

**DETERMINANTS OF FIRM COMPLIANCE WITH  
ENVIRONMENTAL LAWS:  
A CASE STUDY OF VIETNAM**

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**NATIONAL UNIVERSITY OF SINGAPORE**

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ENVIRONMENTAL LAWS:  
A CASE STUDY OF VIETNAM**

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# ABSTRACT

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Understanding of the factors influencing the behavior of firms allows for the development of environmental regulations and measures that generate greater compliance. Theories about compliance provide different perspectives on what motivates compliance and noncompliance. These theories suggest different approaches used to influence firms to comply with laws, regulations and beyond compliance environmental management programs which are designed to further environmental protection and sustainable development.

With regard to environmental management tools, ISO 14001 Environmental Management System (EMS) has emerged as a potential environmental compliance tool which can be used as a measure to enhance greater compliance with environmental laws. Through the case study of Vietnam, this thesis explores the potential role of the ISO 14001 EMS in complying with EIA requirements. The motivations for compliance with environmental laws and regulations and implementation of environmental programs including ISO 14001 EMS and EIA are assessed for development of a comprehensive model of firm compliance behavior with regard to environmental laws and regulations.

Scott (2001), in his work “Three Pillars of Institutions” proposes a single coherent model for the study of institutions, which is employed as the theoretical framework for this study to synthesize compliance literature across fields. A triangulation approach employing explorative case studies and interviews is used to develop a series of firm compliance motivations around Scott’s “Three pillars of institutions”, which is then tested using quantitative survey with

companies in Vietnam who have certified to ISO 14001 and carried out EIA for their undertaken projects. The hypotheses are tested using mean importance ratings, t-test of the means, and factor analysis. A model of firm compliance behavior around the three pillars of 'regulative', 'normative' and 'cultural-cognitive' is built as the results of the research. Almost all the factors determining compliance developed through the literature review and qualitative case studies and interviews are found to be applicable to the responding companies. Firms are found to be motivated to comply by a variety of factors including rational calculations of the cost and benefit of compliance; rules, laws and sanctions; morality; social influence; legitimacy of laws; and shared understanding of compliance. The determinants of non compliance include high costs of compliance compared to non compliance; weak enforcement of laws; lack of capability and commitment; low social pressure and lack of shared understanding of compliance. The level of importance placed on different factors are analyzed using ANOVA test and are found to vary across companies with different sizes and business structures and firms from different fields of operation. ISO 14001 certification also has certain influence on firms' compliance behavior.

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# LIST OF ABBREVIATIONS

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ADB	Asian Development Bank
AEAM	Environmental Assessment and Management
APEC	Asia Pacific Economic Cooperation
AREA	Australian Research Environment Agency
ASEAN	Association of Southeast Asian Nations
BAP	Biodiversity Action Plan
BLI	BirdLife International
BTA	Bilateral Trade Agreement
CEETIA	Centre for Environmental Engineering Center
CIDA	International Development Agency
CIEM	Central Institute of Economic Management, Vietnam
CRES	Centre for Resources and Environmental Studies-Vietnam
CSR	Corporate Social Responsibility
CSL	Compliance with Social Legislation
DOSTE	Department of Science, Technology and Environment
DONRE	Department of Natural Resources and Environment, Vietnam
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMS	Environmental Management System
EPA	Environmental Protection Agency (U.S.)
EU	European Union
FDI	Foreign Direct Investment
FFI	Flora and Fauna Institute
FZS	Frankfurt Zoological Society
GDP	Gross Domestic Products
IUCN	International Union for Conservation and Nature
IZ	Industrial Zone
LEP	Law on Environmental Protection
MARD	Ministry of Agriculture and Rural Development
MFAP	Ministry of Fisheries and Aquatic Products
MMP	Mexican Maquiladora Program
MNC	Multinational Corporation
MOC	Ministry of Construction
MOE	Ministry of Environment, Japan
MOE	Ministry of Energy
MOF	Ministry of Forestry
MOHI	Ministry of Heavy Industry
MOLI	Ministry of Light Industry
MONRE	Ministry of Natural Resources and Environment
MOSTE	Ministry of Science, Technology and Environment
MPI	Ministry of Planning and Investment
MWR	Ministry of Water Resources
NCAA	National Collegiate Athletic Association (U.S.)

NEA	National Environment Agency
NEPA	National Environmental Protection Agency
NGO	Non-governmental Organization
NSEP	National Strategy for Environmental Protection
OSHA	Occupational Safety and Health Administration
SEE	Society for Environmental Exploration
SIDA	International Development Cooperation Agency
SME	Small and Medium Enterprise
SOE	State Owned Enterprise
STAMEQ	Directorate of Standards and Quality
TCVN	Vietnam Standards
TOR	Terms of Reference
TVA	Tennessee Valley Authority (U.S.)
UNCED	United Nations Conference on the Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
URENCO	Urban Environmental Company
VCCI	Vietnam Chamber of Commerce and Industry
VEPA	Vietnamese Environmental Protection Agency
VFF	Vietnam Fatherland Front
VPC	Vietnam Productivity Center
VSC	Vietnam Standards Centre
VUSTA	Vietnam Union of Scientific and Technical Associations
WB	World Bank
WCMC	World Conservation Monitoring Centre
WHO	World Health Organization
WTO	World Trade Organization
WWF	World Wildlife Fund

# CHAPTER 1

## INTRODUCTION

---

### 1.1 BACKGROUND OF THE RESEARCH

In recent decades, awareness of environmental issues has increased within society. People are becoming more aware of the impacts that human activity is having upon the natural environment. An example of this is the meeting of the United Nations in Johannesburg, South Africa (August-September 2002) for the World Summit on Sustainable Development. There is also increasing evidence that external and internal pressures are being placed upon companies to acknowledge, characterize, analyze and report upon environmental issues and impacts. International market pressures, customer requests for information, government regulations and policies, and social and environmental reporting requirements are examples of the external influences.

Over the years, there has been a gradual introduction of environmental legislation, in an attempt to regulate impacts on the environment. Much of this legislation has involved determining compliance levels for pollution emissions. Other environmental management tools have also been developed. These include environmental auditing, environmental accounting, environmental reporting, life-cycle assessment, Environmental Management System (EMS), Environmental Impacts Assessment (EIA) and risk assessment. EIA, as a



planning tool, is used to predict and evaluate the impacts of proposed development projects in order to assist decision-making (Ortolano and Shepherd, 1995) while EMS is a management tool that helps to identify firms' operational impacts and, as such, to implement measures to minimise such impacts. Both EIA and ISO 14001 EMS have long been considered important tools for the environmental management of development projects (for example, Holling, 1978; Smith, 1993; Bailey, 1994, 1997; Morrison-Saunders, 1996c; Caldwell, 1989; Morrison-Saunders and Bailey, 2000).

Theories have been developed to explain the motivations for compliance and noncompliance, or in other words, as defined by Wikipedia, for acting 'in accordance with relevant laws, regulations, business rules' or 'adhere to ethical codes within entire professions'. Each theory provides different views addressing the "why" of firm environmental compliance and noncompliance. The current approaches either fall under the rationalist or normative theories. The limited scope of such compliance theories encourages a search for a more encompassing approach that can deal with different regulative, normative and cognitive aspects of firm behavior with regard to compliance (Scott, 2001).

## 1.2 RESEARCH PROBLEMS

Since the emergence of EIA, there has been a growing interest in examining the effectiveness of this environmental management tool. In the 1990s, an international study on the effectiveness of environmental assessment highlights several areas where improvements need to be made. Scoping, evaluating significance, reviewing of environmental statements and post-decision monitoring and auditing that are often referred to as "follow-up" are all identified

as priority areas (Sadler, 1996). Lack of follow-up is arguably the weakest point in many jurisdictions. If effectively applied, an EIA should reduce the environmental impacts of developments. However, without follow-up being completed it is only the predicted effects on the environment and not the real effects that are realized.

According to Ridgway (1999), while EIA has been relatively successful at informing environmental decision making, it has not fulfilled the need for businesses to move beyond prediction, planning and assessment and become a practical environmental management tool promoting environmental performance of firms. Sadler (1996) finds that despite the increasing attention given to the post-approval phase of EIA, monitoring and EIA follow-up mechanisms still remain poorly developed. The emphasis on the pre-decision stages and on the preparation of the Environmental Impact Statements (EISs) often deflects attention from the actual environmental impacts of a development and the effectiveness of the proposed mitigation strategies (Marshall and Morrison Saunders, 2003).

The follow up of predicted mitigation requirements needs commitment and careful management. For many projects, there have been requirements for follow-up activities to ensure effective monitoring and mitigation of predicted impacts (Morrison-Saunders and Bailey, 1999). These have even become mandatory in some countries such as Australia, Canada, Malaysia, Sweden and the US. However, follow up has not been systematically required or properly implemented within current practice. This, at the practical level, necessitates the development of a follow up mechanism to facilitate the implementation of proposed mitigation measures and monitoring schedule in EIAs and at the theoretical level,

the comprehensive understanding of motivations behind firm's compliance with environmental laws, which is crucial for the development of effective laws and environmental management measures.

### **1.3 RESEARCH OBJECTIVES**

The research seeks to assist the development of effective environmental regulations which necessitates the understanding of the motivations of firm compliance behavior. The overall objective of this research is, therefore, at the theoretical level, to assess the determinants of firm compliance behavior with regard to environmental laws, and at the practical level, to develop a tool that can successfully fulfill EIA follow-up requirements of the project. Specifically, the role of ISO 14001 EMS, the most popular environmental tool being implemented during the operational stage of the project in Vietnam, is explored with regard to its usefulness in the implementation of EIA recommendations during the execution stage of the project. Motivations for using this EMS to comply with EIA follow up requirements are assessed.

Specific objectives of the research are to:

- Review theories of firm compliance;
- Examine the motivations of firm compliance with regard to environmental laws;
- Identify and analyse the motivating drivers for the implementation of EIA and ISO 14001 EMS in Vietnam;
- Explore the potential for using ISO 14001 EMS to comply with EIA follow-up requirements; and
- Develop a model of firm compliance behavior with regard to environmental laws.

## 1.4 GENERIC THEORETICAL FRAMEWORK

Theories on compliance provide different perspectives to explain the motivations of compliance behavior. In the literature on firm compliance behavior, the theories fall into either the rationalist or normative models. Disaggregate theories try to break firms up to study their subunits and components including firm size, information flow and organizational context as determinants of behavior at firm level. This research focuses on firms as a unitary entity; it does not study the individual players within firms. The rationalist model of compliance follows the logic of consequences, positing regulated firms as rational actors that act to maximize their economic self-interest. Accordingly, these theories emphasize enforcement, deterrence and incentives to change the firm's calculation of benefits and costs. Normative theories of domestic compliance follow the logic of appropriateness, viewing firms as institutions that are generally inclined towards compliance with environmental laws because of civic motives, social motives, or internalization of societal norms favoring environmental protection.

Neither rationalist nor normative theories provide an overarching framework that can adequately explain compliance behavior of firms. This research, therefore, seeks to develop an overall framework that would address the motivations underlying the compliance behavior of firms.

Scott's (2001) proposes a single coherent model for the study of institutions, the "Three Pillars of Institutions", which is employed as the generic theoretical framework for this study. In Scott's (2001) framework, institutions are founded on three pillars: the regulative pillar, based on consequentiality, the normative pillar, based on appropriateness, and the social-

cognitive pillar, based on orthodoxy. This research seeks to build a comprehensive model of firm compliance behavior around these three pillars of regulative, normative and cognitive motivations.

## **1.5 SCOPE OF RESEARCH**

The adoption and implementation of the EIA process, in particular, and other environmental programs, in general, depend on the institutional framework and the political context of the decision making process (Beattie, 1995; Ross, 1994). For this reason, this thesis limits its scope of study to Vietnam. The focus on the country level provides a specific setting for the study of firms and their environmental institutional environment. In this research, the focus is on the Vietnamese business community and its environmental institutions under the legislative framework of Vietnam.

With the concern over EIA follow-up implementation and motivations for the implementation of environmental laws and programs, the study covers key participants in environmental management of development projects during their operation stage. The focus is on companies' perception of both the benefits and problems of EIA and EMS, and motivations of firms' compliance with environmental laws and environmental programs in general, and with EIA and ISO 14001 EMS in particular.

## 1.6 RESEARCH METHODOLOGY

Given the objectives of the research of developing a model of firm motivations for compliance behavior, an overarching approach to the study of firms needs to be employed rather than either a rational or normative approach to studying firms that provides only a limited set of points of departure for explanation of firm compliance behavior. This is done in Phase 1 of the Study: Choice of generic conceptual framework.

In order to have a comprehensive understanding of the issue, a new look at the identification of the motivations of firm compliance behavior is adopted. This is done through an exploratory process using qualitative data. The generic framework specified in Phase 1 is used for the purpose of classification of factors identified from the literature and qualitative research (Phase 2) of case study and key informant interviews. Such a generic framework provides the opportunity to capture the views of firms and recognise their unique character as they arise from the data. It also has the benefit of structuring the discussion in a way which enables understanding and coherence. The qualitative study is carried out in Phase 2, with the following purposes:

- to confirm the key variables from the literature, and to add any additional ones;
- to help in the grouping of like variables together;
- to increase the validity and reliability of conclusions;
- to generate hypotheses from the two data sets collected (Miles and Huberman, 1994).

However the qualitative study alone would not advance understanding sufficiently unless further support could be gained from a quantitative study. Therefore, Phase 3 “Testing the hypotheses” is done.

The literature is reviewed in three separate stages during the research study. The first review is a preliminary exploration of the concepts, theories and models current at the time. This material is presented mainly in Chapter 2 “Literature Review” as an introduction to the domain of firm compliance behavior. The second stage of the review, at the end of Phase 2, after the interviews are analysed, is used to confirm and validate the findings of the interviews. The ‘factors’ identified at this stage are based on the groups of variables as arranged by the generic framework and inspection of their common characteristics, and these findings are presented in Chapter 4. The third stage of the literature review is after the Phase 3 data are analysed using statistical factor analysis, as described in Chapter 3. The literature review during this stage and the second stage of the review is also presented in Chapter 2, and again drawn upon in the interpretation in Chapters 5 and 6.

#### **1. Phase 1: Choice of generic conceptual framework**

Scott’s (2011) “Three Pillars of Institutions” is selected as the generic framework for the study. The framework presents an overarching model of institutions which helps to synthesize compliance literature across fields into a comprehensive model of compliance. Scott’s (2011) “Three Pillars of Institutions” group institutions under the regulative, normative and cognitive pillars, which are used as broad categories to categorize the compliance variables reviewed in the literature and developed from Phase 2 “Operationalisation of the theoretical framework”.

## **2. Phase 2: Operationalisation of the theoretical framework**

Determinants of firms' compliance behavior are developed around the generic framework of "Three Pillars of Institutions" in the specific context of Vietnam using qualitative data. The use of EMS in meeting the follow up requirements of EIA is studied in depth for development of variables.

Qualitative case study and key informant interviews, in addition to literature review, are used for the development of variables for the preliminary model of firm compliance. The developed framework is then validated through using a survey questionnaire with quantitative data analysis.

The key informant interviews with open-ended questions are conducted with environmental managers (or equivalent) in eighteen companies which have been certified to ISO 14001 EMS and had undertaken EIA on their current facilities. The interviews are audio-taped and subsequently transcribed. The transcribed information is analysed using coding of key words and themes of which the results are synthesized into a series of hypotheses which are then quantitatively tested in the next step through extensive survey questionnaire with the sample population under study.

## **3. Phase 3: Testing the hypotheses**

In Phase 3, the hypotheses are tested and research questions answered using quantitative data from the survey. The combination of three methods of case studies, interviews and





## **1.7 IMPORTANCE AND POTENTIAL CONTRIBUTIONS OF THE RESEARCH**

In this thesis, a model of firms' compliance behavior is developed. The triangulation method using case studies, interviews and survey is used to allow the data to elaborate on the theoretical framework, in addition to the literature review. Using exploratory techniques diverse data spread across a wide number of issues are collected. A series of propositions deduced from a review of the literature and collection and analysis of qualitative case study data are presented and then quantitatively tested by analysing survey questionnaire results.

Overall, the research seeks to contribute to the knowledge about theories of compliance. By applying Scott's (2011) "Three Pillars of Institutions" to a study of firms' compliance behavior, compared to the rationalist and normative studies, the conceptualisation of Scott's "Three Pillars of Institutions" into motivations of firms' compliance with environmental laws provides a more detailed and comprehensive framework.

Besides, this research seeks to lay the foundations for further research to investigate the role of EMS in compliance with environmental laws. The results of such research may lay the ground for new policy in environmental management which requires mandatory EMS as a mechanism to execute regulatory environmental requirements, besides other benefits that this environmental management tool can contribute.

For practical purposes, the research can:

- Provide regulators with comprehensive understanding of firm compliance motivations for formulation of environmental protection policies that could generate greater compliance;
- Develop a new mechanism for effective EIA follow-up execution, and for enhancement of EIA effectiveness;
- Help companies better identify and manage their environmental impacts from their operation;
- Provide companies with a tool to carry out their EIA follow-up requirements; and
- Encourage more uniform practice of using ISO 14001 EMS as an EIA follow-up mechanism throughout industries and countries.

## 1.8 THESIS OUTLINE

This dissertation is divided into nine chapters.

Chapter 1 presents the introduction to the research, including research background, objectives, hypotheses, methodology, and scope of the research, its contributions, and structure of the thesis.

Chapter 2 reviews the existing firm compliance theories including the rationalist theories, normative theories and disaggregates theories. The shortcomings of these approaches are discussed to provide the basis for the need for an overarching framework to study firm compliance behavior.

Chapter 3 discusses the institutional approach to organizational study and Scott's "Three Pillars of Institutions". It argues for the use of Scott's "Three Pillars of Institutions" as the most holistic, sufficient and comprehensive framework to develop a model of firms' compliance behavior with regard to environmental laws.

Chapter 4 presents discussions about corporate environmentalism and institutions in Vietnam. The business context of the Vietnamese market is presented to provide the background for the study with focus on the key corporate environmental organizational field constituents and players.

Chapter 5 discusses EIA and EMS. Focus is on approaches to the implementation of the regulatory requirements of EIA follow up and ISO 14001 EMS as a widely used and recognized tool for environmental management.

Chapter 6 discusses the methodology for the study. An introduction to the triangulation method is presented together followed by data collection techniques and analysis for the case studies, interviews and survey questionnaire.

Chapter 7 reports and discusses the results of the study. It first presents the breakdown of each of Scott's three pillars of institutions into firms' compliance motivations based on the results of the case studies and interviews, together with the literature review on firm compliance behavior earlier presented, which are synthesized into a model of firms' compliance behavior. The survey results which are used to validate the developed model are then presented and discussed together with the synthesis of both qualitative and quantitative data.

Triangulation of the results of the main parts of the study, linking the findings from the qualitative and quantitative data sets, is done in this chapter. The similarities and differences among the findings of the three data collection phases are shown, and the results are related to the literature review presented in Chapter 2. Other relevant findings are also used to support the issues arising in the discussion and interpretation of the data.

Chapter 8 discusses the findings of the research. It summarizes the research and makes recommendations to enhance firms' compliance with environmental regulations.

Chapter 9 presents the research's contribution to knowledge, suggests future research directions, presents limitations of the current research and concludes the research.

# CHAPTER 2

## REVIEW OF THE LITERATURE ON FIRM COMPLIANCE

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### 2.1 PURPOSE OF THE REVIEW AND OUTLINE OF ITS STRUCTURE

This chapter reviews the literature about firm compliance in search for a comprehensive framework explaining the compliance behavior of firms. It seeks to answer the key question: why new institutionalism and Scott's Three Pillars of institutions provide for a comprehensive approach to the study of firm compliance behaviour? It is organized into three sections.

The first section provides a brief overview of current compliance theories, which fall into three main groups: rationalist models, normative models and disaggregate models that treat firms as comprising distinct components. Each of these approaches looks at compliance behavior from different viewpoints and thus has knowledge gaps. Increasingly, a growing body of research has focused on a more comprehensive approach to studying factors influencing firm compliance behavior. There is the need for the development of a framework that would help to synthesize the literature across various fields to create a more comprehensive understanding of the determinants of corporate response to regulatory

requirements. This framework would be able to deal with regulative, normative and cognitive aspects of institutions that underpin the behavior of organizations.

The second section introduces an approach that can comprehensively deal with the broad issues of compliance behavior: the new institutionalism approach. Among the broad field of institutional study, this section argues for the use of Scott's "Three Pillars of Institutions" as a comprehensive approach to explaining motivations of firm compliance behavior.

The third section reviews Scott's (2001) framework of "Three Pillars of Institutions" and discusses its application to firm compliance study. The section examines the various sets of relevant variables and models from the compliance literature, which are then grouped under Scott's framework of "Three Pillars of Institutions". In using this generic framework, the discussion can be structured in a way which enables understanding and coherence, meeting the objective of building a coherent framework of firm compliance behavior, which is elaborated upon and tested in later parts of the study.

## **2.2 THEORIES OF FIRM COMPLIANCE**

Theories of compliance provide distinct perspectives on what motivates compliance and noncompliance. In understanding determinants of compliance, these theories suggest different approaches to attaining greater compliance with environmental laws and regulations, and thus, achieving better environmental protection and sustainable development. In this study, the focus is on firm-level responses to environmental requirements.

Here, it is worth noting that, in discussing the firms' compliance behavior, the current research encompasses both compliance and beyond-compliance activities; hereafter, both terms will be referred to by the term "compliance". Firms may comply with law or even have policies specifically intending to exceed the requirements of laws. They may involve modifying physical aspects of value-addition processes or adopting new management systems, for example, the ISO 14001 EMS. For this reason, the views of respondents on their compliance with regulatory requirements and beyond compliance with the adoption of voluntary measures are examined. The two typical cases of EIA and ISO 14001 EMS, as the two important environmental management tools, are studied as examples of regulatory and voluntary environmental requirements under study.

This research reviews, organises and synthesises literature on compliance across fields of management, psychology, sociology, and economics. The literature is categorized and synthesized into different groups of factors determining compliance. This choice fits the objective of this research of studying behavioral motivations, the logic behind firms' responses to environmental regulations.

In "The Institutional Dynamics of International Political Orders", James March and Johan Olsen divided the basic logic of human action into the "logic of consequences" and the "logic of appropriateness" (March and Olsen, 1998). The "logic of consequences" views actors as choosing rationally among alternatives based on their calculations of expected consequences, whereas the "logic of appropriateness" sees actions as based on identities, obligations, and conceptions of appropriate action. These broad categories provide a useful starting point for discussing the particular theories of firm compliance, and the specific approaches that flow from these different logics of action.



In this regard, the current study groups literature about compliance into two main groups:

1. **Rationalist models:** follow the logic of consequences that focus on deterrence and enforcement as a means to prevent and punish noncompliance by changing the actor's calculation of benefits and costs; and
2. **Normative models:** follow the logic of appropriateness that focus on cooperation and compliance assistance as a means to prevent noncompliance.

In terms of the normative perspective of compliance, research in psychology and sociology emphasizes the importance of socialization processes in affecting behavior. Compliance with rules and regulations is hypothesized to be related to both the internal capacities of the individual and external influences of the environment, where the socialization process is the linkage between the individual and society. There are two leading psychological theories to explain how socialization processes work with respect to compliance behavior: cognitive theory focusing primarily on the individual stages of development; and social learning theory focusing primarily on the conditioning effects of the environment (Sutinen and Kuperan, 1999). The normative theories about compliance are therefore further divided into three sub-categories of personal morality, social influence and legitimacy as three factors affecting compliance behavior.

These models, however, treat firms as unitary entities while in fact, firms are comprised of multiple actors, both within and outside the companies. The analysis of a firm as comprised of sub-units and distinct components allows for a more detailed examination of

the potential determinants of behavior at the firm level (Chen, 2005). For this reason, an additional group of disaggregate theories of compliance is added to the above list of two groups of compliance theories for more comprehensive review of the determinants of firm compliance.

**3. Disaggregate theories:** firms as comprised of distinct components.

**2.2.1 Rationalist Theories**

**2.2.1.1 Rational models of compliance**

Rationalist theories are based on the conceptions of rational choice rooted in the analysis of human behavior developed by the early classical theorists, Beccaria (1764) and Bentham (1789). The theory adopts a Utilitarian belief that man is a reasoning actor who weighs means and ends, costs and benefits, and makes a rational choice. The theory has spread to and become an important topic in virtually all social sciences and law. There has been a large collection of papers and articles published in respected journals. James S. Coleman launched a new interdisciplinary journal, “Rationality and Society”, in 1989 (Akers, 1990).

The central points of rational choice theory are: (1) The human being is a rational actor, (2) Rationality involves an end/means calculation, (3) People freely choose all behavior, both conforming and deviant, based on their rational calculations, (4) The central element of calculation involves a cost benefit analysis: “pleasure” versus “pain”, (5) Choice, with all other conditions equal, will be directed towards the maximization of individual pleasure,

(6) Choice can be controlled through the perception and understanding of the potential pain or punishment that will follow an act judged to be in violation of the social good, the social contract, (7) The state is responsible for maintaining order and preserving the common good through a system of laws (this system is the embodiment of the social contract), (8) The swiftness, severity, and certainty of punishment are the key elements in understanding a law's ability to control human behavior. Classical theory, however, dominated thinking about deviance for only a short time. Positivist research on the external (social, psychological, and biological) causes of crime focused attention on the factors that impose upon and constrain the rational choice of individual actors (Keel, 1997).

Rationalist theories follow the logic of consequences, viewing actors as choosing rationally among alternatives based on their calculations of expected consequences. With specific regard to firms as target of regulations, rationalist theories see firms as rational actors that act to maximize their economic self-interest. Accordingly, these theories emphasize enforcement and deterrence to change the firm's calculation of benefits and costs.

Deterrence and the utilitarian view of rational human have been developed in the eighteenth century. The deterrence doctrine, which was at the heart of classical criminology, arguably has been the most researched topic in criminology since the latter part of the 1960's (Vold and Bernard, 1986).

Becker (1968) was the first to develop a formal theoretical framework for explaining criminal activity followed by Stigler (1970) and Posner (1986) who also provided a powerful

restatement of the deterrence calculus in the framework of microeconomic theory. These authors' basic insight is that potential offenders respond to both the probability of detection and the severity of punishment if detected and convicted.

According to Becker's (1968) theory of rational crime, a profit-maximizing firm will comply with an environmental regulation only as long as the expected penalty of violating exceeds the compliance cost. Other deterrence models then extend the Becker model to incorporate noncompliance and maintain that, besides cost-benefit calculation, there must be a credible likelihood of detecting violations; swift, certain, and appropriate sanctions upon detection; and a perception among the regulated firms that these detection and sanction elements are present. Heineke (1978) and Pyle (1983) studied the theoretical models used in the economic literature of criminal behavior. More recently, Sutinen and Andersen (1985), followed by Anderson and Lee (1986) and Milliman (1986), combined Becker's deterrence model with a bio-economic model to investigate various aspects of fisheries law enforcement. All address the issue of optimal quantities of enforcement services and management policies. According to deterrence framework used in these studies, compliance with regulations can be improved by raising the penalty, by increasing monitoring activities to raise the likelihood that the offender will be caught, or by changing legal rules to increase the probability of conviction.

The application of these early deterrence models to corporate misconduct relies on four simplifying assumptions: (1) corporations are fully informed utility maximizers; (2) legal statutes unambiguously define misbehavior; (3) legal punishment provides the primary incentive for corporate compliance; and (4) enforcement agencies optimally detect and punish misbehavior, given available resources. These assumptions allowed the use of powerful microeconomic models that produced clear implications for setting optimal penalties,

optimal detection strategies, and optimal statutes given optimal compliance rates (Scholz, 1998).

Spence (2001) studies the rational polluter model of modern American environmental regulatory system, which is founded on the assumption that firms are rational and self-interested economic and political actors, and rational pursuit of their self-interest guides both their compliance decisions and their attempts to influence policy. In order to maximize profit, the rational polluter will shift as many costs as possible to society; one way it does so is by discharging its wastes into the environment. Even though the rational polluter may prefer a clean environment to a dirty one, it is individually rational for each polluter to continue to pollute. This is the lesson from Garrett Hardin's "tragedy of the commons" (Hardin, 1968), the prisoner's dilemma from game theory (Spence, 1995), Samuelson's (1954) analysis of public goods, Pigou's (1920) analysis of externalities, and other rational actor models of firm behavior. According to these views, rational polluters will pollute unless deterred by some sort of coercive action. Environmental enforcement must aim to deter violations through the imposition of penalties; likewise, to prevent firms from capturing the regulatory process, regulation must rely on prescriptive rules and eschew ad hoc policymaking methods (Spence, 2001).

The civil enforcement provisions of the major pollution control statutes follow the rational polluter model of enforcement by assuming that prospective violators of environmental laws make compliance decisions using an expected value calculation, as follows:

$$E (NC) = (S-pF)$$

where  $E (NC)$  = the expected value of noncompliance,

$S$  = the economic benefit (or savings) associated with noncompliance, such as the money saved by taking fewer steps to minimise pollution, failing to monitor, or failing to report as required by law,

$pF$  = the expected costs of noncompliance, since

$p$  = the probability that a violation will be detected, and

$F$  = the expected penalty (or fine) imposed if detected.

On the basis of this rational model of firm behavior, America's Environmental Protection Agency's (EPA) enforcement policies and practices embrace the rational actor theory of firm behavior. The agency's penalty policies state that the EPA will not settle a case for an amount less than the economic benefit of noncompliance, and authorize assessment of penalties at amounts many times the economic benefit to the violator based upon the seriousness of the violation and the risk of harm it poses (Spence, 2001).

Behavioral decision theory adds to rationalist theories by acknowledging the role that people's cognitive biases can play in their rational calculations. Behavioral decision theory suggests that compliance decisions may also be affected by how the risks of noncompliance are described and how the decision-maker's preferences are expressed.

In studying compliance behavior of taxpayers, Casey and Scholz (1991) focuses on the cognitive processes and strategies people use for subjectively evaluating and choosing

among risks. The study identifies several behavioral phenomena that are inconsistent with rational maximizing models of deterrence but that potentially affect compliance. It is suggested that taxpayers' decisions are sensitive to how risk information is presented and how preferences are expressed. When risks of noncompliance are known to the taxpayer, the preference reversal phenomenon suggests that the way preferences are expressed (for example, whether a tax professional is used) can affect compliance decisions by altering the relative weight placed on the probability of detection versus the penalty if detected. The conjunction effect suggests that compliance choices are affected by the way in which information about probabilities of getting caught is presented, and thus compliance can be enhanced by providing probability information for the individual. The ambiguity and vagueness effect suggests that compliance decisions are affected by the degree of imprecision in estimates of the probability of detection. Similar effects may occur for penalty estimates. However, boundary effects demonstrate that whether vagueness about risks increases or decreases compliance may depend critically on where the risk estimates fall within the range of possible values.

#### **2.2.1.2 Critics**

The rationalist models have certain shortcomings. It is argued that low expected penalties do not always result in high levels of noncompliance; and prescriptions for more enforcement inputs and higher penalties are usually unfeasible or not cost-effective. In addition, simple deterrence will often fail to produce compliance commitment because it does not directly address business perceptions of the morality of regulated behavior.

