNCs still cling to second place (14.7%), but Japanese and German MNCs are close behind in third and fourth positions (11.7% and 8.4% respectively). New MNCs are also emerging from other new industrialized countries. Half of the world's 50 largest manufacturing companies and two-third on the leading MNCs are based in the United States. Next as a home for top firms is Japan, followed by Germany and Britain. Certain small European countries are home to the headquarters of the largest MNCs such as Nestlé (Swiss), Phillips (Dutch), Unilever and Royal Dutch Shell (Dutch-British), ENI (Italy), and Volvo (Sweden) (Berry, Conkling and Ray, 1997:380). Many of the world's leading MNCs receive half or more of total company sales from foreign affiliates. Foreign sales also constitute a major part of total earnings of the leading petroleum multinationals (Berry, Conkling and Ray, 1997:381). FDI brings technology, management know-how and access to key export markets that are needed by developing countries. This investment has important affects on economic growth, technology transfer, community development and human resource development (Loizides and Khoury, 1996:1). FDI has become a central feature of the globalization process characterizing the world economy. The current boom in FDI flows underscores the increasing role played by MNCs in both developed and developing countries. This role has been facilitated by the liberalization of FDI policies that has taken place in many countries in recent years, as part of an overall movement towards more open and market-friendly policies (UNCTD, 1997:1).

3.3 Sustainable Development

An increasing number of corporations are convinced that no long-term economic growth is possible unless that growth is environmentally sustainable. These corporations recognize that they require a balance between economics and environmental sensitivity (Epstein,1995:43). Corporate leaders who ignore economic, political, or social changes will lead their companies toward failure (Schmidheiny,1995:1). Some firms have also discovered that enhanced environmental performance can lead to cost-savings, either in the short-term through improvements in their revenue position, or over the longer-haul through a change in company profile and market share (Roberts,1994:37).

3.3.1 Definition of Sustainable Development

In 1987, the World Commission on Environment and Development (the "Brundtland Commission") defined sustainable development as a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations (WCED,1987:46). Sustainable Development is development that meets the needs of the present without compromising the capacity of future generations to meet their own needs (IISS,1994:14).

3.3.2 Initiatives Toward Sustainable Development Within Businesses

Since environmental considerations are likely to be a source of profound changes in business practices (Welford,1998:9), the implementation and integration of environmental strategies within management decisions are very important. Those companies that achieve high standards of environmental performance will gain competitive advantage. Therefore, companies must seek to develop management strategies which will improve this performance. By incorporating this important environmental dimension into the decision making process of the firm, managers can seek to reduce costs and exploit the opportunities offered by increased public environmental concern within a dynamic marketplace (Welford,1998:5). Based on these concepts, international institutions such as the International Chamber of Commerce and the International Institute for Sustainable Development have developed principles for sustainable development.

The International Chamber of Commerce (ICC)

In April 1991, the ICC met at the Second World Industry Conference on Environmental Management. Those present adopted a set of 16 principles as guidelines for creating sustainable development corporations (see Appendix A). These principles affect all aspects of company operations, from investment planning and staff training to customer advice to research, from product development to marketing, and from technology transfer to relations with suppliers. Since this time the top management of several hundred companies, government organizations, and industry associations have endorsed these principles (Epstein, 1995:44,50).

The International Institute for Sustainable Development (IISD)

In 1994, the IISD published seven Principles for Trade and Sustainable Development (IISD, 1994). These principles are designed to meet the need for a wider vision in the formulation of trade, environment and development policies based on a clear understanding of how the three are related. These principles are:

- efficiency and cost internalization
- equity
- environmental integrity
- subsidiarity
- international cooperation
- science and precaution
- openness

3.3.3 Approaches to Sustainable Development

The Association of South East Asian Nations (ASEAN) has recommended the following steps to approach sustainable development within business (Online: [gopher://gopher.un.org:70/00/esc/cnl7/1996/off/96-30.en](http://gopher.un.org:70/00/esc/cnl7/1996/off/96-30.en); Oct/20/98). These steps encourage business to:

- promote the contribution business, commerce and industry can make to sustainable development, especially through publicizing success stories. There

is an important leadership role for companies that can show that environmental excellence pays

- press for better collective statements of business environmental goals, for example by securing a review and revision of the ICC Business Charter
- seek symbiotic partnerships with other companies, municipalities and public utilities whose wastes could be used as raw materials, or with whom joint ventures would enhance local environmental conditions
- negotiate with local and national governments the improvement of incentives and opportunities for sustainable development, including through the construction of a "level playing field"
- press for local and central governments and other components of society themselves to demonstrate environmental excellence, for example by keeping the environment clean
- enter into dialogues with those responsible for environmental education, to promote understanding among young people of the positive role the business sector is playing in creating environmentally responsible sustainable development
- join Responsible Care Programmes for particular sectors, working with Public Advisory Committees linked to national trade associations or other collective groups

The United Nations Commission on Sustainable Development (UNCSD) has provided the following recommendations to business to promote sustainable development practices (Online: [gopher://gopher.un.org:70/00/esc/cn17/1998/98-20.en](http://gopher.un.org:70/00/esc/cn17/1998/98-20.en): Oct/22/98):

- Companies can enable consumers to make more informed choices by providing reliable and accurate information on the impacts, and where possible, conditions of production and qualities of products and services, through their marketing and advertising activities, environmental reporting and improved stakeholder dialogue.
- Industry and civil society should work with Governments to strengthen secondary, vocational and advanced education and to ensure that it meets the developmental needs of society and the economy. This includes fair treatment of employees and constructive training programmes.

- Environmentally oriented management should aim at both preventing environmental damage and encouraging sustainable use of natural resources through.
- Industry should act to improve its environmental performance through appropriate implementation of environmental management systems.
- Large corporations should apply best practice in their own branches, both domestically and abroad.
- Chambers of commerce and business organizations in developed and developing countries should be encouraged to cooperate in the transfer of technology and in the development of management tools and institutional frameworks for sustainable development.
- There is a growing trend among a variety of stakeholders to hold industry accountable and responsible for the environmental impact of its operations and products throughout their entire life cycle. The industry and business sectors should respond positively to these demands by continuing to develop voluntary codes of conduct, charters and codes of practices.

A recent report of the International Chamber of Commerce (ICC) and the World Business Council for Sustainable Development (WBCSD) entitle *Corporate Management Tools for Sustainable Development* (1998) states that the development and use of environmental management tools are essential and show strong promise to integrate environmental and sustainable development considerations into everyday business. The report also states that environmental management tools deployed within companies help business to make steady progress toward sustainable development. Finally, the report concludes that the concept of how to do business has been changing: business is shifting from a disconnected and fractured view of environment and development issues to a integrated concept of business and sustainable development, which involves a transition from (Online: http://www.iccwbo.org/Commissions/Environment/Final_Management_Tool.htm: Oct/18/98).:

- seeing only costs and difficulties in the concept of sustainable development to seeing savings and opportunities
- end-of-pipe approaches to pollution to the use of cleaner, more efficient technology throughout the entire production system, and further, to seeing sustainable development as integral to business development
- linear, “through-put” thinking and approaches to systems and recycling approaches
- seeing environmental and social issues as responsibilities only for technical departments or experts to seeing these as company-wide responsibilities
- a starting premise of confidentiality to one of openness and transparency

3.3.4 Examples of Sustainable Development Practices

Some examples of how businesses are approaching their environmental strategies to meet sustainable development objectives are:

Recycling Approaches

Industries are moving toward recycling the materials in their products and thus limiting the use of raw materials and of energy to convert those raw materials, Carl H. Hahn from Volkswagen has stated: “It is one of the tasks of our age that not only are the products of industry accepted and enjoyed, but the consequences of industrial production are kept under control. If we think of the future -a central point of the obligation to rising generations- we must adopt the cyclical processes on which the whole of Nature is based” (Schmidheiny, 1995:105).

Social Concern

Companies are developing positive relationships with several key players in the community, including national and local governments, employees and trade unions, suppliers, customers and non-profit community organizations (Loizides and Khoury, 1996:2). “In the Republic of Yemen, in the interest of balancing local expectations and fostering a stable business operating environment, CanadianOxy implemented a Community Affairs Program. The company provides a modest budget as seed capital for local projects which are screened by a management committee that includes local community representation” (IPIECA, 1995:25).

Commitment to Sustainable Development

A growing number of leading companies are adopting and publicly committing themselves to sustainable development strategies. Sustainable development is the focus of Shell Canada Limited. Its President and Chief Executive Officer, Mr. Charles W. Wilson, stated: "Sustainable development occupies an important place on the Canadian and international agenda. Profitability must be achieved without compromising environmental performance. I believe commercial success will be increasingly linked to environmental performance" (Shell Canada Ltd., 1996:1).

3.4 Environmental Practices Followed By MNCs

MNCs are operating in both developed and developing countries. Their environmental policies and practices have been changing with time. In 1992, a United Nations' study regarding environmental practices followed by MNCs in developing countries stated: "MNCs activities in the developing countries have often involved working conditions and levels of environmental degradation which are seldom paralleled in OECD" (UNCTC, 1992:25). This situation does not depend only on MNCs' environmental practices, Thomas Andersson (1991) stated "the reason for environmental neglect in developing countries are likely to be found in imperfections in the international capital markets, lack of information and government failure".

Another factor influencing the different environmental practices followed by a corporation within its operations around the world can be found in the phenomenon stated by Thomas Andersson (1991) in the sense that "in the industrialized countries there has been an unprecedented expansion of industrial output, and there is a growing appreciation of environmental quality; In contrast, in the developing countries little attention is paid to this matter, and environmental degradation is increasing in many places", Anderson follows by saying that "higher control costs in industrialized countries provide an incentive for business to relocate pollution-intensive activities".

Although most of them have implemented sound environmental practices, Miriam A. L. Miller concludes that "corporations still depend on a cost-benefit analysis that marginalizes most environmental costs" (1995:37). This affirmation is corroborated by an United Nations' study: "In other areas, MNCs have merely adjusted their own

standards of production downwards. They have made use of more lax environmental laws to produce more cheaply, creating more pollution than they would otherwise" (UNCTC,1992:26).

It is clear that most MNCs have not followed the same environmental practices worldwide. However, some MNCs have adopted worldwide standards. For example, IBM and Allied Signal (Epstein,1995:10). More recently, Royal Dutch/Shell Group have established a minimum environmental standard for all their operations worldwide (Royal Dutch/Shell Group,1997:24).

The tendency today is towards standardized environmental policies and practices around the world. This new tendency is being driven by forces such as trade and international agreements, financiers (Banks), consumers, concerns market place, stricter legislation and enforcement, liability and litigation, purchasing guidelines, real estate transactions, and Codes of Practice (see Chapter 2: driving forces). A report entitled *Integrating Business Methods With Environmental Management*, issued in June 1997 by Enterprise for the Environment (E4E) has identified the following factors that motivate companies to seek excellence in Environmental, Health and Safety (EHS) performance (Online: <http://www.csis.org/e4e/yosierpt.html>: Nov/01/98):

- a) **economic benefits resulting from improved EHS performance.** These benefits include cost savings, improved cycle time, and enhanced time-to-market
- b) **corporate commitments and values.** These range from CEO level leadership on EHS issues to longstanding corporate traditions and culture that emphasize a commitment to such factors as quality processes or transparency
- c) **reputation enhancement.** In a globally competitive marketplace, brand name identity and other reputation factors are viewed as highly valuable differentiating factors. EHS issues can add to or subtract from reputation and, thus, have business implications
- d) **regulatory requirements.** Maintaining a strong compliance record is stated as a starting point to do business. EHS and business excellence are not possible without a commitment to full compliance

- e) **the need to meet customer and stakeholder expectations.** Larger institutional customers are viewed as having a growing interest in the EHS practices of those with whom they do business. For example, purchasing guidelines are becoming widely used by many institutional customers
- f) **the contribution of EHS issues towards strategic differentiation of the company.** In industry sectors as diverse as micro-electronics, petroleum, pulp and paper, and utilities, EHS performance and reputation is seen by business executives as shaping marketplace distinctiveness when other competition factors (e.g. price, product quality and performance) are relatively equal
- g) **improved employee relations.** The role of employees in fostering support and goodwill in the community is increasingly recognized as a business asset. Good environmental performance is also viewed as an important factor in a company's ability to recruit new, younger employees

As a response to these new factors such as global environmental concerns, globalization, and new markets that are affecting businesses, MNCs have been implementing environmental strategies by integrating them into their business decision making process. Their environmental strategies can be grouped as follows:

- a) establishing environmental departments with their organizations
- b) complying with regulations and going beyond those regulations
- c) strengthening relationships with their stakeholders
- d) establishing strategic partnerships
- e) using environmental management tools to improve their environmental performance
- f) developing environmental policies and practices to help them to improve their business strategies

In summary, these six points represents current environmental management followed by multinational corporations. Examples of these strategies are:

- a) Canadian Occidental Petroleum Ltd. has established an EH&S department maintaining direct and open lines of communication between the CEO and this department. For CanadianOxy "if environmental structure is not properly designed you can get wrong people doing the wrong things in the wrong places with negative impacts for the company" (personal communication: Garry J. Mann, EH&S Manager: Jun/21/98).

- b) Occidental Exploration & Production Co. currently operating in Ecuador is trying to foster dialogues with responsible environmental groups as well as directly affected stakeholders in a project, inviting them to see for themselves the plans and projects (OGJ,1997:38).
- c) ARCO in Ecuador, is trying to incorporate natives' self-sufficiency as part of its sustainable development initiative, helping them develop their own long-term, self-sustaining ventures to minimize their dependence on ARCO operations and provide for generations to come (OGJ,1997:40).

In general, in the oil and gas E&P multinational corporations environmental management can be represented by the following. **Figure 3.1:**

Fig. 3.1: Environmental Management Structure

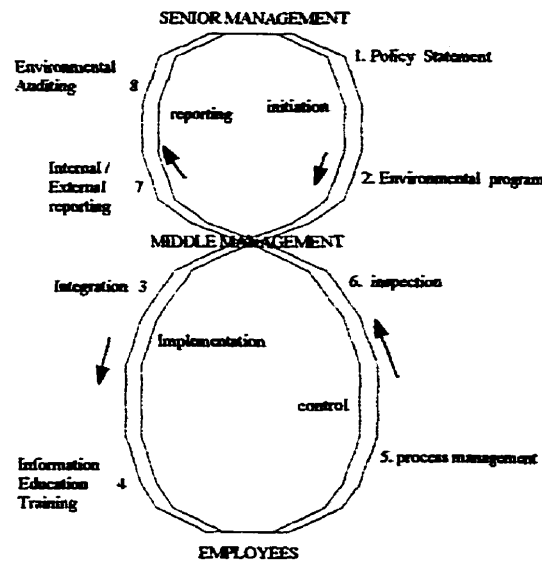


Fig. 1: General Environmental Structure and Management in MNCs

Adapted from NOGPA (1990)

3.5 Multinational Oil And Gas E&P Corporations

The oil and gas E&P is defined by the Standard Industrial Classification (SIC) as follows (Pearce and Robinson,1997:34-1): "This industry is made up of establishments primarily

engaged in operating oil and gas field properties. Such activities include exploration for crude petroleum and natural gas; drilling, completion, and equipping wells; operation of separators, emulsion breakers, desalting equipment; and all other activities incident to making oil and gas marketable up to the point of shipment from the producing property”.

These two authors have identified the trends that are driving the oil and gas E&P industry, these are (1997,section B-34):

- a) continuing price instability: in the last two decades the oil and gas industry experienced high instability. After hovering near \$3 a barrel for decades, it rose to a peak of over \$30/bbl in early 1981. Many factors affect price instability such as production level with OPEC countries and improvement of market information concerning petroleum stocks, production quotas, and world and industry events
- b) restructuring of natural gas market: natural gas markets have been improved, gas prices rose and LNG (liquefied natural gas) moved to international markets
- c) increasing environmental regulatory requirements: environmental regulatory requirements for the hydrocarbon sector have been strengthened around the world. More environmental regulatory laws and bodies have appeared
- d) attractive international investment opportunities: political stability, privatization and new policies to foreign direct investments have attracted investment in Southeast Asia, Africa, South America, and areas of the Middle East
- e) growing role of technology development: new technologies are allowing producers to increase their recovery factor from the reservoirs doing, resulting in more attractive production practices. Only the largest companies in the industry possess the technological sophistication and financial resources to apply advanced technologies successfully

Chapter 4: Latin America

4.1 Introduction

The social, economic, and political environment in Latin American countries provides a different framework in which multinational oil and gas corporations must operate. Recent changes relating to these issues, that will influence in the way how multinationals do business, were identified by literature review, interviews in Latin American countries and personal experience. These are:

1. transitions from dictatorships to democratic governments
2. structural reforms of petroleum markets (privatization)
3. tendency to strengthen environmental management practices
4. cultural differences affecting MNCs
5. globalization
6. foreign direct investment
7. economic changes affecting MNCs

In order to have a better understanding of these changes, the following section will provide a very brief description of each of the points mentioned above. The Oil & Gas Journal (1997:37) states "Multinational petroleum companies in South America are gradually sculpting a new paradigm of how to operate in a rain forest with utmost regard for its indigenous people and environmental resources".

4.2 Latin America Situation

The Latin American region is made up of South America, Mexico, Central America, and part of the Caribbean. Spanish and Portuguese colonies in Central and South America became independent during the first half of the 19th century. Independent nations plus some colonies and other political units in Latin America have special ties with the United States, Great Britain, France, or The Netherlands.

4.2.1 Transitions from Dictatorship to Democratic Governments

Dictatorships have been common in Latin America. They include the dictatorships of Rafael Leonidas Trujillo Molina in the Dominican Republic from

1930 to 1961. The Somoza dynasty in Nicaragua from 1937 to 1979, Juan Peron in Argentina from 1946 to 1955. Alfredo Stroessner in Paraguay from 1954 to 1989, and Fidel Castro in Cuba from 1959 to the present. Among the many earlier dictators were Porfirio Diaz of Mexico from 1876 to 1911 and Juan Vicente Gomez of Venezuela from 1908 to 1935.

Political instability continued into the 20th century, with revolutions occurring in Mexico in 1911, Bolivia in 1952, Cuba in 1959, Chile in 1973, and Nicaragua in 1979. In the late 1970s civil war broke out in El Salvador between the right-wing military and left-wing guerrillas; fighting continued into the 1990s. At the same time, Mexico, Costa Rica, Venezuela, and Colombia moved toward democratic governments. Autocratic governments led by military regimes were common. In elections in 1990, Nicaragua's Marxist Sandinista regime was replaced by a coalition government. General Augusto Pinochet of Chile was the last of South America's military dictators to be replaced by a democratically elected president in 1990.

In 1987 President Oscar Arias Sanchez of Costa Rica authored a regional peace plan that called for a cease-fire in Central America. In addition to Arias the agreement was signed by the presidents of Nicaragua, Guatemala, Honduras, and El Salvador. The five presidents met again in August 1989 to sign an accord to disband Nicaragua's contra rebels. The contras surrendered their arms to Nicaragua's new president, Violeta Barrios de Chamorro, in June 1990.

In the 1990s, Latin American countries have been carrying out democratic elections. In Perú, Alberto Fujimori was elected in 1990 and reelected in 1995, in Ecuador, Durán Ballén was elected in 1994 and Jamil Mahuad in 1998, in Colombia, Ernesto Samper was elected in 1994 and Andrés Pastrana in 1998, In Argentina, Raúl Alfonsín was elected in 1981 and Carlos Menem in 1989. Elections were also carried out in Chile, Venezuela, Bolivia, Brasil, Uruguay and Paraguay (Online: <http://www.latinsynergy.org/latinamerica/history.htm>: Sep/12/98).

Dictatorial governments were in most cases associated with nationalization of multinational corporations, in Perú, General Velasco in 1968 nationalized the International Petroleum Company, in Cuba, Fidel Castro in 1959, nationalized American companies. There was an increase in nationalization from the late 1960s

up to the late 1970s when the general trend was reversed (Anderson, 1991:15). It is widely believed that international capital flows may be impeded or distorted by the behavior of capital-importing countries (Anderson, 1991:91).

4.2.2 Structural Reforms of Petroleum Markets

The most recent changes have occurred in policy development, oil markets have evolved significantly, and structural reforms of petroleum markets have become a critical component of macroeconomic liberalization policies. The role of the government in the petroleum sector is being redefined, and markets are being deregulated (i.e. state interventions such as special treatment of state-owned oil companies, price controls, and restrictions on trade are being removed, and monopolies are being broken up). Increasingly, the private sector is participating in more competitive petroleum markets. The following examples outline recent changes in Latin America (<http://worldbank.org/html/fpd/energy/energynotes/energy06.html>: Oct/22/98):

Price Liberalization in Honduras

“The price liberalization taking place in Honduras, an oil-importing country close to a large oil market, provides insights into the typical stages of a deregulation process. After a first phase in which procurement was opened to competition that brought the closure of the Texaco refinery, the government introduced a price formula reflecting import parity values and generous margins for terminal and retail operators. Hence, in the last three years, investments in terminals have risen to US\$30 million, and today this small market (18,000 barrels/day) has four importers. Honduras now faces the difficulties of establishing a minimal regulatory framework and a skilled agency to move ahead toward full market deregulation”.

Reform of the Petroleum Market in Chile

“Chile provides an excellent example of the separation of policy and regulatory responsibilities into different government agencies and of the elimination of barriers to competition. Empresa Nacional Administradora del Petróleo (ENAP) continues to own all the refineries and most of the common storage facilities but

operates them on a commercial basis. Since the mid -1970s, barriers to the downstream segment have been abolished, and facilities have been run by qualified operators with open access under nondiscriminatory rules”.

4.2.3 Tendency to Strengthen Environmental Management Practices

Latin American countries are in the process of implementing, strengthening and/or improving their environmental management practices. Colombia and Peru are two examples: they have signed a five year cooperation program with the Canadian International Development Agency (CIDA) to improve their environmental management practices (strengthening institutions and environmental regulations) in the hydrocarbon sector. The process of strengthening environmental management practices is being encouraged by international agreements such as Rio 92, Plan of Action for the Sustainable Development of the Americas and international institutions such as World Bank and Inter-American Development Bank.

In 1993, the World Bank began to convert its Operational Directives (ODs) into a new system of Operational Policies (OPs), Bank Procedures (BPs), and Good Practices (GPs). The current environmental and social statements are (Online: <http://www-esd.worldbank.org/html/esd/env/envmat/vol2f96/legal.htm>: Oct/01/98):

- OD 4.01 Environmental Assessment (to be issued as OP/BP/GP 4.01)
- OP/BP/GP 4.02 Environmental Action Plans
- OP 4.09 Pest Management
- OP 4.07 Water Resources Management
- OD 4.20 Indigenous Peoples (to be issued as OP/BP/GP 4.10)
- OD 4.30 Involuntary Resettlement (to be issued as OP/BP/GP 4.12)
- OP/GP 4.36 Forestry
- OD 9.01 Procedures for Investment Operations under the Global Environment Facility (to be issued as OP/ BP 10.20)
- OP/BP 10.21 Investment Operations Financed by the Multilateral Fund of the Montreal Protocol
- OP/BP 4.04 Natural Habitats
- Operational Policy Note 11.03 Management of Cultural Property in Bank-Financed Projects (to be issued as GP 4.11 Cultural Property)

The Inter-American Development Bank has stated that "the new development model of "good governance" emphasizes the role of the competitive markets, government responsibility to manage the state, including environmental protection, and the importance of civil society (private rights and individual initiative). In the area of environmental protection, the specific themes arising from the good governance model are economic incentives for environmental management, and citizen participation" (Online <http://www.iadb.org/sds/level3.cfm?parent=70>: Oct/20/98).

In this context of growing strength of environmental management within Latin American countries, companies must be prepared. Little has stated that "companies and investors interested in pursuing petroleum ventures in south countries of Latin America, will need to do so with an understanding that growing environmental concerns and increased regulations have become critical factors affecting the feasibility of those ventures". He also added that "petroleum companies entering business ventures in South America need sufficient resources and flexibility to satisfy the growing regulatory framework within which they operate" (Little, 1996:1).

4.2.4 Cultural Differences Affecting MNCs

The people of Latin America reflect a variety of ethnic heritages. Inter-marriage among indigenous people, whites, and blacks has created unique blends of culture in the region. Traditions inherited from indigenous people, black slaves, and white immigrants have contributed to a rich regional culture. Music, arts, foods, religion, architecture, and language all reflect the contributions of American, African, and European heritage.

Today, most of the people of Latin America speak Spanish or Portuguese, and a smaller number speak English, French, or Dutch. Spanish is the official language of most Latin American nations, and Portuguese is the state tongue of Brazil, the largest country. Between 20 and 25 million indigenous people in Latin America continue to speak in their native tongues. The main language groups remaining today include the Quechua and Aymara of Ecuador, Perú and Bolivia, the Chibcha of Colombia, the Mam and Quiche of Guatemala, the Nahuatl of central Mexico, and the Maya of the Yucatan. Perú has recognized two official languages: Spanish and Quechua.

Indigenous people and mixed indigenous and white populations tend to be concentrated in tropical highlands of South America (where most oil operations are located, such as in Ecuador, Colombia and Perú), Central America, and Mexico. Large numbers of blacks live in northeastern Brazil, and around the Caribbean. Southern South America serves as the homeland of European peoples who are primarily of Portuguese, Spanish, German or Italian origin.

The differences in culture within Latin American population must to be taken into account by multinational corporations to design their strategic environmental management plan. Loizides and Khoury (1996:p.4) stated that "a company needs to develop cross-cultural sensitivity to be able to communicate effectively with its local partners and/or stakeholders, and that corporate responsibility policies should reflect not only local laws, but also local customs". It is also important "to respect local culture and preserve the core values that made the company successful elsewhere" they added.

The way in which companies operate and deal with local communities in host Latin American countries will have great influence in their success. "Developing a strong relationships with partners and government agencies and communicating in the language of the country are key factors to succeed. Knowledge of a country's language will contribute to a stronger business relationship, bring foreign companies closer to both the customer and government officials and simplify the negotiation process. Learning the host country's language also demonstrates a level of commitment that may mean the difference between success and failure" (Lemaire,1996:11).

4.2.5 Globalization

The globalization trends and the reforms being taken by Latin America countries within the economic context assigns high priority to the liberalization and/or privatization of public utilities to create new savings/investment strategies based on the relatively more stable nature of income flows from energy activities. A study carried out by the Economic Commission for Latin America and the Caribbean (ECLAC), (Online: http://www.eclac.cl/Celade-Esp/dgi1905/ii_b.htm: Sep/24/98) has shown that many countries, in response to globalization, have been taking actions such as:

- liberalization and deregulation of the economy
- opening up of national economies to foreign trade
- liberalization of domestic financial markets
- and downplaying of the role of the State, particularly by privatizing public corporations, including utilities, and working towards balancing the budget.

Another study performed by the same organization (online: <http://www.eclac.cl/english/BasicTexts/Linkages.html>: Oct/05/98), pointed out that the international scenario has been presenting new challenges and opportunities for Latin America for the following reasons:

- slower growth in the industrialized economies in comparison with previous decades
- stronger trends towards globalization and technological change
- realignment of the major markets, with many developing countries seeking to improve their linkages with international markets
- an impressive expansion of international capital mobility and the creation of mechanisms to facilitate this expansion

The effects of globalization in environmental management in Latin America is becoming an important issue, in both governments and industries. Products from Latin America are encountering "barriers" to gain markets in developed countries. An study carried out by ECLAC in 1997 outlines the obstacles placed by the U.S. on trade. The study mentions "obstacles" such as standards, testing, labeling and certification, it says "exporting to the United States is a daunting task, it is estimated that more than 44,000 federal, state and local authorities enforce 89,000 standards for products within their jurisdictions. Phytosanitary regulations for fruit and vegetables "pose numerous difficulties" for the region's exports. Gaining access to the U.S. market is a cumbersome and costly process that can take years" (Online: <http://www.eclac.cl/espanol/noticias/comunicados/barreras.htm>: Oct/28/98).

Worldwide, it is also clear that economic and political strategies of globalization are improving environmental management practices (Bragd, Bridge, Hond and Jose, 1998:188), such as:

- globalization of investment leads to the transfer of cleaner technologies and best-practice management practices as firms invest in state-of-the-art equipment at greenfield sites or in retrofitting and modernizing existing plant.
- market demand for high-value, natural products in the industrialized economies can promote investment in organic or environmentally sensitive production in the developing world.
- the emergence of international environmental standards - such as the ISO 14000 series, together with self-regulation through the adoption of voluntary codes of corporate responsibility decreases the possibility of adopting different standards of environmental performance from one part of the world to the next.
- the emergence of environmental conditions attached to credit and insurance, investor concern about environmental and social liability and end-use consumer pressure is raising the threshold of acceptable environmental performance worldwide.
- the globalization of environmental awareness and the professionalization of environmental advocacy has increased the influence of stakeholders, the range of interests they represent and the geographical scale at which these interests are expressed. Telecommunication technologies have made it impossible to hide poor performance and have confirmed the importance of pursuing a global strategy of best practice.

The effect of globalization will also affect Latin American countries' environmental practices, since their products will need to meet worldwide environmental standards and requirements.

4.2.6 Foreign Investment

At the beginning of the Mexican economic crisis early 1995, there was a high likelihood that flows of private foreign capital to Latin America would shrink. The difficulty for Mexico was to meet its commitments on short-term debt instruments (amounting to just over US\$ 30 billion). As a result, foreign capital did flow rapidly out of a number of Latin American countries in response to investors' anxiety, and inflows of private capital to the region did virtually dry up as investors grew more wary. However, multilateral organizations acted rapidly granting Mexico compensatory capital to meet its short-term obligations.

Latin American countries were able to move back into the international capital markets as of May 1995. It is important to note that capital flows into Latin America did not all react in the same way, only in Mexico did direct investment flows decrease dramatically: in Chile, Ecuador, Uruguay and El Salvador they dropped slightly and in Peru somewhat more sharply. In the remaining countries of Latin America, direct investment actually increased, thus maintaining the rate it had kept up since 1991.

Studies performed by the International Monetary Fund show that during the 1990s there has been a dramatic shift in the geographical distribution of annual flows of FDI worldwide that has brought about an increase in the developing countries' share. This change can be attributed to the gradual decline of investment in the industrialized countries between 1990 and 1994 and the explosive expansion in investment in developing countries. This greater relative dispersal of FDI flows within Latin America was a result of a strengthening of the position of Chile, Colombia and, above all, Peru. FDI trends in Bolivia and Ecuador had less impact on aggregate totals, but were highly significant for the domestic economies of those countries. The principal change that has come about with respect to the origin of the FDI in the region consists in its greater diversification based on the following (Online: <http://www.eclac.cl/english/Coverpage/Invest.html>: Nov/03/98):

- the emergence of Canada as a source of FDI in some countries of the region;
- the relative weakening of the position of the United States as the country of origin of FDI for a number of countries of the region;
- the increase in investment flows from the European Union and from new sources of FDI within the region; and
- the declining importance of the geographic location of the host country as a competitive advantage.

There have also been important changes within the region with respect to the sectoral allocation of FDI. In the 1980s, a number of Latin American Governments changed their attitude to FDI, in many countries restrictions that weighed heavily on the oil and mining activities were removed. At the same time, the application of structural adjustment programs led to privatization of public utility companies.

A 1996 report of ECLAC on *Foreign Investment In Latin America And The Caribbean* (Online: <http://www.eclac.cl/english/Coverpage/Invest.html>: Nov/03/98) states that in recent years, foreign capital inflows into the region have continued to play an important role in programs to privatize public enterprises. The role of foreign investment in the privatization of State enterprises is not the same throughout the region. In Argentina, Bolivia, Cuba, Ecuador, Panamá, Perú, and Uruguay, foreign investors accounted for over 60% of total income from privatization between 1993 and 1995. On the other hand, in Chile, Colombia and Paraguay, the percentage varied between 40% and 60%, while in Brazil, Mexico, Nicaragua and Venezuela, it was less than 40%.

Trade liberalization, deregulation of economic activity, the privatization of public-sector production units and much more careful management of the main macro-economic aggregates are causing profound changes in the behavior of the Latin American economies. A more competitive climate is gradually spreading through the countries of the region as companies, markets and institutions adapt to a new micro- and macro-economic scene (Online: <http://www.eclac.cl/english/CepalReview/rw60/Changes.html>: Oct/15/98).

Foreign Investment in Latin America is also bringing sound practices of environmental management. Corporations currently operating in Latin America are being encouraged by competitive forces, public concerns, ENGO's, banks, and insurers to implement strategic environmental management (see Driving Forces, Chapter 2).

4.2.7 Economic Changes Affecting MNCs

Most of the nations of Latin America depend highly on income earned from exports. Until about 1960, these countries relied on the export of products for most of their foreign income. During the 1970s and early 1980s, Mexico and Brazil made the most rapid strides toward industrialization, especially in the diversification of their export trade. Both nations have become exporters of automobiles, and Brazil now exports aluminum and iron and steel products to the United States. Since 1973, sharp increases in the price of petroleum have slowed economic progress in Latin America, particularly among the oil-poor nations. In the early 1980s, the unstable price of petroleum, and a worldwide recession, created financial crises even in the oil-rich nations of Venezuela and Mexico.

Over the centuries, income from the export of a succession of agricultural products has supported the economic development of Latin American nations. However, governments have become increasingly aware of the need to diversify exports and, where possible, to convert raw commodities into finished products. Mining is another important source of income for many nations. The export of copper from Chile, tin from Bolivia, and copper, zinc, and lead from Peru have made the southern Andes one of the world's richest sources of minerals. Mexico also produces these minerals, but the country is increasingly converting them into finished products.

Manufacturing has become one of the most rapidly growing economic activities in Latin America, governments are urging that raw materials not be exported but be converted into finished products for sale abroad. This trend started in Mexico, but it has spread to Argentina, Chile, Venezuela, and other nations. Brazil and Mexico are the only Latin American nations that earn more from manufacturing than from agriculture or mining.

4.3 Latin America and Sustainable Development

The implementation of sustainable development programs is being encouraged by international agreements (e.g. Agenda 21), international institutions (e.g. United Nations, World Bank).

4.3.1 Definition

According a well recognized definition of sustainable development ("Brundtland Commission", 1987) the first requirement for sustainability is the generation of goods and services (economic growth) for the population as a whole (social equity) and they must be managed to guarantee that the needs of future generations are met. The Program of Action adopted at the International Conference on Population and Development points out that in order to achieve sustainable development it is important that the relationship between population, resources, the environment and development be properly managed.