Scholz (1998), a prominent researcher in the field, has summarized empirical findings from his two decades of studying the deterrence models and questioned the simplifying assumptions of the deterrence models. The findings from Scholz's (1997) studies of the limitation of the rationalist theories include: size of penalty, ambiguity of rules and deterrence versus cooperative strategies; fear of detection versus perceptions of trust and duty and enforcement problems.

In addition to Scholz's (1997) findings concerning the problems of deterrence models, critics also challenge the rational model as unrepresentative of reality and ultimately counterproductive. Critics (see, for example, Spence, 2001; Strelow, 1990) say that the environmental regulatory apparatus is so complex that compliance with regulatory requirements is unreasonably difficult.

In what follows, each limitation of deterrence models will be discussed in detail.

**a) Size of penalty**

Scholz and Grey (1990), in a study of Occupational Safety and Health Administration (OSHA) enforcement and workplace injuries, suggest that inspections carried out under OSHA imposing penalties result in improved safety because they focus managerial attention on risks that may otherwise have been overlooked. It is not the level of penalty that makes OSHA inspections effective in reducing injuries, but rather the concern of managers to prevent the costs associated with accidents once they are aware of the risks (Scholz and Grey,



1990). Busy managers do not have the time, capability, knowledge, or information required to maximize corporate utility, and rather choose familiar alternatives that are good enough for the current situation.

Harrington (1988), in studying the pollution control system in the US in the late 1970s and early 1980s, also finds empirical evidence of firms complying to much a higher degree than predicted by the deterrence theory. It is found from the study that despite low expected penalties, most firms comply. This phenomenon is summarized by Harrington (1988) in the following three statements:

- For most sources the frequency of surveillance is quite low.
- Even when violations are discovered, fines or other penalties are rarely assessed in most states.
- Sources are, nonetheless, thought to be in compliance a large part of the time.

Harrington (1988) shows that if the maximum penalty level is restricted, a regulator's enforcement can be made more efficient by dividing firms into groups, contingent on each firms' past performance, and then subject recent violators to a stricter monitoring and sanctioning policy than others. Other authors, for example, Harford and Harrington (1991), Heyes and Rickman (1999), Lai et al. (2003), Decker (2003), and Heyes (1996), have tried to elaborate Harrington's theory and suggesting alternative explanations to the paradox.

**b) Deterrence strategies versus cooperative actions**

Cooperative enforcement techniques can reduce the inevitable inefficiencies of rules by allowing local tradeoffs on a case-by-case basis. For example, the Environmental Protection Agency (EPA) could allow an innovative firm to use newly developed cost-saving technology to control emissions as long as the new technique reduced emissions by more than the legally required technology. Practically every inspection encounters potential tradeoffs that could reduce both the levels of harm that concern the agency and the compliance costs that concern the corporation. Minor violations can be overlooked in return for more effective actions that reduce greater harms at lower costs (Scholz, 1998).

Without cooperative enforcement, control of corporate behavior through the enforcement of rules is best limited to situations in which there is sufficient expertise and consensus to create behavioral standards that are at once efficient, practical, and enforceable. Cooperative enforcement provides some of the flexibility normally associated with liability-based control of corporate behavior. The liability system does not rely on rules enforced by a government agency to deter corporate misconduct but rather holds corporations responsible for damages they cause. As with the liability system, cooperative enforcement requires that the principles behind the rules are applied flexibly, and that enforcement agencies and corporations accept the procedures established to legitimate the decision-making process (Scholz, 1998).

**c) Ambiguity of rules**

The simple deterrence model is most appropriate when corporate misbehavior are clearly defined in the legislation. However, rules are seldom capable of defining the exact behavior

desired of corporations. Rules are uniformly applied to a broad range of situations and thus, cannot readily take advantage of better alternatives available to control harm in specific situations. A rule that makes an optimal tradeoff nationally between harms prevented and costs imposed generally will be sub-optimal locally, imposing requirements that are overly stringent in some settings and overly lax in others. As a practical matter, rules that are written to be clear to the managers who must implement them may lack the enforceability important to prosecutors or the detailed specification required by safety engineers (Scholz, 1998).

**d) Voluntary compliance: fear of detection versus perceptions of trust and duty**

Spence (2001), in studying American environmental law, concludes that the traditional view fails to explain the behavior of many regulated firms. Because complying with environmental rules is often prohibitively difficult, a significant percentage of noncompliance is neither intentional nor reckless. Spence (2001) argues that over-reliance on the rational polluter model poses a long term risk to the legitimacy of the American regulatory system by undermining popular support for the system and incentives for voluntary compliance.

The deterrence model reflects a common assumption that rules are imposed on corporations against their wishes, and, therefore, that legal penalties provide the primary motivation to counterbalance the profitability of misconduct. According to Scholz (1998) the model does not consider the more subtle relationship that occurs when corporations stand to gain if all corporations obey the law, but each corporation individually benefits if they can free ride.

In studying taxpaying behavior, Scholz (1998) find evidence against the basic assumption of deterrence models that fear of penalty will keep rational taxpayers from cheating on

taxes and free-riding on the contributions of the other taxpayers. Scholz's (1998) findings on the U.S. federal income tax have consistently found that a sense of duty when paying taxes is at least as important as fear in predicting compliance. Studies by Scholz and Lubell (1998) provide evidence that taxpayers' compliance strategies are more intelligent than the free-riding strategy assumed in deterrence theory. They show that compliance increases as trust toward the government and toward the honesty of other citizens increases, and also that trust and the sense of duty to pay taxes honestly increase when government policies (specifically the 1986 U.S Federal Tax Reform Act) prove to be beneficial to the taxpayer. In other words, taxpayers are willing to pay taxes contingent on the behavior of the government and other citizens. Unlike the free-riding strategy, contingent compliance allows taxpayers to gain the advantage of cooperation in the provision of public goods, but at the same time protects them against exploitation by political elites or by free-riding taxpayers. The authority supports contingent compliance not by deterring each taxpayer, but rather by providing credible assurances that other taxpayers are complying.

**e) Enforcement problems**

In practice, enforcement is always costly and high penalties are not large enough or generally not feasible. For example, in the study of ground fish fishery of the northeast USA, Sutinen et al. (1990) find a pattern of potential high illegal gains relative to low certainty and severity of sanctions in most fisheries. The sanctions for violations of fishing regulations are generally modest and, according to the basic deterrent framework, do not act as an adequate deterrent to illegal fishing. Yet, despite these low penalties, the level of compliance turns out to be high (90%) (Sutinen and Gauvin, 1988; Sutinen et al., 1990).

Besides, controlling corporate misconduct involves the behavior of the public enforcement agencies designed to define and control misconduct, which is often a hard job for most regulatory systems. The simple deterrence model avoids this issue. In practice, enforcement agencies adjust enforcement behavior in response to changes and variation in their political environments (Scholz, 1998). For example, specialized federal regulatory agencies like OSHA step up enforcement actions in the U.S. Democratic counties in comparison to Republican ones. In the case of speeding fines, the deterrence model's prediction is that an increase in speeding fines will decrease speeding. If we add the assumption that police are motivated to decrease their enforcement effort, however, the amount of speeding will remain constant and only the number of tickets issued will decrease. Similarly, if we assume that business interests can bribe or cajole inspectors; this will lead not to more efficient reduction in harms, but rather to less enforcement.

#### **f) Complexity**

Spence (2001) summarizes the complexity critique on environmental regulations as comprised of four main issues as follow:

- too numerous,
- too difficult to understand,
- too fluid, or ever-changing, and
- too hard to find

The findings are the result of a survey of corporate environmental managers which reveals that nearly half report that their most time-and energy-consuming duty is trying to

determine whether their companies are in compliance with the law, with seventy percent believing perfect compliance is impossible. According to proponents of this critique, most firms do not know what constitutes perfect compliance and so cannot achieve it. This would particularly be the case for small businesses, which generally lack the resources to stay apprised of complicated, changing regulatory requirements.

As a result, critics claim most noncompliance results not from calculations by rational polluters, but rather from a lack of awareness or understanding of the rules. Consequently, the regulatory system is not producing as much environmentally beneficial behavior as it could (Spence, 2001). With such a complex regulation system, firms have to devote substantial resources and effort to the task of understanding and complying with the law.

First, environmental regulations are numerous. It is difficult to comply with rules that are usually inflexible. There is a variety of situations in which those problems arise, and it is difficult to write a prescriptive rule specifying all the ways in which firms must address environmental problem. Putting aside situations in which rules explicitly require the use of unnecessarily costly means to reach a given end, reliance on even the best-written rules necessarily begets some inefficiency. There will inevitably be cases of bad fit, and more rules imply more bad-fit situations.

Second, environmental regulations are difficult to understand. The rules are both technically complex and written and structured in ways that impede comprehension. Even if the firm understands the words, it must ensure that its understanding of the meaning of those words is similar to the agency's understanding, otherwise it may risk liability based on its mistaken understanding. Strelow (1990) stresses the requirement for simplification of complicated

and nearly incomprehensible system of regulations that could result in much more voluntary compliance.

Third, environmental regulations evolve and their meaning changes over time. For example, the pollution emissions standards under the U.S. Clean Air Act are tied to evolving industry practices imposing more stringent standards over time without any formal change in statutes or regulations. And the laws are designed to promote continuous movement toward those goals automatically. Consequently, environmental regulatory requirements are in a constant state of flux. In addition to this automatic fluidity, the rules themselves are frequently amended and replaced.

Finally, environmental regulations are hard to interpret. Consistent with the evolving nature of environmental law, the EPA sometimes reevaluates its interpretations of statutes and rules, a process that can have a significant impact on the regulated community. The task of locating and understanding the myriad official interpretations of agency rules is even more difficult than the task of finding and understanding the rules themselves.

It is clear from the analysis that the rational framework posits certain limitations and must be strengthened to better explain the available evidence on compliance for better formulated compliance policies.

### 2.2.2 Normative Theories

Normative theories follow the “logic of appropriateness” which sees actions as based on identities, obligations, and conceptions of appropriate action, or, as termed by some authors, moral acts or intrinsic motivation (see Tyler, 1990; Sutinen and Kuperan, 1999).

The heart of normative theories is that firms are institutions that are generally inclined towards compliance with environmental laws, whether because of civic motives, social motives, or internalization of societal norms favoring environmental protection. But generally, the theory holds that firms comply because of a “compliance norm”, fueled by the belief that laws that are developed and implemented fairly should be followed. Compliance is expected to be higher when individuals and firms believe the rules are legitimate and fairly applied. Under the normative model, this compliance norm affects behavior even when legal sanctions are absent.

Sunstein (1996) defines norms as “social attitudes of approval and disapproval, specifying what ought to be done and what ought not to be done”. Sunstein (1996) asserts that there are three factors that influence a choice among options: the intrinsic value of the option; the reputational benefits or costs of the choice; and the effects of the choice on one’s self conception. According to Chen (2005), awareness of the influence of norms upon individuals within a firm, especially upon those of managers and decision-makers whose decisions may be most likely translated into firm-level actions, serves to build a more valuable model of firm compliance behavior.



Tyler (1990) recognizes two types of intrinsic motivation or obligation. One is related to the individual's desire to behave according to his sense of personal morality, i.e. an internal obligation to follow one's own sense of what is right or wrong. The other type is related to the intrinsic obligation to follow the dictates of a "legitimate" authority, such as the police, one's boss, or other authority (Tyler, 1990). Legitimacy effectively functions as a stock of loyalty on which leaders can draw. Those who accept an authority's legitimacy are expected to comply with its dictates even when the dictates are contrary to an individual's self-interest.

In this regard, this section categorizes the normative perspectives on compliance into three main factors of personal morality, social influence and legitimacy.

#### **2.2.2.1 Personal morality**

Social psychology emphasizes the importance of an individual's personal characteristics in determining compliance behavior. Moral development of the individual is hypothesized to be directly related to one's propensity to comply with society's rules (Sutinen and Kuperan, 1999). Organizations are made up of individuals who make decisions about the extent to which their organization complies with the law. According to Makkai and Braithwaite (1993), the values and attitudes of individuals working within the organizational culture will impact on the organization's performance against regulatory standards.

Etzioni (1988) identifies several characteristics of moral acts which are generally agreed on. Firstly, moral acts are motivated intrinsically, involving non-material rewards internal to oneself. That is, internal satisfaction is realized independently of extrinsic consequences,

such as whether others know about such behavior. Secondly, sacrifice and the denial of pleasure (for example, doing penance, fasting) in the name of moral principle are often involved. An implication of this is that individuals will sacrifice income or incur costs to carry out a moral act. Thirdly, moral acts often concern intentions and processes, not outcomes. Unlike consumptive pleasure, moral satisfaction can be the result of taking proper measures, regardless of the outcome. To the extent that moral acts are concerned with the end results, how the result was attained is significant. Finally, the standard defining morality is applied equally to all people under comparable circumstances. Otherwise the moral dictum is arbitrary.

Sutinen and Kuperan (1999) argue for the sense of moral obligation to be a significant motivation explaining much of the evidence on compliance behavior. According to the authors, the paradigm commonly used in economics to explain and predict behavior, especially the theory used for policy analysis, makes little allowance for personal moral values. Most contemporary economic theories typically either ignore the influence of moral considerations or, in the extreme, deny that moral factors have an influence on economic behavior. In contrast to contemporary economists, the economist forefathers gave morality due attention. According to Smith (1759), human economic motivation is multidimensional. He argues that psychic wellbeing is based on acting morally and receiving the approval of others, as well as enhancing wealth.

Spence (2001) summarizes the reasons for compliance with environmental laws of the U.S. firms and suggests that firms may comply with environmental regulations because of a variety of internal motivations unrelated to external rewards and punishment. Decision makers may comply because it is the right thing to do; that is, they internalize the goals represented

by regulations and pursue them because they believe they are important. There is considerable evidence to support the idea that most Americans value environmental protection for its own sake. While that does not necessarily imply that such a belief would guide compliance decisions, scholars like Scholz, working outside the context of environmental regulation, suggest that values often do trump self-interest as determinants of action (Scholz and , 1995). Similarly, irrespective of whether business people believe in environmental values, they may comply because they see themselves as law-abiding (Ayres and Braithwaite, 1992). That is, individuals and firms may choose to comply with the law whether the law in question is reasonable or not (Spence, 2001).

#### **2.2.2.2 Social influence**

Concern for one's social reputation has long been recognized as a motivation important to compliance behavior (see, for example, Allingham and Sandmo, 1972). Social influence and morality are closely linked. The symmetry characteristic of moral acts implies that the standards used to judge one's own behavior are used to judge others' behavior. According to social identity theory, as a member of a social group, one is expected to adopt shared attitudes. There is a large influence on one's behavior attributed to the sense of belonging to a distinctive group (Tafel, 1978). Therefore, the moral principles on which individuals base their own behavior are also the basis for the social influence they exercise. Social influence to conform is expected to be stronger the more widespread a common moral obligation in the population.

Social influence plays a significant role in everyday social exchange, often taking the subtle forms of ostracism or withholding of favors. Like enforcement authorities, peer groups can reward and punish their members, either by withholding or conferring signs of group status and respect, or more directly by channeling material resources toward or away from a member of the group.

Community and peer groups are considered a source of influence on individuals' actions. If peer groups are non-compliant, individuals are likely to be non-compliant, too (Sutinen and Kuperan, 1999). Social influence in fisheries is often manifested in forms of verbal and physical abuse (for example, fist fights, destruction of gear and vessels). In the Massachusetts lobster fishery, strong forms of social influence, commonly called "self-enforcement", are estimated to account for the bulk of enforcement in the fishery (Sutinen and Gauvin, 1988).

### **2.2.2.3 Legitimacy**

The willingness to comply stemming from moral obligation and social influence is based on the perceived legitimacy of the authorities charged with implementing the regulations. Some evidence suggests that a key determinant of perceived legitimacy is the fairness built into the procedures used to develop and implement policy.

According to Faber (1999), the regulatory system's effectiveness depends upon a great deal of undetected and undetectable compliance. For example, regulated firms that question the legitimacy of the system might be less likely to comply in the usual absence of a credible

threat of enforcement. Defeated expectations, perceived unfairness, and other forms of slippage may undermine the legitimacy of the system one voter at a time (Tyler, 1990).

The theories in the compliance literature identify four sets of an authority's characteristics which relate to legitimacy (see, for example, Tyler, 1990; Faber, 1999; Tyler and Blader, 2000). Two involve outcomes, and two involve processes of the authority; of which two involve issues of justice, and two do not. The effectiveness of the outcome may involve the extent to which conservation is realized and an individual or firm is made better off. The distributive justice of the outcome involves the perceived fairness of how the benefits or sacrifices are shared among the affected parties. The efficiency of the process involves the speed and efficiency with which people perceive the authority responding to problems within the scope of the authority's jurisdiction. The procedural justice involves how fairly the authority treats people and the concerns of those affected by the process (Sutinen and Kuperan, 1999).

Tyler and Blader (2000) focus upon the concept of procedural justice as a critical determinant of internally-driven motivation for cooperative group behavior. On this basis, Chen (2005) argues that the concept of procedural justice plays a pivotal role in guiding firm-wide policies attempting to promote compliance behavior at the individual employee level, leading to firm-level compliance. According to the authors, legitimacy in decision-making processes appears to be a logical focus and pivotal component of promoting compliance behavior that takes into account the strong influence of individual employees' subjective attitudes regarding their work organization on their behavior (Tyler and Blader, 2000).

The normative perspective of sociology literature emphasizes what individuals consider just and moral, instead of what is in their self-interest. Individuals tend to comply with the

law to the extent that they perceive the law as appropriate and consistent with their internalized norms. The key variables determining compliance in the normative perspective are individuals' perceptions of the fairness and appropriateness of the law and its institutions (Tyler, 1990).

According to Tyler (1990), perceptions of procedural fairness are important in determining compliance by individuals with court orders. The perception of fair treatment and due process enhances compliance even when orders impose considerable costs. Tyler (1990) argues that loss of faith in the fairness of the system can reduce voluntary compliance. Tyler (1990) contrasts the instrumental view of compliance with the normative perspective. Under the normative view, compliance decisions are influenced by individuals' beliefs about what is "just" and "moral". Tyler reasons that the normative view offers a better explanation of compliance behavior when there is low probability of noncompliance detection. That is, people internalize legal obligations when they view the law as legitimate, either because they believe that legal requirements are just or because they recognize legal authorities' right to govern their behavior. Because enforcement alone cannot assure high enough levels of compliance, legitimacy of the law is essential to good governance. If perceptions of fairness support voluntary compliance by corporations as well, then agency procedures should be designed to enhance perceptions of fairness and to convince corporations of the legitimacy and positive benefits from the law being enforced.

By considering the impact of internal and external norms on human behavior, Vandenberg (2003) incorporates the impact of internal and external norms on human behavior into the rational choice model to more accurately predict the firm behavior regarding environmental compliance. This model incorporates an earlier, sociological theory outlined

in 1961 by Dennis Wrong and highlights three main factors that promote compliance including: fear of formal legal sanctions; fear of informal sanctions; and the internalization of legal norms or a moral commitment to comply with the law (Vandenbergh, 2003).

Vandenbergh (2003) identifies eight norms that influence individual corporate managers' behavior as decision-makers and categorizes these norms into substantive norms, procedural norms, and the norm of conformity. The substantive norms of law compliance, human health protection, environmental protection, and autonomy have been found to affect individual behavior. Likewise, the procedural norms of fair process, good faith, and reciprocity address individual managers' perceptions of the fairness of their interactions with enforcement agencies. In this sense, Vandenbergh's (2003) analysis of procedural norms echoes Tyler and Blader's (2000) findings that procedural justice promotes cooperative behavior, wherein the goals of the regulators and regulated entities would be compliance with environmental regulations and enforcement agencies.

The norm of conformity in Vandenbergh's (2003) typology takes into account the effects of other firms' noncompliance and social validation upon the compliance rates of individual firms. Lai et al. (2003) examine this same relationship in a model that addresses the relationship between the internal environmental norm of a firm and the general level of compliance within an industry. According to their findings from a study on the impact of a higher pollution tax rate, a firm is more likely to be compliant when aware of a significant level of compliance within the industry, such that a firm's internal environmental norm generally depends on "conditional cooperation" among firms (Lai et al., 2003).

### 2.2.3 Non compliance

Normative theories posit that noncompliance occurs largely because of the regulated entities' lack of capability and commitment. Firms' capability implies knowledge of the rules, and financial and technological ability to comply and commitment is considered to be determined by norms, perceptions of the regulators, and incentives for compliance. Accordingly, these theories call for a more cooperative approach to ensuring compliance, with the full range of compliance assistance strategies such as dissemination of information, technological assistance, and inspections designed to enable inspectors to provide compliance advice. According to Parker (2006), business perceptions of regulator unfairness are likely to have a negative influence on long-term compliance with the law. Moreover, big businesses that perceive regulatory enforcement as illegitimate are also likely to actively lobby for the political emasculation of the regulator. In these circumstances, most regulators are likely to avoid conflict by taking the easy option of enforcing the law "softly," and therefore ineffectively (Parker, 2006). Another problem that influences firms to act in compliance with laws is the mistrust of agency discretion. The difficulty in ensuring the accountability of enforcement agencies has been widely recognized. Mistrust of agency discretion appears to be the primary reason why groups who benefit from a policy prefer deterrence-oriented enforcement even when cooperative enforcement leads to greater benefit.

The complexity of environmental regulations suggests another explanation for noncompliance due to lack of capability of firms. Noncompliance may be due to industry ignorance of the existence of regulatory requirements, or misunderstandings, or disagreements about their meaning (Spence, 2001). Brehm and Hamilton's (1996) study of



compliance with toxic chemical reporting in the U.S. finds that ignorance of the legal requirements accounts for a large portion of the noncompliance with that requirement and was a much stronger predictor of noncompliance than either evasion or the costliness of compliance. It is found that smaller firms are less likely than larger firms to have complied with the Emergency Planning and Community Right-to-Know Act (Brehm and Hamilton, 1996). If smaller companies lack the resources or sophistication to keep themselves apprised of complicated, changing regulatory requirements, they are more likely than well-heeled sophisticated companies to violate rules unintentionally.

Another possible explanation for noncompliance focuses on agency losses within the firm. Alexander and Cohen (1999) suggest that noncompliance may occur in the face of management's preference for compliance, which presents noncompliance as one kind of shirking behavior. Front line employees or departmental managers may see this kind of shirking as a way to move up in the company by cutting costs, reasoning that it will go undetected by their principal.

### *2.2.3 Disaggregating Theories*

The usual forms of both the rationalist and normative models treat firms as a unitary actor — the “firm” calculates penalties or the “firm” has a compliance norm. Organizations, however, are made up of distinct components such as subunits, groups, individuals, and so on. The focus on the unitary actor can mask of the roles of other players, both within and outside the firm (Chen, 2005). This subsection provides an analysis of distinct components within firms as potential determinants of behavior at the firm level.

Individuals are one of the essential components of organizations who make decisions about the extent to which their organization complies with the law. According to Makkai and Braithwaite (1993), the values and attitudes of individuals working within the organizational culture will impact on the organization's performance against regulatory standards. From psychological and sociological perspective, this aspect of human behavior has been discussed in Section 2.2.2.1 about Personal Morality and Section 2.2.2.2 on Social Influence as important determinants of firm compliance behavior. This section reviews firms' compliance from the business management and strategy perspective which focus on the structural and organizational components of a firm in determining the behavior of managers and decision-makers, which are often translated into the actions taken by the firm as a unit (see, for example, Gricar, 1980; Keim, 1978b).

Gricar (1980) examines the responses of foundries to OSHA regulations by exploring variables such as firm size, managerial ideology, and boundary spanning activities. Similarly, Keim (1978b) seeks to use firm size as a surrogate for managerial discretion in order to understand Corporate Social Responsibility (CSR) behavior.

### **2.2.3.1 Firm size**

The literature and studies conducted that incorporate firm size and environmental compliance behavior emphasize the characteristics of larger firms that both promote and impede compliance behavior. In contrast, they tend to highlight the weaknesses within smaller firms that would inhibit compliance (see, for example, Malloy, 2003; Henriques and Sadorsky, 1996; Silberman, 2000). However, it is argued that, despite the advantages that help to enhance

compliance, larger firms usually encounter coordination problems and a greater opportunity for the diffusion of responsibility within the sub-units of larger firms may act as restraining forces to compliance at the firm level. Therefore, even after accounting for their greater likelihood of implementing strategies to address environmental issues, larger firms in general do not necessarily exhibit greater compliance behavior.

Various characteristics of larger firms that can help to promote compliance include availability of resources and the care for public image. Small firms, on the other hand, appear to have less financial capital and resources, less awareness of environmental regulations and their potential to damage the environment, and less likelihood to adopt a formal environmental strategy.

According to Malloy (2003), the allocation of resources within a firm to addressing environmental issues and to ensuring awareness of environmental requirements is a critical component of compliance. Similarly, Henriques and Sadorsky (1996), based on a survey of 750 of the largest firms in Canada, find that smaller firms are more restricted in their level of financial capital and resources and thus less likely to implement an environmental plan. In addition, Silberman (2000) finds that a lack of capital may result in a limited ability on the part of smaller firms to pay the penalties imposed by regulating bodies. Specifically, Silberman (2000) asserts that current research suggests internal corporate structure and penalty/reward systems play a significant role in how corporations address compliance internally or react to external enforcement stimuli.

According to Shover and Routhé (2005), smaller firms tend to cut corners and neglect environmental issues in their allocation of resources in order to stay competitive with larger firms which have more competitive advantages. In relation to awareness of environmental

regulatory requirements, Solomon and Mihelcic (2001) survey small and medium-sized chemical facilities and find a significant correlation between the size of a firm and its awareness of compliance requirements, with smaller firms less likely to be aware of environmental regulations. In addition to size, the complexity of chemical industry regulations may also have contributed to the large disparity between awareness of requirements in different-sized firms (Solomon and Mihelcic, 2001).

The results of a study conducted in 1999 on small and medium-sized enterprises in England show that actual corporate responses to environmental issues reflect a conflict between a positive culture of compliance among individuals in business and the operational climate of feasibility to act upon these attitudes (Petts, 1999). More recently, the SME-nvironment Survey conducted in 2003 on small and medium-sized enterprises in the UK reinforces the earlier study when finding generally that the smaller the business, the less the availability of resources and time available to address environmental issues (NetRegs, 2003). In addition, smaller businesses tend to be less aware of their potential to damage the environment as well as the environmental regulations applicable to their companies. In fact, a mere 6% of the businesses surveyed thought that their actions could damage the environment and only 18% could name a piece of environmental legislation unprompted. Furthermore, only 20% of micro businesses, which have less than ten employees, operate with an environmental policy and only 3% of all the businesses surveyed had adopted a formal environmental management system (NetRegs, 2003).

In relation to larger firms, business and management journals address various aspects of these firms that either promote or inhibit compliance behavior. The tension between these aspects are not necessarily contradictory but lead to difficulties in drawing distinct

characterizations of compliance at the firm level as related to firm size. Both Shover and Routhé (2005) and Malloy (2003) use the size of a firm as a proxy for complexity and coordination difficulties and conclude that larger firms are more likely to be non-compliant. Reasons for noncompliance in more complex firms include the obscuring of oversight through the diffusion of responsibility and the greater likelihood of cultivating sub-cultures of noncompliance. Henriques and Sadorsky (1996) recognize that larger firms will be subject to greater coordination costs but simultaneously find that larger firms may also be more likely to adopt environmental management plans in order to reduce monitoring costs.

Several other characteristics of larger firms that may encourage greater compliance are addressed by studies from the management and organizational studies fields. The results from Solomon's study indicate that larger firms are more likely to implement voluntary compliance programs due to their greater level of resources and the perceived benefits of positive press coverage (Solomon and Mihelcic, 2001). Henriques and Sadorsky (1996) apply this greater visibility to showing that larger firms are more often expected to be industry leaders and at the forefront of implementing environmental management strategies. Examining the data collected from a study within Canadian firms in the oil and gas industry, Sharma (2000) finds that managers in larger firms are more predisposed to viewing environmental issues as opportunities rather than threats. Sharma (2000) attributes this finding to either the greater capability and capacity of larger firms to handle environmental issues or the amount of slack in these companies that can absorb the risks implicit in adopting voluntary environmental strategies.

### **2.2.3.2 Information Flow and Organizational Context**

The relationship between the flow of information and its effects on firm compliance behavior operates at the intra-firm and inter-firm levels. Within an organization, Malloy (2003) states that problems in information transmission often lead to managerial problems and noncompliance. Similarly, Silberman (2000) finds that a large number of violation detections results in information being sent up the management chain within a firm and greater compliance behavior. At the inter-firm level, several theories assert that the information flow regarding compliance behavior of other firms may alter a particular firm's behavior. In studying tax compliance behavior, Vandenberg's (2003) typology of the social norms that influence compliance behavior combines the effects of information flow with the norm of conformity to hold that social validation and the compliance of other firms will encourage individual firms to comply (Vandenberg, 2003). Based on tax compliance studies, intentions to evade taxes may be influenced by present widespread noncompliance or by a perceived reduction in the risk of formal or informal sanctions. Although the relationship of causation between these factors and noncompliance is not exactly clear, tax compliance literature also finds that social validation provides a standard of comparison for individuals to compare their own beliefs, attitudes, and actions (Vandenberg, 2003).

In addition to the flow of information as a factor, several theories incorporate decision-makers' subjective interpretations of environmental issues into the organizational context of a firm to calculate compliance behavior. Paternoster and Simpson's (1996) rational choice model joins the organizational context of a firm with individual perceptions of costs and benefits to derive a theory of compliance behavior. This model recognizes the influence of

norms upon an individual's moral code, which in turn shapes personalized calculations of costs and benefits. Therefore individual decisions to violate the law in an employment context depend on three main factors: 1) the risks and benefits they perceive for themselves, 2) the risks and benefits they perceive for the company, and 3) the presence or absence of offending inducements or restrictions within the specific context of the organization (Paternoster, 1996). In an analysis addressing similar factors, Ocasio (1997) posits that organizational context, which are made up of firm's rules, resources and relationships, more than individual preferences, determines decision-makers' behavior through attentional processes. Attentional processing functions at multiple levels and is shaped by individuals, organizations, and the environment (Ocasio, 1997).

Silberman (2000) presents a complementary view that focuses on the role of upper management in the allocation of resources to address environmental enforcement actions. Upper management may need to address problems such as staff discipline, public stigma, and negative market impacts. In relation to non-management employees, programs implemented by individuals that are well-integrated into the structure of an organization, such that they influence firm-level decision-making, can lead to greater compliance (Silberman, 2000). In addition, Malloy (2003) attributes noncompliance to deficient routines within a firm's organizational and operational structure, resulting from a problem of management. For example, a lack of coordination between sub-units may result in conflicting goals of managers and employees in each sub-division undermining a firm-level goal to comply with environmental regulations. This analysis is based upon a principle-agent model of the firm, wherein the principals such as the shareholders, the firm, or senior managers has expressed a preference for complying with the law, which the agent, that is, a subordinate manager or employee, ignores (Malloy, 2003).

## **2.2.4 Conclusion**

The literature identifies main factors determining compliance including potential illegal gain, severity and certainty of sanctions, individuals' moral development and their standards of personal morality, individuals' perceptions of how just and moral are rules being enforced, social environmental influences, firm size, information flow and organizational context. The compliance motivating factors across the literature are presented in Table 2.1, which will be synthesized under a general theoretical framework developed in Chapter 3. The framework will be developed in consistence both with compliance literature and with basic principles of institutions. The theoretical development adopts the new institutional approach. The factors determining compliance with environmental laws are built around concepts developed by Scott (2001), a coherent and comprehensive framework of institutions.