4.3.2 Approaches to Sustainable Development Practices

After Rio 92, many international institutions, associations and lending institutions have been increasing and encouraging countries and business around the world to implement sustainable development practices. Three examples of these are the Association of South East Asian Nations (ASEAN), the United Nations: Commission on Sustainable Development (UNCSD), and countries of America as follows:

The Association of South East Asian Nations (ASEAN) has provided the following recommendations to governments to promote sustainable development practices within industries (Online: [gopher://gopher.un.org:70/00/esc/cn17/1996/off/96-30.en](http://gopher.un.org:70/00/esc/cn17/1996/off/96-30.en): Oct/20/98):

- adopt national strategies for sustainable development, including national strategies to promote profitable, sustainable business, prepared in dialogue with all sectors of the community and back these by commitment at the highest level (Head of Government and Cabinet)
- promote round-table dialogues among industry and commerce and environmental and citizen groups, the scientific community and other major sectors so as to secure wide Public support for the national strategy
- adopt, on the basis of such dialogues, administrative measures and economic incentives that encourage corporate environmental excellence, while using and enforcing regulations where these are essential to deter the irresponsible (including those engaged in a black market of banned substances) and avoiding perverse taxes that inhibit environmental progress. Such instruments and measures should be used consistently and the corporate sector should be sheltered against arbitrary and short term changes in the operating environment
- in partnership with international bodies including the World Business Council for Sustainable Development, facilitate the sharing of new and improved technologies with developing countries since the use of such technologies is likely to be essential for sustainable development at the global level

- encourage the use of "alternative dispute resolution" or other dialogues as a cost-effective and constructive way of resolving conflicts between business and other sectors of society.

The United Nations, Commission on Sustainable Development (UNCSD) provides the following recommendations to governments to promote sustainable development practices within industries (Online: gopher://gopher.un.org:70/00/esc/cn17/1998/98--20.en: Oct/22/98):

- within a supportive international environment, Governments should create an enabling policy environment in order to encourage domestic private enterprise and economy-wide competitiveness through improvements in infrastructure and educational, financial and legal institutions; encourage research and development; and facilitate exports and the liberalization of domestic markets
- governments should continue to promote the integration of environmental and industrial policies, with emphasis on the preventive approach
- development strategies should encompass official development assistance and should include the effective use of all possible means of promoting sustainable development and the facilitation of private investment, trade, technology transfer, and utilization of science and technology, tailored to the specific conditions and needs of each country
- governments in developed countries should encourage foreign direct investment to assist developing countries and economies in transition in their development in a way friendly to the environment and supportive of sustainable development
- there is a need for making existing subsidies more transparent in order to increase public awareness of their actual economic, social and environmental impacts, and for reforming or, where appropriate, removing them
- governments should encourage the implementation of environmental management systems. In order to widely disseminate environmental management concepts in small and medium-sized enterprises, especially in

developing countries, the instruments and methods of environmental management have to be adapted to their specific capacities and needs, making them easier to apply and less costly

- social objectives should be an integral part of sustainable development, and the overriding social policy challenge for Government and industry is to promote the positive impacts of industrial activities on social development, while limiting or eliminating the negative impacts
- governments, where appropriate, should cooperate with industry, trade unions and other concerned organizations of civil society in expanding, strengthening and ensuring the sustainability of social security schemes
- attention should be given to studies that propose to improve the efficiency of resource use, including consideration of a tenfold improvement in resource productivity in industrialized countries in the long term and a possible fourfold increase in resource productivity in industrialized countries in the next two or three decades
- the concept of eco-efficiency should not be a substitute for changes in the unsustainable lifestyles of consumers, and the pursuit of eco-efficiency also requires enhanced efforts to assist developing countries in their efforts to promote sustainable consumption and production patterns, by improving access to financial resources and environmentally sound technologies
- governments should continue to encourage voluntary initiatives by industry, in both the formal and informal sectors, including voluntary and transparent codes of conduct, charters and codes of good practice, and the conclusion of voluntary agreements
- in order to strengthen domestic technological capabilities, it is useful for Governments to develop a national science and technology strategy and to support capacity-building to promote partnerships with industry
- technology transfer and cooperation and the development of human and institutional capacities to adapt, absorb and disseminate technologies and to

generate technical knowledge and innovations are part of the same process and must be given equal importance

The States and Governments of the Americas convinced of the urgent need to advance toward sustainable development by strengthening social awareness, with a broad vision that promotes public participation, integration, hemispheric cooperation, equity, and social justice, with special emphasis on women, children, and vulnerable groups, committed to implement the first Plan of Action for the Sustainable Development of the Americas, based on the principles of the Declaration of Santa Cruz de la Sierra, which are (summarized):

- equitable economic growth.- Implement effective and ongoing measures to ensure that the international economic and financial system supports the growth of local economies and their sustainable development with a view to establishing greater social justice for all people**
- social dimensions.- There is an urgent need to intensify efforts to reduce the poverty and marginalization which broadly affect the societies, and especially women and children**
- a healthy environment.- Planning and decision-making for sustainable development require understanding and integrating environmental considerations, as well as social and economic factors**
- public participation.- Promote opportunities for the expression of ideas and the exchange of information and traditional knowledge on sustainable development between groups, organizations, business, and individuals, including indigenous people, as well as for their effective participation in the formulation, adoption, and execution of decisions that affect their lives**
- the environment and transfer of technology.- Efforts to promote the transfer of, and access to, appropriate technology should continue. In addition, national scientific and technological capacities must be strengthened and complemented with international cooperation**

- **financing.-** The strong support of international organizations and financial institutions is important
- **strengthening of the legal framework.-** Promote the progress in international law and the reform and modernization of national laws. Develop national mechanisms for effective enforcement of applicable international and national laws and provisions.

Lending institutions such as the World Bank have been involved in many sustainable development projects in Latin American countries as will be seen next.

4.3.3 Examples of Sustainable Development Practices

Latin American projects in which the World Bank is/was involved with to address sustainable development issues:

Key Stakeholders Involvement(*)

Ecuador: Indigenous and Afro-Ecuadorian Development Project. Indigenous organizations were invited to be part of a Consultative Board for project preparation. The project has been prepared in a highly participatory fashion, incorporating components that, among other things, would strengthen grassroots social organizations, including their cultural heritage, and both improve their access to land, water, and investment resources as well as the legal framework of indigenous peoples rights.

Addressing Social and Institutional Concerns(*)

The Latin America and Caribbean social team is developing a Regional Urban Peace Program with a focus on the reduction of violence and its effects on poor communities; and is designing a new initiative called the Peasant Enterprise Zones to address rural violence reduction in Colombia. Under its Indigenous Peoples Development Initiative, LCR will also be providing new lending in Argentina, Bolivia, Guatemala, Mexico, and Peru.

(*): Oct/18/98, <http://wbIn0018.worldbank.org/essd/lb.nsf/c233a8b6c290f431852566730079d343/d266611cb522173f8525668e004ea601?OpenDocument>

Communication for Development

Information and knowledge are essential to improve the productivity of small farmers in Latin America. An FAO regional project financed by the Government of Italy (July 1993-December 1996) has created national capacity in rural communication in four countries (Bolivia, Brazil, Nicaragua, and Chile) in addition to providing assistance to a number of other countries in the region (Mexico, Argentina, Costa Rica, Honduras, etc.) The main objective has been to train national staff in the production and use of communication methods and media to promote the participation and training of small farmers and their families. In Chile and Mexico computer technology is being applied to establish information networks to provide agricultural producers and farmer associations with essential data on crops, inputs, prices, markets, weather conditions, available social services, credit facilities, etc. to enable them to compete in the new market economy.

The communication staff trained by the project works with groups of farmers, with the entire farm families, including women and youth. The multimedia approach reinforces learning, especially among illiterate rural populations. The cost effectiveness, quality, and outreach of the training activities have substantively improved. In addition, the project has not been working only with government institutions but with all the stakeholders involved in rural development. After three years, the project has developed national capacity in four countries, and received requests and provided assistance to many more (Argentina, Costa Rica, Honduras, Mexico, etc.). The major beneficiaries are subsistence farmers and their families. Government agencies, NGOs, municipalities and farmer associations now have communication systems, methodologies, and tools to disseminate information and transfer knowledge and skills on a wide scale. (<http://www-esd.worldbank.org/extension/cases/CASES022.shtml#A170>, Oct/22/98).

The concept and application of sustainable development has become very important to Latin American countries dealing with social, economic and environmental problems. In this context, multinational corporations who plan to operate in Latin America will have to adjust their environment management practices to the same standards they exercise in developed countries, or even more, because they will have to take into consideration other sensible

environmental issues such as operating in the rain forest, surrounding indigenous communities and sometimes being affected by guerrillas and armed political groups such as in the Colombian case.

4.4 Environmental Management in Latin America

Countries like Colombia and Peru are currently in the process of improving their environmental management in the hydrocarbon sector (i.e. strengthening institutions, improving environmental laws). Other industries are being encouraged by international trade agreements to implement or improve environmental practices.

4.4.1 Environmental Management in the Hydrocarbon Sector

An study carried out by the Inter-American Development Bank in 1991 shows that most Latin American countries are organized as centralist nations in which the legislative, executive and judicial powers are practiced by separate bodies. The presidential system is the most common system in Latin America, the executive powers are administrated by the President of the Republic, who is responsible for national public administration, and therefore, the incorporation of environmental management into public administration is led by the President.

Parallel to the centralized administration system, there is a local system of government based on municipalities, which are independent institutions responsible for local interest and have their own administration. Some countries have created intermediate bodies between central and municipal bodies in an attempt to decentralize the political and administrative system. There are a few countries organized as federations (Argentina, Brazil, Mexico and Venezuela), in these countries the central and municipal governments are also established, but an additional federal government power is exercised.

Environmental management is concentrated in centralized administrations and divided into specific sectors that are part of these administrations (i.e. ministries or departments of environment). The study also shows that administrative systems for environmental management in Latin American countries are organized around three principles (Brañes, 1991:50-55):

- a certain degree of decentralization
- a certain degree of trans-sectoralization, and
- a certain degree of public participation

The degree of centralization or decentralization of environmental management is determined by the number and importance of the environmental responsibilities that are assigned to national and local governments, and to intermediate bodies. The degree of sectoralization and trans-sectoralization of environmental management is determined to a the greater or lesser extent by which environmental responsibilities are divided among the different government bodies at any given level. Public participation in environmental management is determined by the way in which citizens can share in a the governments' activities and decisions to protect the environment.

Latin American countries have adopted a different perspective for addressing environmental management. The same study carried out by the Inter-American Bank (1991) has illustrated the different models adopted by these countries, these are:

- strengthening a preexisting judicial-administrative structure (i.e. a ministry of health or a ministry of agriculture)
- creating a special judicial-administrative structure (i.e. a ministry or an ad hoc environmental agency)
- establishing a coordinating body (i.e. an inter-ministerial committee)
- a combination of the different models (i.e. strengthening or establishing a judicial-administrative structure, accompanied by the creation of an inter-ministerial committee)

Generally, environmental responsibilities in Latin American countries are divided into the following sectors: protection of renewable and nonrenewable natural resources, management of the urbanized environment, and environmental sanitation. Control over renewable and nonrenewable natural resources in general is entrusted to:

- ministries or departments of agriculture, for activities related to land, wildlife, and continental waters

- ministries or departments of fisheries for activities related to fishery
- ministries or departments mining, energy or fossil fuels for activities related to the whole process of these activities

Management of the urbanized environment is generally considered a local issue, and therefore the responsibility of local governments such as municipalities. However there has been a trend to centralize this responsibility in ministries or departments of urban affairs. Environmental sanitation is still a responsibility of ministries or departments of public health. Ministries frequently have subordinate bodies. It is also important to note that in many countries, the president of the republic has technical or advisory bodies that play a significant role in environmental management.

The implementation of environmental management within governments and industries in Latin America is becoming more evident. The incorporation of environmental management into government functions had begun with some measures taken by the centralized administrations such as protection of certain natural resources and control of the negative environmental effects of certain activities.

4.4.2 Environmental Regulations in the Hydrocarbon Sector

Environmental regulations in Latin American countries are characterized by overlapping authority and frequent regulatory changes (Little, 1996:3):

- **Overlapping Authority:** in some countries, such as Brazil, Colombia, and Argentina, a combination of regional, state, and municipal agencies may have authority over environmental protection requirements that overlap with or add to the level of regulatory by federal environmental or energy agencies. In others, such as Ecuador, national ecological institutes have specific environmental regulatory authority in addition to that exercised by the principal environmental agency
- **Frequent Regulatory Changes:** Turnovers in presidential administrations often result not only in a corresponding change in those who hold key ministry positions but also in changes in the structure of ministries

The environmental laws and regulations in south countries of Latin America vary greatly by level of detail, requirements for approval, and jurisdiction authorities. Considering the application of these laws and regulations some common characteristics are (Little,1996:4):

- not well defined in terms of what must be done to achieve compliance
- evolving in terms of how they are understood and applied by government officials
- sometimes applied on the basis of a double standard, holding international industries to more stringent expectations and more advanced environmental management practices than local industries
- applicable across the spectrum of oil and gas activities, from exploration through refining, transportation, and marketing
- generally less advanced for off-shore than for on-shore operations
- enforced inconsistently

Lucas (Conference,1998) has identified three areas as “emerging issues” in which Latin American countries are putting special attention for the development and/or strengthening of their environmental legal framework, these are:

- natural areas: parks reserves
- wide choice for economic instruments
- transparency in public participation

Chapter 5: Environmental Management Model

5.1 Introduction

Much of the underlying philosophy for introduction of environmental management in public and private organizations has been derived from the concept of sustainable development (Mortensen,1998:24). In 1987, the Brundtland Report *Our Common Future* identified the interconnections between economic growth and the environment and suggested that in order to keep an economic growth, a better management of the earth's natural resources would be required. The principles of sustainable development (Appendix A) have been adopted by some governments and industries. The regulatory framework for environmental protection has responded equally, a shift from a reactive to a proactive approach to environmental protection has emerged (Mortensen,1998:26).

The increasing requirement to improve the environmental performance and to integrate the environmental issues into management decisions, has resulted in the development and implementation of wide range of environmental management tools such as environmental audits, EIA, and cost-benefit analysis, among others mentioned in Chapter 2. The development of formal environmental management systems and standards are based on the experience of using these earlier techniques. Formal environmental management systems are based in the management structure of an organization (Mortensen,1998:28).

The development of green strategies is under continuous improvement: "there has undoubtedly been tangible progress in improving environmental performance within multinational corporations" (Bragd, Bridge, Hond, and Jose,1998:180). At the same time, new driving forces and barriers to the development and implementation of environmental management systems (use of selected set of environmental management tools) are appearing as a result of the globalization, and because companies are investing in more sensitive environmental areas. Bragd, Bridge, Hond, and Jose have stated that there is increasing evidence that the "scene" in which firms and other organizations play their "act" of greening, is changing"(1998:184). The scene comprises the organizational field in which the organization operates (i.e. its task environment, market and direct stakeholders).

Governments and industries have been designing and improving their environmental management strategies. The following section will provide some "guidelines"

recommended by associations, researches, industries and international institutions for the development and implementation of strategic environmental management.

To develop a model of environmental management for Latin American countries and for oil and gas multinationals operating within Latin America, I will consider the following steps:

- a) current guidelines for the development and implementation of strategic environmental management issued by international institutions, researchers, and industry associations
- b) develop a model for the development and implementation of strategic environmental management within Latin American countries
- c) develop a model for the development and implementation of strategic environmental management within multinational oil & gas corporations operating in Latin America

The models must take into account the driving forces and barriers explained in Chapter 2, these are:

Environmental Driving Forces:

- 1. Lending Institutions
- 2. Regulatory Requirements
- 3. Insurance Companies
- 4. Demands of Sustainable Development
- 5. Markets
- 6. Stakeholders
- 7. Voluntary Environmental Programs
- 8. Investors
- 9. Environmental Liability
- 10. Environmental Non-Governmental Organizations
- 11. Industry Associations
- 12. Public Concerns
- 13. International Standards
- 14. International Agreements

Barriers to Environmental Management

1. lack of political and public awareness
2. inadequate skills and personnel
3. corporate/institutional culture
4. lack of enforcement
5. national priorities
6. lack of recognition of the need for an EMS
7. avoidance of the unknown
8. multiple stakeholders with conflicting interests

5.2 Current Models for the Development & Implementation Of Strategic Environmental Management

I have found the following seven models in the literature for the development and implementation strategic environmental management, these models are:

Model A: Enterprise for the Environment (E4E)

Model B: Environmental Protection Agency (EPA)

Model C: The Society of Management Accountants of Canada

Model D: The Global 500/UNEP/ASEAN

Model E: Enterprise for the Environment (E4E)

Model F: L.R. Jones & John H. Baldwin

Model G: Thompson & Thompson / Kirkland

5.2.1 Model A: Enterprise for the Environment (E4E)

In February 1998, the E4E released its final report entitle "The Environmental Protection System in Transition: Toward a More Desirable Future" aimed at building a broad, bipartisan agreement on improving the USA's environmental protection system. The report provides with a set of elements representing the common vision of the E4E participants and with steps to begin improving environmental protection system (Hausker,1998:30-36), these are:

Vision

- maintain basic standards of environmental protection, and effectively and efficiently prevent and control threats to human health and the environment;
- ensure that all environmental laws and regulations are fairly and consistently enforced;
- distribute cost and benefits fairly, accounting for impacts on both present and future generations, and address disproportionate impacts on any group in society, especially low-income individuals, people of color, and other disadvantage groups;
- set and pursue clear environmental goals and milestones for the nation, states, localities, and tribes, and use understandable indicators to measure progress;
- adapt and adjust policies, strategies, and systems based on experience and new information;
- generate, disseminate, and rely on the best-available scientific and economic information;
- offer flexibility of means coupled with clarity of responsibility, accountability for performance, and transparency of results;
- rely on a broad set of policy tools including:
 - ⇒ economic incentives that are aligned with environmental goals, reward superior environmental performance, and stimulate technological innovation;
 - ⇒ incentives for changes in individual behavior, and
 - ⇒ disclosure of consistent and accurate source-level performance information.
- place authority, responsibility, and accountability at the appropriate level of government;
- promote high levels of environmental stewardship and continuous improvement in environmental performance; and
- create decision processes that meaningfully involve affected stakeholders and engage all citizens in protecting the environment.

Steps for Implementations

- set goals, milestones, and reassessment;
- create an information-rich environmental protection system;
- change the existing regulatory system toward the E4E vision;
- provide incentives for organizations and individuals to act in certain ways;

- describe the role of the government and the public;
- define environmental stewardship as an approach to managing the company that reflects an internal set of values that takes into account society's concern for the environment;

5.2.2 Model B: Environmental Protection Agency (EPA)

The Environmental Protection Agency, has recognized that most states within the United States stand as competent environmental managers, but the agency also recognize that there is a continuous improvement process. Under this concept, the State Capacity Task Force was created to invigorate EPA and state efforts to enhance environmental management capacity. The following are the recommendations provided by the Task Force to strength environmental management in the United States (EPA,1993)

Framework and Policy

- establish a new framework and policy for state/EPA relations emphasizing flexibility, a mutually supportive working relations, and shared responsibility for success.
- initiate a review of the current policy statement to intent of issuing a new concise statement to reflect the new framework.
- restructure program oversight practices.
- issue a new policy statement on grant oversight to clearly define EPA's responsibilities for managing and accounting for public funds.

Strategic Planning and Integration Priorities

- establish a joint process with each state to identify and define clear environmental goals and to systematically integrate federal and state priorities.
- regional administrators should meet with states within their jurisdictions to discuss regional priorities and state priorities, and agree on integrated federal and state priorities.
- States should be active participants in EPA's long-term planning process and be included in setting its agenda.
- EPA should devise mechanisms to include states in setting goals and developing planning guidance.

- EPA and states should issue periodic public reports detailing state and federal environmental goals, objectives and priorities, and discussion progress.
- implement collaborative projects to promote state/EPA co-management of geographic projects.
- vigorously promote operational efficiency in all state/EPA programs.

Mechanisms to Institutionalize State Capacity

- establish a central contact to guide and monitor state capacity efforts.
- form an EPA steering committee on state capacity to advise and consult on EPA matters that affect states.
- convene a conference of states with the new Administrator to review this report.
- strengthen the State/EPA Operations Committee.
- consult other advisory groups, such as the Environmental Financial Advisory Board (EFAB) and the National Advisory Council for Environmental Policy and Technology (NACEPT).
- initiate a dialogue to manage the environment, researching critical issues, and improvement management of environmental programs.
- significantly expand the exchange of EPA and state employees, through both individual assignments and team efforts.

Building State Capability and Management Infrastructure

- use EPA's planning and budget processes to incorporate state capability support as a key investment priority.
- ensure state representation and consideration of stated needs and priorities.
- seek to obtain maximum delegation of national programs.
- exercise maximum flexibility in negotiating grant-assisted work plans.
- encourage the use of innovative approaches to improve the efficiency and effectiveness of state environmental programs.
- energize EPA's environmental training function to provide learning experiences for federal, state, and local employees.
- invest in a state/EPA integrated data and information portfolio.
- continue to provide consultation and assistance on environmental management needs, risk assessment, information system management, and TQM.

- implement programs to improve the scientific and technical capability of state and local personnel.

Environmental Finance

- state and local governments with environmental management responsibilities should critically assess and challenge the funding mechanisms used for each component of their capital and operating budgets.
- expand the existing multi-media environmental finance program to develop strategies and approaches to assist state and local governments in financing and carrying out their environmental mandates.

Grants Administration

- establish a State/EPA Grants Steering Committee to ensure continuous improvements in grants management processes.
- continue research on alternative grant mechanisms and advocate new authorities for multi-media grants.
- seek more efficient grant award and management process by improving the integration of state and federal planning cycles.

Legislative Action

- legislative initiatives that would make state-capacity building a primary mission of the Agency.
- articulate the current limits and opportunities under the Administrative Procedure Act (APA) for including states in the rule-making process, and propose specific legislative changes to the APA that would address EPA and state needs.
- offer guidelines on how EPA can currently work with the states under the Federal Advisory Committee Act (FACA).
- when EPA's basic statutes are reauthorized, seek amendments that clarify the roles and responsibilities of the states and EPA.

5.2.3 Model C: The Society of Management Accountants of Canada

The Society of Management Accountants of Canada has proposed the following steps to implement Corporate Environmental Strategy within a company (Epstein, 1995:4-6):

Managing Regulatory Compliance

Organizations acknowledge the financial implications of environmental matters; they realize the possible risks, such as litigation and cleanup costs, associated with current practices; steps recommended in this stage are:

- ensuring top management commitment and support
- developing a corporate environmental policy statement
- preparing an environmental action program
- creating an environmental management system; and
- establishing an environmental audit program

Achieving Competitive Advantage

Organizations move from a commitment to comply with legal requirements to a realization that they can gain a competitive advantage by using resources more efficiently; steps recommended in this stage are:

- developing strategy for external environmental reporting
- designing products/processes that take environmental impact into account; and
- integrating environmental impact information into managing decisions

Completing Environmental Integration

Organizations have fully integrated environmental components into corporate life. Environmental issues, large and small, are part of everyone's day-to-day decision making, they recognize that long-term economic growth must be environmentally sustainable; steps recommended in this stage are:

- integrating environmental impact into performance evaluation systems
- generating revenue through recycling and "waste" management
- introducing and marketing "eco-efficient" products/services; and
- integrating the principles of sustainable development

5.2.4 Model D: The Global 500/UNEP/ASEAN

The Global 500 Forum and Golden Hope Plantations Berhad in collaboration with the Ministry of Science, Technology and the Environment, Malaysia and the United Nations Environment Programme (UNEP) organised the 1st Global 500 Forum International Conference called *Towards Corporate Environmental*

Excellence - Challenges and Opportunities in Asia-Pacific. The conference was held in conjunction with the Association of South East Asian Nations (ASEAN) from 17th to 20th October, 1995 in Kuala Lumpur, Malaysia (Online: gopher://gopher.un.org:70/00/esc/cn17/1996/off/96-30.en; Oct/20/98). They have recommended the following steps to develop and apply corporate policy for environmental excellence:

Developing a Corporate Policy for Environmental Excellence

- set out for a Company its goals of environmental excellence as an integral part of the wider corporate vision and mission;
- demonstrate firm commitment to these goals, perhaps by preparing Company "Agenda 21s";
- emphasize that ecoefficiency is being pursued because it is profitable therefore economic and environmental targets do not conflict and must be pursued together;
- accept key guiding principles such as the precautionary principle, the polluter pays principle (which is a no-subsidy, non-externalizing principle) and above all, the accountability principle: accountability to shareholders and stakeholders for what the Company does;
- adopt the goals of the ICC Business Charter, the UNEP Bankers' Charter and the ASEAN business principles - or even better ones;
- set down practical measures for achieving environmental excellence within the Company, and also define how the Company will relate to the wider community;
- be transparent regarding how the Company will work to achieve its ends.

Applying Environmentally Advantageous Operating Procedures

- motivating the entire enterprise
 - ⇒ secure the involvement and commitment of the Board of Directors and the CEO, supported by all senior management;
 - ⇒ involve expert advisers as an Environmental Advisory Group or even as "non-executive environmental directors";
 - ⇒ involve all levels of the Company in formulating and implementing the corporate environmental strategy. If the work force as a whole is able to make an input, it will feel a sense of ownership, will understand the plan better, and will implement it more energetically;

- ⇒ ensure that the Company's training schemes cover the whole subject of eco-efficiency and environmental excellence.
- adopting best Practice
 - ⇒ adopt and implement best practice for minimizing the waste of energy and raw materials, for optimum recycling and avoiding polluting discharges to the environment and the externalization of costs. How this can be done in a variety of enterprises has been illustrated by numerous case studies presented to the Conference;
 - ⇒ adopt detailed measures including:
 - ◇ life cycle assessment of products;
 - ◇ environmental impact assessment (even if not required by law);
 - ◇ completion of a check list of quantifiable targets against which progress can be monitored, giving an "Environmental Performance Index";
 - ◇ rigorous monitoring of discharges to, and impacts on the environment;
 - ◇ monitoring of compliance with the provisions of the ICC Business Charter or other codes of practices, and with the relevant goals set out in the corporate environmental strategy;
 - ◇ promotion of research and development that allow introduction of practices that further enhance environmental excellence;
 - ◇ enter into dialogue with contractors and suppliers to ensure that they also adopt high environmental standards.
- Reporting and accounting
 - ⇒ produce a corporate environmental report designed to inform and enthuse employees, inform local communities, educate the public, answer critics,
 - ⇒ and satisfy stakeholders, financial institutions and others that the Company is fully committed to environmental excellence;
 - ⇒ ensure that this report includes quantitative data on the Company's performance in achieving (or failing to achieve) its set targets.
 - ⇒ monitor the level of commitment to environmental excellence in the Company and the acceptability of its environmental reports and performance to the local community, consumers and others.

- **Independent certification and Promotion**
 - ⇒ Seek independent validation of corporate action and certification to ensure that products and processes indeed meet high environmental standards. Assess corporate environmental management of the Company against ISO 14000 and its various component elements, and work towards compliance;
 - ⇒ enlist the aid of expert consultants to criticize and help improve the Company's environmental reports, and consider the potential value of eco-counsellors in identifying unsuspected opportunities for improved environmental performance;
 - ⇒ involve all major stakeholders in dialogues about the Company's role and performances, targeting in particular:
 - ◊ local communities;
 - ◊ consumers;
 - ◊ environmental groups;
 - ◊ financial institutions.
 - ⇒ make the Company's environmental performance a positive feature in its promotion and marketing, and urge that it to be recognized as a "green investment" by financial institutions. Adopt eco-labelling voluntarily; it should be a selling point.

5.2.5 Model E: Enterprise for the Environment (E4E)

During the past decade, private companies have found increased pressures to improve their business and environmental performance. Business pressures such as marketplace competition, expanded pressure for stakeholder return, technological change, and management practices emphasizing quality improvement and cost reduction. In improving their environmental performance, companies have responded to driving forces such as public expectations for environmental quality improvements, more direct stakeholder monitoring of environmental performance, changing corporate values, and efforts to integrate EHS with business management (E4E, 1997). The E4E provided with the following recommendations to develop and implement strategic environmental management (Online: <http://www.csis.org/e4e/yosierpt.html>: Nov/01/98) .

Key Factors of Success for Creating Sound Environmental Management

- Achieving a “boundaryless” character to business and environmental management systems so that such issues as the corporate vision and performance measures are more consistently managed across different levels of management across business units.
- Developing scorecards for key business and environmental management system element. Scorecards help management track performance results, and they also enable stakeholders as varied as financial analysts and communities to verify such results in ways that can sustain a company’s long-term reputation and credibility.
- Managing environmental issues to contribute more directly to value-generating operations and strategies so that the value of environmental activities is more clearly demonstrated to business colleagues, shareholders and customers.
- Enhancing the personal and professional skills of managers and employees to improve environmental performance, while upgrading the management system.
- Expanding the diversity of stakeholder viewpoints and perspectives considered by management in making business and environmental management decisions.

Best Practices for Transferring Excellence in Business to Environmental Management

- Setting goals: corporations should set goals in order to achieve excellence in practicing environmental management.
- Performance measures: placing an economic value upon specific environmental functions such as compliance, due diligence reviews, and product life cycle analysis, broadening the application of economic value to environmental activities.
- Creating a core process focus to integrate business and environmental management. Companies are devising an increasing number of methods for integrating their business and environmental activities including: environmental staff review of business plans; improving business-environmental accountability processes; and reducing business and

environmental cost by redesigning business processes.

- Building and transferring core competencies. Companies committed to performance excellence seek to enhance the skill levels of their personnel and continually learn about and apply practices that produce superior performance. Example of some leading applications include: developing and retaining core expertise as a business team, business unit or corporate asset; and rotating business managers to direct environmental functions.
- Managing behavior to improve business and environmental performance such as incentives programs that apply to individual employees and clarify the consequences of failing to achieve environmental goals.
- Instituting feedback processes.

5.2.6 Model F: L. R. Jones & John H. Baldwin

L. R. Jones & John H. Baldwin (1994) proposed six steps to achieve Corporate Environmental Excellence, these are:

- develop program organization, staffing, and resources;
- develop an environmental policy with full participation of corporate management;
- accomplish an environmental audit;
- develop and implementation program including strong technical, legal, and educational programs;
- monitor, evaluate, and adjust the program; and,
- monitor trends and support similar interests.

5.2.7 Model G: Thompson & Thompson / Kirkland

Thompson and Kirkland (1999:In Press) have identified eight components that should be considered to develop, implement and operate a strategic environmental management within MNCs, these are:

- The list of driving forces
- Theoretical or formal environmental Management systems and standards, such as ISO 14000

- current practices
- environmental management tools
- scientific facts
- barriers
- identify actors & participants
- corporate culture

This eight components are linked and interact with each other in the process of designing, implementing and operating an environmental management system (Fig 5-1).

Kirkland and Thompson (1999, In Press) also provide with strategies to overcome barriers to the implementation of EMS, these are:

- identify the environmental driving forces affecting the organization
- educate, train and communicate
- align the EMS with the organization
- phase-in the introduction of the EMS
- encourage employee acceptance of the EMS
- identify required resources
- share resources
- identify innovators and early adapters

5.3 Strategic Environmental Management Model for Latin America Countries

The model design for the development and implementation of strategic environmental management will be based not only in the use or modification of previous models, but also in the consideration of political, social, cultural and economic issues. Developing a strategic environmental model for Latin American countries will be more an art than a science, considering the new scenarios which it will be applied. I consider that there is not a single model that can be used for all Latin American countries, but this model can be adapted and modified according to specific country requirements.

To develop and implement strategic environmental management, Latin American countries should consider the following steps:

- a) commit country's laws with environmental protection
- b) express their commitment to international agreements
- c) establish and define the role of the environmental organization within the country
- d) select a set of environmental management tools
- e) understand the importance of hosting multinational corporations

5.3.1 Commit Country's Laws with Environmental Protection

The environmental concern must come from the top level of the government commitment: the constitution and/or legislation. They should address protection and management of the environment as a priority and essential for achieving national goals. The responsibility for environmental protection and management should be led by the President and the Ministers. The Canadian of Management Accountants stated that "the responsibility for setting environmental policy rest with those with proprietary interest in the organization or their delegates" (Epstein,1996:9).

Traditionally, governments have used command-and-control regulations to achieve environmental objectives (Schmidheiny,1995:19). Although there is a growing perception that "command-and-control" regulations have begun to reach its limits as environmental protection strategy (Muir,1998:1), they may be complemented by economic instruments and by self-regulation (voluntary actions) for an optimal mix to achieve the objectives of sustainable development (Schmidheiny,1995:29). I agree with Nuevos Horizontes (EVDS 702,1997:44) when they mention that environmental regulations, combined with the use of economic instruments and voluntary programs, can effectively contribute to environmental protection.

In the case of developing environmental regulations, some of the following principles to promote innovation, resource productivity, and competitiveness proposed by Porter and Linde must be considered (Porter and Linde,1995:124):

- focus on outcomes, not technologies
- enact strict rather than lax regulation
- regulate as close to the end user as practical, while encouraging upstream solutions

- employ phase-in periods
- use market incentives
- harmonize or converge regulations in associated fields
- make the regulatory process more stable and predictable
- require industry participation in setting standards from the beginning
- develop strong technical capabilities among regulators
- minimize the time and resources consumed in the regulatory process itself

5.3.2 Express Their Commitment to International Agreements

Prior to design of any strategic environmental model, Latin American countries should express their commitment to international agreements. These international agreements provides with principles, guidelines and/or minimum environmental standards (i.e. Rio 92, Declaration of Santa Cruz de la Sierra, ISO series guidelines) as baseline to start developing a new model. International agreements such as Rio 92 and Declaration of Santa Cruz de la Sierra (<http://coord.rds.org.bo/cb/eng/fdec-en.html>) provide with principles under which Latin America countries should perform to achieve sustainable development objectives.

5.3.3 Establish and Define the Role of the Environmental Organization

The environmental organization and structure is crucial to develop and implement sound environmental policies and practices. A study carried out by Little (1996) has identified “overlapping authority” in addressing environmental issues among Latin American countries. The environmental structure and jurisdictions must be clearly defined to avoid overlapping functions and therefore, delay in the administration processes (i.e. providing permits). If the country is structured as centralized government (i.e. Perú, Chile, Ecuador, Bolivia), or as federation government (i.e. Argentina, Brasil, Mexico) that environmental structure should be well defined among government bodies in all levels (i.e. provincial, regional, local). In general, it must be considered to:

- establish and define the role and functions of the ministries
- establish environmental bodies in the government structure

- establish a link among environmental bodies for coordination, cooperation and avoid jurisdiction and administration problems.

5.3.4 Select a Set of Environmental Management Tools

To develop an environmental management system that allows the country to establish an effective way to regulate, register, control, manage, communicate, and follow up, appropriate environmental management tools should be selected. At least, the following list of tools should be selected:

- environmental management structure
- strategic environmental planning
- environmental impact assessment
- environmental audit
- environmental reports
- environmental indicators
- product and technology assessments
- economic instruments
- education and training
- risk management

There are other tools that can help the country to improve its environmental performance, such as:

- life cycle assessment
- life cycle costing
- new systems of accounting

The strategies identified by Kirkland and Thompson (1999, In Press) should be considered to implement a strategic EMS.