Table 2.1 Reasons for firm compliance and noncompliance with laws and regulations

Theories of compliance	Compliance	Noncompliance
<b>Rationalist models</b>		
	<ul style="list-style-type: none"> <li>▪ Noncompliance cost is not small</li> <li>▪ Economic benefit of noncompliance is smaller than the cost of compliance</li> <li>▪ Probability of violation detection</li> <li>▪ Swift, certain, and appropriate sanctions upon detection</li> <li>▪ Provision of probability information: perception of detection and sanction/probability of conviction</li> <li>▪ The way decision-maker's preferences are expressed (for example, whether a professional is used).</li> </ul>	<ul style="list-style-type: none"> <li>▪ Noncompliance cost is small</li> <li>▪ Economic benefit of noncompliance is higher than the cost of noncompliance</li> </ul>
<b>Normative models</b>		
Personal morality	<ul style="list-style-type: none"> <li>▪ Belief in abiding by law</li> <li>▪ Human health protection, environmental protection</li> <li>▪ Agency losses: employee/agent disobeys owner/principal's order to violate</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ignorance of the law</li> <li>▪ Lack of financial and technological ability to comply</li> <li>▪ Lack of commitment</li> <li>▪ Agency losses: employee/agent disobeys manager/principal's order to comply</li> </ul>
Social influence	<ul style="list-style-type: none"> <li>▪ Concern for social reputation</li> <li>▪ Community and peer groups are compliant</li> </ul>	<ul style="list-style-type: none"> <li>▪ The efforts are not recognized</li> <li>▪ Community and peer groups are non-compliant</li> </ul>
Legitimacy	<ul style="list-style-type: none"> <li>▪ Procedure fairness</li> <li>▪ Effective of policy outcome</li> <li>▪ Distributive justice of the outcome</li> <li>▪ Efficiency of the process</li> </ul>	<ul style="list-style-type: none"> <li>▪ Defeated expectations, perceived unfairness, and other forms of slippage</li> <li>▪ Mistrust of agency discretion</li> </ul>
<b>Disaggregate theories</b>		
Firm size	<ul style="list-style-type: none"> <li>▪ : availability of financial capital and resources, awareness of environmental regulations</li> <li>▪ Perceived benefits of positive press coverage</li> </ul>	<ul style="list-style-type: none"> <li>▪ Coordination problem</li> <li>▪ Likelihood of cultivating sub-cultures of noncompliance</li> </ul>
Information flow	<ul style="list-style-type: none"> <li>▪ Proper transmission of information regarding compliance behavior of other firms</li> </ul>	<ul style="list-style-type: none"> <li>▪ Present widespread noncompliance</li> </ul>
Organizational context	<ul style="list-style-type: none"> <li>▪ The presence or absence of offending inducements or restrictions within the specific context of the organization</li> <li>▪ Firm's rules, resources, and relationships</li> <li>▪ Allocation of resources to address environmental enforcement actions</li> <li>▪ Integration of program into organization structure</li> </ul>	<ul style="list-style-type: none"> <li>▪ Deficient routines within a firm's organizational and operational structure</li> <li>▪ Diffusion of responsibility</li> </ul>

# CHAPTER 3

## NEW INSTITUTIONAL APPROACH TO STUDYING FIRM COMPLIANCE BEHAVIOR

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### 3.1 INTRODUCTION

Following the last chapter on theories of firm compliance, this chapter highlights the current knowledge gap of existing theories and the need for a comprehensive framework explaining compliance behavior of firms. The chapter argues for the use of new institutional approach to the study of firm compliance behavior. A historical review of new institutionalism is presented followed by an overview of different variants of this school of thoughts including institutionalism in economics, political science, and sociology. It is then narrowed down to a discussion of Scott's Three Pillars of Institutions, the theoretical framework selected for the synthesis of compliance literature presented in Chapter 2 to a preliminary model of firm compliance to be further developed and tested in the field studies.

### **3.2 THE NEED FOR AN OVERARCHING FRAMEWORK EXPLAINING COMPLIANCE BEHAVIOR OF FIRMS**

The current literature shows the knowledge gaps of existing compliance theories with regard to their ability to adequately explain firms' compliance behavior. The rationalist view sees firms as rational actors that act to maximize their economic self-interest. Enforcement, deterrence and incentives are the main measures to ensure compliance which are considered to be useful in changing the firm's calculation of benefits and costs. According to normative theorist, firms are considered to comply with laws because of civic motives, social motives and the norms of environmental protection. Disaggregate theories try to disaggregate firms to highlight the influence of firm size, organizational context and information flow in determining firm compliance behavior.

Rationalist theories, normative theories and disaggregate theories have provided important insights, but for the most part they have not adequately addressed the question of why's of compliance behaviors. Neither rationalist, normative nor disaggregate theories provide an overarching and unified framework sufficiently explaining compliance behavior of firms. A series of studies associated with the compliance model have been developed to deal with this issue. This marks the recognized growing need to develop an overall framework that would comprehensively address motivations underlying compliance behavior of firms.

Scholarly evidence and regulatory best practice suggest that regulators should generally use mixes of regulatory styles or strategies to improve compliance, rather than relying on deterrence alone (for example, Gunningham and Grabosky, 1998; Gunningham and Johnstone, 1999; Winter and May, 2001; May, 2005; Dao and Ofori, 2008). The leading

theory for explaining and prescribing that mix is responsive regulation (Ayres and Braithwaite, 1992; Braithwaite, 2002). It proposes that enforcement strategies should be arranged in a regulatory pyramid. The focus is on, cooperative strategies deployed at the base of the pyramid with punitive approaches located at the top of the pyramid that can be utilized if and when more cooperative strategies fail. The objective is that firms and individuals will comply, even without enforcement action, through internalization and institutionalization of compliance norms, informal pressure, and the indirect threat of the violation detection and sanctions at the top of the pyramid. Incentives or compensation practices are considered to result in better organizational performance. Principal agent-theory focuses on the incentive effects of variable pay and the reduction of agency costs as the path to improved shareholder performance (Gomez-Mejia and Balkin, 1992)

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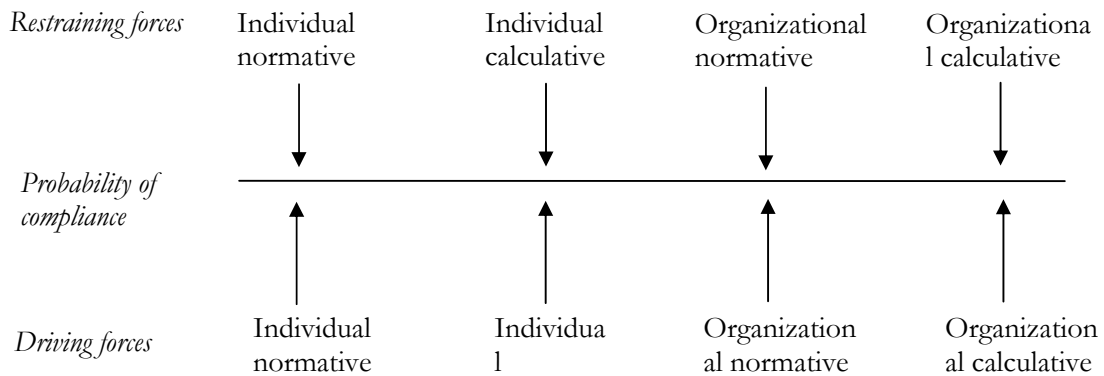
Kagan et al. (2003) and May (2005) note that firms' motivations to comply and even go beyond compliance are shaped by a combination of regulatory, social, and economic factors (Kagan et al., 2003) or by shared expectations about what constitutes compliance established through repeated regulatory interaction and a sense of civic duty to comply (May, 2005).

The compliance with social legislation (CSL) model developed by Greer and Downey (1982) provides another combined approach to study compliance behavior. This model draws from the work of Lewin (1951) who hypothesizes that behavior in organizations can be explained in terms of a dynamic balance of countervailing forces (Greer and Downey, 1982). These opposing forces, which operate in the social-psychological space of organizations, are termed driving and restraining forces, those that increase the probability of compliance behavior and those that would decrease the likelihood of such behavior relatively. The model categorizes

driving and restraining forces along two dimensions: the origin of the force (individual and organizational) and decision criteria (calculative and normative). The categorization of decision criteria follows March and Olsen's (1998) logic of action to include logic of consequences and logic of appropriateness. Calculative decision criteria are those that involve costs and benefits evaluation of an action. The use of calculative criteria constitutes pragmatic responses to the specifics of the situation or set of circumstances. Normative decision criteria, the second type, are those that employ supra-ordinate value structures in evaluating compliance and noncompliance alternatives. Normative criteria are not concerned with specific situational stimuli. For example, normative criteria might call for compliance with a regulation because of the norm of compliance or because of a belief that it is immoral to disobey the law. Similarly, normative criteria might call for noncompliance with a regulation because a manager's sense of rights would be abridged.

The CSL model cross classifies origins of forces and decision criteria which results in four categories of both driving and restraining forces. The resultant driving and restraining forces are: (1) individual calculative forces, (2) individual normative forces, (3) organizational calculative forces, and (4) organizational normative forces. An implicit notion of the Lewin's (1951) concept on which the CSL model is built is that any type of force involved typically will have both driving and restraining components. The CSL model is presented in Figure 3.1. The probability of compliance (dependent variable) is shown to be a function of eight potential driving and restraining forces (independent variables). Greater probabilities of compliance result when driving forces are strong relative to restraining ones; lesser probabilities of compliance result when restraining forces are strong relative to driving ones.

The compliance is influenced by both costs-benefits calculations and the norms and expectations of acceptable behavior that are part of the individual and organization's environment.



*Figure 3.1 Basic model of the probability of compliance behavior in an organizational setting (Greer and Downey, 1982)*

Sutinen and Kuperan (1999) also argue that the pure deterrence model of regulatory compliance, which focuses primarily on the certainty and severity of sanctions as key determinants of compliance, provides only a partial explanation of compliance behavior. To offer a more complete explanation, the two authors developed a model that integrates economic theory with theories from psychology and sociology to account for both tangible and intangible motivations influencing individuals' decisions whether to comply with a given set of regulations. Specifically, the model accounts for moral obligation and social influence in addition to the conventional costs and revenues associated with illegal behavior (see Figure 3.2).

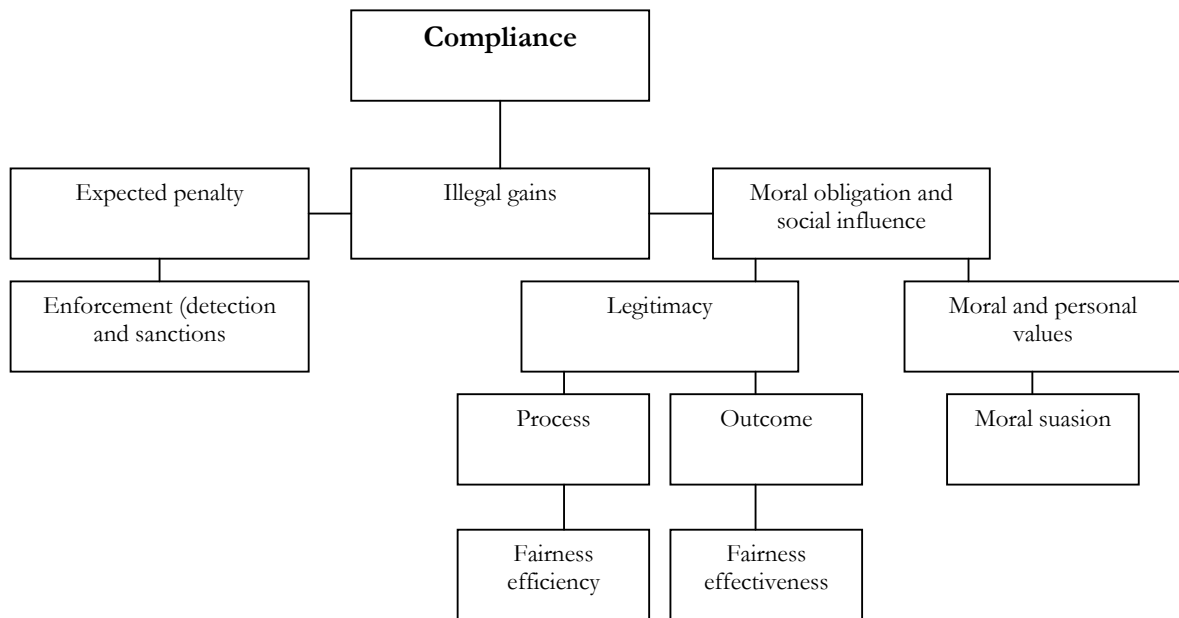


Figure 3.2 Determinants of compliance (Sutinen and Kuperan, 1999)

The model identifies three factors determining compliance: potential illegal gain, severity and certainty of sanctions, and moral obligation and social influence, which are further divided to include individuals' moral development and their standards of personal morality, and individuals' perceptions of how just and moral are rules being enforced.

Joining the attempts of the scientific community in developing a comprehensive framework explaining compliance behaviors of firms, this research seeks to develop an overarching framework that can help to synthesize literature across fields to comprehensively address the motivations behind firm compliance behavior. New institutionalism approach is employed as a general approach to study of organizations. Institutional theory adopts an open system perspective asserting that organizations are strongly influenced by their environments, not

only by competitive forces and efficiency-based forces at work, but also by socially constructed belief and rule systems (Scott, 2004). This perspective provides a good starting point for this study in which it helps to address the shortcomings of the reviewed compliance models.

Within the broad field of institutional study, Scott's (2001) "Three Pillars of Institutions" presents a good theoretical framework for this research as it synthesizes a wide range of institutional literature and proposes a single coherent model for the study of institutions. In this framework, institutions are founded on three pillars: the regulative pillar, based on consequentiality, the normative pillar, based on appropriateness, and the social-cognitive pillar, based on orthodoxy. An overview of new institutionalism is next presented and Scott's "Three Pillars of Institutions" are discussed as the generic theoretical framework for development of a comprehensive model of firm compliance behavior.

### **3.3 INSTITUTIONAL APPROACH TO ORGANIZATIONAL STUDIES**

#### **3.3.1 Introduction**

As mentioned before, the rational choice approach, normative models as well as disaggregate theories provides only a limited set of points of departure for the explanation and prediction of firm compliance behavior. However, an institutional approach offers these opportunities. Institutionalism presents a distinctive approach to the study of social, economic, and political phenomena. Institutional theory goes to the heart of the basic problem of social science:



how do we explain the things people do? What role do institutions, organizations, and calculations of utility play in decision making? How much weight ought to be given to the individual and to the institutional context within which decisions are made and to the larger environmental factors such as culture, social norms, and conventions? The debate raises the classic question of whether structure, culture, or individual action best explains social phenomena (Koelble, 1995). In organizational study, the organization's behavior has been one of the main focuses of institutional theory, Studies in organizational behavior have been making lots of effort to answer the question of whether organizational behavior reflects the pursuit of rational interests and the exercise of conscious choice, or whether behavior is primarily shaped by conventions, routines, and habits. Is it because they are rewarded for doing so, because they think they are morally obliged to obey, or because they can conceive of no other way of behaving (Scott, 1995)? For these reasons, in this research, institutionalism is chosen as the general approach to the study of firm compliance behavior.

It is worth noting from the beginning of the review and discussion of institutional theory that there is not one but several theoretical variants of institutional theory. Institutional theory in the early days, at the end of the nineteenth and beginning of the twentieth centuries, is rooted in the disciplines of economics, political science and sociology, and thus, brings about different disciplinary institutionalisms: institutional theory in economics, in political science and sociology. The early works on institutional study, however, pay little attention to organizations. Institutional economists focus on individual behavior and historical change (see, for example, Veblen, 1909; Commons, 1970). Political scientists focus their analysis on wider institutional structures, on legal framework and administrative arrangements of governance structures (see, for example, Burgess, 1902; Wilson, 1889; and Willoughby, 1904). Sociologists focus on language, government, laws and customs of property and

family (see, for example, Cooley, 1902), on occupations and professions (see, for example, Hughes, 1939), on the emergence of common meanings and normative frameworks out of social interactions (see, for example, Durkheim, 1949), and most notably, Weber (1968) with the concern for understanding the ways in which cultural rules define social structures and govern social behavior. Few treat organizations as institutional forms or paid attention to the influence of wider institutions on organizing forms and structures (Scott, 1995). Only by the 1950s did theorists begin to recognize the significance of individual organizations and focus on this form of institution as a target study unit. For this reason, this review does not turn back to the discussion of early institutional approaches, but considers the later period of their development, the new institutionalisms, for their close association with and direct application to organizational study.

The later period of institutionalism, termed “new institutionalism”, developed during the mid-1970s, seeing the development of institutional theory across the social sciences, with greater contributions made not only by economists, political scientists and sociologists but also by researchers of organizational behavior and theory, management and strategy. The connection of institutional study to structures and behavior of organizations started during the early 1950s, along side with the emergence of organizations as a recognized field of study (Scott, 1995, 2001; DiMaggio and Powell, 1991).

Similar to the early period of development of institutional theories, new institutionalists are grouped into three camps that focus their study on the role of institutions in the different disciplines of economics, sociology and political science. All approaches share a concern for the role of institutions in social science; however, they diverge sharply on theory and method. To rational choice institutionalists in economics and political science, institutions

are an intervening variable capable of affecting an individual's choices and actions but not determining them. To the historical institutionalists in political science, institutions play a determinant role since they shape the actions of individuals but are at times affected by collective and individual choices. To the sociologists, institutions are themselves dependent upon larger "macro level" variables such as society and culture, and the individual is a largely dependent and rather unimportant variable.

Among new institutionalisms, this study focuses on the new institutionalism in organizational analysis, differentiating it from other currents in social theory. In making this distinction, it is good to note that the focus of the study is not to understand the differences among different variants of institutional theories but on the important issues, the core concerns and principal dimensions of institutional study. Hence, the differences are viewed as supplementary, not excluding each other, all of which together help to provide an encompassing picture of the institutions and their comprehensive explanatory and predictive power of organization behavior, specifically, in this research, firm compliance with environmental laws. This comprehensive analytical review, fortunately, has been attempted by Scott (1995, 2001), who brings together most contemporary views on institutional study for the development of an integrated model of institutions, applicable to varying levels of analysis from world system to organization subsystems.

This chapter thus first provides a brief overview of neo-institutional analysis across disciplines, highlighting the disciplinary differences. This is followed by application of institutional theory to organizational studies. These two subsections together form the background on institutionalism in organizational analysis and its later development and integration into Scott's "Three Pillars of Institutions". It is this model developed by Scott

(2001) that is discussed in detail as the generic framework for the development of a model of firm compliance behavior, identifying key determinants of compliance with environmental law and regulations. The review provides the rationale for the selection of new institutionalism as the general approach to this study. It sets out fundamentals of neoinstitutionalism in organizational study, locating it among contemporary institutionalisms and within organizational studies. It stresses the advancement of this theoretical approach as supplementing and addressing the shortcomings of the rational, normative or disaggregate models of compliance discussed in Chapter 2.

### **3.3.2 New Institutionalism in Economics**

The new institutional economic theories attempt to incorporate theories of institutions into economics. They are concerned with the rule and governance systems that develop to regulate or manage economic exchanges occurring at different levels from structures governing an entire economy to those of a specific industry to the administrative structure of individual organizations (Scott, 1995).

Within new institutional economics, there exist varying schools of thought with varying interests and focuses. The economic historians (for example, North, 1990) focus on the study of the emergence and change of the entire economy. They define institutions as “regularities in repetitive interactions, customs and rules that provide a set of incentives and disincentives for individuals” (North, 1986; p.231). Organizational economists are interested in studies of the sources of organizational forms. They consider institutions as governance structures, and social arrangements geared to minimise transaction costs (Williamson, 1985). Industry

systems, however, are of interest to industrial economists, such as Stigler (1968). All of these works are regarded as institutional economics (Scott, 1995). Nevertheless, the following discussion focuses on the works of organizational economists focusing on firm-level structures which have been especially identified with the new institutionalism in economics and have a close association with this study.

The new institutional economists focus on the analysis of transaction costs. The pioneer theorist of the new institutional approach to the firm is Coase (1937), who uses the concept of transaction costs to explain the emergence of firms. In the author's "Nature of the Firm", he argues that firms provide governance structures involving rules and hierarchical enforcement mechanisms for carrying out economic exchanges, that help to minimise the transaction costs of negotiation, execution, and enforcement of individual exchanges in the market (Coase, 1937).

Coase's (1937) transaction cost approach is influential in modern organization theory and is advanced in the 1970s with Williamson's (1985) effort to conditionalize and elaborate it. In Williamson's (1985) argument, the transaction costs increase as the functions of costly information, bounded individual rationality and individual opportunism. Under such conditions, exchanges are likely to be removed from the market and brought within an organizational framework or governance structures, specific guidelines designed by trading partners to mediate particular economic relationships. Business firms, long-term contracts, public bureaucracies, nonprofit organizations and other contractual agreements are examples of institutional arrangements.

The attributes of the transaction include “the frequency with which transactions recur, the uncertainty to which transactions are subject, and the type and degree of asset specificity involved in supplying the good or service in question” (Williamson, 1991; p.281). These attributes of transactions give rise to economic institutions (Powell and DiMaggio, 1991). North (1986) defines institutions as the rules of the game of a society or more formally the humanly-devised constraints that structure human interaction. According to North (1986), institutions are composed of formal rules (statute law, common law, regulations), informal constraints (conventions, norms of behavior, and self imposed codes of conduct), and the enforcement characteristics of both. Institutions define and limit the set of choices of individuals. Institutional constraints include both what individuals are prohibited from doing and the conditions under which some individuals are permitted to undertake certain activities (North, 1986).

It can be seen from the review that new institutional economics focuses on how discrete structural alternatives - market, hybrid forms and hierarchy - economize on transaction costs. North (1986) is one of a few economists who pay attention to the analysis of origins and changes of institutional rules. Of these sets of rules, the economics literature has been interested in studying economic effects of laws and the mechanisms by which legal rules change. New institutional economics has been particularly interested in contract law and property law (Klein, 1999). Equally important are the informal rules that structure social conduct. “Formal rules ... make up a small ... part of the sum of constraints that shape choices; ... the governing structure is overwhelmingly defined by codes of conduct, norms of behavior and conventions” (North, 1990; p. 36).

### **3.3.3 New Institutionalism in Political Science**

New institutional theory in political science is viewed as a reaction to the behaviorist emphasis which dominated during the mid 20<sup>th</sup> century. New institutionalists in political science have grouped themselves into two distinct camps: the historical and the rational choice theorists. Researchers in both groups share the view of the importance of institutions in political life and are concerned about the distinctive features of political institutions and their effects on individual behavior. However, according to rational choice institutionalists, individual action is guided primarily by utility-maximizing calculations and preferences, an idea which is rejected by historical institutionalists who concede that individuals may attempt to calculate their utility but that outcomes are shaped by a number of structural and institutional factors beyond individual calculation or control. Rationalists take institutions into account but do not consider them to be a determining factor influencing human behavior while historical institutionalists view institutions as a determinant of choices and preferences (Thelen and Steinmo, 1992).

The historical camp comprises institutional scholars focusing on the analysis of regimes and governance mechanisms. Members of this camp include March and Olsen (1984, 1989), Hall (1986), and Skocpol (1985, 1992).

The historical institutionalists view institutions as comprising rules of conduct in organizations, routines, and repertoires of procedures (March and Olsen, 1989). According to March and Olsen (1989), “political institutions are collections of interrelated rules and

routines that define appropriate actions in terms of relations between roles and situations. The process involves determining what the situation is, what role is being fulfilled, and what the obligation of that role in that situation is” (p. 160).

March and Olsen (1989) argue that individuals behave according to a set of rules and procedures which define the appropriateness of their actions (March and Olsen, 1989). In their view, institutions matter because they shape and even determine human behavior. Institutions give legitimacy to certain rules of conduct and behavior which concern power relations and the establishment of social and cultural norms far more than utility maximizing calculation. When faced with decisions, people hardly ever calculate every aspect of costs and benefits involved in the decision. They decide their main priorities and try to fit their needs as well as they can. They make sacrifices based on limited information and bounded rationality (Simon, 1983). Rather than acting to maximize personal interests, individuals follow routines, choosing the appropriate response given their position and responsibilities. Decisions are not made based on rational calculation but rather emerge from habit, routine, and frequently accidental conjunctions of random events and are always based upon limited information and rationality (Koeble, 1995).

By emphasizing rules, structures, codes, and organizational norms, the historical institutionalists view organizations as constructs designed to distribute rewards and sanctions and to establish guidelines for acceptable types of behavior. Actors in organizations are controlled through a variety of measures such as hierarchies, sanctions, rules, procedures, and reward structures (Koeble, 1995).



According to historical institutionalists, political institutions are not entirely derived from other social structures but have independent effects on social phenomena. They argue that social arrangements are not only or primarily results of aggregating individual choices and actions. The structures of political systems and outcomes are not those planned or intended, but the consequence of unanticipated and constrained choice, and history is context dependent. Current choices and possibilities are constrained and conditioned by past choices (Scott, 1995).

Hall (1986), in his analysis of British and French economic policy formation in the 1980s, summarizes the role of institutional factors in policy making processes. Institutions shape the preferences and goals of the actors in the decision-making process and by distributing power among the players; help shape the outcomes of this process. The two main variables are the institutional distribution of power and the formation of strategies to obtain desired goals by individual actors given their institutional context.

Hall (1986) supports the view that rational choice theories overemphasize the choice individuals have in making decisions within institutional constraints, and underestimate the constraints imposed by these structural features upon actors in determining preferences.

The second group consists of rational choice theorists which view institutions as governance or rule systems. Rational choice institutionalists argue that individuals and their strategic calculations ought to be the central concern of social science. In economics, North (1990) suggests that institutions are created by utility-maximizing individuals with clear intentions. The political institutionalists adopt the new institutional economic models, including Williamson's (1985) transaction costs approach, to the study of political institutions.

According to these theorists, institutions are rationally constructed edifices established by individuals seeking to promote or protect their interests (Scott, 1995). Tullock (1976) applies economic models to explain political behavior. He argues that voters and customers are the same people. Though recognizing that economic models need to be modified to be applied to political systems, political analysts insist that both share the concern over the existence of public organizations, and their varying forms and governance mechanisms, as well as the effects of political institutions on political and social behavior.

The main task of rational choice theorists is to understand the origin of institutions (Moe, 1990a). These theorists argue that “economic organizations and institutions emerge and take the specific form they do because they solve collective action problems and thereby facilitate gains from trade” (Moe, 1990a; p.217-218).

### **3.3.4 New Institutionalism in Sociology – New Institutional Approach to Organization Study**

The sociological institutionalists provide a much broader definition of institutions than that of political scientists. According to this group of institutionalists, institutions include not only formal rules, procedures or norms, but also the symbol systems, cognitive scripts, and moral templates guiding human action. Similarly, Powell and DiMaggio (1991) define institutions to be not merely rules, procedures, organizational standards, and governance structures, but also conventions and customs.

The new institutionalism in organizational theory and sociology rejects the view of rational choice theorists. It shows an interest in institutions as independent variables, a focus on

cognitive and cultural elements, and an interest in properties of supra-individual units of analysis that cannot be reduced to aggregations or direct consequences of individuals' attributes or motives (DiMaggio and Powell, 1991).

The new sociological institutionalists argue that individual decisions are a product not only of local environment but of a much larger frame of reference of organizational fields or sectors. People are embedded in cultural and historical frameworks which shape individual choices and preferences. According to DiMaggio and Powell (1991), cognitive and cultural embeddedness explains why most individuals cannot even conceive of alternative institutional arrangements or actions, and prefer to follow routines (Powell and DiMaggio, 1991). Similarly, Granovetter and Swedberg (1992) argues that individuals are viewed as embedded in so many social, economic, and political relationships beyond their control and even cognition that it is difficult to take into account utility-maximizing calculation and rational behavior in a strictly economic sense. The concept of rationality is dependent upon its environment.

The new institutionalism in organizational analysis presents an institutional approach to organizational sociology. The approach reflects the cognitive turn in social theory, the transformation in the way social scientists think about human motivation and behavior. The approach marks a departure from current approaches to organizational analysis such as contingency and resource dependency theories. The approach presents a shift from the early institutional general theory of action of Parsons (1951) to the practical theory of action based in ethnomethodology and in psychology's cognitive revolution (Powell and DiMaggio, 1991).

While Parson's (1951) arguments emphasize internalization of cultural norms, commitment, and infusion of objects with values, the new institutional sociologists stress the cognitive dimensions of institutions (Scott, 1995).

Early attempts to introduce institutional arguments to organizational analysis were made by Silverman (1971), who proposed an action theory of organizations (Scott, 1995). Silverman (1971), influenced by phenomenological sociology, especially ethnomethodology, focuses on meaning systems and the ways in which they are constructed and reconstructed in social action. According to Silverman (1971), meanings are not only in the minds of individuals but are also social facts residing in social institutions. Organizations provide a source of meaning for members of organizations. Organizations are socially constructed by individual actions of members having habituated expectations of others (Silverman, 1971).

Later, in 1977, Mayer and Rowan's articles "The Effects of Education as an Institution" and "Institutionalized Organizations: Formal Structure as Myth and Ceremony" and Zucker's (1977) "The Role of Institutionalization in Cultural Persistence" mark the introduction of new institutionalism in organizational studies. Mayer and Rowan (1977) study the educational systems to examine the effects of institutional systems on formal organizations. Organizations are recognized to be the result of rationalization of cultural rules, representing appropriate methods for pursuing purposes (Meyer and Rowan, 1977). The study presents a new insight into causes and consequences of formal structures. Organizations, besides their objective functions, also serve symbolic ones, invested with socially shared meanings. Formal structures are not only influenced by production processes but also external pressures such as the passage of legislation and the development of strong social norms within an organizational network. "Organizational success depends on factors other than efficient coordination and

control of production activities. Independent of their productive efficiency, organizations which exist in highly elaborated institutional environments and succeed in becoming isomorphic with these environments gain the legitimacy and resources needed to survive” (Mayer and Rowan, 1977; p. 352).

Zucker (1977) focuses the study on the institutionalization processes at the micro level among organizational actors. Organizational actors are distinguished by a number of properties - hierarchical authority, potentially unlimited lifespan, unique legal responsibilities, and so forth, which can affect institutionalization processes. Zucker (1977) defines the process of generalizing the meaning of an action as “objectification,” and identifies it as one of the key component processes of institutionalization. According to Tolbert and Zucker (1994), institutionalization process has three main aspects including exteriority, habitualization and objectification. Exteriority refers to the degree to which typifications are “experienced as possessing a reality of their own, a reality that confronts the individual as an external and coercive fact” (Berger and Luckmann, 1967; p.58). Habitualization is defined to be the development of patterned problem-solving behaviors and the association of such behaviors with particular stimuli. And objectification is the development of general, shared social meanings attached to these behaviors, a development that is necessary for the transplantation of actions to contexts beyond their point of origination (Tolbert and Zucker, 1994). Zucker (1977) stresses the effects of cognitive beliefs on behavior and demonstrates that as the degree of objectification and exteriority of an action increases, the degree of institutionalization will also increase, and that when institutionalization is high, then transmission of the action, maintenance of that action over time, and resistance of that action to change are also high.

DiMaggio and Powell (1983) develop their own variant of institutional theory which tries to explain the processes that “make organizations more similar without necessarily making them more efficient” (p.147). The authors define three mechanisms of diffusion of institutional effects through the organizational field, including: coercive, mimetic and normative, and emphasize structural isomorphism as an important consequence of both competitive and institutional processes.

Early empirical work in institutional sociology centered around three themes: factors affecting the diffusion of institutional forms (for example, Zucker, 1987; Meyer et al., 1987), the disruptive effects of conflicted or fragmented institutional environments on organizational forms (Meyer et al., 1987; Powell, 1988), and the processes at work in constructing the rules and logics unpinning an organizational field (DiMaggio, 1983; Leblebici and Salancik, 1982).

Apart from Mayer and Rowan’s (1977) focus on the organizational level, both sets of researchers consider new levels of analysis in the institutional approach to organization study to include the organizational field (DiMaggio and Powell, 1983) and the societal sector (Scott and Mayer, 1983). Institutional theory in organizational study directs attention toward forces that lie beyond the organizational boundary, in the realm of social processes (DiMaggio and Powell, 1991; Scott, 1995). A firm’s action is seen not as a choice among an unlimited array of possibilities determined by purely internal arrangements, but rather as a choice among a narrowly defined set of legitimate options determined by the group of actors composing the firm's organizational field (Scott, 1991). As the purpose of the current research is on all possible factors affecting a firm’s decision to comply or not comply with environmental laws, the level of analysis should not be confined within the individual organizations. The organizational field of corporate environmentalism, the institutional environment

constituting different actors (for example, government, special interest groups, trade organizations, critical exchange partners, and the general public) that are all concerned about the issue of corporate environmentalism, will be presented in subsection 3.2.6.

### **3.3.5 Points of Divergence**

The divergence among approaches can be illustrated by their varying definitions of institutions. Historical institutionalists define institutions as “the formal or informal procedures, routines, norms and conventions embedded in the organisational structure of the polity or political economy” (Hall and Taylor, 1996; p.938). In the rational choice tradition, political scientists view institutions as frameworks “of rules, procedures and arrangements” (Shepsle, 1986) established by individuals seeking to promote their self interest, and organizational economists conceive of institutions as governance structures and social arrangements aimed at minimizing transaction costs (Williamson, 1985). In sociology, institutions take a different meaning. Institutions are not the outcomes of purposive actions by instrumentally oriented individuals but the result of human activity, not necessarily conscious ones. Institutions are not restricted to the instrumental calculations but include cognitive and cultural elements. Institutions are products of a phenomenological process by which certain social relationships and actions become taken for granted (Zucker, 1983). Behaviors can be institutionalized over a wide territorial range, from family understandings to progress in the world system (DiMaggio and Powell, 1991).

The second difference among various institutionalisms is noted by DiMaggio and Powell (1991). Economists and political scientists expect the desired outcomes of constructed

institutions but in fact they sometimes encounter unintended effects. The sociological approach, on the other hand, views institutions as taken-for-granted expectations. Sociologists argue that individuals do not choose freely among institutions, customs, social norms or legal procedures. They follow the logic of appropriateness absorbed through socialization, education, and on-the-job learning, and so on. Besides, people in different societies hold different assumptions of interests and appropriate action. (Powell and DiMaggio, 1991).

The last dividing line between economic and political science and sociological variants of new institutionalism concerns the autonomy, plasticity and efficiency of institutions (Powell and DiMaggio, 1991). The former views institutions as temporary entities that change quickly until an efficient equilibrium solution is achieved. Organizational sociologists find institutionalized behaviors and structures as being more resistant to change than those that are not. Though all agree that institutional changes are constrained by technical interdependence and physical sunk costs, sociologists find the constraint is also due to the fact that people sometimes cannot even conceive of appropriate alternatives to an existing institutional arrangement. Economists and political scientists view institutions as efficient solutions to problems of governance, whereas sociologists reject this explanation and focus on the ways institutions complicate and constitute the paths by which solutions are sought (Powell and DiMaggio, 1991).

Concerning three basic questions of institutional analysis, including the relationship between institutions and individual behavior, the role of institutions and the development of institutions, Hall and Taylor (1996) argue that institutionalists provide two distinctive kinds of responses to these questions termed “calculus approach” and “cultural approach”.



The calculus approach focuses on the instrumental aspects of human behavior. Individuals act strategically in order to maximize their benefits. Institutions provide information relevant to the behavior of others, enforcement mechanisms for agreements, penalties for defection, and the like. They affect individual action by altering the expectations an actor has about the actions that others are likely to take in response to or simultaneously with his own action. In explaining the persistence of institutions, it is argued that individuals adhere to certain patterns of behavior because deviation will make the individual worse off than will adherence. It follows that the more an institution contributes to the resolution of collective action dilemmas or the more gains from exchange it makes possible, the more robust it will be.

In contrast, the cultural approach focuses on the individual's bounded rationality. Advocates of this approach agree that individuals are rational actors, but are also influenced by their worldview. They tend to follow routines and familiar patterned behavior to achieve their purposes. It tends to see individuals as satisfiers, rather than utility maximizers, and to emphasize the effects of situational factors on the choice of a course of action rather than the purely instrumental calculation. From this perspective, institutions provide moral or cognitive templates for interpretation and action. The individual is embedded in a cognitive and cultural environment, composed of symbols, scripts and routines, which provide the filters for interpretation, of both the situation and oneself, out of which a course of action is constructed. Not only do institutions provide strategically-useful information, but also, they affect the very identities, self-images and preferences of the actors (Hall and Taylor, 1996). The cultural approach explains the persistence of institutions as they are socially constructed and become conventions and taken-for-grantedness that could not be easily transformed by actions of individual actors.

Hall and Taylor (1996) summarize the distinctive features of the three schools of thought in new institutionalism along dimensions of the calculus and cultural approaches. The three schools of thoughts are classified into the rational choice group consisting of economists and political science theorists embracing a rational choice framework; the historical group consisting of historical institutionalists in political science; and the sociological institutionalists group.

According to Hall and Taylor (1996), historical institutionalists conceptualise the relationship between institutions and individual behaviour using both approaches. They emphasize the asymmetries of power associated with the operation and development of institutions. Historical institutionalists are likely to assume a world in which institutions give some groups or interests disproportionate access to the decision-making process; and, rather than emphasize the degree to which an outcome makes everyone better off, they tend to stress how some groups lose while others win. Advocates of this school represent a view of institutional development that emphasises path dependence and unintended consequences. They argue that the effect of the same operative forces do not produce the same results everywhere but will be mediated by the contextual features of a given situation often inherited from the past. Lastly, historical institutionalists are attentive to the integration of institutional analysis with the contribution that other kind of factors, such as ideas, can make to political outcomes. They posit that institutions are not the only causal force in politics. They typically seek to locate institutions in the relationship with ideas and beliefs.

Rational choice institutionalists argue that actors have a fixed set of preferences or tastes and behave entirely instrumentally so as to maximise the attainment of these preferences.

Rational choice institutionalists tend to see politics as a series of collective action dilemmas,

when individuals acting to maximize the attainment of their own preferences are likely to produce an outcome that is collectively suboptimal. This group of theorists emphasizes the role of strategic interaction in the determination of political outcomes. They postulate that an actor's behaviour is likely to be driven, not by impersonal historical forces, but by a strategic calculus and that this calculus will be deeply affected by the actor's expectations about how others are likely to behave as well. They explain the creation of institutions as the purposive actions of actors who want to realize their gains from cooperation. Thus, the process of institutional creation usually revolves around voluntary agreement by the relevant actors; and, if the institution is subject to a process of competitive selection, it survives primarily because it provides more benefits to the relevant actors than alternate institutional forms. Thus, a firm's organizational structure is explained by reference to the way in which it minimises transaction, production or influence costs.

The last school of thought is sociological institutionalism. Besides formal rules, procedures and norms, the sociological institutionalists incorporate the symbol systems, cognitive scripts, and moral templates that provide the "frames of meaning" guiding human action into the definition of institutions. They also have a distinctive understanding of the relationship between institutions and individual action, which follows the 'cultural approach'. These theorists also take a distinctive approach to the problem of explaining how institutional practices originate and change. They argue that organisations often adopt a new institutional practice, not because it advances the means ends efficiency of an organisation or its participants, but because it enhances the social legitimacy of the particular organisation or its participants.

The distinctive features of historical institutionalism, rational choice institutionalism and sociological institutionalism are summarized in Table 3.1.

*Table 3.1 Distinctive features of three institutionalisms*

<b>Institutional approaches</b>	<b>Relationship between institutions and behavior</b>	<b>Role of institutions</b>	<b>Development of institutions</b>
<b>Historical institutionalism</b>	Both calculus and cultural approach: both instrumental calculation and worldview influence	Institutions distribute powers unevenly across social groups	Institution development are path and context dependent and consequences are unintended
<b>Rational choice institutionalism</b>	Calculus approach: instrumental calculation to maximize benefits	Institutions structure strategic interaction determining political and economic outcomes. They affect individual action by altering the expectations an actor has about the actions that others are likely to take in response to or simultaneously with his own action	Institutions are created by actors who want to realize their gains from cooperation
<b>Sociological institutionalism</b>	Cultural approach: actors are both rational actors and satisfiers, following routines and familiar patterned behaviors of shared attitudes and values.	Institutions provide moral or cognitive templates for interpretation and action.	Institutions enhance legitimacy

### 3.3.6 Organizational Field and Corporate Environmentalism

Social analysts have been applying institutional theory in their studies at different levels of analysis from the world system to societal, organizational field to organizational population to organization and organizational subsystem (Scott, 2001). In organizational study, “organizational field”, the community of a focal organization, has been recognized as an important level of analysis that can help to explain the behavior of a particular organization within the field (Scott, 2001; DiMaggio and Powell, 1991). DiMaggio and Powell (1983) define an organizational field as comprising “those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product

consumers, regulatory agencies, and other organizations that produce similar services or products” (p.143).

An organizational field comprises all the actors that impose influence on a given organization, including the government, critical exchange partners, sources of funding, professional and trade associations, special interest groups, and the general public (Scott, 1991). A field is formed about issues that bring together different field constituents, such as, in the case of this research, the issue of corporate environmentalism. Organizational fields become the center of common channels of dialogues and discussion where multiple field constituents compete over the definition of issues and the form of institutions that will guide organizational behavior. Institutional beliefs and perceptions are influenced by this field-level competition. Specific institutions are formed and exist at the center of an issue-based field (Hoffman, 1999). In this study, the institutions affecting firm compliance, therefore, are explored at the organizational field level centering around the issue of corporate environmentalism to fully understand all possible factors guiding the firm compliance behavior with regard to environmental laws.

The modern corporate environmentalism developed alongside the environmental movement since the early 1960s, marked by structural, technical and cultural changes in corporate behavior toward the environment. The 1960s witnessed concerns over air and water pollution. The movement was sparked by Carson (1962), in her famous publication of “Silent Spring”, who pointed out the problems of increasing and restricted pesticide usage. Carson (1962) charged that the pesticide DDT was a persistent presence in the food chain and that continued use of this and other synthetic chemicals would disrupt the “web of life,” posing a

hazard to all living organisms, including humans. Following the publication, several mass deaths of fish on the Mississippi River in 1964, one involving the death of over a million fish, intensified industry's attention to the environmental issue.

The accepted belief of industry during this period was that engineering advances improved the quality of life for all humankind (Florman, 1976). However, environmentalism challenged such commonly accepted beliefs with society's emerging questions regarding their validity. "Silent Spring" initiated an increase in environment-industry dialogue, marking the early formation of an organizational field centered on the issue of environmentalism (DiMaggio, 1983).

The environmental movement during the 1970s was marked by the United Nations Conference on the Human Environment held in Stockholm in 1972, attended by representatives of 119 countries and 400 non-governmental organizations (NGOs). The conference published the Stockholm Declaration on the Human Environment and Action Plan for the Human Environment. The conference succeeded in placing environmental problems, especially pollution, on the international political agenda. The United Nations Environment Programme (UNEP) was established. As a result of Stockholm conference and its resulting declaration, environment ministries and agencies were established in more than 100 countries, a key requirement for carrying forth the results of the conference. It also marked the beginning of the explosive increase in non-governmental and intergovernmental organizations dedicated to environmental preservation.

In April 1970, the U.S. Environmental Protection Agency (EPA) was created. Industries were under pressure to comply with the government's environmental standards. The

creation of the EPA in 1970 ushered in the era of Regulatory Environmentalism, characterized by the imposition of state rules and sanctions. Industries responded to these coercive forces during the 1970s with the creation of separate environmental departments at the corporate level to manage the process of legal compliance. Attempts to control pollution at industrial facilities focused on “end-of-pipe” treatments to meet those environmental standards (Hoffman, 1999). According to Hoffman (1999), the organization field of corporate environmentalism in the 1970s saw the active role of NGOs with their battle with industries over legitimate environmental practice.

In the early 1980’s, the term “sustainable development” was first introduced to the public through the presentation of the “World Conservation Strategy” by the International Union for the Conservation of Nature and Natural Resources (IUCN). The Strategy aimed at achieving sustainable development through the conservation of living resources. The focus, however, was on ecological sustainability, not social and economic aspects.

Corporate environmentalism as social responsibility emerged during the 1980s together with the reduced scope and influence of the EPA as a response to growing industry frustration with the burdens of environmental regulation. This resulted in an increasing movement of environmental activists, who began to challenge corporate activities directly through lawsuits and boycotts, rather than indirectly through the EPA. Organizations responded by expanding their environmental department staff, to develop a more cooperative relationship with governmental regulators as well as establish public relations campaigns aimed at influencing the negative perceptions of various audiences, such as environmental activists (Hoffman, 1999).

Throughout this period, enforcement and regulation were still the main concern of the environmental movement, but environmentalism was moving beyond purely regulatory concerns. Corporations began to perceive the normative institutional aspect of environmentalism. Environmental protection became ethically appropriate, a matter of social obligation, to initiate controls that went beyond regulatory requirements. Environmental protection attempts shifted from end of pipe control measures toward waste minimization and pollution prevention in the production process (Hoffman, 1999).

The Bruntland report, published in 1987 by the World Commission on Environment and Development, broadened the concept of sustainable development and became the mainstream of sustainable development thinking among countries and organizations (Bruntland, 1987). In 1992, the United Nations Conference on the Environment and Development (UNCED), or the “Earth Summit”, was convened by the General Assembly of the United Nations. The primary goal of the Summit was an understanding of the development which would support socio-economic development and prevent continued deterioration of the environment. The result of the conference was “Agenda 21” containing detailed proposals for action in social and economic areas and for conserving and managing natural resources, and the “Rio Declaration” specifying principles defining the rights and responsibilities of states regarding relevant issues.

Several serious environmental accidents occurred during this period, heightening the concerns about environmental issues. The most notable events include the 1984 methyl isocyanate release at Union Carbide’s Bhopal, India plant that killed over 3,000 people and injured another 300,000; the emergence of concern over the hole in the ozone layer in 1985 leading to the formation of a UN treaty halting the production of ozone-depleting



chemicals in 1987 (the Montreal Protocol); the emergence of concern over global warming in 1988; and the Exxon Valdez oil spill in Prince William Sound on March 24, 1989. In response to these issues, states worldwide have adopted various measures to cope with the problem. In the U.S., the Toxics Release Inventory was enacted, and the Responsible Care Program of the Chemical Manufacturers Association in 1990 was initiated. This program outlined a set of proactive environmental principles that all members of the trade association would be required to adopt.

In the late 1980s and 1990s, corporations adopted more proactive environmental protection measures to achieve both operational efficiencies and environmental benefits. Beside regulation and technology, other environmental protection now included management, strategy and public relations measures. Environmental management departments grew in size and stature, and new alliances began to be forged with other actors, such as the state and environmental movement organizations. Ecological sustainability was viewed as good business. Corporate environmental attention showed concern for product stewardship and life-cycle analysis, leading industries to reduce pollution by altering raw material and product choices (Hoffman, 1999). Environmentalism began to include a cognitive institutional pillar. For example, it was believed that companies would no longer dump hazardous wastes in an unsecured landfill. Besides, there was also the widespread adoption of organizational and strategic innovations, such as environmental annual reports, pollution prevention programs, etc. These present taken-for-granted beliefs about legitimate corporate environmental practice (Hoffman, 1999).

### 3.4 SCOTT'S THREE PILLARS OF INSTITUTIONS

Institutional influences on organizational behavior can take several forms, but taken together they guide the interpretation of issues as they emerge. Scott (2001) synthesizes a wide range of literature on institutional theory, including older and more recent versions as pursued by economists, political scientists, and sociologists, to find out commonalities among these approaches. He proposes a single coherent institutional theory specifying three aspects of institutions, called the “Three Pillars of Institutions”. Scott (1995; p.33) defines institutions as consisting of “cognitive, normative, and regulative structures and activities that provide stability and meaning to social behavior. Institutions are transported by various carriers - cultures, structures, and routines - and they operate at multiple levels of jurisdiction”.

According to this definition, institutions are multifaceted systems incorporating regulative structures, which are the main element of rational choice models, with symbolic systems of cognitive constructions and normative rules shaping social behavior.

Scott (2001) identifies three analytical elements that make up institutions. Each element operates through its own mechanisms and processes, but they may also work in combination. Scott's framework presents a comprehensive approach to the study of institutional elements deciding behaviors of organizations, in particular, the compliance behavior of firms, the subject of this research. The framework encompasses views of economics, political science and sociological institutionalists presented in section 3.2 to include the regulative pillar, based on consequentiality, the normative pillar, based on appropriateness and the social-cognitive pillar, based on orthodoxy. These analytical elements have been identified by one or another theorist as vital components of institutions.

Scott (2001) describes these pillars according to six principal dimensions “along which assumptions vary and arguments arise among theorists emphasising one element over the others” (p.51). These dimensions are considered in Table 3.2. The three pillars in the right column are differentiated along the six dimensions presented in rows, including: Basis of compliance; Basis of order; Mechanisms; Logic; Indicators; and Basis of legitimacy

Although all institutions are composed of various combinations of elements, they vary among themselves and over time in which elements are dominant. Institutional scholars vary in the relative emphasis they place on these elements and in the levels of analysis at which they work. Thus, most economists and rational choice theorists stress regulative elements (for example, Williamson, 1975; North, 1990); early sociologists favored normative elements (Hughes, 1939; Parsons, 1937, 1951; Selznick, 1949); and more recent organizational sociologists and cultural anthropologists emphasize cultural-cognitive elements (for example, Zucker, 1977; DiMaggio and Powell, 1991; Scott, 2001).

*Table 3.2 Dimensions of three pillars of institutions (Scott, 2001)*

Dimensions	Pillar		
	Regulative	Normative	Cognitive
Basis of compliance	Expedience	Social Obligation	Taken -for-grantedness Shared understanding
Basis of order	Regulative rules	Binding expectations	Constitutive schema
Mechanisms	Coercive	Normative	Mimetic
Logic	Instrumentality	Appropriateness	Orthodoxy
Indicators	Rules Laws Sanctions	Certification Accreditation	Common beliefs Shared logics of action
Basis of legitimacy	Legally sanctioned	Morally governed	Comprehensible Recognisable Culturally supported

### 3.4.1 The Regulative Pillar

The regulative pillar refers to regulative processes that constrain and regularize behavior: rule setting, monitoring and sanctioning activities. The regulatory process in this sense concerns “the to establish rules, inspect others’ conformity to them, and, as necessary, manipulate sanctions - rewards or punishments - in an attempt to influence future behavior” (Scott, 2001; p.52). Actors are said to conduct expedient behavior and force and fear and expedience are considered to be the basis for compliance with an institution. The mechanism to conform to institutions can, according to this pillar, be seen to be coercive. Rules and regulations are said to control these elements of the regulative pillar. Laws, rules and sanctions can be seen as indicators of institutions in the context of this pillar and institutions are thought of as being legitimate because they are legally sanctioned. Scholars who emphasize the regulative element of institutions include economists and rational political science theorists.

Theorists emphasizing the regulative view of institutions embrace a rational choice framework, explaining behavior to be based on cost-benefit calculations. North and Thomas (1973), in their study of “The Rise of the Western World”, argue that individuals will be motivated to undertake socially desirable activities only if they provide benefits that exceed private costs. The regulative institution taken in such a case by the government is then the establishment and enforcement of property rights. The authors note that property right structure in the Netherlands and England at the beginning of the 18<sup>th</sup> century provides incentives for sustained economic growth in general (North and Thomas, 1973). However, the authors do not examine which groups benefit and which do not benefit from the development and enforcement of various types of regulative institutions.

Sociological advocates of the rational choice approach focus their attention on the development of rules and government structures promoting social order and in doing so, protecting everyone by curbing the social behavior of each individual in the society (Scott, 1995). According to Coleman (1990), the demand to control rules and norms stems from the fact that people's interests are affected by actions of others' externalities. Another example can be found in Stern's (1979) study of the evolution of the National Collegiate Athletic Association (NCAA) in the United States during the first half of the 20<sup>th</sup> century. The study shows how NCAA, a small loose confederation at its founding, introduced enforcement institutions imposing serious financial losses and sanctions on NCAA's members violating the association's rules and regulations.

### **3.4.2 The Normative Pillar**

In the normative pillar "emphasis is placed on normative rules that introduce a prescriptive, evaluative and obligatory dimension into social life" (Scott, 2001; p.54). Theorists embracing this view are mostly sociologists like Parsons (1937) and Selznick (1949). Like the regulative pillar, rules play an important role, but now with a different connotation. The normative elements in this pillar include norms and values guiding the behaviour of the actors by specifying how things should be done, or in other words, they act according to the logic of appropriateness (March and Olsen, 1989). Social obligation is considered to be the basis of compliance with an institution. With the guiding role of norms and values, expectations are external pressures on actors guiding their behavior. Actors conform to what is expected of them and what is appropriate for them to do, and are not based on their calculation of their individual interests. Institutional behavior is morally governed behavior.

The differences between the regulative and normative elements are clarified by the distinction between the logic of consequences and logic of appropriateness by March and Olsen (1989). According to the authors, actors whose behavior follows the “logic of consequences” choose rationally among alternatives based on their calculations of expected consequences, whereas actors who follow the “logic of appropriateness” perform actions based on identities, obligations, and conceptions of appropriate action.

Like other institutions, normative institutions are created at different levels, from world system to individual actor one. According to Selznick (1949), to institutionalize is to ‘infuse with value’. In the case of his study of the Tennessee Valley Authority (TVA), he shows how the organization’s officials’ commitments influence its structure and goals, transforming its means of action, ways of conducting work and even the survival of the organization (Selznick, 1949). The author emphasizes informal structures of the organization and the influence of external groups on the agency’s decision making process (Selznick, 1949).

At the organizational field level, Leblebici et al. (1991) examine the changes of the radio broadcasting industry during the period 1920-1965. The changes are phased into three development stages differentiating from each other in terms of dominant players, medium of transactions and institutions governing these transactions. In a highly competitive market, leaders are forced to adopt innovations that later, through recurrent use, become conventions, and subsequently institutional practices diffused throughout the field with the emergence of supporting norms (Leblebici et al., 1991).

Axelrod (1984) examines how individuals with self interest calculation evolve norms of cooperation. When coping with situations, like the prisoner's dilemma, people have to make decisions on their choice between cooperation and non-cooperation. Cooperation presents a secure choice with shared rewards for both players while non-cooperation will result in no reward for one of the players. Such situations give rise to security regimes and similar types of institutions. The anticipation of future interaction evokes stable cooperative norms (Scott, 1995).

### **3.4.3 The Cultural-Cognitive Pillar**

The cognitive dimensions of institutions mark the distinction of new institutionalism in sociology. The cultural cognitive elements present “the shared conceptions that constitute the nature of social reality and the frames through which meaning is made” (Scott, 2001; p.57). The most important cognitive element is constitutive rules, which involve the creation of categories and the construction of typifications. “For cultural-cognitive theorists, compliance occurs in many circumstances because other types of behavior are inconceivable; routines are followed because they are taken for granted as “the way we do these things” (Scott, 2001; p.57). Compliance with an institution is spread though mimicking others. Further, “a cultural-cognitive view stresses the legitimacy that comes from adopting a common frame of reference or definition of the situation” (Scott, 2001; p.61).

Various studies are conducted to examine the development of cognitive elements at different levels. DiMaggio (1991) studies the efforts by professionals to create the cultural conditions supporting the development and maintenance of art museums during the late 19<sup>th</sup> century

in America. The author focuses on the creation of cultural distinction between high and low forms of art and the creation of cultural models for constituting art museums.

### **3.5 ORGANIZATIONAL BEHAVIOR AND SCOTT'S THREE PILLARS OF INSTITUTIONS**

Institutional theory and Scott's "Three Pillars of Institutions" have been widely applied to the studies in organizational study (see, for example, Barnett and Carroll, 1993; Hoffman, 1999); and other fields such as political science, sociology and law.

In organizational study, Hoffman (1999) and Dao and Ofori (2008) study firms' environmental behavior from institutional perspectives, employing the well established institutional framework of Scott's (1995) "Three Pillars of Institutions". According to Hart (1997), corporate environmentalism supplies the context for an exploration, application, and critique of institutional theory.

Hoffman (1999) applies institutional theory and Scott's "Three Pillar of Institutions" to study 33 years of changing responses to environmental pressures of the chemical and oil industry in the U.S. Hoffman examines the dominant institutions associated with each industry and each period of corporate environmentalism development. The findings identify the constructs closely linked with Scott's Three Pillars of regulative, normative and cognitive institutions. The four distinct periods, or, in Hoffman's (1999) term, "eras" of corporate environmentalism are:



1. Industrial environmentalism (1960-1970): dominated by cognitive/mimetic institutions with focus on industrial internal resolution of environmental problems of the firm's operations.
2. Regulatory environmentalism (1970-1982): dominated by regulative institutions with focus on firm's efforts to compliance with stringent new environmental laws.
3. Environmentalism as social responsibility (1982-1988): dominated by normative institutions with focus on environmental measures as normative responses to industry associations and voluntary initiatives.
4. Strategic environmentalism (1988-1993): dominated by cognitive institutions with focus on top management integration of proactive environmental strategies.

According to Hoffman (1999), the organizational field is influenced by external events such as the publication of "Silent Spring" (Carson, 1962), or the events at Bhopal, and Exxon Valdez. These events mark the transitions from one period to another. In the industrial environmentalism period, industries dominate the field. The dominant role, however, shifts to the government during regulatory environmentalism. Industry associations and nonprofit organisations become key driving forces in the period of environmentalism as social responsibility, whereas investors, insurance companies, and business competitors appear as important forces in strategic environmentalism. Institutional norms and rules change over each period depending on the established organizational field to reflect the political interests of the newly formed field. The findings are consistent with Scott's theory regarding the varying levels of emphasis put on institutional elements over time and in different contexts of social and industrial development (Scott, 2001).

The study of Hoffman (1999) concludes with further research directions that would expand the study not only to the chemical and oil industry, but also beyond the institutional field of the U.S. Further studies should target other industries as well as examine the firm institutions in different contexts around the globe. This provides a rationale for this study of firms, mostly manufacturing enterprises, in the context of Vietnam. The findings of this research would provide a richer argument for institutionalization.

In the field of law, Powell (1996) uses Scott's "Three Pillars of Institutions" to argue for a deeper conception of law not only as rule-making and sanction-applying processes but also subject to the normative and cognitive process of negotiation and interpretation. Law is widely perceived as a coercive constraint, the regulatory arm of the government to formulate and maintain the rules of games for individuals and corporate actors. However, beside the role of a constraining force, the normative and cognitive pillars also give room for negotiation and edition of firms' behavior through the interaction process. Rather than reflecting self-interested or strategic calculations, the legitimacy of laws depends heavily upon normative conceptions about what is proper and obligatory (Tyler, 1990). Sutinen and Kuperan (1999), Chen (2005) and Tyler and Blader (2000) also recognize the influence of procedural justice in determining corporate compliance behavior.

In economic development, institutional theory and Scott's "Three Pillars of Institutions" have been widely recognized as critically important in national economic development (see, for example, Easterly and Levine, 2002; Harris et al., 1995). Krauze (2006) uses Scott's Three Pillars to study the legitimacy of organizational practices in Mexico. The study focuses on exploring the role of institutional elements in achieving economic programs such as the Mexican Maquiladora Program (MMP). Maquila operations utilize institutionalized routines

that import foreign merchandise into Mexico on a temporary basis, where it is assembled, manufactured or repaired and then exported, either to the country of origin or to a third country. Such routines, with cognitive legitimacy for managers, require subsidiary practices predicated in headquarters control, or in other words, a dependency on headquarters. The multi national corporations (MNCs) control practices in emerging economy subsidiaries need cognitive acceptance of the MNCs, normative acceptance of voters in terms of the righteousness of such institutional practice, and regulative acceptance of elected representatives, the formal rules of the regulative pillar supporting such institutions.

### **3.6 CONCLUSION**

The chapter highlights the rationale for the choice of Scott's (2001) Three Pillars of Institutions as the theoretical framework for the research, bridging the knowledge gap of existing compliance theories. It provides for an overarching framework that can help to comprehensively explain compliance behaviors encompassing views of different groups of institutional theorists: economists, political scientists and sociologists. Scott's (2001) Three Pillars of Institutions mark the focus of the chapter, providing the generic framework for the synthesis of compliance theories in Chapter 2 into a hypothetical model of determinants of firms' compliance and non-compliance with environmental laws and regulations. The model is further developed through exploratory case studies and interview results and tested using quantitative data in Chapter 7.

# CHAPTER 4

## CORPORATE ENVIRONMENTALISM AND INSTITUTIONS IN VIETNAM

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### 4.1 INTRODUCTION

This chapter provides an overview of the business environmental practices in Vietnam focusing on the current protection measures applied by firms from different business sectors. A market overview and the local legal framework governing business sector are first presented to provide a background for the discussion of corporate environmentalism in Vietnam, followed by a discussion of local environmental issues. Current environmental initiatives by different stakeholders are reviewed before specific measures to deal with environmental problems by firms are detailed along

## 4.2 OVERVIEW OF BUSINESS COMMUNITY IN VIETNAM

### 4.2.1 Vietnam in Brief

Vietnam, located in the eastern part of Indochina, has a population of 84 million, the second largest country in Southeast Asia after Indonesia. Half of the population is under the age of 30 years. The capital, Hanoi, is located in the north while Ho Chi Minh City is the central economic city in the south.

Vietnam consists of 64 provinces and four cities under central government (Hanoi, Ho Chi Minh City, Hai Phong and Da Nang). Vietnam's population and economic activities are concentrated in two great river deltas; the Red River Delta in the north, including Hanoi and surrounding provinces, and the Mekong River Delta in the south, centered on Ho Chi Minh City and its surrounding cities and provinces. Hue in the North Central Coast and Da Nang in the South Central Coast are the two economic hubs of Central Vietnam. Quick facts of Hanoi (and the Red River Delta), and Ho Chi Minh City (and the Mekong River Delta) (Table 4.1) are presented providing rationales for selection of these cities as target geographical regions of this research.