5.3.5 Understand the Importance of Hosting Multinational Corporations

Multinational corporations play an important role in the economies of Latin American countries as was explained in chapter 4. Foreign direct investment in

the oil and gas sector is important considering the amount of money required to do high risk investment in very sensitive environmental areas. For this reason, Latin American countries should establish, develop and maintain good relationships with multinational corporations. It means that Latin American countries should consider MNCs as partners for the development and implementation of national programs taking into account that MNCs have expertise and technology. Sharma, Vredenburg and Westley (1994) provided an example of how MNCs can support programs in the Third World Development, in this particular case, the MNC played the role of bridge between an international development funding agency and the country to get funds and administered those funds. Keeping a good relationship with MNCs will also improve the country's image, and it will be an incentive for more investment.

5.4 Strategic Environmental Management Model for Multinational Oil & Gas Corporations Operating in Latin American Countries

The model design for the development and implementation of strategic environmental management within corporations operating in Latin American will be based not only in the use or modification of previous models, but also in the consideration of political, social, cultural and economic issues. Driving forces and barriers to the implementation of environmental management systems must also be considered. I consider that each multinational will have to design a particular model, depending on the country in which it is operating. The following steps should be taken into account by multinational oil and gas corporations to develop and implement a strategic environmental management:

- a) express commitment to host country regulations
- b) define the role of the environmental organization within the company
- c) select a set of environmental management tools
- d) establish, develop and maintain good relationships with the stakeholders
- e) act in a proactive way rather than a reactive way

5.4.1 Express Commitment to Host Country's Laws/Culture/Needs

Multinational corporations should express their commitment to the host country's laws, culture and needs. The environmental policy statement should be used for this purpose, in which the company's mission, vision, core values and beliefs,

stakeholder requirements and guiding principles should also be addressed (see Chapter 2). The company should make public its compliance with national regulations and international environmental agreements. Even more, the company should develop and implement better environmental practices than host country's requirements. A paper issued by the Conference Board of Canada entitled "Corporate Responsibility in Developing Countries" (Loizides and Khoury, 1996:4) states that "corporate policies should reflect not only local laws, but also local customs". Compliance with national laws and international agreements is a first step in developing a strategic environmental management.

The company should also develop a cross-cultural sensitivity to be able to communicate effectively with its local partners and/or stakeholders (Loizides and Khoury, 1996:4). The company should have to staff its operations, up to the highest levels, with local employees to ensure that the company's operations become part of the community. Loizides and Khoury state that "local employees are better able to help a company identity". Another way to commit to host country's culture is by choosing a local partner, it is an effective way of establishing a presence in a foreign country and facilitates market access and communication with the community.

The company must also perform in a way to alleviate host country's needs. Loizides and Khoury (1996) have identified the following issues in which multinationals could help host countries:

- transferring technical skills to local people through human resource development in order to use the technology efficiently
- establishing a mechanism to address long-term needs associated with infrastructure, education and health, and support community economic development projects in order to raise the company's profile with the public

5.4.2 Define the Role of the Environmental Organization Within the Company

The environmental organization within the company is important to approach an efficient strategic environmental management. It must clearly define the role of the Board of Directors, environmental senior and middle managers as well as

personal in charge of the environmental affairs in the host country. A key issue to succeed is to keep open lines of communication in the organization; from the bottom line (i.e. field operators) to top managers. A good system of communication should be used for this purpose (i.e. computers, faxes, e-mails, databases, telephone, teleconferences, pagers).

Decision makers should have updated information to decide whether is necessary to develop and/or implement an action program. It is also important to establish an open line of communication among the stakeholders to know of any initiative coming from them that could benefit or harm the company.

5.4.3 Select a Set of Environmental Management Tools

The selection of a set of environmental management tools to be used in a Latin America country will depend on the degree of environmental performance the company wants to achieve. However, there are some tools that necessarily have to be used, such as:

- environmental management structure
- environmental policy
- strategic environmental planning
- environmental impact assessment
- environmental reports
- environmental audit
- education and training
- risk management

There are other tools that can help the company to improve its environmental performance, such as:

- environmental indicators
- product and technology assessments
- life cycle assessment
- life cycle costing
- new systems of accounting
- economic instruments

These tools provide the company with information about how the environmental practices can be improved (i.e. environmental audits and environmental indicators); information about how to reduce costs and maximize profits (i.e. life cycle assessment, life cycle costing, new systems of accounting).

The selection and use of environmental management tools should respond company's goals and objectives. The strategies identified by Kirkland and Thompson (1999:In Press) should be considered to implement a strategic EMS.

5.4.4 Establish, Develop and Maintain Good Relationships with the Stakeholders

A close communication with all the stakeholders is very important for the performance and reputation of the company. The company should identify its stakeholders and set up an action plan to establish, develop and maintain good relationship with them. Depending on the country in which the company is operating, the stakeholders may vary, generally, they can be grouped as:

- government organizations, generally regulatory bodies such as:
 - ⇒ ministry or department of environment;
 - ⇒ ministry or department of energy; and
 - ⇒ regional, provincial, and local government organizations

The company must provide regulatory agencies with information regarding its environmental practices such social programs and others that can improve its image and reputation.

- non-government organizations, such as:
 - ⇒ non-governmental organizations;
 - ⇒ universities; and
 - ⇒ professional associations.

Working with non-governmental organizations is a key issue to succeed. NGOs can provide the company with human resources, knowledge about the country; support to develop social programs; enhance image, reputation, and

representation; and they can even assist the company to dialogue with dangerous groups such as guerrillas and terrorists that threaten a company's operations such as in Colombia.

- community, probably the main sensitive stakeholders, they are:
⇒ communities surrounding operations.

The way in which the company behave with and communicate with communities surrounding the operation will affect its performance. The company should show respect for local customs and should help to preserve them. The company also should provide with all the information requested for local people about its operations. Information programs should be frequently carry out.

5.4.5 Act in a Proactive Way Rather Than a Reactive Way

Acting or behaving in a proactive rather than a reactive way will provide the company with many benefits. "Proactive are those who exhibit a consistent pattern of environmental practices, across all dimensions relevant to their range of activities, not required to be undertaken in fulfillment of environmental regulations or in response to isomorphic pressures within the industry as standard business practices" (Sharma and Vredenburg, 1998:733).

Areas in which oil and gas companies are implementing corporate environmental strategies, identified by Sharma and Vredenburg (1998), are:

- habitat preservation at exploration and drill sites
- environmental restoration of contaminated soil
- risk reduction of environmental accidents and wastes
- waste reduction/reuse at production and refining sites
- material use reduction and conservation
- use of alternative fuels
- energy conservation
- less environmentally damaging products
- stakeholder partnerships for environmental preservation
- public disclosure
- commitment to research and employee training for environmental preservation

Sharma and Verdenburg (1998) have also identified the following competitive benefits from acting as a proactive company:

- **lower costs of processes/inputs/products**
- **innovations in processes/products/operating systems**
- **improved corporate reputation**
- **relationship with a wide range of stakeholders**

Chapter 6: Case Study - Canadian Petroleum Colombia Ltd.

A subsidiary of Canadian Occidental Petroleum Ltd.

6.1 Introduction

The way companies do business is changing: environmental concerns are becoming essential parts of strategic management within corporations. Richard Welford (1998:9) has stated that "companies are beginning to realize that environmental issues need to be addressed for a number of reasons, including: consumer pressure, potential cost savings, legislation and ethics". Epstein in "Implementing Corporate Environmental Strategies" (1995:1) has stated that "corporations are recognizing the benefits to the community and to the long-term corporate profitability of reducing their environmental impact".

Canadian Occidental Petroleum Ltd., more commonly known as CanadianOxy, has grown from a Canadian company to a multinational corporation with operations around the world. In order to gain a competitive advantage, CanadianOxy has adopted strategic management and environmental policies. The incorporation of environmental impacts into management decisions is part of these strategies. This case study describes how CanadianOxy is addressing strategic environmental management. Its primary focus is on its operations in Colombia, a very sensitive environmental area in Latin America.

The case study is divided into five parts. The first part provides a general background regarding research methods, CanadianOxy's corporate information, and its operations worldwide. The second part addresses CanadianOxy's strategic corporate management decisions and actions. The third part focuses on the current corporate environmental strategies followed by CanadianOxy. The fourth part describes how CanadianOxy is addressing its environmental strategy in Colombia. It is also an overview of the Colombia environmental management situation within the hydrocarbon sector, and finally, the fifth part provides comments.

6.2 General Background

6.2.1 Research Approach

The case study was developed through interviews with senior environmental executives from CanadianOxy in their headquarters in Calgary and the main offices in Bogota-Colombia; interviews with Colombian government officials; a

literature review regarding strategic environmental management and current global trends; lectures at the Faculty of Environmental Design and at the Faculty of Management, University of Calgary; and Internet research. They were analyzed to describe the current strategic environmental management followed by CanadianOxy.

6.2.2 CanadianOxy's Corporate Information

CanadianOxy is a diversified energy and chemical company with its corporate headquarters in Calgary, Alberta. CanadianOxy is organized into three business segments (CanadianOxy,1996:Company Profile):

- Oil & Gas E&P: engaged in the exploration for and the development, production and marketing of conventional crude oil, natural gas and sulphur.
- Chemicals: engaged in manufacturing, marketing and distribution of industrial and specialty chemicals.
- Alternative Fuels: engaged in the production of synthetic crude oil from oil sands, and the exploration for and evaluation of minerals, coal and oil sand deposits.

This case study focuses on the oil and gas segment. Approximately 70% of the Company's 66.9 million shares are owned publicly. The remaining 30% are owned by Occidental Petroleum Corporation, a United States company headquartered in Los Angeles, California. CanadianOxy's shares are listed for trading on the Toronto Stock Exchange and the Montreal Stock Exchange in Canada, and the American Stock Exchange in the United States (CanadianOxy,1993:Company Profile). The main company's grown activities are (CanadianOxy,1996:Company Profile):

- 1971 Canadian Occidental Petroleum Ltd. is incorporated under the laws of Canada.
- 1972 CanadianOxy expands exploration activities to include the United States Gulf Coast offshore Texas and Louisiana.
- 1978 Makes initial oil and gas investments in Bolivia and Peru.
- 1983 Acquires Canada-Cities Ltd.

- 1984 Purchases interest in various oil and gas fields in the United States Gulf Coast
- 1986 Adds North Sea oil and gas properties to the Company's assets.
- 1988 Acquires a 25% interest in the Caister field, Block 44/23a of the UK North Sea. Reduces its interest in the Athabasca Oil sands to 7.23% of the Syncrude project and 20% of the OSLO project.
- 1989 Acquires significant gas reserves in the Okotoks area of southern Alberta from Husky Oil Ltd.
- 1991 Declares commercially on a portion of the Masila Block in the Republic of Yemen.
- 1992 Increases public ownership to 70% as a result of the sale of 12 million common shares by Occidental Petroleum Corporation.
Discovers six additional fields on the Masila Block in Yemen.
- 1993 CanadianOxy Acquires 15 per cent interest in Ecuador: Block 15.
- 1994 Five blocks were acquired in the United Kingdom through a farm-in agreement with LASMO plc. 25 per cent interest in a shut-in Doig light oil pool in the Buick Creek area of north east British Columbia were also acquired.
- 1995 CanadianOxy Acquires 40 per cent interest in an exploration permit covering the Boqueron Block in the Upper Magdalena Basin of Colombia
- 1996 Three blocks in the Putumayo Basin of Colombia were acquired.
- 1997 CanadianOxy Acquires 11 Gulf of Mexico Blocks and Wascana Energy Inc.
- 1998 CanadianOxy Acquires new exploration blocks in Yemen

6.2.3 CanadianOxy's Operations Worldwide

The Oil & Gas E&P segment is divided into two divisions: North American and International divisions (CanadianOxy, 1996: Annual Report: 5).

North American division

The North American division is involved in the exploration, development and production of crude oil and natural gas in the United States and Canada.

United States: CanadianOxy's oil and gas operations in the United States are administered by CXY Energy Inc. (CXY), a wholly-owned subsidiary. As of

Dec/31/97, CXY was producing from 36 platforms located on 28 federal offshore blocks, in the Gulf of Mexico, with a total of 234 crude oil and natural gas wells capable of production from these platforms. In addition, CXY obtained production from 86 crude oil and 43 natural gas wells located onshore. CXY Energy's most significant property is Eugene Island, offshore Louisiana, from which it received approximately 64 per cent of its production (CanadianOxy, 1997: Form 10-K Annual Report).

Canada: In Canada, CanadianOxy operates through Wascana Energy Inc. a wholly-owned subsidiary. Wascana has established four business units: Williston Basin, Heavy Oil, Shallow Gas, and Western Oil and Gas. Wascana's activities are located in Saskatchewan, Alberta, British Columbia, Manitoba and Newfoundland. In addition, activities extend into North Dakota and Montana in the northern United States. As of December/31/97 Wascana holds varying interest in 4,541 crude oil and 2,133 natural gas wells and has access to 4.7 million (3.4 million net) acres of undeveloped land (CanadianOxy, 1997: Form 10-K Annual Report).

International division

The International division includes operations in Yemen, the North Sea, Ecuador, Nigeria, Indonesia, Colombia, Vietnam, and Australia. The Division operated under the name of Canadian Petroleum International Limited.

Colombia: CanadianOxy has a 40% interest in an exploration permit covering the Boqueron Block in the Upper Magdalena Basin of Colombia. The Boqueron Block is operated by LASMO Inc. and comprises 242,000 acres. CanadianOxy has interests in three adjoining exploration blocks in the Putumayo Basin of southwest Colombia: the Troyano Block, in which CanadianOxy holds a 50% interest in a joint venture with Ecopetrol (Colombia's national oil company), Paramo Este and Paramo Oeste Blocks, in which CanadianOxy has a 100% interest in and is the operator.

Ecuador: CanadianOxy holds an indirect 15% interest in Block 15 in the Ecuadorian Amazon region in which Occidental is the operator. Block 15 is divided into two areas: the Base Production Area (BPA) and the Additional

Production Area (APA). The Operator company is producing from five fields: Jivino, Indillana, Laguna, Limoncocha, and Itaya. As of December/31/97, 32 wells were completed of which 23 were tied into a central processing facility in which the company owns an interest and 9 wells were tied into a third party operated facility (CanadianOxy,1997:Form 10-K Annual Report:6).

Yemen: CanadianOxy has a 52% interest in and is operator of the Masila Block in Yemen. As of December 31, 1997, there were 78 crude oil wells located in 13 fields, with an average production of 189.6 thousands barrels per day (CanadianOxy,1997:Form 10-K Annual Report). The International Division's core production comes from the Masila Fields in Yemen (CanadianOxy,1996:Annual Report, p.12).

United Kingdom: In the North Sea southern gas basin, CanadianOxy holds a 7.9% interest in the Vulcan field and a 12.5% interest in the South Valiant field. These two fields comprise two of the four fields in the Conoco-operated "V" fields project. CanadianOxy owns:

- 30% interest in the Caister field located on Block 44/23 of the North Sea, which commenced production in November 1993.
- 15% interest in the Caister-Murdoch Transportation System (CMS), a natural gas pipeline jointly constructed by the owners of the Caister Field and the adjoining Murdoch Field.
- 30 % interest in the Hunter Field also located on Block 44/23.

CanadianOxy has interest in seven exploration and appraisal blocks in the vicinity of the Caister Field. As of December/31/97, 18 wells were producing at Vulcan, 5 wells were producing at South Valiant, and 6 wells at Caister (CanadianOxy,1997:Form 10-K Annual Report:5).

Nigeria: In 1996, CanadianOxy entered into a risk service contract requiring it to provide services to explore, develop and operate Block OPL 75 and to fund all of the costs in return for a service fee payable out of production from the Block. During 1997, CanadianOxy commenced development of the Ejulebe Field and started to produce on September 23, 1998 (Calgary Herald: 09/24/98). The Ejulebe Field is located off the coast of Nigeria in water approximately 45 feet deep.

Australia: During 1997, CanadianOxy acquired a 50% interest in Block WA-260-P on Australia's northwest shelf, which is operated by BHP Petroleum Ltd. The Block contains the Buffalo Field discovery, which started to be developed in September 21, 1998 (CanadianOxy: News Releases, 09/21/98) and is expected to come on-stream for late 1999.

Indonesia: During 1997, CanadianOxy acquired a 100% interest in the Manna Block in southwest Sumatra. CanadianOxy has a 100% interest in the Seram Block off the north coast of the island of Seram, 40% interest in the Merangin Block, 47.5% interest in the Karang Besar Block and a 10% interest in the Maratua Block.

Other Countries: CanadianOxy has interest in other undeveloped acreage around the world. During 1997 and early 1998, CanadianOxy either disposed of or relinquished its interests in Pakistan, Romania, Kazakstan, Algeria and Venezuela.

6.3 Corporate Strategic Management

CanadianOxy has been addressing its corporate strategy through the formulation and implementation of strategic management decisions and actions that consider the following principles (CanadianOxy, 1996:Annual Report:5):

Focus on Value Creation by:

- (a) maintaining high investment standards;
- (b) accessing business opportunities that provide CanadianOxy with competitive advantage; and
- (c) developing and expanding its market niches.

Ensure Near Term Value Growth by:

- (a) maximizing value of core producing assets;
- (b) acquiring new exploitation opportunities through acquisitions and low risk exploration.

Explore for Longer Term Value Growth by:

- (a) developing programs of high impact exploration.