Table 4.1 Area and population of Vietnam (2006)

	Area (km <sup>2</sup> )	Population (pers)
Whole country	33,1211.6	84,155,774
The North	116,421.5	30,273,058
Hanoi	921.8	3,216,651
Red River Delta	14,862.5	18,207,732
The South	75,412.4	31,214,238
Ho Chi Minh City	2098.7	6,106,017

(Source: General Statistics Office of Vietnam)

This continual state of war (French, Japanese, and American wars) had serious adverse effects on the natural environment of the country, including the degradation of forest resources and low living standards. About ten years of rapid socialization following the end of the Vietnam War intensified the economic difficulties, which included faltering agriculture, the most fundamental industrial sector, driving the country to the brink of economic collapse. In response, Vietnam adopted the “Doi Moi” or Renovation policy in its sixth Congress in 1986. Under this policy, while maintaining the socialist system, the country shifts from a command and control to a market economy with measures such as recognition of private enterprises, and the opening of the economy to the rest of the world.

The Vietnamese Government has a mid-term goal of doubling the GDP over 2000 by 2010 and joining the ranks of industrialized nations of the world by 2020. Toward this end, in the past ten years or so, the government has been steadily working to establish a foundation for economic development through promoting structural reforms of society and building social infrastructures to encourage investment by foreign countries, the prime mover of economic development, and through improving external relations, including joining in Association of Southeast Asian Nations (ASEAN) (Swinkels and Turk, 2002).

#### **4.2.2 Market Overview**

Since around 1989, when the “Doi Moi” policy started to have effect, Vietnam has achieved stable, high economic growth through encouraging investment by foreign countries and promoting industrialization. In 1995, the rapid economic growth in neighboring Southeast

Asian countries helped to attract lots of foreign capital flowed into the country, leading to high economic growth. However, the boom was short-lived. After peaking at 9.5% in 1995, the economic growth gradually slowed down each year to 4.8% in 1999, mainly due to the influences of the currency and economic crisis in Asia in 1997 and the delay in creating a favorable investment climate. The Vietnamese Government responded to this situation by providing foreign companies with tax exemption and other incentives, and the growth rate rose back to 6.7% in 2000, showing a recovery trend. Vietnam's economic growth rate has been among the highest in the world in recent years, expanding annually at 7-8%, while industrial production has been growing at around 14-15% a year. The gross domestic product (GDP) growth rate for 2006 was 8.2% (Table 4.2). The entry into force of the U.S.-Vietnam Bilateral Trade Agreement (BTA) in 2001 transformed the bilateral commercial relationship between the U.S. and Vietnam and has greatly expanded business opportunities for American firms.

*Table 4.2 GDP and GDP per capita of Vietnam from 2000-2006*

	2000	2002	2003	2004	2005	2006
<b>GDP (billion VND)</b>	441,646	535,762	613,443	715,307	839,211	973,790
<b>GDP growth rate</b>	6.79	7.08	7.34	7.79	8.44	8.17
<b>GDP per capita (USD)</b>	402	440	492	553	639	722

*Source: Vietnam Statistics Handbook 2006 (General Statistics Office of Vietnam)*

Vietnam became a member of the World Trade Organization (WTO) on January 11, 2007. Vast changes are expected in Vietnam's economy that could provide excellent opportunities for foreign businesses. To meet the obligations of WTO membership, Vietnam revised nearly all of its trade and investment laws and regulations. As a result, foreign investors and those seeking to sell goods and services to the increasingly affluent Vietnamese population will benefit from the improved legislative framework and lower trade barriers. Local firms that have heretofore enjoyed a wide range of protections, meanwhile, will experience increased

competition. By the end of 2006, the Government of Vietnam reasserted its goal of becoming a middle-income country by 2010. That would entail raising the average per capita income to at least US\$1,000 from the 2006 average of US\$726.

Vietnam was the host economy for the Asia Pacific Economic Cooperation (APEC) meetings in 2006. This is an illustration of Vietnam's ongoing and successful efforts to play a larger part in the world economy. Along with WTO accession, this event marked an important milestone for Vietnam. Vietnam is a dynamic commercial environment with strong economic growth and a large population base (over 84 million).

The development of the Vietnamese economy is centered on Ho Chi Minh City in the south, and Hanoi and Hai Phong in the north. Many companies are located in these areas and adjacent provinces of Dong Nai and Binh Duong in the south, and Vinh Phuc in the north, with more and more availability of industrial estates established to cater for the increasing need of industrial production. For this reason, companies surveyed in this research are taken from these geographical locations.

#### **4.2.2.1 Agriculture and Industry**

Land reform, de-collectivization, and the opening of the agricultural sector to market forces converted Vietnam from a country facing chronic food shortages in the early 1980s to the second-largest rice exporter in the world. Besides rice, key export products include coffee, tea, rubber, and fisheries products. Agriculture's share of economic output has declined, falling



from 42% of GDP in 1989 to 20.4% in 2006, as production in other sectors of the economy has risen (General Statistics Office of Vietnam, 2006).

Together with the country's efforts to increase agricultural output, Vietnam's industrial production has also grown. Industry contributed 41.5% of GDP in 2006, up from 27.3% in 1985. State-owned enterprises are marked by low productivity and inefficiency, the result of a command-style economic system applied in an underdeveloped country. Foreign direct investment (FDI) is a dynamic feature of Vietnam's industrializing economy. By the end of 2005, cumulative implemented foreign direct investment totaled over US\$34 billion, helping to transform the industrial landscape of Vietnam (Table 4.3) (General Statistics Office of Vietnam, 2006).

Table 4.3 *Gross domestic product by economic sector, Vietnam 2000-2006*

	2000	2001	2002	2003	2004	2005	2006
<b>Total (billion VND)</b>	441,646	481,259	535,762	613,443	715,307	839,211	973,790
Agriculture and forestry	108,356	111,880	123,383	138,285	155,992	175,984	198,266
Industry and construction	162,220	183,150	206,197	242,126	287,616	344,224	404,753
Services	171,070	185,922	206,182	233,032	271,699	319,003	370,771
<b>Structure (%)</b>							
Agriculture and forestry	24.53	23.24	23.03	22.54	21.81	20.97	20.36
Industry and construction	36.73	38.13	38.49	39.47	40.21	41.02	41.56
Services	38.74	38.63	38.48	37.99	37.98	38.01	38.08

*Source: Vietnam Statistics Handbook 2006 (General Statistics Office of Vietnam)*

#### 4.2.2.2 Foreign Investment

The main force behind the country's economic growth is the increased number of companies moving into Vietnam from foreign countries such as Japan, Singapore, Taiwan,

and South Korea, Europe and the U.S., and an associated increase in the amount of direct investment. Foreign direct investment in Vietnam peaked at US\$8.5 billion in 1996, exceeding the Vietnam's national budget. Thereafter, however, as the country's investment climate became known to be saddled with various problems such as tangled bureaucratic procedures, red tape, sluggish sales in immature domestic markets, and relatively high communication, transportation and other business costs due to underdeveloped infrastructure, the direct investment slowed down. In 1999, it dropped to US\$1.6 billion partly under the additional influence of the currency and economic crisis of 1997 in Asia. Japan's investment, swelling to over US\$1.1 billion in 1995, followed a similar trend, and fell to US\$62 million in 1999. Faced with this situation, the Vietnamese Government developed in quick succession a series of measures and incentives for improving investment climate, which included revision of the Law on Foreign Investment, originally enacted in 1988, and reduction of electricity and communication charges for foreign companies for lowering their business costs. As a result, since 2000, foreign investment has finally been back on course for recovery (Table 4.4). Strong industrial growth and expanding foreign investment is generating the need for a variety of workplace skills that are currently in short supply.

*Table 4.4 Total domestic product by ownership, Vietnam 2000-2006 (billion VND)*

	2000	2002	2003	2004	2005	2006
<b>Total</b>	441,646	535,762	613,443	715,307	839,211	973,790
<b>State sector</b>	170,141	205,652	239,736	279,704	322,241	363,449
<b>Non-state sector</b>	212,879	256,413	284,963	327,347	382,804	444,659
<b>Foreign investment sector</b>	58,626	73,697	88,744	108,256	134,166	165,682

*Source: Vietnam Statistics Handbook 2006 (General Statistics Office of Vietnam)*

As seen in Table 4.5, the number of enterprises in Vietnam as a whole has been increasing with the fastest growth and largest number (93.1%) to be found in the non-state sector. Next

comes the foreign investment enterprises at the increasing speed of 17% in 2005. The state enterprises, on the other hand, show a decrease in number annually (12.5% in 2005).

Table 4.5 *Number and structure of enterprises by ownership, Vietnam 2001-2005*

	2001	2002	2003	2004	2005
<b>Number</b>					
Total (billion VND)	51,680	62,909	72,012	91,755	113,352
State-owned enterprise	5,355	5,364	4,845	4,596	4,086
Non-state enterprise	44,314	55,237	64,526	84,003	105,569
Foreign investment enterprise	2,011	2,308	2,641	3,156	3,697
<b>Structure (%)</b>					
State-owned enterprise	14	8.5	6.7	5.0	3.6
Non-state enterprise	85.7	87.8	89.6	91.6	93.1
Foreign investment enterprise	3.9	3.7	3.7	3.4	3.3

*Source: Vietnam Statistics Handbook 2006 (General Statistics Office of Vietnam)*

#### 4.2.2.3 Legal framework and administrative system governing enterprise sector

In Vietnam, the problem is compounded by the fact that the country is just beginning to establish a legal framework and a set of rules that can accommodate the market economy. Therefore the level and intensity of legal and regulatory activity are bound to be high. Between 1992 and 1999, for example, legislative efforts included nearly 120 new laws and ordinances, and thousands of implementing regulations and guidelines (Quinn, 2002).

The compliance cost imposed on business is high. Besides the fixed administrative costs for business registration, business also has to familiarize themselves with frequent changes in laws and regulations. For example, the Law on Foreign Investment changed four times between 1987 and 2000. Other laws such as the Law on Organization of the National Assembly, the Law on the Organization of the Government are subject to revision by the National

Assembly almost every term of election. The rapid changes add to laws' inconsistency and ambiguity.

The intensity of government regulations is high. Vietnam ranks fourteenth in terms of intensity of labor regulations (Botero et al., 2002). Given the high intensity of regulations, the limited human resources dedicated to their enforcement and limited of government officials, compliance with regulations is poor (Belser and Rama, 2000). The survey by Tenev et al. (2003) reveals the average number of 28 days that senior management spends per year dealing with requirements imposed by government regulations such as taxes, labor requirements, licensing, and registration. This is significantly higher than for newly industrialized states in East Asia and Latin America. Significant differences are observed for enterprises of different ownership. Private enterprises have to spend more times dealing with government regulations than state enterprises do (Tenev et al., 2003). The frequency of inspections by government agencies is also higher for private firms as compared to state owned enterprises. The assessments of inspection agencies are also inaccurate and very harmful for the reputation of the enterprise (VCCI, 2000). This issue opens door to corruption of government officials (VCCI, 2000). The level of bribes is negatively and significantly correlated with size (Tenev et al., 2003).

#### **4.2.2.4 Markets and competition**

State-owned and private enterprises differ significantly in terms of their main customers, suppliers, and competitors. Both types of firms have equal reach in domestic market with state owned enterprises (SOEs) have stronger national presence. Private firms, however,

show a higher orientation to international market. The main customers of private enterprises are Vietnamese individuals while SOEs mainly serve other SOEs and state agencies since the state sector's dominant share in industry and most of the services (VCCI, 2000).

In terms of competition, private firms' main competitors are other private enterprises. Similarly, SOEs have to compete mainly with other SOEs. The competition between large and small and medium firms is low due to product differentiation between these two types of businesses (Tenev et al., 2003).

Unfair competition is one of the largest problems for both private and state enterprises. Private firms have to operate in an uneven playing field with SOEs, while SOEs have lots of competitive disadvantages in their competition with foreign firms. Private firms, mostly small and medium firms are less able to afford businesses such as training, finance and accounting, technical assistance and legal services than state firms. Private firms rely on social networks of special unofficial connections such as family and friends in the business development.

Business associations are important instruments of collective actions in Vietnamese business community with most of the business services are provided by these organizations. Firms can derive lots of benefits from membership in associations, especially information regarding technology, clients, suppliers and competitors. However, participation in the business associations is not widespread, especially for the private sector. Many firms find performance of business associations to be weak and do not address business concerns. Besides, firms are also not aware of the activities of those organizations (VCCI, 2000).

The financial market in Vietnam is segmented. State firms enjoy easier access to financing than private firms. SOEs can rely on investment resource primarily from state banks. Other sources of financing for SOEs include investment funds and money lenders. Private enterprises, however, have to get loans from state owned commercial banks, family and friends.

Banks treat private enterprises differently from state-owned enterprises regarding finance sourcing. Factors such as size and profitability that are normally associated with lending practices based on commercial criteria are important in the case of private enterprises but insignificant in the case of state-owned enterprises that can rely on government guarantees for access to loans. Besides, the limited capability of the banking sector with regard to project assessment adds to the difficulties of private enterprises in getting loans from banks.

### **4.3 ENVIRONMENTAL ISSUES IN VIETNAM**

Environmental problems emerging from the rapid economic growth in Vietnam as a developing country mainly derive from insufficient infrastructure to support the fast economic growth, a lack of taxation legislation, a growing economic gap between the private and government sectors, and corruption among government agencies and officials. Increasing population density combined with a shortage of resources such as food and fuel, and developing disparities between rich and poor, are the major socio-economic factors that threaten the survival of the precious biodiversity and the natural resources in the country. Furthermore, the inefficiency of forest protection units and law enforcement, the low level of budgeting being allocated to conservation work are all negative impacts to the

government's ambition and plans for conserving the natural environment (UNEP, 2002; World Bank, 2004, 2005).

### **4.3.1 Deforestation**

Deforestation is the most serious threat to the biodiversity in Vietnam. This phenomenon is caused by numerous factors including mismanagement of logging activities, illegal harvesting of forest products, conversion for agricultural purposes, forest fires, war damage, shifting cultivation, collection of firewood, overgrazing, and infrastructure development. The forest coverage has decreased from 43% in 1943 to 33% in 1976 and to only 27% by 1990. Since 1990, however, as a result of the national afforestation program, the governmental policy of forest land allocation to people, as well as better protection, the forest coverage has increased gradually and reached 28.8% in early 1999. The target is to reach the forest coverage of 45% by 2010 through the 5 million hectare afforestation program. Apart from forest loss, many individual species are endangered as a consequence of massive over-utilisation, such as over collection of rare medicinal plants and timbers or over hunting for the wildlife trade (UNEP, 2002).

### **4.3.2 Land Degradation**

Land degradation is a major problem, particularly in upland areas. Its major causes are insecure land tenure, poor logging practices, drought, salinisation and acidification. Monitoring data over the past several years has revealed that over 50% of the natural area of the whole country (including 3.2 million hectares of plain area and 13 million hectares

of highland) should be identified as “degraded soils”. Degraded steep slopes and deforested landscapes, especially in the northwest region, are now very susceptible to soil erosion during heavy rains. Despite recent increases in forest area, forest quality remains a concern. Closed canopy forests still make up only 13% of the total forest area, while poor/regenerating forests account for 55%. Plantation forests, on the other hand, have more than doubled from 0.7 million ha in 1990 to 1.6 million ha in 2000 (UNEP, 2002).

### **4.3.3 Loss of Biodiversity**

Vietnam is one of the world’s top 10 biodiverse countries, but it is facing serious problems with the illegal wildlife trade. It is a central international market for endangered plant and animal species, both as a supplier and as a trade route for items collected in neighboring countries (World Bank, 2006). The numbers of rare and endangered species is decreasing continuously. More species are proposed to be added to the Red Data Book of Vietnam which contains a list of 365 animal and 356 plant species.

In general, the following four categories of threats are responsible for the loss and degradation of biodiversity in Vietnam:

- Habitat destruction and loss: habitat destruction and loss can be traced to anthropogenic activities such as logging (including of mangrove), human-induced fires, land conversion, destructive fishing methods, and natural calamities like earthquakes, natural fires, typhoons and diseases.



- Overexploitation: Population pressure, poverty and paucity of livelihood opportunities all contribute to the overexploitation and destruction of country's biodiversity.
- Chemical or environmental pollution: some ecosystems of wetland and swamps are polluted by hazardous wastes from industrial plants, mine tailings, agriculture fertilizers and pesticide run-off, and even household wastes. Oil pollution due to shipping activities occurs in the coastal estuarine waters.
- Biological pollution: the introduction of exotic species may lead to the extinction of indigenous species either directly through predation, competition, and hybridization or indirectly through parasites and habitat alteration.

#### **4.3.4 Water Pollution**

Water pollution in Vietnam is caused by a combination of industrial and domestic wastewater, with waste being dumped into rivers and lakes. The principal reason for the pollution is attributable to the underdeveloped infrastructure for preventing water pollution, including the shortage of treatment facilities, and weak enforcement (Le and Nguyen, 2004). One important source of the pollution is industrial wastewater. As mentioned earlier, most of the factories, especially the state owned enterprises, are not provided with wastewater treatment equipment. Industrial estates, where a large number of factories are located, are not provided with central wastewater treatment facilities, except for part of them, including recently opened industrial estates, and make it the responsibility of the tenants themselves to treat their wastewater. For this reason, except some foreign companies, most factories, disliking paying the construction

and operating costs of such treatment facilities, discharge untreated industrial wastewater into nearby rivers, waterways and other water bodies (MOE, 2002).

Domestic wastewater is usually mixed with night soil, rainwater and sometimes with industrial wastewater before being discharged into water bodies. In Hanoi and Ho Chi Minh City, the sewerage systems are old and perform almost none of their intended functions because of a prolonged lack of proper maintenance, only serving as drainage systems that collect wastewater from various sources. As a result, most of their domestic wastewater flows into rivers and other water bodies almost without any treatment, becoming a large source of water pollution.

Such water pollution by industrial and domestic wastewater is not confined to urban waterways or rivers. It extends to the large rivers into which they finally flow, such as the Red River in the north, and the Sai Gon River and the Dong Nai River in the south. It is now difficult to utilize water from these large rivers for any domestic or industrial purposes.

In coping with this situation, the Vietnamese Government has taken various measures, including more rigorous on-site inspection of factories, the river improvement in urban areas, and the construction of sewage treatment facilities with foreign assistance (Le and Nguyen, 2004).

### 4.3.5 Air Pollution

Air pollution in Vietnam is mainly caused by exhaust gas from motorcycles and automobiles, mainly in urban areas, and air emissions from industrial activities (World Bank, 2004).

Of the two, air pollution caused by exhaust gas has recently become a more serious problem. In Vietnam, motorcycles are the principal means of mobility. The number of privately owned motorcycles is estimated to be about 6.5 million, which translates into one per every 12 persons. In Hanoi, Ho Chi Minh City and other large cities, it has become a common sight to see the road filled with motorcycles. In addition, the number of privately owned automobiles is increasing in step with economic development. The registered number of motorcycles now reaches about 650,000. To make matters worse, the large cities are also populated by other types of motor vehicle that are difficult to equip with exhaust gas control devices; trucks manufactured in the former Soviet Union and Eastern Bloc countries some 30 years ago and second-hand trucks imported from South Korea and other countries.

Air pollutants discharged from all these motor vehicles has led to the increase in the concentrations of soot and dust, lead, CO (carbon monoxide), NO<sub>x</sub> (nitrogen oxides), HC (hydrocarbons), SO<sub>2</sub> (sulfur dioxide) and other matters. Especially, air pollution by soot and dust and lead has become a serious problem with severe health effects. The Department of Natural Resources and Environment (DONRE) of Ho Chi Minh City reported that the measurements at a roadside monitoring station in Dien Bien Phu Street, in the central part of the city, in 2000 were 2.1mg/m<sup>3</sup> for soot and dust, far higher than the central government's environmental standard; and 0.03mg/m<sup>3</sup> for lead, some three times as much as the value specified in World Health Organization's (WHO) Health Guidelines. These pollutants

have resulted in an increasing number of cases suffering from asthma, bronchitis and other health problems. As the economy grows, the number of motor vehicles will continue increasing rapidly, and measures against exhaust gas are considered to be an important environmental challenge. As a countermeasure, a regulation providing for the switch to lead-free gasoline was put into effect in July 2001, prohibiting the use of leaded gasoline.

On the other hand, air pollution caused by industrial activities has become a problem in the neighborhoods of industrial estates, coal-fired thermal power plants and other industrial facilities. Vietnamese companies, mostly state-owned enterprises, have almost no measures for controlling air pollution, in complete disregard of the emission standards that exist. In the face of this situation, however, inspection and enforcement from the environmental administrative bodies are weak, leaving the factories to their own devices.

Further, in Vietnam, heavy oil available as fuel in the domestic market is limited to poor quality ones with a sulfur content of 3%. This makes it difficult to take effective measures against sulfur oxides. In addition, coal used in the northern region in winter for domestic heating contributes to seasonal increases in the concentrations of soot and dust, and sulfur oxides in urban areas. Open fire (waste burning and cooking) is a common sight and by now, there is still no regulation to govern this kind of environmentally unfriendly activity.

### 4.3.6 Urban Pollution

Urbanization is proceeding at a rapid rate in Vietnam. A large and growing part of the urban population lives in poorly serviced slum areas with inadequate water, sanitation, drainage, and paved access.

In Ho Chi Minh City, 300,000 people live in such slums. In spite of the abundant rainfall, water supply falls short of demand in urban and rural areas due to inadequate infrastructure and confusing jurisdictional responsibilities. In 2000, clean drinking water was provided to only 53% of Vietnam's population, and the target is 93% by 2020 (MARD, 2000). Irrigation places the largest burden on water resources, with the consumption of 76.6 billion cubic meters in 2000, accounting for 84% of total demand. Between 1999 and 2003 about 6 million cases of water-borne diseases were registered and incurred costs of at least US\$27 million.

Wastewater and run-off from urban areas, industrial centers, and agricultural land, pollute surface, ground, and coastal waters. Waste collection rates are low and water bodies such as lakes, streams, and canals serve as sinks for domestic sewage and industrial wastes. On average, in Vietnam, cities with a population size greater than 500,000 have collection rates of 76% while it is only 70% for cities whose size is between 100,000 and 350,000 (Nguyen, 2005). In contrast to the urban collection rates, rates in the rural areas are dismally low. In high-income rural areas, the amount of trash collected is a mere 20%, indicating that collection services for the low-income rural population are practically non-existent. As a result, the method of self disposing of waste into nearby rivers, lakes and at sites near home, or burning, or burying the trash is widespread (Nguyen, 2005).

The concentration of air and noise pollution from vehicles has exceeded 2-5 times the allowance in big cities like Hanoi, Ho Chi Minh City, Da Nang and Hai Phong. Air quality in nearly all urban and industrial areas is affected by various pollutants, such as particulates, lead and nitrous oxides, sulfur dioxide and carbon monoxide emitted by sources including vehicles, construction activities, factories, power plants, and households. Sulfur dioxide levels near some factories occasionally exceed national standards by several times. Household waste collection efficiencies remain low, and there is no separate treatment for hazardous wastes.

#### **4.3.7 Solid Waste**

Together with rapid industrialization and urbanization, waste has become one of the greatest challenges to Vietnam. Solid waste discharged from urban areas of the country amounted to 8.1 million tons in 1998, after increasing to 5.9 million tons in 1996 and 7.05 million tons in 1997 for an average annual increase of nearly one million tons. About 70% to 80% of total solid waste is estimated to be household waste, and the remainder, about 20%, is industrial waste. In Vietnam, household and industrial wastes are collected without being sorted out, and most of them are dumped as landfill, except for some medical waste. The low waste collection rate should also be noted; it ranges from 40% to 67% in urban areas and from 20% to 40% in rural areas. The national average is as low as 53.4%. Uncollected waste is dumped into rivers, vacant lots or other available places, or burned in the open, becoming a new source of pollution.

The waste management system is plagued by a number of problems, some of which include inadequate management, lack of technology and human resources, a shortage of transportation vehicles and insufficient funding. In 2000, there were only 95 organizations – only 2 of which were privately-owned – working in the waste management industry and together, they served 82 cities and towns (Nguyen, 2005). The construction of new waste treatment facilities is delayed, and almost no environmental sanitation measures are taken in the existing waste treatment facilities. These shortcomings have made waste a more serious problem. There are indeed disposal sites throughout the country, but most are open pits dug in the ground in which waste is piled high without taking any step to confine environmental pollution such as covers to prevent waste from flying off and waterproof sheets to prevent leakage from seeping into the ground. As a result, wastewater, gases and malodor arising from such waste pollute the surrounding environment.

#### **4.3.8 Natural Disasters**

Vietnam is highly prone to natural disasters, with 7537 disaster-related deaths and VND 40,835 billion (about EUR 2 billions) in losses over the last 10 years (UNDP, 2007). Water-related disasters are the most serious in Vietnam and cause regular and substantial health and economic damage. The worst damage is caused by floods, particularly when accompanied by typhoons. On average, 4 to 6 typhoons reach Vietnam each year, and hundreds of people are killed. It is anticipated that the number of heavy storms and typhoons to hit Vietnam will increase both in number and intensity with global warming.

Non water-related disasters in Vietnam, while less common than water disasters, are having an ever-greater impact on the country. Vietnam's remarkable socio-economic and industrial development over the last ten years has increased the risk of technological accidents. Industrialisation, population growth and urbanization have put severe pressure on Vietnam's forests and agricultural land. Climate change has led to drought in certain areas, thereby increasing risk of forest fire as well (UNDP, 2007).

#### **4.4 ENVIRONMENTAL MANAGEMENT IN VIETNAM**

A number of measures have been proposed by the Government to address the degrading environmental problems. Important environmental management landmarks demonstrate Vietnam's determination to develop its economy and protect the environment. The formulation and implementation of Vietnam's strategy toward sustainable development has been greatly and positively influenced by Agenda 21 in terms of viewpoint, methodology and experience.

In this section, an overview of organizational field centering around corporate environmentalism and environmental institutions is discussed.



## **4.4.1 Environmental Stakeholders in Vietnam**

### **4.4.1.1 Government agencies**

In Vietnam, the National Plan for Environment and Sustainable Development 1991-2000 was formulated in 1991 as a master plan for environmental protection. This plan triggered a series of environmental legislation and the formation of administrative bodies in Vietnam. The plan, drawn up with the cooperation of the United Nations Development Plan (UNDP) and other organizations, proposed to the Vietnamese Government to (1) clarify environmental administrative authorities at central and local levels, (2) formulate environmental policy, laws, and regulations, and (3) establish environmental monitoring systems. In response, in 1992, the State Committee for Science and Technology was reorganized into the Ministry of Science, Technology and Environment (MOSTE), now Ministry of Natural Resources and Environment (MONRE). In the following year (1993), the National Environment Agency (NEA) was set up under the MONRE as a working organization responsible for Vietnamese environmental administration. By that time, in each of the 57 provinces and the four cities under central government (Hanoi, Ho Chi Minh City, Hai Phong, and Da Nang), the Department of Science, Technology and Environment (DOSTE), now Department of Natural Resources and Environment (DONRE), was also formed as a local environmental administrative body under respective Provincial People's Committee (MONRE, 2007).

MONRE shall be responsible to the Government for exercising the function of State management of environmental protection. MONRE performs the function of State management over land, water and mineral resources, environment, hydro-meteorology,

survey and mapping for the whole country<sup>1</sup>. Whenever MOSTE is mentioned in the context, MONRE has now taken over its functions (MONRE, 2007).

The NEA is responsible for a range of functions relating to environmental protection and control. Its functions include examination and submission of policies, legislation and documents relating to environmental protection; inspection for compliance with the Law on Environmental Protection (LEP); review of environmental impact assessment reports; prevention of environmental pollution; handling of problems relating to environmental accidents and incidents; and guidance of local environmental protection agencies (NEA, 2007).

The head office of the NEA, located in Hanoi, consists of 10 divisions. Among them, the Pollution Control, Waste Management and Environment Accidents Division supervise environmental control on industrial activities. The Environment Policy and Legislation Division is responsible for planning environmental policy and preparing long-term plans for environmental protection. The NEA is also charged with the publication of the Environment Protection Journal, a magazine providing environmental information for rural people who have little access to such information.

At local level, DONREs are responsible for environmental administration: a total of 61 DONREs are set up in the provinces and the cities under central government. Each DONRE issues Environmental Approval Certificates to factories, monitors river water and air qualities, implements control measures for wastewater, emissions and waste discharged from factories,

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<sup>1</sup> Decree 86 (2002) prescribes the functions, tasks, powers and organizational structures of MONRE.

and enforces corrective measures on any entities that is found by on-site inspection to be in violation of environmental legislation. In addition, the DONRE with jurisdiction over the administrative area where factories are located is also in charge of implementing routine environmental control procedures. The DONRE, however, performs a wide range of functions relating to science, technology, quality measurement, communications, and information technology. Environmental administration is only one of such functions, so that the agency, suffering from chronic personnel and budgetary shortages, is unable to perform on-site inspection, the basis for environmental control, as it wants (MONRE, 2010).

Other ministries including the Ministry of Construction (MOC), Ministry of Agriculture and Rural Development (MARD), Ministry of Forestry (MOF), Ministry of Fisheries (MOF), Ministry of Industries (MOI), ministry-level agencies and other government bodies shall, within the scope of their respective functions, powers and responsibilities, cooperate with MONRE in carrying out environmental protection within their sectors and in establishments under their direct supervision. The DONREs shall exercise their State management function for environmental protection at the local level.<sup>2</sup>

In Vietnam, the MOI plays a role in controlling industrial pollution of the state-owned enterprises. Under MOI, the Technology and Production Quality Management Department and the Industrial Safety Engineering Supervision and Inspection Directorate, as administrators of the state-owned enterprises, undertake research into measures against industrial pollution, and assist existing factories in improving their production facilities and introducing cleaner production technology.

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<sup>2</sup> See Vietnam Environmental Protection Agency (VEPA) website for details. [www.nea.gov.vn/](http://www.nea.gov.vn/)

The MOI also cooperates with local DOSTE to perform on-site inspection of factories, and plays a part in the review of environmental impact assessment reports of proposed industrial developments. Like MONRE, however, MOI faces problems of insufficient financial resources and a lack of experience in industrial pollution control. MOI is required to strengthen its capabilities to deal with industrial pollution caused by state-owned enterprises under its jurisdiction, a leading source of pollution in Vietnam. Another organization dealing with industrial pollution problems is the Vietnam Standards Centre (VSC). This organization is under MONRE, and is charged with drafting and publishing Vietnam Standards (TCVN) for wastewater and emissions. The Technology Committee, set up under the Center, prepares and revises the drafts of various environmental standards.

Local environmental administrative bodies are charged with the functions of collecting, treating and disposing of waste, including industrial waste, but in most cases, public corporations, formed under the cities or provinces, perform such work. The Urban Environmental Company (URENCO) in Hanoi and the Public Services Company in Ho Chi Minh City perform all work from the collection of waste to the operation and management of waste treatment and disposal facilities.

#### **4.4.1.2 Non-governmental institutions**

In May 1998, the Government issued Decree 29 on the exercise of democracy in localities. This decree provides the basis and mechanism for people's involvement in local decision making, resource management and supervision of programmes at local level. With the newly introduced participatory approach, communities have also been promoted to form groups

for specific purposes, such as water use, community based forest management and environmental sanitation (ADB, 2001).

A number of local and international NGOs make important contributions, among other things to public involvement and participation in the solution of environmental problems. They are also instrumental in raising awareness of the environment.

Currently, approximately 367 non-governmental organisations are present in Vietnam, and these organisations play a role in delivery of public services including poverty alleviation, environmental protection, health care, community development and technology transfer (NGO Resource Center, Vietnam, 2008). The non-governmental institutions that exist in Vietnam can be grouped into numerous sectors that may encompass the mass organizations under the Vietnam Fatherland Front (VFF, 2008), economic production sector, academic and research sector, professional associations, and international NGOs. The Fatherland Front is an umbrella group of pro-government “mass movements” in Vietnam, of which the members include important organizations such as the Vietnam Communist Party, General Confederation of Labour, and Ho Chi Minh City Youth Union. The Front has a significant role in society, promoting national solidarity and unity of mind in political and spiritual matters. Many of the government's social programs are conducted through the Front, including the poverty reduction program. The Front is also responsible for much of the government's policy on religion, and has the ability to determine which religious groups will receive official approval. Perhaps more importantly, the Front is intended to supervise the activity of the government and of government organizations (VFF, 2008).

The economic production sector is the non-state sector that makes important contributions, approximately 46% of GDP to the economy (General Statistics Office of Vietnam, 2006). Environment protection guidance is crucial to this sector. Many organisations in the academic and research sector have recently developed individual funding sources rather than depending on the government subsidies, thereby increasing their autonomy from the government. Almost all of the professional associations available in Vietnam may be classified as members of the Vietnam Union of Scientific and Technical Associations (VUSTA), which is a member of the Fatherland Front. These professional associations consist of the Forestry Association, Association on Conservation of Nature and the Environment, Mining Association, Association of Geographers and so on. Some of these associations are important as a link with international agencies in conducting multilateral projects with regard to environmental issues. Many of the mass organisations that were initially created by the government as a means of mobilizing people and resources are gradually tending to be more autonomous and indicating many of the characteristics of non-governmental organisations. These organisations, such as the Youth Organisation (Union) and Women's Union, play a role as executing agencies in most of the multilateral and bilateral development projects.

The famous international NGOs that are committed to environmental management in Vietnam include the World Wildlife Fund (WWF), BirdLife International (BLI), Flora and Fauna Institute (FFI), Frankfurt Zoological Society (FZS), Australian Research Environment Agency (AREA), World Conservation Monitoring Centre (WCMC), Centre for Resources and Environmental Studies-Vietnam (CRES), International Union for Conservation and Nature (IUCN) and Society for Environmental Exploration (SEE) (NGO Center Vietnam, 2010). These international agencies assist local bodies in both technical and financial aspects to make multilateral and bilateral projects a success.

Since 1975, Vietnam has received both technical and financial assistance from different groups of international donors to stimulate development in various aspects. The dominant donors that have been involved in projects corresponding with environmental management are the WB, Asian Development Bank (ADB), UNDP, SIDA, the Swedish International Development Agency (CIDA), the European Union (EU) and so on. Basically, the participation of the private sector in environmental management is not considerable. Encouragement in terms of economic incentives is probably necessary for the private sector to incorporate environmental considerations into investment planning.

The major institutions in the national administrative framework for environmental management are summarized in the Table 4.6.

Table 4.6 *Administrative framework for environmental management in Vietnam (NEA, 2006)*

<b>Policy/laws making</b>	Communist Party of Viet Nam Prime Minister National Assembly Provincial People's Councils
<b>Planning</b>	State Planning Committee Ministries and National Committees (planning depts.) Provincial People's Committees (planning depts.)
<b>Advisors</b>	Office of the Government State Planning Committee Ministries, universities and institutions Non-government organizations Steering committees, cross-sectoral working groups
<b>Execution</b>	Ministries MONRE Vietnam Environmental Protection Agency (VEPA) Provincial People's Committees Provincial Department of Natural Resources and Environment (DONRE) National committees
<b>Implementation</b>	Environment Department of the National Committees and Ministries (e.g. DONRE) NEA, NGOs, DONRE, institutes, mass organizations universities, research institutions

#### 4.4.2 Environmental Laws and Regulations

Together with the formation of administrative body for environmental management, work was also done to develop a system of environmental legislation. First, in December 1993, as a basic framework for the country's environmental policy, the Law on Environmental Protection was passed by the National Assembly, and put into effect in January 10, 1994. In October 1994, the Government Decree on Providing Guidance for the Implementation of the Law on Environmental Protection (Government Decree No.175/CP) was enacted in order to carry out environmental policy based on the LEP. Together with this Decree, a large number of environmental legislations were enacted, each stipulating penalties for violating the provisions of environmental legislation, environmental impact assessments, and other matters. In 1995, environmental standards showing desired levels of air and water qualities and the Vietnam Standards specifying discharge standards for wastewater and



emission were simultaneously established. Other environmental legal initiatives include government decrees, ordinances, inter-ministerial circulars, guidelines and other by-law documents.

Until 1994, when the LEP became effective, there had been no legislation dealing with environmental problems comprehensively. There had indeed existed legislation intended for sanitation, health and other environmental matters, but because they were not intended for environmental protection, it was difficult under such legislation to take appropriate measures against pollution problems that occurred with economic development. For this reason, Hanoi and Ho Chi Minh City, where economic growth and industrialization took place earlier than in other parts of the country, had formulated their own rules for environmental protection to cope with pollution problems before LEP was put into effect. With the enactment of a series of environmental legislation, however, these cities are now coping with such problems uniformly under national environmental legislation.

EIA is first mentioned in the LEP. Article 18 stipulates that organizations and individuals must submit EIA reports to the State management agency for environmental protection for appraisal. The result of the appraisal shall constitute one of the bases for competent authorities to approve the projects or authorize their implementation. Further discussion of Vietnam EIA legislation will be presented in Section 5.1 on Environmental Impact Assessment.

In addition to the pursuance of LEP, Vietnam has made an attempt to develop legislation to enforce the compliance with the LEP. Since the introduction of LEP in 1994, the Prime Minister has enacted 14 decrees, decisions and directives that are relating to industrial

environmental management. The most significant of these is Decree 175/CP issued in October 1994 to guide the implementation of the LEP. This Decree establishes in greater detail the responsibilities of the NEA in environmental management, and further clarifies many of the LEP provisions (Tan, 1998).

In 1996, the Government Decree on Sanctions against Administrative Violations in Environmental Protection (Government Decree No.26/CP) was issued, setting forth penalties for violators of environmental legislation. It stipulates various penalties, which include fines, the revocation of Environmental Approval Certificates, and the closing of factories. The maximum amount of fine set by the Decree is VND100 million (about US\$6,500) for one oil spillage accident. The amount may be small to foreign companies, but the violator may be indicted on a crime and subjected to a lawsuit. In recent examples, one Taiwanese enterprise was ordered by the court to pay VND16 billion (about US\$900,000) in damages for violating a wastewater regulation.

Apart from the LEP and GD 175/CP, sector-specific laws and regulations and provincial environmental regulations and standards are also available to intensify the attempts of solving the environmental problems arising in various aspects throughout the country. Major regulations dealing with sectoral and local level environment protection include Directive 36-CT/TW on “Strengthening Environmental Protection in the Period of Industrialization and Modernization of the Country” (1998); Oil and Gas Law (1993); Mineral Resource Law (1996); Ordinance on Radiation Safety (1996); Ordinance on Natural Resources (1989); Directive on Urgent Measures On Solid Waste Management in Urban and Industrial Areas (1997); Decision on the Establishment of Vietnam GEF (1997); Decision on Hazardous Waste Management (1999); National Plan for Oil Spill Prevention and Response (1999).

Overlapping jurisdiction amongst MONRE and other government ministries and bodies make the implementation of laws difficult. Such overlap occurs between different levels of government, for example, between the central and provincial authorities (“vertical” overlap), or between MONRE and other central government ministries (“horizontal” overlap). Different sectoral legislation not only prescribes differing rules, they also prescribe overlapping powers for their respective state management agencies. In Vietnam, mining, forestry, wildlife, fisheries, marine environment, and oil and gas exploration issues all come under ministries other than MONRE. Few clear rules and procedures exist, either in the framework LEP or in other laws, to coordinate and delineate the respective ministries’ jurisdiction, or to ensure that the sectoral laws and regulations governing these activities are consistent with the LEP and with the regulations issued under the LEP (Tan, 1998).

For the most part, the LEP (and MONRE) do not directly deal with natural resource exploitation and management. The framework legislation relating to natural resource management is to be found in laws administered by other government ministries. The key legislation governing the natural resource sectors in Vietnam include:

- The Law on Forest Protection and Development, which is under the Ministry of Agriculture and Rural Development.
- The Law on Minerals, which is under the Ministry of Industry.
- The draft Law on Fisheries, which is under the Ministry of Fisheries. This law is currently being drafted and will replace the Ordinance on the Protection and Development of Aquatic Resources.

- The draft Law on Water Resources, which is under the Ministry of Agriculture and Rural Development.
- The Law on Petroleum, which is under the Oil and Gas General Department of the Office of the Government.

Other policy documents with respect to environmental management have also been developed continuously, for example, the Biodiversity Action Plan (BAP). As a sustainable development indicator, environmental strategies and action plans in Vietnam are carried out on a regular basis in keeping with the development planning cycle and are effectively implemented by all arms of the government. Five national environmental strategies have been prepared since the 1980s. A National Conservation Strategy was prepared in 1986 while a ten-year National Environmental Plan for Sustainable Development was adopted in 1991 just prior to the Rio Conference. Another two plans were prepared and approved in 1995 including the National Environment Action Plan in anticipation of the WB requirements, and the BAP that was prepared following the ratification of the Biodiversity Convention in 1993. Despite significant attempts that have been undertaken over the past decade, a trend of declining natural resources and environmental quality has been reported in the National State of Environment Report 1999 (MONRE, 2000). In this regard, the formulation of National Strategy for Environmental Protection 2001-2010 was therefore initiated by NEA in late 1997 (MONRE, 2000).

A National Environmental Action Plan 2001-2005 was revised in April 2000 as one of the supplements to the National Strategy for Environmental Protection (NSEP) 2001-2010.. This new National Environmental Action Plan 2001-2005 (NEAP) details seven priority programs for the government including sustainable industrial development; solid and

hazardous waste management; water management; forest management; environmental institution strengthening; environmental education; and community involvement (MONRE, 2001).

Apart from the action plan, some other environment-related national action plans have already been implemented but not extensively, such as the National Forestry Action Plan, National Conservation Strategy, Draft of Environmental Strategy, and so on. The integration of such environmental planning into the environment management system in Vietnam is basically insufficient up to date. Most of the current applicable environmental plans in Vietnam are one-off events while long-term strategies are rarely available. Cross-sectoral support, which is very important to make an environmental strategy a success, is limited due to inadequate technical and policy coordination. The management of Vietnam's natural resources is to be improved with the newly revised NEAP in which the priority areas conform to the modernisation and industrialisation of the nation.

#### **4.4.3 Water Pollution Control**

The problem of water pollution in Vietnam has been becoming more serious annually with the rapid economic development. In response, the Vietnamese Government has embarked on mitigating water pollution problems through the establishment of environmental standards for water quality and industrial effluent standards. Despite these efforts, however, the construction of treatment facilities for both domestic and industrial wastewater has been delayed. The NEA and DONREs located in various parts of the country for local environmental administration, are suffering from a lack of administrative capability. As a

result, effective water quality control can hardly be enforced. But as wastewater is easier to measure than gaseous emission, higher priority is assigned to water quality control in environmental administration among various targets of environmental control. In fact, on-site inspection for wastewater is conducted on a regular basis to monitor the wastewater discharged from factories against the national standards.

There are four Vietnam Standards on water control based on LEP and the Government Decree on Providing Guidance for the Implementation of the Law on Environmental Protection (Government Decree No.175/CP). The standards include Surface Water Quality Standards (TCVN 5942-1995), Coastal Water Quality Standards (TCVN 5943-1995) and Ground Water Quality Standards (TCVN 5944-1995). The standards give guidelines for desirable water qualities. The representative of the standard is TCVN 5942-1995 (Surface Water Quality Standards), which divide applicable water bodies into two categories. One is Category A, water from which is subjected to treatment appropriate for the intended use and then used for domestic purposes, and the other, Category B, water from which is used for purposes other than domestic use. Under the heading of each Category, permissible upper limits for 31 different substances are given as environmental standards.

On the other hand, effluent standards, which significantly affect the operations of companies, are laid down in the revision of the 1995 version of the Industrial Wastewater Discharge Standards (TCVN 5945-2005). In addition, specific standards are newly issued in 2007 to control waste water discharge from paper mills and that of the landfill sites including Effluent Standards for Pulp and Paper Mills (TCVN 7732:2007), and Effluent Standards for Leachate of Solid Waste Landfill Sites (TCVN 7733:2007).

In TCVN 5945-2005, wastewater is classified into three categories based on the water bodies to which it is discharged. Permissible upper limits are specified for wastewater of each category with regard to 33 items starting with general items such as temperature and COD (Chemical Oxygen Demand), and covering various substances ranging from heavy metals, and organochlorine compounds such as trichloroethylene, to radioactive substances (Directorate for Standards and Quality, 2005). These Standards are applied uniformly across the nation according to the conditions of water bodies into which wastewater is discharged. They do not discriminate one line of business from others. Even a line of business where it is difficult to take effective wastewater measures is required to comply with the same Standards.

The current Industrial Wastewater Discharge Standards (TCVN 5945-2005) are revised from the former standards issued in 1995. Basically, the new standards are revised in line with the reality of the country. In the new standards, the Government introduces the idea of controlling area-wide total pollutant load, in addition to the current control based on concentration levels, in order to achieve effective wastewater control according to the conditions of water bodies into which wastewater is discharged and the location of a factory. However, a major problem will remain unsolved even after the Industrial Wastewater Discharge Standards are revised. Factories that are subjected to the Standards are those that have commenced operations since the LEP became effective. Most of the state-owned enterprises established a long time ago are not subjected to the Standards, despite the large water pollution loads they discharge. Besides, as with the former standards, the new standards specify very stringent standards for ammonia nitrogen and some heavy metals, requiring factory operators to address difficult technical challenges for meeting the

standards. Some substances, such as phenol, require extremely low standards, so low as to make analyzing it difficult. In addition, the DONRE of each locality is authorized to set standards for additional items not covered in the Vietnam Standards according to local conditions. In addition, most of the current environmental standards in Vietnam were borrowed without adjustment from Western countries located in the temperate zone, and are not suitable for the climatic conditions of Vietnam, part of which lies in the tropical zone (MOE, 2002).

#### **4.4.4 Air Pollution Control**

Air pollution control in Vietnam, like water quality control, is based on four Vietnam Standards, formulated on the basis of the LEP and the Government Decree on Providing Guidance for the Implementation of the Law on Environmental Protection (Government Decree No.175/CP). Of the four air quality Standards, two give guidelines for desirable atmospheric environment, the remaining two specify standards for air pollutants discharged from factories or the like.

The guidelines for desirable atmospheric environment include the Ambient Air Quality Standards (TCVN 5937-1995) and Maximum Allowable Concentration of Hazardous Substances in Ambient Air (TCVN 5938-1995). The former Standards specify upper limits in terms of hourly average and 24-hour average (8-hour average as well for CO) to be met for securing desirable atmospheric environment, for six different substances; CO (carbon monoxide), NO<sub>2</sub> (nitrogen dioxide), SO<sub>2</sub> (sulfur dioxide), lead, O<sub>3</sub> (ozone), and suspended particulate matter. Similarly, the latter Standards specify allowable concentrations in



atmosphere in terms of 24-hour average and maximum level for 38 different substances, including ammonia, hydrogen chloride and hydrogen sulfide. These two Standards are not directly applied to control air pollutants discharged from factories but indicate the concentrations of those substances to be met for securing desirable atmospheric environment in Vietnam.

On the other hand, specific air pollution control of factories and other industrial facilities are based on Industrial Emission Standards-Inorganic Substances and Dusts (TCVN 5939-1995), Industrial Emission Standards-Organic Substances (TCVN 5940-1995), Industrial Emission Standards of Inorganic Substances in Industrial Zones (TCVN 6991-2001), in Urban Areas (TCVN 6992-2001), and in Rural Areas (TCVN 6993-2001), and Industrial Emission Standards of Organic Substances in Industrial Zones (TCVN 6994-2001), in Urban Areas (TCVN 6995-2001), and in Rural Areas (TCVN 6996-2001). The two latter standards are developed in line with the development of the country with increasing number of industrial zones coming into operations.

Of particular importance to air pollution control measures taken by companies is Industrial Emission Standards-Inorganic Substances and Dusts (TCVN 5939-1995). The Standards classify industrial facilities into Category A (existing factories and others already in operation prior to the effective date of the LEP) and Category B (new facilities commencing operations after the effective date). They specify emission standards for 19 different substances, such as particulate and gaseous air pollutants, for each Category.

The other emission standards, Industrial Emission Standards-Organic Substances (TCVN 5940-1995) specify the maximum allowable concentrations for 109 different hazardous

chemical substances contained in emission gases. These Standards need to be complied with. In practice, however, Vietnamese environmental administrative bodies are not enforcing these Standards partly because there are too many substances subjected to control, and because many of them are difficult to analyze (MOE, 2002).

Recently, in 2007, four new standards are issued as part of the air pollution control effort (STAMEQ, 2007), including:

- Emission standards for chemical fertilizer manufacturing (TCVN 7734:2007)
- Emission standards for cement manufacturing (TCVN 7735:2007)
- Determination of carbon monoxide: Non-dispersive infrared spectrometric method (TCVN 7725:2007)
- Determination of sulfur dioxide: Ultraviolet fluorescence method (TCVN 7726:2007)

TCVN 7734:2007 and TCVN 7735:2007 Standards specify emission level for the chemical fertilizer and cement manufacturing industry. The two other standards provide for the methods to determine the carbon monoxide and sulfur dioxide concentrations, assisting the air quality monitoring process of both industry and regulator.

In addition, with economic development, the numbers of motorcycles and automobiles are increasing sharply in Vietnam, and air pollution caused by exhaust gases from these mobile sources has become a social issue, especially in urban areas. In order to cope with this situation, the Appendix to the Government Decree on Providing Guidance for the Implementation of the Law on Environmental Protection (Government Decree

No.175/CP) specifies standards for each unit of vehicle for CO, HC (hydrocarbons), and NOx (nitrogen oxides) discharged from motor vehicles. Besides, the Vietnamese Government has been promoting the introduction of lead-free gasoline as a measure against lead in exhaust gases, and a complete switch to lead-free gasoline was completed in July 2001 across the nation.

#### **4.4.5 Solid Waste Management**

Almost no legislation governing waste treatment has so far been enacted. The only piece of legislation related to waste management, except for environmental ideals set forth in LEP and other laws, would be the Directive of the Prime Minister on Urgent Measures to Manage Solid Wastes in Urban and Industrial Districts (Directive No.199/TTg) issued in 1997.

In Vietnam, industrial wastes of monetary value, such as glass, metals, plastics, cardboard, and wood, are usually collected by waste recycling operators for recycling or reuse. For hazardous industrial wastes, including sludge resulting from wastewater treatment, there is no treatment facility or disposal facility available in Vietnam now. Contract waste recycling operators entrusted with industrial waste disposal most often haul it together with domestic waste to a landfill disposal site, where it is dumped without any treatment. Such being the case, while mounting hazardous industrial wastes are threatening to cause environmental pollution, a lot of Japanese companies, active in implementing environmental measures, have difficulty in disposing of hazardous industrial wastes they generate. Some of them are planning to request the Vietnamese Government to construct treatment facilities for hazardous industrial wastes as early as possible.

Under these circumstances, the Vietnamese Government started to tackle the hazardous industrial waste problem, and has made a plan to construct hazardous waste disposal facilities. In 1999, the Government promulgated Regulation on Hazardous Waste Management (Decision No.155/1999/QD-TTg), specifying treatment and disposal methods for hazardous wastes. The Regulation includes a definition of hazardous waste, responsibilities of relevant ministries and agencies, responsibilities of its generator, a certification system for entities hauling, treating and disposing of it, a manifest system under which to haul it, and emergency measures.

The Regulation on Hazardous Waste Management (Decision No.155/1999/QD-TTg) requires that entities hauling, treating or finally disposing of hazardous wastes be those certified by the MOSTE. On the other hand, however, neither a treatment facility nor final disposal site for hazardous wastes is currently available, nor has the manifest system yet been realized.

In Vietnam, hazardous wastes can be disposed of through a waste disposal contractor for a fee. However, these wastes seem to be dumped at a landfill disposal sites together with general wastes, as mentioned earlier. In order to prevent these wastes from causing any problem in the future, some companies (mostly, foreign investments) store hazardous wastes within their own premises. They intend to store these wastes that way until the Vietnamese Government provides appropriate systems of legislation and treatment facilities. For large volumes of hazardous wastes or any quantity of highly dangerous wastes, it would be necessary to take similar measures.

Efforts on solid waste management have been greatly enhanced with the implementation of major projects in solid waste treatment (Vo, 2006), including:

- Da Phuoc Solid Waste Treatment Complex in Ho Chi Minh City, a 128-hectare waste treatment complex project is one of the key waste treatment plants in the city's environment protection strategy until 2020. It has daily recycling capacity of 6,000 tons, a fertilizer factory that uses organic waste as production material, and a dumping site.
- Vietstar Lemna Eco Centre which is also the largest modern waste treatment facility in Vietnam, has been built with a total investment of 53 million USD. It can process 1,200 tonnes of garbage per day from the city and treat it with environmental friendly technology to convert it into useful products.
- Vung Tau City in Ba Ria-VungTau Province has build its sixth solid waste treatment facility. This new plant's capacity is 600 – 1000 tons a day and it aims to convert the waste into compost, recycling materials, plywood, etc. Prior to this project, the province built three factories in Ba Ria, Phuoc Hoa and Song Xanh. Vietso Petro, a joint venture in the oil and gas sector, is building its own solid waste treatment plant in this province. A small plant to treat waste is also under construction in Con Dao Island.

## **4.5 CORPORATE ENVIRONMENTALISM AND COMPANIES OPERATING IN VIETNAM: ORGANIZATIONAL FIELD AND INSTITUTIONS**

Over the last few years, as a fast growing developing economy, the Vietnamese government and the entire society have been increasingly concerned about environmental issues. Many organizations and enterprises are aware that environmental issues are becoming urgent in all aspects of social life, and the government has been more concerned about environmental protection. The government has been taking various measures to protect the environment through an increasingly stricter legal system, particularly the enforcement of the LEP of 1993, of which EIA has been recognized as an important tool and regulatory requirement in the efforts to control environmental impacts of firms. Together with the development of this environmental mandate, these growing concerns about environmental impacts of enterprises' operations push these enterprises to apply pollution control measures. Although quality is the most-valued development objective of firms, environmental issues are also much pursued by businesses; minimizing environmental impacts has become one of the business objectives of a growing number of companies in Vietnam (Dao, 2002). Environmental Management Systems have emerged as an effective measure to protect the environment.

### **4.5.1 Business Environmental Awareness in Vietnam**

At the company level, although most companies have included environmental management in their operations to some extent, they have never had it inserted in the overall

management framework. Environmental management is still not considered to be an issue which needs to be dealt with systematically. There is some degree of consensus that the environmental management systems and ISO 14001 can be useful in improving the environmental performance of companies and that they can assist in facilitating trade. However, it is recognized that there is little experience and empirical research on the implementation of ISO 14001. The level of awareness of ISO 14000 and its benefits among businesses in Vietnam remains low compared to other countries in the regions, especially among the local enterprises (MOE, 2002).

In Vietnam, companies that operate on a global basis are more concerned with environmental issues than Vietnamese ones. Joint ventures and companies owned outright by foreign investors (100% foreign invested companies) indicated a strong interest and have been applying various measures to protect the environment including conforming to ISO standards. State-owned companies in general, while accounting for about half the nation's mining and manufacturing production, execute almost no environmental conservation measures. For those domestic firms, the environmental awareness is low and the concept of ISO 14000 EMS is very new but there is a growing awareness that it will be an important tool for prevention of pollution by industry. Multi-national companies are mostly probably more interested in implementing ISO 14000 EMS. Internal environmental concerns of other countries are being passed from international corporations down through their supplier networks in Vietnam (Dao, 2002).

Manufacturing enterprises are more concerned about the environment than other sectors. This is reflected by a much larger number of manufacturing enterprises implementing environmental management measures such as EIA, ISO 14001 EMS, OSHA 18001, and

other voluntary initiatives (for example, Toyota Vietnam Environmental Activities Grant Program) than companies from other sectors. For ISO 14001 EMS, by 2005, 92% certified companies are from the manufacturing sector, the rest are operating in service sector. All companies applying OSHA 18001 are manufacturing enterprises (VPC, 2005). Manufacturing companies implement various measures to respond to various environmental problems. These measures include specific ones to deal with water pollution, air pollution and waste treatment to environmental management systems, including ISO 14000 Certification. The ISO 14001 had attracted greatest interest among manufacturers and started to influence the attitudes of service and other business sectors (VPC, 2007).

Many companies have executed firm environmental conservation measures based on the principle that the environmental conservation measures constitute a normal corporate activity. This is partly because of the pressure from their parent companies who promote environmental conservation measures in any country they advance to, on the basis of their global environmental policies. This is also largely because their foreign executives have experienced environmental conservation measures in manufacturing plants in their home countries. In addition to that, quite a few companies recognized reduction of energy cost and production cost through implementation of environmental conservation measures. The foreign companies entering Vietnam are internationally well known so their brand names are recognized as product names in Vietnam. For such companies, any environmental damage caused by them could harm the reputation of their brand images. This is one of the reasons why these companies are very keen to take environmental conservation measures (MOE, 2002).



By 2005, there were about 120 industrial estates and export processing zones in Vietnam. Some industrial estates, especially those managed by foreign investors like Japanese and Singaporean corporations, though constituting only a small fraction of these establishments, exercise excellent environmental conservation measures, thereby contributing to upgrading environmental conservation measures of Vietnam. These Japanese industrial estates naturally have their own environmental facilities such as wastewater treatment facilities. A certain industrial estate includes substances not included in the Vietnamese standards, as its effluent standards are based on the Japanese experience of industrial pollution (MOE, 2002). The industrial estate requires the tenants to abide by the estate's standards including these substances. The company managing this industrial estate considers that preventing the industrial estate from causing environmental problems eventually leads to the protection of the interest of the tenant companies. A Japanese industrial estate even provides a termination clause in its tenant contract, in which the estate reserves the right to retire the tenant from the industrial estate if the tenant causes an environmental violation. The industrial estate management company first demands the tenant causing an environmental violation to rectify the situation. If the tenant fails to rectify the situation the tenant has to leave the industrial estate. Tenants can enter this industrial estate only on condition that they will abide by this termination clause (MOE, 2002).

Currently, foreign invested industrial estates like Japanese and Singaporean industrial estates tend to be mainly occupied by Japanese and Singaporean companies respectively. However, there are some non-Japanese/Singaporean foreign companies operating in these industrial estates. It is expected that Vietnamese companies will enter these industrial estates. In view of

such a trend, the forward-looking environmental considerations by these foreign invested industrial estates will greatly contribute to environmental conservation measures of Vietnam, while these measures are indirectly effective on the environment in Vietnam.

With regards to the ISO 14001 EMS, international and regional experience of using ISO 14000 EMS as an environmental management tool encourages the application in Vietnam. Environmental management standards, particularly the ISO 14000 series, are under expert study by different organizations in Vietnam. Such studies have covered aspects such as the possible trade effects of environmental management standards, the impact of environmental management standards on foreign direct investment and the role of transnational corporations, implementation and certification issues, and the needs for certification of industry, especially small and medium enterprises (SMEs) (see, for example, Dao, 2002; MOE, 2002). For this reason, ISO 14001 has been selected for study for its potential role in environmental protection in general, and its role in meeting environmental regulatory requirements in particular. The ISO 14001 EMS and its development in Vietnam as a popular environmental management tool being applied by firms will be discussed in detail in Chapter 5.

#### **4.5.2 Industrial Pollution**

The industrial sector is a major source of environmental pollution. The escalation of industrial pollution is divided into three primary sources (Ngo, 2007).

The first source of pollution comes from 1970s era manufacturing facilities, which are largely built before 1975 and are small and medium sized enterprises operating with outdated technology. Most of them have not invested in air treatment systems and only some have dust filtration equipment. These old manufacturing plants are scattered, but mainly located in urban residential areas. Many old plants consume coal and fuel oil, causing significant amounts of air pollution.

The second group of enterprises contributing to industrial pollution comprise modern manufacturing facilities set up very quickly in recent years and are largely concentrated in industrial zones. Industrial zones have increased from 80 in 2002 to more than 120 in 2005. They are located in the southeast (53%), central coastal region (18%), Red River Delta (18%), and the rest, including northern mountain, central highlands and Mekong River Delta (11%).

Factories located in village areas are sources of serious local pollution. Currently, there are over 1,450 villages with significant industry, accounting for substantial employment in rural areas. These are largely located in the more heavily populated rural areas, including parts of the Mekong Delta and the outlying regions of major urban centers. Their production activities are quite diversified, focusing on food processing, livestock processing, textiles and dyeing, handicrafts, waste recycling, and construction materials. Most of these village industries use outdated technology, consuming a large amount of materials and energy. Equipment in these villages often dates to the 1950s and 1960s. Air pollutants are mainly dust and gases, such as nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), and carbon monoxide (CO), resulting from the use of coal as fuel. Some industrialized villages in Ha Tay province have SO<sub>2</sub> and CO concentrations many times higher than the national standard (TCVN 5937-1995).

Of all the industrial facilities, Vietnam's 800,000 small and medium industrial enterprises increasingly contribute to worsening air quality. Because of poor urban planning and overcrowding in cities, much manufacturing is located in heavily populated urban areas. Many of these small and medium plants use outdated machines and technologies with high rates of waste and without any air treatment measures. The importation and use of less-efficient secondhand equipment is also commonly seen as a factor. No statistics are available about environmental compliance at individual factories, but the problem is very widespread (MOE, 2002).

### **4.5.3 Wastewater Treatment Measures by Firms**

Most companies concentrate environmental management measures on wastewater treatment. As explained in previous sections, the effluent standards of Vietnam are very strict, similar to those of Europe and America. For this reason, a survey of 20 Japanese companies operating in Vietnam by the Japanese Ministry of Environment (2002) finds that Japanese companies in Vietnam, in complying with environmental laws and regulations, have installed high-performance wastewater treatment facilities to comply with these effluent standards, while nearby state-owned companies discharged foul water without any treatment, or the quality of river water was inferior to that of the water discharged by Japanese companies. These facilities require minute routine operation cares. The companies with water treatment facilities exercise utmost caution in the operation of these facilities and comply with the effluent standards. Some of them have set their own stricter standards to achieve, as well as easily achieving the standards of Vietnam, or made substantial investments in the installation of wastewater treatment facilities. Others expand their wastewater treatment facilities after they have

commissioned their plants when the government of Vietnam establishes new effluent standards (MOE, 2002).

Besides foreign companies with very high environmental awareness, for the most part, and despite the government's mandate on the installation of wastewater treatment facilities, only about 15% of industrial estates have central wastewater treatment facilities. In the case of Ho Chi Minh City, only 4 out of 11 industrial zones have wastewater treatment plants. In the majority of industrial estates where wastewater treatment facilities are not available, companies discharged polluted wastewater directly into the stream and river systems. For medium and small enterprises outside industrial estates, the compliance is mostly determined by regulatory actions. There have been certain regulative measures to deal with the environmental issues caused by their operations like screening of operation license for inclusion of environmental management measures for the firms to be approved of their operation. Other measures include violation penalties and fines, pollution tax, and so on (NEA, 2007). Besides regulative measures, training courses are also organized to raise the environmental awareness of firms.