In order to address how CanadianOxy is approaching its corporate strategic management, I will focus on the following issues:

- a) Worldwide Operations
- b) Competitiveness
- c) Core Competence
- d) Environmental Management

6.3.1 Worldwide Operations

Investing abroad has helped CanadianOxy to grow as a corporation. One of the key factors to success in this industry is to replace production with new reserves. Through exploration CanadianOxy has found new reserves abroad, especially in Yemen with the discovery of new fields in 1992. Currently CanadianOxy is working on an aggressive exploration program of new fields in Colombia, Vietnam, Indonesia, United Kingdom, Australia and Nigeria. Investing in exploration is part of its long-term value growth objective.

A competitive advantage tool that CanadianOxy uses is economies of scale. Its international high oil production rate (over 100 thousand barrels per day in 1996) makes CanadianOxy's international division one of the lowest cost producers in the industry (CanadianOxy, 1996 Annual Report, p.14).

Another strategic management decision of CanadianOxy was to establish local and international partners in host countries. CanadianOxy is sharing its risks and operations with Occidental Petroleum Co. in Ecuador and Yemen. CanadianOxy has signed a partnership with EcoPetrol (Colombian National Oil & Gas Company) in Colombia to explore the Magdalena and Putumayo basins.

The following statement (Gray and Wood,1991:3): "The formation of collaborative alliances among organizations is touted as a significant strategy that organizations can use to cope with the turbulence and complexity of their environments." can be used to describe CanadianOxy's decisions to adopt strategic partnerships. The environment includes social, cultural and political differences between developing countries and the developed world.

In order to succeed abroad, "corporate responsibility policies should reflect not only local laws, but also local customs (Loizides and Khoury,1996:4). CanadianOxy has trained and hired people from host countries to run the subsidiary company. By doing this, CanadianOxy is ensuring not only the preservation of local customs, but also respect and a good reputation in the host countries.

The importance of this industry to developing countries' economies has helped CanadianOxy in its investment abroad. This fact is mentioned in the following statement (Loizides and Khoury,1996:1):

"Foreign direct investment brings technology, management know-how, and access to export markets that are need by developing countries. This investment affects economy growth, employment creation, the environment, technology transfer, community development and human resource development."

6.3.2 Competitiveness

Jay Barney (1991:104) has stated: "In an industry where firms possess exactly the same resources, all of them can conceive and implement the same strategies. Because these firms all implement the same strategies, they all will improve their efficiency and effectiveness in the same way, and to the same extend. In this kind of industry, it is not possible for firms to enjoy a sustained competitive advantage."

CanadianOxy is competing with other bigger and more powerful companies within the oil & gas industry. CanadianOxy has been evolving from a national oil and gas E&P corporation to a multinational corporation with investments around the world. It is difficult for CanadianOxy to sustain a competitive advantage considering that its potential competitors have equal or greater resources. However, Lieberman & Montgomery in 1988 (Barney,1991:104) said that the first firm in an industry to implement a strategy can obtained a sustained competitive advantage over other firms, more commonly called "first mover advantages". Barney (1991:104) stated that if competitive firms are identical in the resources they control, it is not possible for any one firm to obtain a competitive advantage

from moving first. He concludes by saying that to be have a first mover advantage, firms in an industry must be heterogeneous in terms of the resources they control.

CanadianOxy has been adopting the following actions in order to develop and maintain a competitive advantage:

- Implement strong strategic environmental management policies, setting clear principles, values, goals and objectives (Attachment A: EH&S Policy).
- Establishment of strong relationships with stakeholders, improving image and reputation nationally and internationally.
- Optimization of resources: physical capital resources, human capital resources and organizational capital resources (Barney,1991:101). CanadianOxy is always in a continuous improvement process in all aspects of its operations.
- Use technology within the corporation, train and hire qualified people, and maintain an efficient organization structure. These are its key factors to success.
- Invest in exploration around the world to replace oil and gas production with new reserves.
- Develop the International Code of Ethics for Canadian Business (Attachment B) which increased its image (example of “first mover advantage”).
- Develop a set of core competencies to be achieved by the company.

6.3.3 Core Competence

“Core competence is communication, involvement, and a deep commitment to working across organizational boundaries. It involves many levels of people and all functions” (Prahalad and Hamel,1990:82). In order to be a recognized worldwide competitor in the energy business, CanadianOxy has developed a set of core competence principles (CanadianOxy: Core Competence principles, Oct/1997: Attachment C), these are:

- adaptability/managing change: ability to embrace new technologies, meet emerging market demands, respond effectively to changing conditions, apply continuous improvement techniques and create new business opportunities;

- **communications:** ability to speak and write clearly and succinctly in a variety of settings and styles; ability to secure information, listen effectively and get messages across that have the desired effect;
- **global cultural sensitivity:** ability to work successfully in international environments, by effectively handling cultural, political and economic differences;
- **initiative:** think critically and act logically to evaluate situations and generate required steps to ensure success;
- **leadership:** ability to achieve desired results by encouraging and supporting the contributions of others; possession of required knowledge; skill and experience to work effectively with others throughout the organization;
- **teamwork:** knowledge, skill, and ability to work effectively with others to achieve optimal results;
- **technical/operating skills:** possession of appropriate technical and operational knowledge, skills and experience to ensure performance at a high level of accomplishment;
- **total business understanding:** knowledge and expertise in formulating competitive strategies and managing policies, practices, trends and information affecting the total business; and,
- **integrity program:** integrated Environmental, Health and Safety programs.

Based on these principles, the following actions have been carried out nationally and internationally:

- The Yemen operations EH&S training program was enhanced in 1997 by the implementation of several major initiatives (CanadianOxy,1997 EH&S Annual Report:37):
 - ⇒ Yemen Safety Management Program (YSMP) training was provided to "Line Management";
 - ⇒ a quarterly compliance reporting system was introduced for the YSMP;
 - ⇒ a comprehensive training program was developed to improve the training effectiveness and increase the percentage of employees trained;
 - ⇒ third party training expertise was provided for defensive driving and rigid inflatable boat operation and personnel marine rescue;
 - ⇒ emergency response drills and practices were conducted on a regular basis.

- Wascana Energy (a subsidiary of CanadianOxy) EH&S personnel are active participants in a number of CAPP committees and programs which, in addition to assisting the company in staying abreast of current and emerging issues, serve industry positions on various regulatory and public policy development. Committees include: Safety, Environmental Management (and Executive), Air Issues Working Group, Voluntary Challenge Technical Committee, Environmental Research Advisory Committee, etc. (CanadianOxy, 1997 EH&S Annual Report:37):

6.3.4 Environmental Management

The way in which CanadianOxy has been addressing its environmental management is described in details in the next part.

6.4 Corporate Strategic Environmental Management

CanadianOxy, like many other multinational oil & gas corporations has been implementing environmental strategies by integrating them into their business management processes. For Example, its environmental strategies can be grouped as follows:

- a) establishing environmental departments
- b) complying with and/or exceeding environmental regulations
- c) strengthening relationships with stakeholders
- d) implementing environmental management systems
- e) integrating the principles of sustainable development

6.4.1 Establishing Environmental Departments

Environment management is integrated into the Environmental, Health & Safety department (EH&S). CanadianOxy has the commitment and support of top executives and senior management to implement successful corporate environmental strategies. The corporate EH&S Department, headquartered in Calgary, consists of a vice-president and two regional managers who report to divisional programs, address policy issues and trends that affect the company as a

whole, and are responsible for corporate due diligence and reporting. The EH&S organization also includes the Board of Directors and Senior Executive Committee. Divisional personnel report to senior management in the Wascana Energy, Chemicals and International Divisions respectively and indirectly (functionally) to the Corporate EH&S Department (CanadianOxy,1997:EH&S Annual Report:10).

This structure is consistent with the CMA's statement: "the responsibility for setting the environmental policy typically rests with those with proprietary interests in the organization or their delegates (e.g., a board of directors)" (Epstein,1995:9) and with the ICC principles. The environmental structure within CanadianOxy is shown in attachments: D and E.

6.4.2 Complying with and/or Exceeding Environmental Regulations

CanadianOxy operates in Canadian and International jurisdictions with various levels of government and regulatory agencies in each jurisdiction (CanadianOxy, 1997:EH&S Annual Report:12). CanadianOxy complies with all provincial and federal environmental regulations within Canada, and with host countries' environmental regulations. 1996 & 1997 EH&S Annual Reports provide a detailed description of CanadianOxy's compliance with all regulations.

"CanadianOxy strives to be a responsible corporate citizen. Laws as regulations never fully address the matter that a responsible corporation must address if it wishes to be "responsible". Therefore, CanadianOxy's policies and programs are designed to meet or exceed regulatory requirements of the host countries and the corporate requirement as defined by the organization" (Robson, personal communication: Nov/12/98). CanadianOxy's environmental policies, updated in 1998, were designed by considering the corporation's vision, mission, beliefs, values and principles.

6.4.3 Strengthening Relationships with Stakeholders

CanadianOxy, through its commitment to environment, health and safety involves stakeholders including communities, public interest groups and governments in its decision making process for issues that affect them in both national and

international operations (CanadianOxy,1997 EH&S Report: Policy Statement). The corporate EH&S department maintains a close relationship with stakeholders through participation in industry associations and other agencies such as (CanadianOxy,1997-EH&S Annual Report:54):

- the Canadian Association of Petroleum Producers (CAPP) Environmental Policy Group
- International Petroleum Industry Environmental Conservation Association (IPIECA)
- the Conference Board of Canada
- Latin America Energy Organization (OLADE)
- Alberta Environmental Law Centre
- Alberta Ecotrust Foundation

Through these organizations, CanadianOxy maintains good working relationships with government departments and agencies; participates in public policy development; provides a balanced dialogue to the public and receives input regarding EH&S issues from external stakeholders. Examples of stakeholder involvement are (CanadianOxy,1997: EH&S Annual Report:56):

- N.E. Calgary sour gas development: two open houses were held to discuss drilling plans for the area, one in Conrich and the second in Delacour.
- In Yemen, medical aid material was received from a Calgary-based aid agency, Partnership Society, in February and March, 1997 and distributed to 12 hospitals in the Masila Block.

Such initiatives are described by Michael E. Porter (1979:28) as one step of Formulation of Strategy called Positioning the Company. Porter stated: "Strategy can be viewed as building defenses against the competitive forces or as finding positions in the industry where the forces are weakest". By working closely with its stakeholders, CanadianOxy has been improving its reputation and image both nationally and internationally.

6.4.4 Implementing Environmental Management Systems

In order to address its environmental strategy, CanadianOxy has implemented an environmental management system structured as follows (CanadianOxy,1997: EH&S Annual Report):

- **management leadership, commitment and accountability**
 - ⇒ **Board of Directors and Senior Executives EH&S Committee**
 - ⇒ **EH&S Organization**
 - ⇒ **EH&S Meetings**
 - ⇒ **Formal Reporting**
 - ⇒ **Legislation and Regulatory Compliance**
 - ⇒ **Audits, Assessment and Inspections**
 - ⇒ **Integration of EH&S into Decision-Making**
- **Process Integrity**
 - ⇒ **Risk Assessment, Management and Communication**
 - ⇒ **Policies, Standards and Procedures**
 - ⇒ **Preventative Maintenance**
- **Communication**
- **Employee Involvement and Training**
- **Community Involvement, Awareness and Assistance**
 - ⇒ **Responsible Care**
 - ⇒ **Community Affairs Programs**

6.4.5 Integrating the Principles of Sustainable Development

Although CanadianOxy has not published a sustainable development statement, its business activities value the concept of sustainable development (EH&S Policy). This can be seen in the following statement: "Consistent with the key principles of sustainable development, CanadianOxy integrates environment, health and safety (EH&S) concerns into all aspects of business decision making" (CanadianOxy, 1996:EH&S Annual Report:9).

The integration of EH&S concerns into its commitment can be seen clearly in the following statement: "We believe the future will require even greater involvement on the part of corporations to achieve economic development which is environmentally friendly and ensures the health and safety of employees and the public" (CanadianOxy, 1996:Annual Report:4).

CanadianOxy demonstrates its commitment through a number of initiatives such as (The Calgary Sun: Sep/08/98):

- As a member of the Canadian Association of Petroleum Producers (CAPP), CanadianOxy is a strong supporter of the Voluntary Challenge Registry (VCR) that encourages industry to develop new ways of reducing greenhouse gas emissions
- CanadianOxy took a lead role in developing an International Code of Ethics for Canadian Business which is strongly supported by the Canadian Governments

CanadianOxy is convinced that no long-term economic growth is possible unless it is ethical and environmentally sustainable. For this reason, its environmental policies are oriented to achieve sustainable development within the corporation.

6.5 Canadian Petroleum Ltd.: Colombia

6.5.1 Colombian Overview

Colombia is located over the equatorial line at the north-westernmost tip of the South American continent. It has an area of 1'141.748 sq. kms. and a population of approximately 36 million people. It is the fourth largest country in area in South America. Colombia is composed of five large natural regions: the Atlantic Coast, the Pacific Coast, the Orinoco River Basin (Orinoquia), the Amazon River Basin (Amazonia) and the Andean Region. It is bound by the Caribbean Ocean to the north, Venezuela and Brazil to the east, Perú and Ecuador to the south, the Pacific Ocean to the west, and Panama to the northwest (Online: <http://www.presidencia.gov.co/htm/colomb10.htm>, Oct/18/98).

Hydrocarbon exploration started at the end of the last century with the drilling of the Tubara well in the Lower Magdalena Valley basin. Between 1940 and 1960 exploration work was carried out in the Upper, Middle and Lower Magdalena Valleys and the Catatumbo basins which resulted in important discoveries. In the late 70s and early 80s, exploration work increased in the different sedimentary basins, leading to the discoveries of Lisama, Peroles and Nutria in the Middle Magdalena Valley, the Chuchupa, Ballena and Riohacha gas fields in the Guajira,

and Apiay, Barquereña and Caño Limon in the Llanos basin. New reserves have increased production to an average of 652,000 BOPD in 1997. By 1998 production is expected to reach about 800,000 BOPD of which 50% will go to international markets (Online: <http://www.ecopetrol.com.co/prin/hydro/opportun.htm>: Oct/18/98).

The different exploration campaigns have provided important information on the geological provinces that are potentially oil-bearing. Exploration coverage in the country is very low (1 well per 660 Km²), as compared to mature countries such as the United States (1 well per 12 km²) and Canada (1 well per 92 km²). This means that only 30% of the sedimentary areas have reasonable geological knowledge, while the remaining 70% are either poorly known or unexplored. Eighteen sedimentary basins have been identified covering over 840,300 Km² on-shore and 196,150 km² offshore (Online: <http://www.ecopetrol.com.co/prin/hydro/hydroc.htm>, Oct/18/98).

Colombia has a relatively long history of democratically elected government. Violent conflict, however, based on regional, factional and personal rivalries, has a long history in Colombia. During late May, 1997 the National Liberation Army (ELN) instigated a series of sabotage attacks on the construction and drilling sites associated with the Cupiagua field in the Llanos Basin. After 1992, the government increased its use of the military to protect the oil industry's production facilities (Yorkton, 1997:5,8). Considering this scenario, combined with an increased activity of environmental NGOs in the area (OGJ, 97:38) and increased public and communities concerned about petroleum activities in the rain forest, the development of strategic environmental management programs are crucial to success.

6.5.2 Environmental Management in Colombia

Since 1972 Colombia has had established environmental regulations. However, the government's control of environmental pollution has been very limited. The National Population and Environmental Council was created in 1973 as an advisory body to the government on population, natural resources and the environment. For many years the control of environmental damage was managed

at the municipal level through laws and government regulations concerning air and water pollution and solid waste management. In 1991 a new constitution was established prioritizing environmental protection.

In 1993 a new law was approved (Law 99 of 1993) establishing national environmental goals and creating the Environmental Ministry (Latorre,1997:100) with broad responsibilities, including administration of environmental regulations applying to the petroleum industry in coordination with the Ministry of Mines and Energy (Little,1996:2). Colombia's regulatory framework has been characterized by complicated, overlapping jurisdictions of federal, regional, and local authorities. In addition to the federal ministries and regional autonomous authorities, municipalities have certain regulatory responsibilities and powers. The oil and gas industry falls under various jurisdictions as outlined in the following table:

TABLE 6.1: JURISDICTION OVER THE OIL AND GAS INDUSTRY

ENERGY AND ENVIRONMENT			
Jurisdiction Over Energy	Jurisdiction Over Natural Resources		Jurisdiction Over Environment
	Non-renewable	Renewable	
Ministry of Mines and Energy(MME). D2119/92, art 3.1	MME D2119/92, art 3.1	National Environmental Council, coordinating role, L98/93, art 13	
	Regional Autonomous Corps (RACs), L98/93, art 31.11, 33	Ministry of Environment (ME), RACs, L98/93, art 2, 31.2 31.9 and 33	MME, D2119/92, art 3.6.ME, RACs, L98/93, art 2, 31, 33.Ministry of Health, L979, art48 & D0002/92, art178.INDERENA & RACs D2857/91, art28.

On August 3, 1994, through Decree 1753, Colombia implemented a comprehensive environmental review program encompassing petroleum exploration, development, transportation, refining and petrochemical activities. This decree included the requirements for obtaining an environmental license as well as the information required in an environmental impact assessment. The new government established on August 7, 1994 implemented a development plan called "Toward Sustainable Human Development", which had an important chapter dealing with environmental goals and actions to be taken. In 1995, Colombia's President declared that the environmental approval process for energy-related projects would be made less time-consuming. This action was taken due to the length of time required to obtain an environmental approval: on average, 11 months (Little,1996:13). Some important laws, decrees, and regulations include:

- Decree 2811, 1974: Natural Resources and Environmental Code
- Law 9, 1979: Statute for Regulation of Air Quality, Water Quality, and Waste Management
- Decree 002, 1982: Air Pollution
- Decree 2104, 1983: Solid and Hazardous Waste Management
- Decree 1594, 1984: Water Pollution

6.5.3 Canadian Petroleum Colombia Limited

As was mentioned, CanadianOxy is operating in Colombia as Canadian Petroleum Colombia Limited (Canadian Petroleum). Canadian Petroleum is now actively conducting exploration in the Putumayo Basin, and has identified one prospect for drilling in 1999 (Attachment F), (CanadianOxy,1997:Form 10-K Annual Report).

To address its strategic environmental management program, Canadian Petroleum has established the following actions:

- establishment of environmental departments
- compliance with and exceedance of environmental regulations
- strengthening of relationships with stakeholders
- implementation of environmental management systems

Establishment of Environmental Departments

Canadian Petroleum has established a small environmental department because its operations are just starting in Colombia. Two experienced and qualified Colombian people were hired to deal with current environmental issues such as regulatory compliance and stakeholder relationships. These two people have frequent and open lines of communication with CanadianOxy's headquarters in Calgary. Considering the complicated overlapping jurisdictions of federal, regional, and local authorities, this initiative is described by Lemaire as "hiring skilled local workers who are familiar with the culture and the bureaucratic procedures is key to foreign business success" (Lemaire,1996:12).

Compliance with and Exceedance of Environmental Regulations

Canadian Petroleum has complied with all environmental legislation and regulations. The main difficulty found by Canadian Petroleum is the delay in

getting permits for operations. This problem was previously addressed by Little (Little,1996:13). To deal with this problem, the Colombian government has signed a 5-year cooperation project with the Canadian International Development Agency to strengthen the Environment, Mines and Energy ministries and be more efficient. An EH&S/Community Affairs Strategic Planning Framework was developed by Canadian Petroleum, in which states its commitment to "meet or exceed existing regulations".

Strengthening Relationships with Stakeholders

Canadian Petroleum Ltd. has been developing a close relationship with its Colombian stakeholders, including indigenous communities surrounding the Putumayo Basin. To deal with this issue, Canadian Petroleum Ltd. has established a strategic partnership with a NGO called Redepaz. This NGO is working all across Colombia to maintain peace. Through this NGO, Canadian Petroleum Ltd. keeps open communication with local communities in the Putumayo area. Canadian Petroleum Ltd. has also established a partnership with Dasalud (governmental health authority) for the identification of malaria and has jointly established referral stations (Personal communication: Manuel Sierra, Canadian Petroleum Ltd., Community Affairs, Jul/29/98). This initiative is described by Lamarie as "other important factors to consider when working cross culturally include development of strong partnerships, harmony with partners and government agencies, and flexibility" (Lemaire,1996:11).

The activities that are being carried out within these communities, in close cooperation with its strategic partnerships, are guided by the two broad planning frameworks developed by Canadian Petroleum:

- Environmental, Health and Safety/Community Affairs Strategic Planning Framework
- Indigenous Communities Strategic Planning Framework

Charl du Toit (Canadian Petroleum Ltd., Exploration Vice-President, Nov/27/98: e-mail communication) has stated that "Canadian Petroleum Ltd. will not hand out gifts, but will help people to help themselves in the areas of our operations. Examples include a farm to preserve traditional plants, co-sponsoring of the malaria program, and purchasing of water pipes to be installed by the communities themselves. We put a lot of emphasis on identification of traditional cultures and land use".

Implementation of Environmental Management Systems

Canadian Petroleum, as a subsidiary of CanadianOxy, will implement an environmental management system based on its parent's EH&S policy once production starts. Until now, the main actions adopted by Canadian Petroleum were to:

- establish an environmental department
- work actively with communities
- comply with environmental legislation and regulations
- establish strategic environmental partnerships
- report environmental issues to the headquarters in Calgary

6.6 Comments

- a) CanadianOxy is a Canadian oil and gas E&P corporation that has been emerging on the international scene.
- b) CanadianOxy is working on global environmental concerns such as greenhouse gas reduction, waste management and technology transfer.
- c) According to its actions and approaches, CanadianOxy can be considered a pro-active company in the implementation of strategic environmental management decisions and actions.
- d) CanadianOxy is applying the concepts of strategic alliances, core competence, maintaining competitive advantage, and very responsive to factors affecting the oil and gas E&P industry.
- e) Top management commitment and support of Environmental, Health & Safety programs is playing a main role in the implementation of its policies.
- f) Future strategic environmental management actions will determine its success in its investment abroad and will be key factors to achieve its sustainable development goals.

Chapter 7: Conclusions and Recommendations

7.1 Introduction

The main objectives of this MDP were: a) to develop an environmental management model for multinational oil and gas exploration and production (E&P) corporations operating in Latin America, and b) to develop an environmental management model for Latin American countries themselves. Other minor objectives included:

- c) To determine requirements for environmental management imposed by governments in selected Latin American countries.
- d) To determine environmental management practices followed by multinational oil and gas corporations presently operating in Latin America countries.
- c) To make recommendations to improve environmental management practices in both multinational oil and gas corporations and Latin America governments.

To achieve these objectives a literature review, key informant interviews and a case study were carried out, during which seven models for the development and implementation of environmental management were analyzed. Searches on the Internet were extensively used to get recent research done by international organizations and institutions such as the United Nations, the World Bank, and the Inter-American Development Bank and ENGO's. Information obtained from these resources, in conjunction with the seven analyzed models, allowed the development of an environmental management model for both Latin American countries and multinational oil and gas corporations operating within this region. A case study was carried out to analyze the models developed. Canadian Petroleum Ltd., a subsidiary of Canadian Occidental Petroleum Ltd., operating in a sensitive environment in Colombia was chosen as the case study.

7.2 Environmental Management Model

The environmental management model is a set of guidelines and recommendations oriented towards those individuals responsible for setting, designing and applying strategic environmental management within governments and corporations. Two environmental management models were developed, one for multinational oil and gas corporations operating in Latin American countries and other for Latin American countries themselves. The seven models reviewed during the analysis process were

integrated with information obtained from the research process and adapted to the social, cultural, political and economic situation in Latin American countries. The models developed has five components each, these are:

Model for Latin America Countries

- a) commit country's laws with environmental protection
- b) express their commitment to international agreements
- c) establish and define the role of the environmental organization within the country
- d) select a set of environmental management tools
- e) understand the importance of hosting multinational corporations

Model for Multinational Oil & Gas Corporations

- a) express commitment to host country regulations
- b) define the role of the environmental organization within the company
- c) select a set of environmental management tools
- d) establish, develop and maintain good relationships with the stakeholders
- e) act in a proactive way rather than a reactive way

The models are described in section 5.3 and 5.4 respectively.

7.3 Conclusions and Recommendations

The following conclusions and recommendations have been developed from this research:

7.3.1 Conclusions & Recommendations Related to the Implementation and Strengthening of Environmental Management in Latin American Countries

1: Implementation and Strengthening Process

Latin American countries are still in the early stages of implementation and/or strengthening their capability/capacity for environmental management. The way in which they are approaching this objective varies from country to country. Countries like Chile, Colombia and Peru have signed cooperation projects with Canada to achieve this objective. Others such as Ecuador are getting funds from the World Bank for the same purpose. International and regional agreements

such as Rio 92, World Trade Agreement, and the Declaration of Santa Fe de la Sierra on environment, trade and sustainable development are also encouraging Latin American countries to implement environmental strategies.

Latin American countries should strongly encourage their universities to establish cooperation programs and/or projects in environmental issues with universities from developed countries which have experienced human resources. Till now, only a few universities in Latin America have established such cooperation programs, mainly due to initiatives taken by universities from developed countries. Latin American countries should support these initiatives considering that this kind of programs and or projects will help them to prepare human resources to deal with environmental issues.

2: Environmental Organizations within Government Structure

As a result of increasing global environmental awareness, Latin American countries have been experiencing changes within their government structure and organization, environmental bodies at different levels are being created; environmental legislation and regulations have appeared. However, overlap in jurisdiction and regulations on natural resources are common causes of inefficiency or delays of approval which are major concerns for energy based multinational corporations.

The design and implementation of environmental bodies within government organizational structures should avoid overlapping functions and jurisdictional problems. Most Latin American countries are facing these problems and they should be properly addressed. These problems have resulted in delays to granting environmental permits and licenses, which is a barrier to foreign investment.

3: Experiences Gained from Developed Countries

Latin American countries have benefited from experiences gained by developed countries such as the United States, Canada, Netherlands, United Kingdom, Germany and others. Although the implementation and/or strengthening of environmental management within different levels of government organizations are still in the early stages, most of them are being led or supervised by experienced people and organizations from developed countries. It is also noted that although broad environmental regulations have been issued by most Latin

American countries, they are weakly enforced. The main reason is the lack of experienced people within government environmental bodies. Penalties are not strong enough to encourage corporations to implement sound environmental practices.

Latin American countries should not expend too much time and money experimenting with traditional models of environmental management, they should consider experiences gained by developed countries. The need to expend a lot of money in command and control regulations and personal to make them work should be carefully considered. Regulations should be designed to be more flexible and oriented towards sustainable development practices. I agree with Nuevos Horizontes (1997:44) when they mention that a "key to achieve sustainable development is setting a policy mix that is flexible enough to accommodate the dynamic relationship between technology and the environment yet firm enough to ensure environmental objectives are met".

4: Growing Environmental Awareness

Environmental awareness in Latin American countries is growing among governments and the population not only because of the need for environmental protection itself, but also to meet the environmental requirements of lending institutions and international markets environmental requirements. Non-governmental organizations are playing a key role in encouraging Latin American countries to realize the need for better environmental practices. Till now, it appears that Latin American countries are behaving in a reactive way, just trying to comply with international requirements and pressures. Even behaving in this way, Latin American countries are far away from developed countries' environmental initiatives such as the implementation of take-back legislation, recycling, and packaging.

Considering the lack of economic and human resources in Latin American countries it is recommended that they should at least implement or incorporate similar initiatives to developed countries. Latin American countries should also understand that investing in environmental issues (i.e. implementation of sound environmental management among government bodies) will provide the country with economic benefits if right environmental policies and practices are implemented.

5: Social, Economic, Cultural and Political Issues

Although significant advances have been made by Latin American countries to improve environmental protection since 1992, there are still many problems to be solved. Social, economic, poverty, and centralization problems are probably the main barriers to addressing environmental issues properly. Latin American countries have focused their attention in solving these problems rather than addressing environmental concerns.

Multinational corporations should consider within their social programs teaching indigenous and other rural communities how to live without depending on the MNC itself. People from these communities should be conscious that the MNC will not be there forever. Corporations should build local expertise in order to achieve self sufficiency. If the company success in this area not only will they improve their image and reputation among communities and nations but also will help to alleviate social and economic problems among the population.

6: Partnership Development

To deal with environmental issues Latin American countries have established partnerships with other countries, international institutions, funding institutions, etc. to help them develop, implement and strengthen their policies and/or institutions.

Latin American countries should consider MNCs as strategic partners to achieve their sustainable development goals since they have expertise that can support and/or provide recommendations for some projects. I agree with Sharma, Vredenburg and Westley (1994) when they state that corporations, with their greater adaptability, interpenetration, and understanding of the host country's economic and social structures, may be better positioned, as compared to international experts used by international lending institutions to handle the issues surrounding the effective use of development funds.

7: Environmental Management Tools

Latin American countries should at least consider developing and implementing the following environmental management tools:

- Environmental management structure
- Strategic environmental planning

- Environmental impact assessment
- Environmental audit
- Environmental reports
- Environmental indicators
- Product and technology assessments
- Economic instruments
- Education and training
- Risk management

7.3.2 Conclusions & Recommendations Related to the Implementation and Strengthening of Environmental Management in MNCs operating in Latin American Countries

1: Sensitive Areas

Worldwide exploration for oil and gas is being driven into more remote and environmentally sensitive areas as more traditional areas become depleted of hydrocarbons. Oil and gas projects in Ecuador, Colombia and Peru are being developed in the amazon, where most protected areas, indigenous communities, and non-governmental organization activities are located.

MNCs' strategic environmental management currently applied in other countries will have to be modified and/or adapted to Latin American context. Multinational corporations should develop a better understanding of Latin American countries' cultures to effectively approach strategic environmental management. Differences in language, customs, and religion must be considered in order to avoid problems and delays in starting projects.

2: New Stakeholders

Unusual stakeholders are also affecting oil and gas multinationals activities. Guerrilla and paramilitary groups have created uncertainty for investment in countries such as Colombia and Peru. Strategic environmental management within MNCs has to consider these factors to prevent action being taken against their operations.

Multinational corporations should establish strategic partnerships with Latin American organizations in order to develop environmental programs, these organizations must be selected according to their reputation and credibility. Organizations may involve universities, ENOGs, and professional associations.

3: Minimum Standards

MNCs have realized the need to implement sound environmental practices in host countries and establish minimum environmental standards within their operations worldwide. Advances in communication technology (i.e. publications on the Internet) and the increased integration of the global economy have influenced in these decisions. A bad environmental performance of the company in Africa or Asia could affect their operations in Latin America. Under these circumstances, multinationals, specially those who were affected by their bad environmental performance are now establishing minimum environmental standards.

Multinationals should orient their environmental practices to considering minimum environmental practices worldwide. This action will improve their reputation and image since they will be considered a responsible and proactive company for complying and exceeding environmental requirements of host countries. Those minimum international environmental practices should also involve voluntary programs, MNCs must be aware of the advantage obtained by acting in a proactive way.

4: ISO14000 / Environmental Management Systems

The implementation of EMSs is varying from company to company. As identified by a survey of Canadian companies in 1996 by KPMG, 57% of 426 respondents did not have an EMS and dealt with environmental issues on an as-needed basis. Kirkland and Thompson (1999, In Press) have classified into five stages the degree of implementation of EMSs within companies. In Latin American countries the use of EMSs are still in the early stages since there are not enough enforcement compared with developed countries.

Companies should realize the competitive advantage to have implemented EMSs, if they are not familiar with them should adopt or take as guidelines ISO14000 for the development or implementation of their environmental strategies. There are

many references in the literature about ISO14000, one of the most valuable in order to learn and/or change information/experience about ISO14000 is a discussion list on the Internet, the address is iso14000@quality.org.

Environmental management systems developed and implemented by multinationals will have to be translated and adapted to the prevailing situation in Latin American countries. Strategic environmental management should consider the effects of natural disasters such as hurricanes and Fenomeno del Niño. These natural disasters are significantly effecting many oil and gas operations by destroying installations, specially in the coast of Peru.

Companies should at least consider developing and implementing the following environmental management tools within their EMSs:

- Environmental management structure
- Environmental policy
- Strategic environmental planning
- Environmental impact assessment
- Environmental reports
- Environmental audit
- Education and training
- Risk management

5: Driving Forces / Barriers

As it was previously described in Chapter 2, there are many driving forces and barriers affecting the implementation of environmental management practices within multinational operating in Latin American countries, some of them, are even more stronger than in developed countries, such as the action of ENGOs to protect the amazon and rural/indigenous communities. Some companies had difficulties operating in such sensitive areas (i.e. Texaco in Ecuador, BP in Colombia, OXY in Colombia and Ecuador).

In order to ensure the success of their operations in Latin American countries, multinationals should consider recommendations provided by Kirkland and Thompson (1999, In Press) to overcome these barriers and for Sharma and Vredenburg (1998) to become a proactive company. It is also important to understand, respect and preserve Latin American cultures, customs and

languages. Hiring and training local people will provide the company with human resources to deal with these local environmental issues and/or bureaucratic procedures.

6: Social Issues

Most multinationals who claim to have in place sound environmental management systems are focusing on the development of short-term social programs trying to alleviate or solve current problems without considering potential future effects. Example of this situation can be seen especially in the mining sector, multinationals are buying lands from rural and indigenous people at prices that sometimes are considered ridiculous. People who sell their lands, usually spend their money very fast without saving or investing for the future. In the short-term, multinationals are providing this people with economic resources and generating some kind of economic flow or fictitious economic prosperity among these people. In the medium and long terms they are creating potential negative effects since these people no longer possess their land and will soon spend their money.

Multinationals that necessarily will have to buy lands from indigenous and rural communities should provide them with orientation and training on how to invest their money. Social programs should be oriented to the long term benefits such as teaching people how to live relying upon themselves and without depending on MNCs.

7.4 Suggestions for Further Research

Based on the results of this MDP, the following topics are suggested for further research. Each of these topics are broad and complex outside of the scope of this MDP. At the same time, they are important in designing and implementing strategic environmental management.

1: Social Issues

It is recommended that more research on social issues and how they must be environmental managed by multinational corporations be carried out. Multinational petroleum companies working in Latin America are involved in operations in sensitive

areas surrounding or close to native and rural communities. The growing concern of ENGOs, International Financial Institutions, public, and international pressures regarding petroleum activities and their impacts on the communities arise from a need for better understanding of social impacts and how these impacts should be addressed in order to achieve sustainable development goals.

2: Partnership Development

More research is recommended relating to how Latin American countries and MNCs should develop strategic partnerships to approach sustainable development goals. Lately, proactive corporations have focused their environmental strategies to establish strategic partnership to develop projects and/or improve their image. In Latin America, the economic, social, cultural and political context will involve new stakeholders other than those identified in developed countries. Examples of new stakeholders are guerrillas, paramilitary, and narcotics traffickers. Research should be performed to identify the group of stakeholders in the hydrocarbon sector for both Latin American countries and corporations, and select, from this group, strategic partnerships to deal with issues affecting the performance of governments and/or corporations.