The main reason for non compliance is the cost benefit concerns of the investors. Relative to the high cost of constructing treatment facilities, the fees charged on companies for wastewater treatment are also high. For industrial estates that require firms to have their own wastewater treatment systems, this would lead to low occupancy rate. Therefore, it has been common for the industrial estate management body and firms to mutually agree on ignoring the treatment conditions upon signing the contract (NEA, 2007).

#### **4.5.4 Air Pollution Control Measures by Firms**

It is widely recognized that most companies in Vietnam do not have air emission control equipment resulting in pollutants being emitted directly into the air (NEA, 2007).

However, there have been companies, mostly foreign owned estates, exercising excellent atmospheric pollution control measures. For example, very few Japanese companies emit pollutants from their manufacturing processes. Some of them have their own in-house power generators or steam generating boilers to cope with unreliable public electric power infrastructure. These plants exercise their own air pollution prevention measures in their facilities (MOE, 2002).

Very few industrial plants have installed equipment for either dust or gas emission remediation. While new cement plants or those built with foreign investment have installed modern air treatment systems (capable of filtering out more than 90% of dust produced), numerous local plants have not yet installed dust filtration systems.

A survey conducted by the Centre for Environmental Engineering Center (CEETIA), Hanoi University of Construction in 2003 on emissions and pollution management at 185 factories in six industries (food, textile and garments, paper, mechanical, chemical, and electricity), indicates that there is simply no data on actual emissions from these factories because they lack monitoring systems (Ngo, 2007). Most factories in the food, paper, garment, and electricity industries do not have emission treatment systems. Some are equipped with cyclones with water spray systems, absorbents, ventilation systems, or dust filtration

systems. Some plants have plans to invest in air treatment systems and others are in the process of relocating away from cities to industrial zones. The main air pollution abatement measure is to raise chimneys by 10-30 cm. Due to the high degree of pollution in the chemical and mechanical-metallurgy industries, in addition to taller chimneys, about 50% of the surveyed factories in these categories had invested in air treatment systems. In the mechanical-metallurgy industry, only metallurgy factories install air treatment systems, including dust, vacuum and filtration systems, while many mechanical factories use ventilation systems without additional treatment (Ngo, 2007).

In general, the main air pollutants caused by industrial production are SO<sub>2</sub>, NO<sub>2</sub>, NO<sub>x</sub>, CO, CO<sub>2</sub>, H<sub>2</sub>S, dust and volatile organic compounds. SO<sub>2</sub> emissions are overwhelmingly (95%) from industrial and handicraft production. Only 1-2 % of total SO<sub>2</sub> emission is attributable to transportation.

*Table 4.7 Total SO<sub>2</sub> emission by activity*

Sector	1996		2003		2010 (est.)	
	ton	%	ton	%	ton	%
<b>Industry</b>	7169	99.91	8003	99.90	10675	99.89
<b>Transportation</b>	3	0.045	5.4	0.07	9	0.08
<b>Municipal</b>	3	0.045	2.3	0.03	2	0.03
<b>Total</b>	7175	100	8011	100	10686	100

*Source: Centre for Environmental Engineering, Hanoi Construction University (Ngo, 2007)*

By now, besides companies with high environmental awareness, most environmental protection initiatives implemented by enterprises are regulative measures mandated by the government. Major government's mitigation measures are requests on installation of treatment equipment (71.75%), technology renovation (19.8%), relocation of factories to the suburbs or industrial parks (7.97%), and closure of factories (0.45%) (Ngo, 2007).

Other measures are developed aiming at:

- Improving efficiency in usage of materials and energy, select appropriate production materials;
- Integrating environmental pollution in the development plans for industrial and energy sectors; and
- Improving awareness of and strengthen education in environmental protection.

#### **4.5.5 Treatment and Disposal of Hazardous Industrial Waste by Firms**

The amount of industrial waste generated in each locality in Vietnam varies depending on the size of the province/area and its degree of industrialization. Given that the Mekong Delta has more industrial parks and manufacturing industries than anywhere else in the country, it is no surprise that this part of the country is the majority contributor to industrial waste (World Bank, 2004). In the Southern areas, the largest amount of industrial waste are from big cities with large number of industrial zones such as Ho Chi Minh City, Dong Nai, Binh Duong, Da Nang, while in the North, the bulk of industrial waste are generated from craft villages in Hanoi, Hai Phong, Ha Tay and so on.

In Vietnam, the custom of sorting wastes has not yet been established and the concept of industrial wastes has yet to be well understood. Once consigned to collection service agents, wastes of any kind will be collected; however, these wastes are lumped together and used for land filling regardless of whether the wastes are hazardous ones or municipal wastes. Many companies worry about treatment and disposal of hazardous industrial wastes generated at the



manufacturing processes for fear of them causing environmental contamination (NEA, 2007).

The toxic wastes from hospitals and industries are not treated before dumping them with domestic waste at landfills. Only a small amount of medical waste is treated at some hospitals where incineration systems have been installed.

Exceptionally, some foreign companies cope with hazardous industrial wastes in innovative manners. Certain Japanese companies with chemical treatments or painting processes have begun storing their hazardous industrial wastes in their own plant premises or rented plots on the industrial estates. Certain companies have installed controlled landfill facilities with lining to prevent seepage in their plant premises, to improve storage safety. Furthermore, a company operating a plant with a process that may produce wastewater sludge containing heavy metals made a heavy investment in a treatment facility, comparable to commercial intermediate treatment and disposal facilities in Japan, to treat the sludge. The sludge containing copper is enriched in copper content following a primary treatment and is exported to a Japanese copper refining company as a raw material for copper (MOE, 2002).

#### **4.5.6 Environmental Management Systems**

A number of companies, especially foreign invested ones, are keen to establish their environmental management systems. A Japanese company was the first in Vietnam to acquire certification of ISO 14001 in Vietnam, the International Standards for Environmental Management System. By the end of 2005, more than 100 establishments in Vietnam had reportedly acquired the ISO 14001 certification, of which many were Japanese companies.

For ISO 14001 certified foreign companies, not content with merely acquiring the certification, the process of acquiring the ISO 14001 certification is used to enhance the environmental awareness of the Vietnamese senior members and operators. In such a case, the work involved in acquiring the certification is delegated to the Vietnamese staff and employees to the greatest extent possible. The Vietnamese senior members participate in environmental conferences of companies from Southeast Asian countries, or even in environment-related conferences in the parent companies' head offices in Japan, Singapore and so on. Through such arrangements, efforts are made to get the Vietnamese staff and employees to understand environmental considerations of companies in other countries, and the level of Vietnam's environmental conservation measures and their associated problems (VPC, 2007). The development and implementation of ISO 14001 EMS in Vietnam will be further discussed in the following section.

## 4.6 CONCLUSION

In Vietnam, air and water pollution and solid waste treatment has become an alarming problem, particularly in urban areas, where as a result of economic development, people and factories are concentrated.

From the government side, specific environmental regulations designed to deal with water pollution, air pollution, and industrial waste, which are the country's principal environmental challenges and at the same time the problems against which companies are required to take countermeasures have been designed. Responses to environmental problems have been diverse within the business community ranging from excellent performance, to those with

no control measures at all. Unfortunately, those that have a bad environmental performance comprise the majority of businesses.

In the industrial sector, the existence of old production facilities and state-owned enterprises with inadequate financial strength for implementing pollution control measures is a problem that cannot be ignored. Other than a number of the foreign companies that are active in environmental protection, many businesses are implementing almost no emission and wastewater control measures. When it comes to industrial waste, especially hazardous industrial waste, which is expected to become a serious environmental issue in Vietnam, there are now no facilities within the country that can treat and dispose of them as required by law. Solving such an issue will become a tough challenge for the country.

Foreign companies are among those with the highest environmental awareness. Some foreign companies operating in Vietnam have spent a large amount of money vigorously implementing environmental measures, especially for wastewater control. Those manufacturing automobiles, motorcycles, or electric appliances, many of which are internationally well known, have attracted much attention from Vietnam as well as from other countries for their environmental protection efforts. Companies that have financial and technological resources are expected to be a driving force for promoting Vietnamese environmental protection (MOE, 2002). Some companies have executed firm environmental conservation measures based on cost-benefit calculations including fear of fines and penalties. Some with high environmental awareness, on the other hand, implement conservation measures based on the principle that the environmental conservation measures constitute a normal corporate activity and should be promoted to protect corporate reputation (VPC, 2007).

## **CHAPTER 5**

# **EIA – EMS AND THE ROLE OF EMS IN MEETING EIA FOLLOW UP REQUIREMENTS**

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Over the years, there has been a gradual introduction of environmental legislation, in an attempt to regulate impacts on the environment. Much of this regulation has involved determining compliance levels for pollution emissions. However, other environmental management tools have also been developed. These include environmental auditing, environmental accounting, environmental reporting, life-cycle assessment, environmental management systems, risk assessment and environmental impact assessment. EIA has become a widely used tool for identifying the potential impacts of new developments (Glasson et al., 1999). It is a planning tool used to predict and evaluate the impacts of proposed projects in order to assist decision-making (Ortolano and Shepherd, 1995). In addition to its planning role, EIA has long been considered an important tool for the environmental management of development projects (for example, Holling, 1978; Smith, 1993; Bailey, 1994, 1997; Morrison-Saunders, 1996c; Caldwell, 1989; Morrison-Saunders and Bailey, 1999).

In the environmental management of development projects, EIA and EMS are two widely-used environmental tools used separately at different stages of the project cycle with EIA for the pre-decision stage including planning and design, and EMS for the post-decision stage including construction and operation. According to Arts et al. (2001), although a thorough pre-decision analysis such as EIA is a necessary prerequisite, it is not a sufficient condition for sound planning, decision-making and management of projects. There may be a considerable difference between impact prediction and the occurring environmental consequences. In the end, it is not the predicted effects, but the real effects that are relevant to the environment. Follow up is necessary to provide information about the environmental consequences of business activities as they occur, and also gives the responsible parties (proponent and/or competent authorities) the opportunity to take adequate measures to mitigate or prevent negative effects on the environment (see, for example, Sadler, 1996; Marshall and Morrison-Saunders, 2003; Arts et al., 2001).

Environmental management system standards have significantly contributed to improving a uniform environmental management practice throughout the world. ISO 14001 EMS is one of these standard-based management tools that exist to assist organizations in realizing their environmental policy, objectives and targets. ISO 14001 is used principally to aid environmental management during the operational phases of a project's life and then to audit and report performance information back to managers, decision makers and other interested parties (Ridgway, 1999).

In this regard, EMS provides for an integrated and systematic approach to addressing environmental issues in order to implement corporate environmental management, a tool that helps companies to identify and mitigate negative impacts that their business

activities, products and processes have on the environment (Roberts and Robinson, 1998). This perspective is also supported by Ridgway (1999) who states that the audit and review role of the EMS could be used to ensure that the recommendations of the EIA are implemented throughout the life of the project.

This section reviews EIA and EMS with focus on the role of ISO 14001 EMS in implementing EIA follow up requirements.

## **5.1 ENVIRONMENTAL IMPACT ASSESSMENT**

### **5.1.1 Overview of EIA**

Environmental impact assessment, “a systematic process that examines the environmental consequences of development actions in advance” (Glasson et al., 1999; p.4) to assist in the identification, prediction and mitigation of environmental impacts caused by certain new developments (Sadler, 1996; Dipper et al., 1998). It is defined by International Association for Impact Assessment (IAIA) (1999) as “The process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made.” This process provides information for local authority planners, other regulators and authorising bodies, interested organisations and the general public. It also assists developers to meet their own environmental standards, to minimise environmental impacts and facilitate the project approval process (Carroll and Turpin, 2002).

EIA emerged in 1969 and has since become “one of the major tools relied upon by governments and societies worldwide to help them to achieve more effective environmental management (Nitz and Holland, 2000). Over 100 different countries have developed individual EIA systems each with varying levels of sophistication (Glasson et al., 1999). The process was developed in the USA and came into operation as a part of the National Environmental Policy Act (NEPA) in 1969. In the 15 years following its enactment, the establishment of other mandatory EIA systems was confined to a relatively small number of countries, including Canada, Australia and France. Less formalised and often more limited provisions for environmental assessment were also introduced in a number of countries (Lee et al., 1994). However, since 1985 a major expansion in the number of formalised EIA systems has occurred.

The Division of Technology, Industry, and Economics of the United Nations Environmental Program held a meeting in 1998 to review and assess the situation concerning Environmental Impact Assessment (EIA) in Vietnam. Turner (1999), regarding “EIA and the Project Cycle,” states that an EIA is mostly used as a checklist at the planning and development permission stage only; and for an EIA to be effective, it must be operative throughout the whole project cycle. In most cases, there is no formal mechanism to ensure that measures agreed at the planning stage are subsequently carried out, with the result that they are often ignored.

Other authors (see, for example, Sadler, 1996; Morrison-Saunders et al., 2001, 2003; Marshall and Morrison-Saunders, 2003; Arts et al., 2001) also support Turner’s (1999) view and see follow-up as a process which is not only necessary to provide information about the

consequences of an activity as they occur, but also gives the responsible parties including proponent and competent authorities the opportunity to take adequate measures to mitigate or prevent negative effects on the environment

In the following section, Turner's (1999) and other authors' views are examined by analyzing issues coming from impact assessments carried out for development projects with focus on the discussions of follow-up significance and measures developed to date.

#### **5.1.1.1 EIA Process**

The EIA process can be represented as a series of iterative stages (Figure 5.1) and although they are outlined here in a linear fashion, EIA should be a cyclical activity, with feedback from later stages to earlier ones (Glasson et al., 1999). For the purpose of this study, it is useful to employ Arts' et al. (2001) division of the EIA process into two stages based around the principal consent decision for approving a proposed plan or project: pre-decision and post-decision. The pre-decision stage incorporates the early components of EIA prior to project implementation (that is, screening, scoping, impact prediction and the consent decision) (Morrison-Saunders and Arts, 2004b). The post-decision stage of a project or plan, including postdecision monitoring and auditing, is known as follow-up and is concerned with the various components of the plan or project life cycle after the decision has been taken (for example, final design, construction, operation and decommissioning; project and environmental management) (Morrison-Saunders and Arts, 2004b). Main purposes of the follow-up stage are to monitor, evaluate, manage and communicate the environmental outcomes that occur in order to provide for some follow-up to the environmental impact



statement. It is important to highlight that the EIA process has been translated into practice in various ways across the world and the previous description relates to EIA theory. Not all of the stages of the process are mandatory in individual EIA systems and the ways in which the individual stages of the process are carried out will vary significantly. In particular, the final stage follow-up is absent in most jurisdictions and this limits the cyclical nature of the process (Dipper et al., 1998).

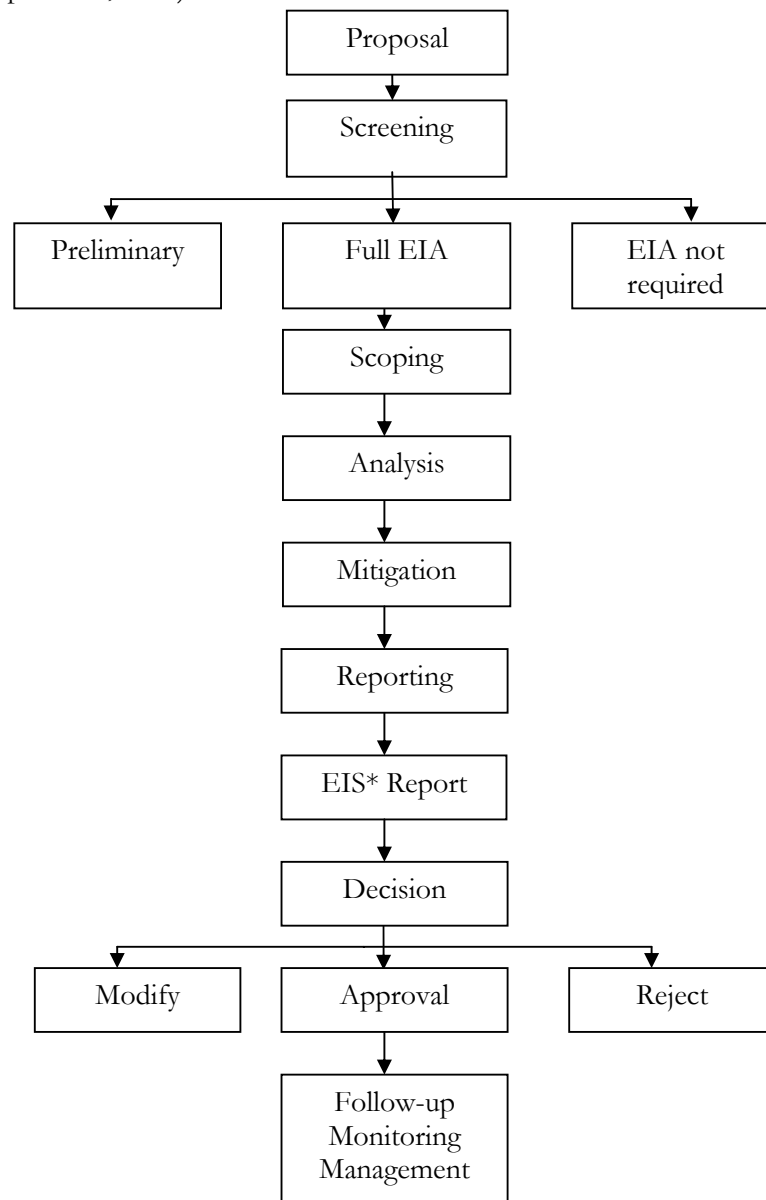


Figure 5.1 EIA process (adapted from Sadler, 1996)

(\*) EIS: Environmental Impact Statement

### **5.1.1.2 EIA effectiveness**

Since EIA emerged in 1969, academics have been questioning the effectiveness of the process in fulfilling its intended purposes, in both theory and practice (Lee et al., 1994; Sadler, 1996; Glasson et al., 1999; Cashmore et al., 2004). During the 1970s, according to Beanlands and Duinker (1984), institutional framework for EIA had been put in place before the scientific basis had been properly established. This is reported to have resulted in scientifically inadequate environmental impact statements and therefore there was much early criticism of the concept of environmental assessment (Beanlands and Duinker, 1984).

Since then further research has been undertaken and there are still ongoing debates concerning EIA effectiveness. Generally, EIA has been considered a useful tool in improving environmental management of development projects. It systematically investigates and identifies the full range of impacts of a proposed project and provides a plan to reduce, mitigate or offset the negative impacts through alternative approaches, design modifications and appropriate remedial measures.

Despite the above benefits, and the fact that it has been considered one of the most interesting environmental management tools worldwide, there are numerous problems of EIA that researchers and practitioners have been trying to identify and finding solutions for improvement. Pardo (1997) reviews the works of other authors (for example, Bailey and Hobbs, 1990; Buckley, 1989; Lee and Colley, 1990; and so on) on the situation of EIA and concludes that EIA needs to improve important aspects such as analyses quality, enforcement, post-development monitoring and public participation (Pardo, 1997).

According to Glasson et al. (1999), EIA can be seen as an effective environmental management tool, if it achieves three purposes: aid to decision-making, aid to developer and, achieving sustainable development. Marshall et al. (2001) argue that EIA is only truly successful when its findings are incorporated into a company's business-making processes. Without this linkage it remains purely a regulatory-driven information-gathering exercise on behalf of the consenting authority. This view is also supported by other authors (for example, Lee et al., 1994; Morrison-Saunders and Bailey, 1999) who state that EIA is effective if it achieves its goals for environmental protection, is cost-effective, and assesses impacts throughout the life of a project. As the last point concerns, for an EIA to be effective, the impacts of the development need to be assessed throughout its life cycle from planning, construction to project implementation and finally, decommissioning. This meets the point made by Morrison-Saunders and Arts (2004b) which emphasises the role of environmental management activities taken during later stages of projects where consequences of decisions taken must be investigated, communicated and acted upon as necessary.

Post-monitoring and auditing can be seen as a powerful instrument for providing the information needed to ensure an environmentally sustainable development (Arts and Nootebloom, 1999). Through monitoring, auditing and evaluation, EIA follow-up during post decision stages of the project can ensure that the expected benefits of EIA forecast during the pre-decision stages of the process are achieved during project implementation and management. It helps to minimise the actual adverse impacts, avoids any further adverse environmental effects, maximises the environmental benefits of development proposals, and learns from past mistakes to prevent similar problems from occurring in other projects (Au and Sanvicens, 1996). Despite its importance, this topic has received less attention in the literature than other aspects of the EIA process (Culhane et al., 1987; Sadler, 1988, 1996;

Morrison-Saunders et al., 2001, 2003). These limitations provide a justification for completing this research.

### **5.1.1.3 EIA follow-up**

There is a long history of interest and professional practice in environmental impact assessment (EIA) follow-up (for instance, Culhane et al., 1987; Sadler, 1988, 1996; Morrison-Saunders et al., 2001, 2003). Without follow-up, EIA may be little more than a paper-based exercise to obtain project approval. Follow-up is particularly important to ensure implementation of mitigation measures and in cases where cumulative effects occur (Morrison-Saunders et al, 2001). Arts et al. (2001) define EIA follow-up as “the activities undertaken during the post-decision stages of the process to monitor, evaluate, manage and communicate the environmental outcomes that occur in order to provide for some follow-up to the environmental impact statement.”

EIA follow-up comprises four key elements (Arts et al, 2001):

- Monitoring: the collection of data and comparison with standards, predictions or expectations;
- Evaluation: the appraisal of the conformance with standards, predictions or expectations as well as the environmental performance of the activity;
- Management: making decisions and taking appropriate action in response to issues arising from monitoring and evaluation activities; and

- Communication: informing the stakeholders as well as the general public about the results of EIA follow-up.

Follow-up is an important stage in EIA, as without it the usefulness of the process and the environmental outcomes of development activities will remain unknown (Morrison-Saunders and Arts, 2004b). Follow-up links the pre-decision and post decision stages of EIA, thereby overcoming the gap that can arise if there is a considerable difference between a projects' plan (including the EIS) and its implementation (Morrison-Saunders and Arts, 2004b). This is significant as ultimately it is the real effects on the environment and not the predicted impacts that are relevant, and follow-up provides an opportunity for these to be assessed and mitigated against if necessary (Morrison-Saunders and Arts, 2004b). During the IAIA 2000 workshop, it was agreed that follow up promotes the application of EIA principles throughout the project cycle.

Recent research has identified that follow-up can serve many purposes, although generally there is a common goal of improving EIA knowledge and practice. Morrison-Saunders and Arts (2004b) have identified the various objectives of follow-up:

- Control of projects and their environmental impacts: Provides both verifying and controlling functions for implemented projects.
- Maintain decision-making flexibility and promote an adaptive management approach: Feedback allows project managers to respond when changes in an activity or in the environmental context warrant adaptation of current practices.

- Enhance scientific and technical knowledge: Many tasks involved in EIA are grounded in scientific methods and follow-up can be used to assess the effectiveness of these tasks.
- Improve public awareness and acceptance: Ongoing programmes may improve public awareness about the actual effects of developments and thereby allay public concerns.
- Integration with other information: Programmes may dovetail with other environmental information programmes such as Environmental Management Systems and therefore contribute to a greater understanding of environmental effects.

These objectives emphasise the many different benefits of using follow-up, not only to improve the effectiveness of EIA, but also to improve the quality of the environment and therefore moving towards a more sustainable world. A further benefit of completing follow-up is the ability to assess whether the mitigation measures stated in the EIS have been undertaken and whether the measures have been successful in mitigating the environmental impacts (Glasson et al., 1999).

Despite significant benefits of follow-up, the absence of follow-up within most jurisdictions is often identified as the most critical weakness of EIA practice (Sadler, 1996; Dipper et al., 1998). As Sadler (1988) states, the paradox of EIA is that very little attention is paid to the environmental effects, which actually result from the development. As such, despite theory indicating that follow-up is an important stage in EIA, in most jurisdictions, there is little emphasis on comparing what was predicted with what really happened and on feeding the results of such exercises back into the EIA process (Dipper et al., 1998).

In a study of EIA follow-up initiative in UK, for example, Marshall (2001a) states that while EIA procedures in the UK require the preparation of an environmental impact

statement (EIS) for certain proposals, there is no statutory requirement to implement mitigation measures outlined in the EIS. No further action is legally required unless the mitigation measures proposed are clearly identified in approval conditions or are clearly marked within site plans approved by the EIA decision-maker (Marshall, 2001a).

Beanlands and Duinker (1984) recommend that post-decision monitoring should be formally recognised as an integral part of the EIA process and that EISs should provide as much rationale and technical detail for monitoring studies as for pre-decision studies and that for each EIA clear responsibilities should be established for conducting and reviewing monitoring programs. More recently, other studies have also suggested the introduction of monitoring and auditing to improve EIA effectiveness (Sadler, 1996; Barker and Wood, 1999).

A number of jurisdictions have established formal or informal systems for EIA follow up and management (Au and Sanvicens, 1996). For example, in Canada, there are provisions under the EIA legislation to require a follow up program to be implemented to verify the accuracy of predictions and the effectiveness of mitigation measures. In 2002, amendments are made to the Canadian Environmental Assessment Act that formalise Canada's commitment to follow-up, making it a mandatory component of EIA practice (Morrison-Saunders and Arts, 2004b). The Act now states that where it is considered appropriate, the responsible authority for a project will design a follow-up program and ensure its implementation (Noble and Storey, 2005). Under the Act, a follow-up program means a program for both verifying the accuracy of the environmental assessment of a project and determining the effectiveness of measures taken to mitigate the adverse environmental effects of a project (Noble and Storey, 2005). In Western Australia, there are direct provisions under the EIA legislation

to require proper implementation of measures arising from EIA. A systematic environmental monitoring and audit requirement has been instituted in some jurisdictions, such as Hong Kong, as part of the EIA process before and after EIA studies are completed.

The results of the workshop on effectiveness of EIA follow-up held in Canberra in 1995, showed that the follow-up objectives stated in the previous sub-section may be achieved by using a variety of approaches and tools, including (Au and Sanvicens, 1996):

- Inspection and surveillance - are less quantitative methods to determine that the terms and conditions of the project approval are adhered to;
- Effects monitoring - refers to the measurement of parameters during construction and/or operation to detect changes in these parameters which can be attributed to the project, for verifying the accuracy of predictions and effectiveness of measures;
- Compliance monitoring - involves the periodic sampling and/or continuous measurement of environmental parameters, levels of waste discharge or process emissions to ensure that regulatory requirements are met; and
- Environmental audit - methodological examination to verify the accuracy of the EIA predictions, the effectiveness of mitigation measures, and the compliance with regulatory requirements, internal policies and standards, or environmental performance limits. This could be carried out during the project implementation or after the project is implemented.

In the European Union, Directive 85/337/EEC as amended does not include any follow-up requirements and this has led to the majority of member states, including the UK, paying little attention to follow-up in practice. However, this does not necessarily mean that EIA practices are unbalanced as many jurisdictions provide other ways, outside the EIA



framework for dealing with follow-up (Arts and Nootebloom, 1999), for example, permit compliance monitoring by proponents and authorities or area wide monitoring by authorities (Arts and Nootebloom, 1999).

#### **5.1.1.4 Problems and constraints to follow-up implementation**

The importance of follow-up has clearly been recognised in certain countries with follow-up initiatives being implemented using a variety of tools and approaches as outlined in Section 5.1.1.3. However it has proved to be difficult to employ follow-up in practice (Arts and Nootebloom, 1999). Barriers to implementation and elements of successful EIA follow-up, based on the experiences of practitioners from around the world, are summarized by Morrison-Saunders et al. (2003), Arts and Nootebloom (1999) and Sebastiani et al. (2001) and presented in Figure 5.2.

Recent research has also found that having regulations in place does not necessarily guarantee that follow-up occurs in practice. For example, despite having regulations making follow-up mandatory in the Netherlands, it has only occurred for 60 projects out of 800 since the introduction of the regulation (Van Lamoen and Arts, 2002). This suggests that alone the traditional ‘command and control’ technique may not be sufficient for follow-up success (Morrison-Saunders et al., 2003).

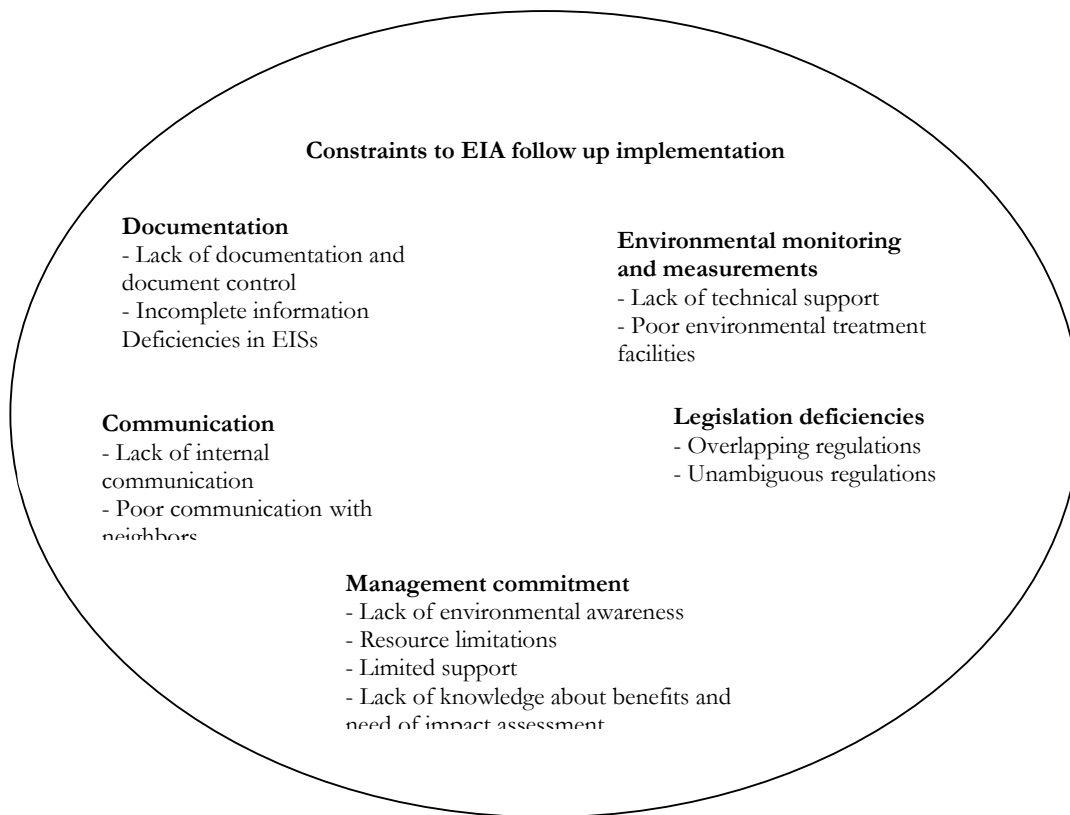


Figure 5.2 Constraints to EIA follow up implementation (adapted from Morrison-Saunders et al., 2003; Arts and Nootebloom, 1999; and Sebastiani, 2001)

Efforts are still needed for further investigation into the issue of follow-up. In particular, there is a need to closely examine current follow-up mechanisms to identify a tool that can help to ensure EIA recommendations to be implemented during later stages of project cycle, and as such provide further justification for this research. A discussion of ISO14001 Environmental Management System, in particular, its role in implementing follow-up requirements (Section 5.3) will be discussed before moving to Chapter 6 on research methodology.