3: Organization Structures

More research is recommended on environmental organization structures within both Latin American countries and corporations to have a better understanding of their role and approach. The way in which Latin American countries are introducing environmental organizations within government bodies is lacking in effectiveness and is still very confusing, not only because environmental issues are a relatively new topic but also because there is not enough expertise and/or experience among government officials to address environmental management. The design and implementation of the process of environmental organization within Latin American countries needs a better understanding of governments structures.

4: Corporate Culture

There are still many companies working in a reactive way. It is recommended that more research be performed in order to understand corporate culture and the means of changing their thinking. Recent studies have shown that there are companies that believe that they are working in a proactive way, however, their policies and programs do not show this. Research should also focus on providing minimum requirements for their being considered as a proactive company, and to demonstrate the advantages of behaving in a proactive way.

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APPENDIX A

The International Chamber of Commerce Business Charter on Sustainable Development

1. Corporate Priority: To recognize environmental management as among the highest corporate priorities and as a key determinant to sustainable development; to establish policies, programs and practices for conducting operations in an environmentally sound manner.
2. Integrated Management: To integrate these policies, programs and practices fully into each business as an essential element of management in all its functions.
3. Process of Improvement: To continue to improve corporate policies, programs and environmental performance, taking into account technical developments, scientific understanding, consumer needs and community expectations, with legal regulations as a starting point; and to apply the same environmental criteria internationally.
4. Employee Education: To educate, train and motivate employees in an environmentally responsible manner.
5. Prior Assessment: To assess environmental impacts before starting a new activity or product and before decommissioning a facility or leaving a site.
6. Products and Services: To develop and provide products or services that have no undue environmental impact and are safe in their intended use, that are efficient in their consumption of energy and natural resources, and that can be recycled, reused, or disposed of safely.
7. Consumer Advice: To advise, and where relevant educate, customers, distributors, and the public in the safe use, transportation, storage and disposal of products provided; and to apply similar considerations to the production of services.
8. Facilities and Operations: To develop, design and operate facilities and conduct activities taking into consideration the efficient use of energy and materials, the sustainable use of renewable resources, the minimization of adverse environmental impact and waste generation, and the safe responsible disposal of wastes.

9. **Research:** To conduct or support research on the environmental impacts of raw materials, products, processes, emission and wastes associated with the enterprise and on the means of minimizing such adverse impacts.
10. **Precautionary Approach:** To modify the manufacture, marketing or use of products or services or the conduct of activities, consistent with scientific and technical understanding, to prevent serious or irreversible environmental degradation.
11. **Contractors and Suppliers:** To promote the adoption of these principles by contractors acting on behalf of the enterprise and, where appropriate, requiring improvements in their practices to make them consistent with those of the enterprise; and to encourage the wider adoption of these principles by suppliers.
12. **Emergency Preparedness:** To develop and maintain, where significant hazards exists, emergency preparedness plans in conjunction with the emergency services, relevant authorities and the local community, recognizing potential transboundary impacts.
13. **Transfer of Technology:** To contribute to the transfer of environmentally sound technology and management methods throughout the industrial and public sectors.
14. **Contributing to the Common Effort:** To contribute to the development of public policy and to business, governmental and intergovernmental programs and educational initiatives that will enhance environmental awareness and protection.
15. **Openness to Concerns:** To foster openness and dialogue with employees and the public, anticipating and respondiing to their concerns about the potential hazards and impacts of operations, products, wastes or services, including those of transboundary or global significance.
16. **Compliance and Reporting:** To measure environmental performance; to conduct regular environmental audits and assessment of compliance with company requirements, legal requirements and these principles; and periodically to provide appropriate information to the Board of Directors, shareholders, employees, the authorities and the public.

ATTACHMENTS

CANADIAN OCCIDENTAL PETROLEUM LTD.

ENVIRONMENT, HEALTH & SAFETY POLICY

VISION

Canadian Occidental Petroleum Ltd. as a Corporation is committed to environmental protection and the health and safety of its people, contractors and the public.

MISSION

- Provide leadership, coordination and support with respect to environment, health and safety management in all operations and administrative functions and undertake the appropriate due diligence consistent with CanadianOxy shareholders' best interest.

BELIEFS

We believe that:

- Management and staff commitment to EH&S is essential to ensuring a safe and environmentally acceptable operating environment.
- Safety shall be uppermost in the minds of all personnel at facilities which we operate.
- All personnel have a responsibility to perform their jobs in a safe and environmentally acceptable manner.
- Excellence in the performance of our environmental, health and safety responsibilities adds value, and is critical to our business.
- Public perception and attitudes are a valuable component to the successful management of our business.
- The environment and the economy can co-exist.
- Community consultation is the preferred mechanism to resolve EH&S issues of concern to the public.

VALUES

We value:

- Our people are our most important asset and we will not compromise our safety standards to achieve other corporate goals.
- The experience and professionalism of our people.
- The commitment, leadership and accountability of all personnel for EH&S performance.
- On-going and open dialogue with our stakeholders.
- The health, welfare and safety of our people, contractors and the public.
- The concept of "sustainable development," a balance of environment, economy and social responsibility.
- The commitment of our people to a safe operating environment and protection of environmental quality.
- Prompt, open, frank and complete communication on EH&S issues.

PRINCIPLES

We will:

- Maintain high standards of environment, health and safety performance consistent with the well being of society.
- Meet or exceed regulatory compliance.
- Strive to meet industry codes, guidelines and practices.
- Proactively participate in the formulation of public policy.
- Integrate environment, health and safety planning and management into our day-to-day activities and define individual responsibilities, authority and accountability.
- Ensure that emergency response capability is in place and periodically tested for all company operations and facilities.
- Establish measurable performance targets and assess, document, report and continuously improve our environment, health and safety performance.
- Apply science-based assessment and cost-benefit analysis to EH&S decision-making.
- Recognize and reward environment, health and safety excellence.
- Strive to optimize the safety of all work sites by hiring only contractors who have superior safety performance and management systems.
- Adopt a "Pollution Prevention" approach to project planning and strive towards the reduction of emissions and wastes.
- Strive to prevent injury to people and damage to equipment, material and the environment.
- Inform stakeholders of our EH&S performance.
- Address stakeholder concerns when examining risk.



Randy Gossen
Division Vice President
Environment, Health and Safety



Victor J. Zaleschuk
President & Chief Executive
Officer



INTERNATIONAL CODE¹ OF ETHICS FOR CANADIAN BUSINESS

Vision

Canadian business has a global presence that is recognized by all stakeholders² as economically rewarding to all parties, acknowledged as being ethically, socially and environmentally responsible, welcomed by the communities in which we operate, and that facilitates economic, human resource and community development within a stable operating environment.

We believe that:

- we can make a difference within our sphere of influence (our stakeholders);
- business should take a leadership role through establishment of ethical business principles;
- national governments have the prerogative to conduct their own government and legal affairs in accordance with their sovereign rights;
- all governments should comply with international treaties and other agreements that they have committed to, including the areas of human rights and social justice;
- while reflecting cultural diversity and differences, we should do business throughout the world consistent with the way we do business in Canada;
- the business sector should show ethical leadership;
- we can facilitate the achievement of wealth generation and a fair sharing of economic benefits;
- our principles will assist in improving relations between the Canadian and host governments;
- open, honest and transparent relationships are critical to our success;
- local communities need to be involved in decision-making for issues that affect them;
- multistakeholder processes need to be initiated to seek effective solutions;
- confrontation should be tempered by diplomacy;
- wealth maximization for all stakeholders will be enhanced by resolution of outstanding human rights and social justice issues; and
- doing business with other countries is good for Canada and vice versa.

We value:

- human rights and social justice;
- wealth maximization for all stakeholders;
- operation of a free market economy;
- public accountability by governments;
- business environment which militates against bribery and corruption;
- equality of opportunity;
- a defined code of ethics and business practice;
- protection of environmental quality and sound environmental stewardship;
- community benefits;
- good relationships with all stakeholders; and
- stability and continuous improvement within our operating environment.

Values

¹ The 'Code' is a statement of values/principles designed to facilitate and assist individual firms in the development of their policies and practices that are consistent with the vision, beliefs, values and principles contained herein.

² Should include: local communities, Canadian and host governments, local governments, shareholders, the media, customers and suppliers, interest groups, and international agencies.

CORPORATE CAPABILITY

Corporate capability encompasses the core competencies, technologies and business processes that create competitive advantage and directly enable organizational and divisional strategies to succeed.

Definitions

"Core competencies" are the demonstrated skills, knowledge and behaviors of individuals and/or teams

"Technologies" may include, but are not limited to, engineering and exploration techniques, for example 3D seismic or horizontal drilling

"Processes" are the business systems which differentiate organizations, for example Strategic Planning/Management processes

CORE COMPETENCIES

ADAPTABILITY/MANAGING CHANGE

Ability to embrace new technologies, meet emerging market demands, respond effectively to changing conditions, apply continuous improvement techniques and create new business opportunities

Behaviors

- Commits to and actively engages in an ongoing process of knowledge and skill acquisition and application
- Identifies/suggests new ideas to accomplish value added work now and in the future
- Learns/adapts quickly when facing new problems/challenges
- Decides and acts competently in changing circumstances
- Handles risk and uncertainty comfortably
- Assumes varied roles in diverse situations with ease
- Effectively manages multiple and potentially conflicting priorities
- Demonstrates creativity, innovative thinking and actions to gain competitive advantage

COMMUNICATIONS

Ability to speak and write clearly and succinctly in a variety of settings and styles, ability to secure commitment, listen effectively and get messages across that have the desired effect

Behaviors

- Expresses thoughts, feelings and ideas effectively both orally and in writing
- Reads, uses and comprehends written materials
- Involves and fully informs others in a timely way
- Expresses ideas in ways that build commitment
- Invites open dialogue and candid discussions
- Listens effectively and responds with understanding
- Ability to communicate complex issues in plain language

GLOBAL CULTURAL SENSITIVITY

Ability to work successfully in multinational environments, by effectively handling cultural, political and economic differences

Behaviors

- Integrates into the local culture and builds personal relationships with national authorities
- Respects different values and cultures, practices and demonstrates patience and flexibility when dealing with nationals
- Initiates programs to provide training and development opportunities for national employees
- Effectively communicates with nationals

INITIATIVE

Works proactively and acts boldly to evaluate situations and generates required steps to ensure success

Behaviors

- Builds organization capacity by continuously improving business processes
- Applies innovative ideas in a practical manner
- Takes appropriate risks and enjoys the challenge of unfamiliar tasks
- Identifies issues that need addressing
- Sets specific, stretching goals and meets or exceeds them

LEADERSHIP

Ability to achieve desired results by motivating and supporting the contributions of others, possession of focused vision, energy and experience to work effectively with others throughout the organization

Behaviors

- Creates, communicates and fosters a vision of what can be achieved and gains others' commitment
- Challenges self and others to achieve desired results and recognizes opportunities to positively influence people
- Develops and fully utilizes others' capabilities
- Actively participates in the recruiting, development and retention efforts of the organization
- Demonstrates effective performance management practices
- Creates a trusting environment where diversity is nurtured as a strategic advantage
- Leads by example, seeking and using feedback to enhance leadership effectiveness
- Champions specific initiatives, projects or groups that create value for the company

TEAMWORK

Knowledge, skill and ability to work effectively with others to achieve optimal results or goals

Behaviors

- Understands and contributes to the organization's corporate and divisional goals
- Understands and works effectively within team culture
- Plans and makes decisions with others and supports synergistic outcomes
- Respects the thoughts, opinions and differences of other team members
- Exercises "give and take" to achieve team and organization goals
- Assumes a leadership role when appropriate, motivating high team performance
- Consults with others to improve the quality of decisions

TECHNICAL/OPERATING SKILLS

Possession of appropriate technical and operational knowledge, skills and experience to ensure attainment of a high level of accomplishment

Behaviors

- Demonstrates technical competence in his/her own discipline and demonstrates mastery of job content
- Uses current technology, computers, tools and information systems effectively
- Continually acquires new technical knowledge and skills
- Assesses and applies specialized knowledge and analyzes successes and failures for valuable learnings
- Demonstrates effective problem solving abilities

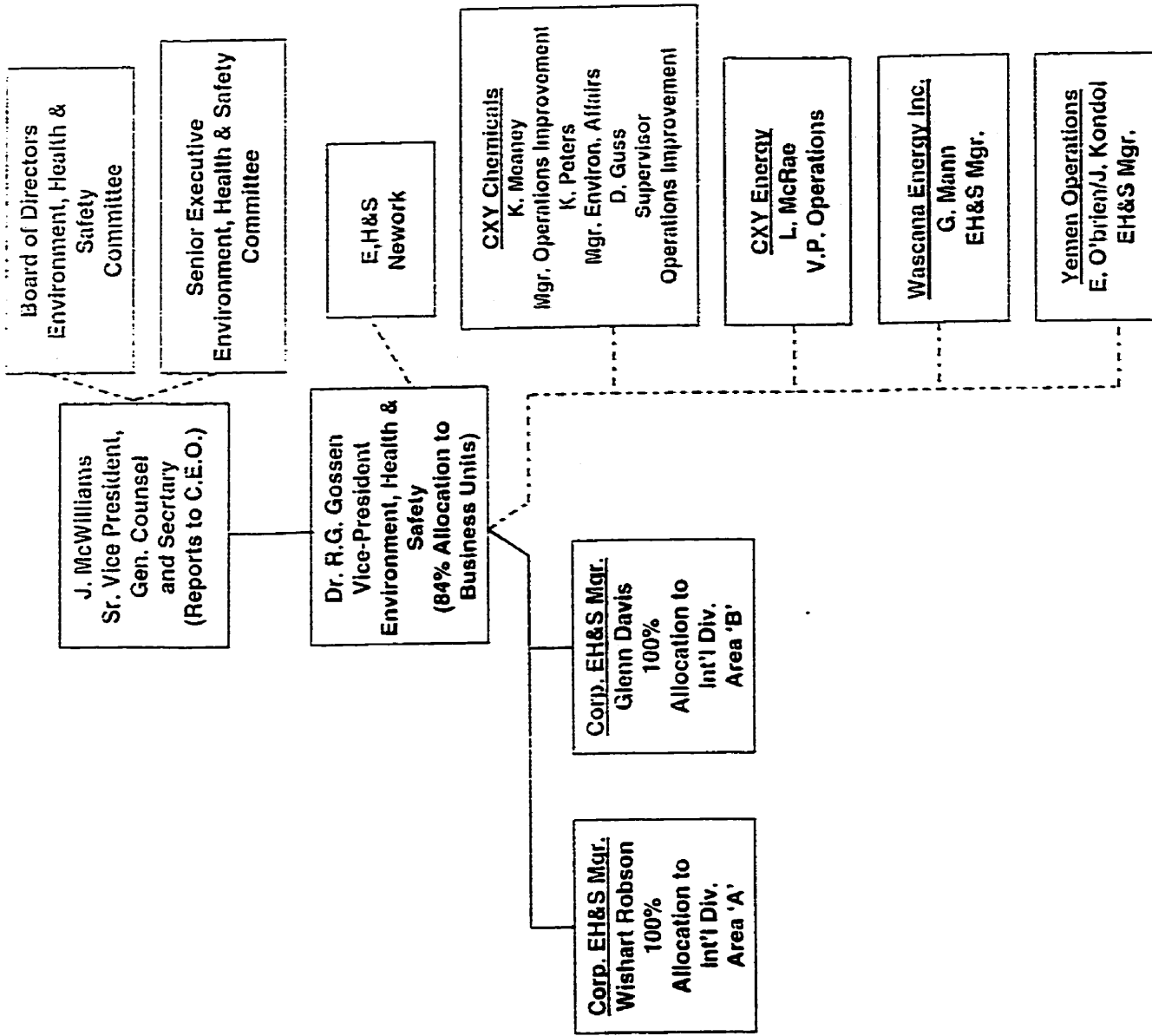
TOTAL BUSINESS UNDERSTANDING

Knowledge and expertise in formulating competitive strategies and in developing, executing, controlling and evaluating effectively the total business

Behaviors

- Anticipates future trends and consequences accurately to deliver high quality results
- Contributes to the strategic management process
- Makes sound and appropriate decisions based on the broadest possible view of an issue/challenge
- Understands corporate operations and inherent interdependency relationships, required to achieve organization effectiveness
- Works across organizations to enable business success in diverse and complex situations
- As required, relocates and works internationally
- Effectively applies the concept of overseas control in international operations

EH&S Structure



General Organization.ppt

ATTACHMENT "D"



EXECUTIVE

CORPORATE

**PRESIDENT AND
CHIEF EXECUTIVE OFFICER**

Victor Zaleschuk

**EXECUTIVE ASSISTANT
TO THE PRESIDENT**
Melanie Stevenson

CORPORATE PLANNING

**DIVISION
VICE PRESIDENT**

Graeme Phipps

SEE PAGE EXEC-3

CXY CHEMICALS

SENIOR VICE PRESIDENT

Tom Sugalski

SEE PAGE CHEM-1

FINANCE

**VICE PRESIDENT
AND CHIEF
FINANCIAL OFFICER**

Marvin Romanow

SEE PAGE FIN-1

**GLOBAL
OIL AND GAS
OPERATIONS**

**EXECUTIVE VICE
PRESIDENT AND CHIEF
OPERATING OFFICER**

Charlie Fischer

SEE PAGE EXEC-2

**HUMAN RESOURCES
AND CORPORATE
SERVICES**

**VICE
PRESIDENT**

David Wartman

SEE PAGE HR-1 & CORP-1

**LAW / CORPORATE
AFFAIRS / ENVIRONMENT
/ HEALTH AND
SAFETY**

**SENIOR VICE PRESIDENT
GENERAL COUNSEL
AND SECRETARY**

John McWilliams

SEE PAGE LAW-1 & 2