### **5.1.2 EIA Legislation in Vietnam**

The EIA system in Vietnam is implemented through Article 18 of the LEP and a series of implementing regulations, particularly Decree 175/CP and Decree 26/CP. Chapter III of Decree 175/CP contains requirements for the submission of EIAs by investors and enterprises, both foreign and local for appraisal. The result of the appraisal shall constitute one of the bases for competent authorities to approve the projects or authorize their implementation. Provisions prescribing the format and content of EIA reports are set out in the appendices to Decree 175/CP.

Chapter 3 of Decree 175 regulates the assessment of environmental impact. It primarily regulates within which areas investors; project managers or directors of the offices and enterprises shall conduct assessment of environmental impact. The scope for assessing environmental impact includes assessing the current situation of the environment in the operating area of the project, assessing impact occurring to the environment as a result of the activities of the project and proposing measures for environmental resolution. If not empowered to a specific branch, it is MONRE that appraises the reports for the central level. The local level shall be appraised by the provincial DONREs. In case of necessity, an Appraising Council shall be set up and MONRE shall decide the establishment of the council. The chairmen of the People's Committees of the provinces and cities under the Central Government will decide the establishment of Appraising Councils at the provincial level. The time for appraising an EIA report would be within two months from the date all related documents are received, i.e. after eventual completion are reviewed.

According to Article 17 of Decree 175, offices assigned with State management of environmental protection are responsible for the supervision of design and conducting measures to protect the environment according to the suggestions of the Appraising Council. If the project owners do not agree with the conclusion of the Appraisal Council, they have according to Article 18, the right to complain to the office which decided the establishment of the Appraisal Council and to the upper-level office assigned with State management of environmental protection. The complaints have to be considered and resolved in a maximum period of three months from the date of receiving the complaints.

The results of the appraisals over EIA reports are according to Article 20 in Decree 175 classified into four categories for settlement:

1. Being permitted to continue its operations without environmental penalty.
2. Having to invest in building facilities to deal with the waste materials.
3. Having to change the technology, to move to another place.
4. Having to suspend its operations.

As mentioned above, Department of Appraisal and EIA attached to MONRE has been designated as the functional institution to assist the Minister in the exercising the state management of environmental impacts assessment and appraisal<sup>3</sup>.

The general guidance for EIA application in Vietnam is currently available in the General Guidelines Book (Le et al., 2000a). This applies to all major projects and covers many

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<sup>3</sup> See Vietnam Environmental Protection Agency (VEPA) website for details  
<http://www.nea.gov.vn/english/organization.htm>

development sectors. A number of different parties are involved in the management and implementation of EIA procedures in Vietnam including EIA managing agencies, proponents, environmental experts, other state management agencies, the public, international funding organisations, and universities and research institutes. Public participation is still a new issue in Vietnam. It is designated in the General Guidelines for EIA 2000 that public participation has legal importance and contributes to the success of the project but has not yet been practiced regularly and nationwide.

The development of EIA in Vietnam can generally be divided into 3 phases since the 1980s. In the first phase which lasted from 1983 to 1993 preparations for EIA procedures were implemented. The activities undertaken during this period of time included training of EIA experts, elaboration of regulatory documents with respect to EIA, and adaptation of EIA methodologies into the current Vietnamese practical situation. The second phase from 1983 to mid 1996 involved the implementation of EIA procedures with the issuance of EIA related regulations, continuation of training of EIA experts, and elaboration and appraisal of EIA reports took place. The last phase from mid-1996 onward comprised the improvement of EIA expertise in regulatory and methodological aspects (Le, 1997).

### **5.1.3 EIA Procedure**

The NEA under the former MONRE has delivered guidelines for setting up environmental impact assessment reports for different sectors, such as industrial park development projects and transportation projects. The sectors that do not have their own guidelines to depend on still have to comply with the same regulations for content of the EIA report. MONRE is

preparing guidelines to cover basically all sectors. The guidelines give comprehensive recommendations on the preparation of the EIA report including structure of the report, project description, proposed implementation of mitigation measures and so on.

MONRE has a department of inspection, namely the Vietnamese Environmental Protection Agency (VEPA). VEPA has a division of inspection and there are also inspection divisions under the provincial DONREs.

The current EIA procedure in Vietnam is basically consistent with the international practice. The EIA procedure in Vietnam can generally be categorized into four main steps as follows:

1. Screening;
2. Preparation and submission of a form typed document, “Registration for securing environmental standards”, for project classified in Category 2;
3. Preparation of detailed EIA report for project classified in category 1; and
4. Appraisal of EIA report.

All investment projects in Vietnam are required to be environmentally screened. Projects possess characteristics as delineated in Annex of Circular 409/1998/TT-BKHHCNMT will be classified in category 1 (Tran et al., 2000). These projects may contain apparent potential to induce adverse environmental impact, for instance, projects in or adjacent with environmental sensitive areas, oil and gas projects, etc. Thus, EIA is essential for projects classified in this category. Other projects will then be classified in Category 2 whereas EIA implementation is not mandatory. The screening procedure that conforms to the project classification is a way to facilitate the EIA implementation for both time and cost reduction.

The final step for project classified in Category 2 requires the proponent to prepare and submit the “Registration for Securing Environmental Standards”, to the environment management agency for appraisal (Le et al., 2000a). For project that classified in Category 1, preparation of preliminary EIA report will be required before the subsequent EIA procedures. Detailed EIA will be initiated after the authorized bodies approve the preliminary EIA report. The appraisal of EIA reports will be conducted at different levels, including local, central or National Assembly, depending on the scale of the project.

The EIA procedure in Vietnam principally focuses on the establishment and appraisal of the detailed EIA report. However, about 70% of the examined EIA reports had major imperfections that need improvement (Tran et al., 2000). Most of these detailed EIA report imply that practices such as impact identification, prediction, impact analysis, impact significance evaluation, impact monitoring and management plan are not regularly integrated into the Vietnamese EIA procedure (Le et al., 2000a). Meanwhile, mandatory scoping which functions at the stage of pre-feasibility study in order to prepare the TOR (Terms of Reference), and impact monitoring and management plan that implemented at the stage of post-construction are also not implemented extensively. The predetermined mitigation measures will therefore be non-applicable without a comprehensive environmental impact management plan at the operation stage of a project. In view of this, the overall EIA procedure has been reviewed by the relevant environment management agencies with the assistance from international funding organizations to establish a general guidelines book for EIA practice in order to provide a basis for upgrading the current EIA framework (Le et al., 2000a).

The integration of the EIA in the stages of feasibility study and decision-making remains generally low. This may arise from the insufficiency of expertise needed to provide training and to carry out activities with respect to EIA, and the low integration between governmental environment managing agencies with other responsible stakeholders. Meanwhile, decision makers and the public find EIA reports difficult to understand because of their length and the complexity of the methods used. Apart from the managerial, the technical for EIA is also generally low. The scientific evaluation of EIA reports are still not a current practice in Vietnam, which subsequently raises another shortcoming that will reduce the opportunity to guide quality improvement. Therefore, there are some -building initiatives established by the cooperation between EIA managing agencies and international donor community in order to promote both the mentioned capacities for EIA practice (Luc and Le, 2000).

Project classification has simplified the environmental screening process. However, the application of the list of projects necessary to carry out EIA in fact can be questionable. In Vietnam, international and national natural conservations, historical and cultural heritages have already been defined. However, there are no criteria available to identify environmentally sensitive areas (UNDP, 1995). Thus, it is difficult to implement part 1, annex 1 of the circular No. 490/1998/TT-BKHCHNMT (Luc and Le, 2000). No specific framework is currently available to identify the potential adverse impacts arise from the project scale or the ecological sensitivity for projects that classified in category 2. This shortcoming may subsequently result in the risk of ignoring the potential cumulative impacts of the project. Therefore, it is necessary to establish more comprehensive sectoral and technical guidelines, which are still in serious shortage in Vietnam. In view of this imperfection, “Building for Environment Management in Vietnam” project has been conducted aiming at the development of general EIA guidelines and specific sectoral EIA guidelines for hydropower dam, urban



planning and tourism development projects. The identification of cumulative impacts is emphasized and elaborated with applicable methods in the newly developed general EIA guidelines (Le et al., 2000a), which provide the basis to upgrade the EIA procedure in Vietnam.

Mitigation measures recommended in the EIA report and environmental impact monitoring are still not practically implemented. As a consequence, most of the EIA reports prepared in this Vietnam lose their respective practical effects (Tran et al., 2000). As reported by Luc and Le (2000), firms commonly pay insufficient attention to the environmental management during the post-construction phase particularly the monitoring and auditing activities. This can be evident from the lack of monitoring data needed for comparison purposes with the predictive EIA reports. In view of this constraint, environmental impact management is necessary to be carried out by firms in order to conform to the EIA procedure stated in the newly developed general EIA guidelines book. As emphasized in the EIA general guidelines (Le et al., 2000a), the EIA report should be easy to understand and suitable for decision-making, including qualifications, reliability and limits of the predictions on the environmental impacts.

There is a realization that EIA should be applied to all development project activities that will potentially cause significant adverse impacts or cumulative effects to the environment and the society. It should be carried out throughout the project cycle, start as early as possible, in the concept design stage. The contents of the EIA report should not only concentrate on development projects but also be elaborated to development plans at national, regional, and sectoral levels (Luc and Le, 2000). Of all the shortcomings of EIA practice in Vietnam, EIA follow up is considered a big problem to be solved for EIA to meet its intended

purposes. This necessitates the search for an environmental tool that can help to carry out EIA proposed mitigation measures and other related requirements specified in the EIA reports. To this end, the next section discusses ISO 14001 and its potential role in meeting EIA follow up requirements.

## **5.2 ISO 14001 EMS AND ITS IMPLEMENTATION IN VIETNAM**

### **5.2.1 Overview**

Viet Nam became the 65<sup>th</sup> member of ISO in 1977. Through STAMEQ, Vietnam participates in the activities of ISO/Technical Committee 207 as an “Observer member” (before 1999) and a “Participating member” (since November 1999). Previously, Vietnam’s participation in activities relating to ISO standards was limited since most of its standard systems were formulated in 1962 on the basis of either accepting or referring to the standards of the former Soviet Union. Up to 1993, Vietnam had no environmental standards and systems in the proper sense of the word. Among the 24 environmental protection standards, formulated separately and unsystematically to cope with immediate demands of state functional offices, none mentions environmental management as a systematic approach.

Under the recommendation of STAMEQ, MONRE adopted ISO 14000 standards for EMS and Environmental Auditing (TCVN/ISO 14001, ISO14004, ISO14010, ISO14011, ISO14012) as national standards (TCVN) in 1997 and 1998. The implementation of the ISO

14000 national standards by companies operating in Viet Nam is not mandatory; rather, it is voluntary.

### **5.2.2 Determinants of ISO 14001 Certification and Implementation**

The main reasons for adopting ISO 14000 standards have been of interest to researchers and practitioners worldwide and in Vietnam (see, for example, Ofori, 1999; Khalid, 2002; Mbohwa and Fukada, 2002). The commonly cited motivations for implementation include:

- Cost containment and cost savings
- Environmental improvements
- Regulatory compliance
- Improvement of corporate image
- Fulfillment of a business requirement or a requirement of a corporate head office
- Competitive advantage
- Opening of international markets and partners
- Top management commitment to the environment
- An ethical or social commitment
- Improvement in employee environmental awareness
- Trade implications of ISO 14001 environmental management system

There is some degree of consensus in Vietnam that environmental management systems and ISO 14001 can be useful in improving the environmental performance of companies, and that it can assist in facilitating trade, although it can also result in creating an obstacle to trade when companies fail to meet requirements to certify to the standard (VPC, 2005). However, it is recognized that there is little experience and empirical research on the implementation of ISO 14001. Though the number of ISO 14000 certified companies in Vietnam is still small, the rate of implementation of environmental management standards is rapidly increasing, especially in 2001 (see Figure 5.3).

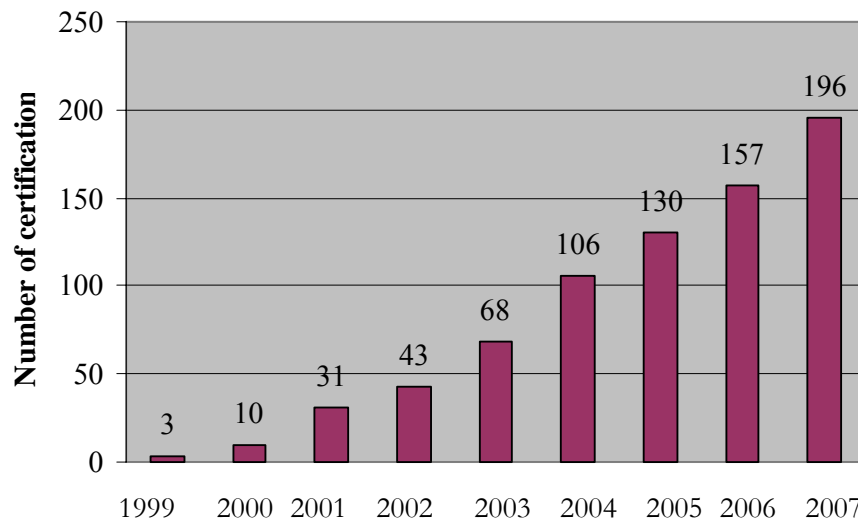


Figure 5.3 Development of ISO 14001 certification in Vietnam (VPC, 2007; ISO World, 2007)

The response of firms to ISO 14000 in Viet Nam in comparison to other developing Asian countries has been small. Compared to other countries in Asia and the Southeast Asia region, firms in Viet Nam have been much less enthusiastic. According to a survey by ISO World in 2007 and as can be seen from Figure 5.4, by January 2007, the total number of companies in Vietnam that have certification to ISO 14001 EMAS is only 196 compared to the total number of 21779, 18979, 5893, 1597, 1369, 716 and 598 certifications in Japan, China, South Korea, Taiwan, Thailand, Singapore and Malaysia respectively (see Figure 5.4).

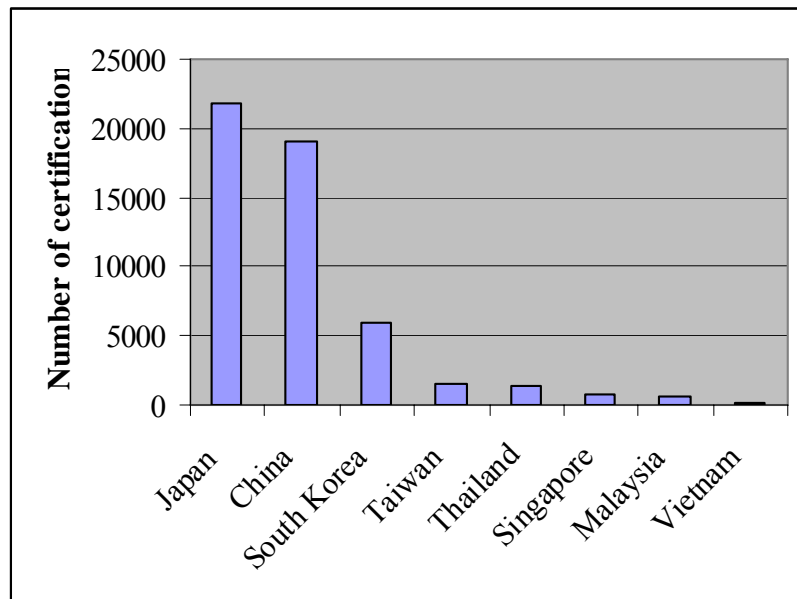


Figure 5.4 ISO 14001 Certification in Asia by 2007 (ISO World, 2007)

At this stage, national companies play a passive role, responding to outside pressure rather than actively seeking improvement of their environmental and economic performance. Joint ventures and 100% foreign owned companies find it easier to meet the requirements of environmental standards and to implement ISO 14001, but smaller domestic firms, especially SMEs, do not have the same experience. General awareness of SMEs of ISO 14000 was found to be low. They have many difficulties arising from lack of finance, skills, know-how, and experience. Newer firms tend to find it easier to meet environmental standards and to implement ISO 14001 than older firms and SMEs.

The possibility of demonstrating conformity with legislation is considered to be the most important motive for all businesses, including SMEs, to achieve certification. Environmental management systems are believed to provide a means to efficiently meet mandatory standards as well as international environmental legislation (Dao, 2002; VPC, 2005).

In Vietnam, transnational corporations such as Sony, Toyota, Fujitsu and others have indicated a strong interest in conforming to ISO standards. Thus, ISO 14000 (EMS) has been implemented on a voluntary basis by large multinational corporations. They are mostly guided by their parent companies in Japan, USA, Korea, etc. For many others, the concept of ISO 14000 (EMS) is very new but there is a growing awareness that it will be an important tool for prevention of pollution by industry. There are, however, a growing number of local companies such as Petrolimex, PetroVietnam, Xuan Hoa, textile corporations, cement producers and pesticide companies implementing ISO 14000 (Tran, 2001; VPC, 2006).

In a study of ISO 14001 EMS certification and implementation in Vietnam, Dao (2002) finds that ‘company to contribute to efforts to protect the environment’; ‘enable company to avoid infringing statutes and regulations’; and ‘enable company to reduce material wastage’ are the most important reasons for ISO 14000 certification and implementation of firms. The cost-benefit concerns of firms when implementing ISO 14000 are dominant. For example, by reducing material wastage, costs are cut. The possibility of demonstrating conformity with legislation is considered to be among the most important motivation for all businesses to get certification. Environmental management systems are believed to provide a means to efficiently meet mandatory standards (Dao, 2002).

### **5.2.3 Benefits of ISO 14001 EMS Certification and Implementation**

In general, an effective EMS has many benefits for the organization, the environment and the general public. EMS can help protect the environment, reduce operating cost, increase

access to market, demonstrate compliance with legislation, improve environmental performance, improve customer's trust and satisfaction, enhance organization's image and credibility, promote employee involvement and education, and finally, have impact on world trade (Ofori, 1999; VPC, 2005, Potoski and Prakash, 2005a).

### **5.2.3.1 Protection of the environment**

The most important benefit of ISO 14001 EMS implementation and certification is that it helps the organization to protect the environment (Kuhre, 1995). Possibly the greatest positive impact on the environment is waste minimization. Under ISO 14000, environmental management programmes are implemented to reduce hazardous materials and hazardous wastes. These types of programmes result in less hazardous wastes needing disposal on land, which in return results in less soil and ground water pollution. This will have a positive impact on the environment. This also applies to reduction, reuse or recycling, all of which maximize the use of natural resources.

Another environmental benefit is the conservation of other natural resources. For example, a good environmental management programme will help to reduce the need for electricity, gas, space and water and therefore, conserve these valuable commodities. ISO 14001 certification can also be a common platform to aid in the solution or management of certain worldwide environmental problems or issues such as the depletion of the ozone layer.

Russo (2001) studies 316 electronics facilities in the U.S. and finds that ISO 14001

certification is associated with decreased toxic emissions. Similarly, Potoski and Prakash (2005a) finds that ISO 14001 adopters pollute less and show better compliance with law than non-adopters.

### **5.2.3.2 Reduced operating cost**

Another important benefit of ISO 14000 is the economic advantage of reduced operating costs (Kuhre, 1995; Tibor and Feldman, 1997). After some initial costs have been incurred to design and implement the EMS and obtain certification, there should be long-term cost savings, especially in the area of environmental control and cleanup.

Because the EMS emphasizes prevention, savings can be realized through waste minimization and prevention of pollution. This results in a reduction in the use of raw materials, energy and hazardous materials. Companies which implement an EMS can often find new opportunities to increase efficiency, to reduce paper work, and to lower costs. Another source of reduced costs will be lower insurance rates and more attractive borrowing opportunities which will accrue to the organization because of lower operating liabilities.

### **5.2.3.3 Increased access to markets**

An organization which has implemented an EMS will enjoy a competitive advantage in global markets over organizations which have not (Kuhre, 1995; Tibor and Feldman, 1997). There are two primary reasons for this. One is that managing in accord with EMS principles drives managers to seek the most economic means of performing work. Moreover, as with ISO 9000, certain global markets may eventually become closed to companies in particular



industries unless they can prove that their operations conform to ISO 14000. Even if markets are open, companies that implement an ISO EMS can use ISO 14001 certification to differentiate themselves from their counterparts and declare their commitment to the protection of the environment (Dao, 2002).

#### **5.2.3.4 Demonstrated compliance with regulations**

By ISO 14000 implementation and certification, companies would enhance the compliance of their operations with increasingly stringent environmental regulations, both at the national and international levels (ISO, 2007). Companies with a good track record of legislative compliance would have less intervention from regulatory bodies and less incidents which result in liability, and hence delays, disruptions and increased costs, in their normal operations (Potoski and Prakash, 2005a).

#### **5.2.3.5 Improved environmental performance**

While not specifically a parameter of EMS effectiveness, improved environmental performance will result from implementing an EMS designed along the ISO 14001 guidelines (Russo, 2001; Potoski and Prakash, 2005a). As organizations ponder the environmental impacts of their activities, products, and services, they will make changes which enhance their own effectiveness as well as the environment. This will, in turn, help industries to shed its label as an anti-environmental segment of society.

### **5.2.3.6 Improved customer's trust and satisfaction**

With ISO 14000 certification, an organization can assure customers and the general public that it is really protecting the environment and it has adequate documentation to back up the statement. EMS implementation and certification also provide customers with an additional layer of assurance that the organization will not be shut down due to excessive damage caused by environmental incidents or accidents resulting from, or relating to, their operations. Hillary (2000) argues that demands from customers may force small firms to network and adopt ISO 14001 certification.

### **5.2.3.7 Enhanced organizational image and credibility**

The majority of the public does not care about the environment. Most of the procedures which ISO 14000 requires are proactive environmental actions. Any such action is good for the environment and can be openly communicated to the public since it is a positive story. The confidence of the public in the organization will be increased if it is aware of environmental issues.

Generally, regarding to the perceived benefits of ISO 14001, it is agreed that ISO 14001 certification can improve organisations' public relations and corporate image and document control, help organizations to respond more effectively to increased customer pressure, and enhance the international competitiveness and quality of their supply chains (Fryxell and Szeto, 2002). Many firms pursue ISO 14001 certification in response to peer pressure in order

to improve risk management and lower their liabilities harmonize standards with ISO 9000, reduce inspection frequency and improve bottom line performance by enhancing internal efficiencies (Tibor and Fieldman, 1996; Vastag et al., 2004).

#### **5.2.3.8 Employee involvement and education**

Implementation of an EMS in an organization makes environmental performance the job and concern of everyone in, or connected with, the organization. This builds a broad awareness among the personnel, to enable them to prevent or solve problem at operating levels and locations. The training components of the EMS will lead to greater awareness among the employees of how they can assist in the improvement of the organization's environmental performance.

#### **5.2.3.9 Potential impact on world trade**

ISO 14000 has the potential to exert a positive impact on world trade and prevent some undesirable developments (Prakash and Potoski, 2006). Prior to initiation of the ISO 14000 process, many countries and industry groups began formulating their own standards for EMS and related issues. If these separate efforts had continued, the myriad standards would have resulted in considerable confusion in world trade and raised costs for all participants. Individual standards, involving different environmental requirements, could be effectively used to restrict trade. In contrast, the ISO 14000 series standards open the possibility of a level playing field, at least as far as environmental issues are concerned. According to Prakash and Potoski (2006), trade can be a vehicle to disseminate ISO 14001 if the key export markets have widely implemented this environmental management system.

Dao (2002), in a study of ISO 14001 EMS implementation in Vietnam also supports the findings by other authors with regard to the benefits of this environmental program as perceived by businesses operating in Vietnam. According to the study, environmental protection, compliance with regulations, and material waste reduction were the most important benefits of implementing ISO 14001 EMS in Vietnam.

Central to all the benefits that an EMS can bring about is the benefit of environmental protection for which the standard is intended to achieve. The implementation of the system helps firms to at least comply with environmental legislations and also go beyond that to achieve other environmental targets set out by the firms themselves.

Taking the initiative on environmental management can improve a company's record with environmental regulators, financiers and insurers. Adopting environmentally friendly design, demonstrates a company's credibility and commitment to reducing environmental impacts (Woodside, 2000 in Fryxell and Szeto, 2002).

The recognized benefits of environmental protection of ISO 14001 EMS once again justify the choice of this environmental tool for studying of its potential role in fulfilling the EIA follow up requirements which primarily concern with implementing mitigation measures and monitoring environmental impacts of development projects. Review of EMS's role in implementing EIA recommendations and scoping of EMS's elements for meeting EIA follow-up requirements will be presented in Section 5.3 and 5.4.

## **5.2.4 Problems of ISO 14000 Implementation and Certification**

Many efforts have been put on studying the problems associated with ISO 14000 certification and implementation. A range of authors (Babakri et al. 2003; Rondinelli and Vastag, 2000; Zutshi and Sohal, 2002a) focus on identifying the problems of ISO 14001 for small firms. In general, there are four types of barriers to the implementation and certification of ISO 14000 EMS (Ofori, 1999; Mbohwa and Fukada, 2002; Babarkri et al., 2003). These barriers can present real challenges for many organizations.

### **5.2.4.1 Management commitment**

The first set of hindrances is management barriers related to the knowledge, aptitude and attitude of the organization's top management. The management may not be familiar with modern management practices involving corporate environmental policy and performance. They may also pay little attention to environmental issues. Griffith (1994) considers the absence of "top-down" management as perhaps the most important obstacle to implementing EMS.

Lack of data to demonstrate cost-effectiveness is another hurdle for justifying implementation and certification of ISO 14000 to the top management who have the authority to allocate resources. They must be convinced that the expense of implementation and certification will be more than offset by the benefits derived from the resulting system and related changes. The information based on disciplined budget and tracking of environmental quality costs is

needed for the decision makers to defend their decision to support EMS implementation and certification. Some of the data collected may be hard cost data, but much of the benefit data may be anecdotal (Ofori, 1999).

#### **5.2.4.2 Organizational structure and resources**

The second set of barriers to ISO 14000 implementation concern the organizational structure and characteristics of companies. Many companies may lack a clear policy, systematic organization, proper documentation, and other key features of a comprehensive corporate management system (Rondinelli and Vastag, 2000). An organization may also lack staff resources to undertake the development and implementation of an EMS. Funding of resources may also not be available for implementation and certification, for example, to meet the cost of certification, improving procedures or training staff (Babakri et al., 2003).

When implementing ISO 14001 EMS, the integration of this management system with other existing management systems within the organization is associated with lots of difficulties. Shillito (1995) sees responsibilities for implementation and operation, and professional and institutional pressures as important hurdles on the path towards integration. Accommodating the many diverse activities within an organization can be problematic. Difficulties arise where discrete parts of the organization fail to maintain uniformity or continuity across the EMS and firm's general management system.

#### **5.2.4.3 Organizational change**

Organizational change is another issue in EMS development and implementation. Such a change may be necessitated by the EMS. However, the resistance to concepts and applications of EMS can hinder its development and adoption.

It is difficult to convey the concept of an individual management system like quality or environmental system. Employees often need thorough training and education to be more aware of the need for environmental control and increase their adaptability to change and change to a proactive attitude (Wong, 1998).

#### **5.2.4.4 Operational issues**

Finally, an organization is likely to encounter a number of concerns and problems at the operational management level. The main issues include the following: performance specification; possible superficial environmental review; excessive paperwork; and poor communications (Babakri et al., 2003).

The study by Dao (2002) about ISO 14001 certification and implementation in Vietnam states that, 'there is little knowledge of the standards' and 'there is low awareness among staff members' are regarded by respondents as important problems related to ISO 14000 certification and implementation of the EMS in the context of Vietnam. Dissemination of the standards in Vietnam is quite limited. Though environmental awareness among managerial

staff is high as reflected by the some mentioned findings, the general workforce has very low awareness. For some respondents, ISO 14001 just documents the procedures they already have in place.

### 5.3 LITERATURE REVIEW OF EIA-EMS LINKAGE

The role of environmental management systems in meeting EIA follow-up requirements has already been recognized. It is possible to find an implied reference to the environmental management tail end of EIA within the wording of the National Environmental Protection Agency, Vietnam (NEPA) itself when, in Section 102(2)(c)(ii), reference is made to the avoidance of adverse environmental effects. Ongoing environmental management is one of the approaches to achieve that end. Indeed, the importance of environmental management was realized quite early by Caldwell (1982) who said:

“This concept of monitoring, follow-up, and feedback would extend the EIS beyond a cautionary or action-forcing device to a continuing tool of management and evaluation. The full decision record and the feedback loop would assist an agency to assess the accuracy of its predictions, to see how mitigation measures have been working, and to adapt subsequent decisions as feedback may indicate” (Caldwell 1982, p. 135).

This idea that EIA needs to be carried forward into ongoing environmental management has been termed adaptive environmental assessment and management (AEAM) by Holling (1978). AEAM highlights the importance of environmental management and also the cycle of impact monitoring and adapting management in response thereto.



Holling's (1978) early work has been continued by others (for example, Storey, 1986; Lee, 1993). These authors have explained the concept of adaptive environmental management as a systematic response to scientific uncertainty and how best to deal with such uncertainty in a decision making context. Storey (1986) calls for a greater emphasis on the environmental management aspects of projects, rather than focusing solely on the impact prediction process leading up to the decision to proceed with development projects.

In an environmental audit of artificial waterway projects in Western Australia, Bailey et. al. (1992) examine the relationship between the success with which impacts were predicted and the management response to them. They find that accuracy of impact predictions has no bearing on environmental management activities, with management responses to actual impacts being implemented both for inaccurately predicted impacts and for unforeseen impacts.

Culhane (1993) proposes a managerial model of environmental assessment in which environmental management objectives are determined from environmental impact statements (EISs) and any conditions established by environmental assessment decision-makers on a particular proposal. This model focuses upon the role of the individual manager. It is intended that these objectives are then addressed by project managers to ensure that project and environmental requirements are met. The important addition made by Culhane (1993) is to extend understanding to the post-decision stage. The EIS is seen to provide a set of management objectives for the manager to follow.

Results of the workshop on effectiveness of the EIA follow-up workshop in Canberra in 1995, and the results of the study by Morrison-Saunders (1996c) also acknowledge the environmental benefits accrued from ongoing adaptive management and monitoring programmes. This has largely occurred in response to observed impacts including both inaccurately predicted impacts in EIA reports and unexpected impacts. The occurrence of adaptive environmental management and monitoring appears to have arisen largely from the practice by EA decision-makers in Western Australia of setting environmental objectives for proponents to meet rather than prescriptive undertakings.

Ridgway (1999) states that the role of an EIA must be reviewed within the framework of other environmental tools, particularly the environmental management system standard ISO 14001 and that the audit and review role of the EMS could be used to ensure that the recommendations of the EIA are implemented throughout the life of the project.

According to Arts et al. (2001), EIA follow-up is not a static exercise and the process should be subject to ongoing adjustment and improvement. In his discussion about Canadian EIA practice, Włodarczyk (2000) suggests that improvements to follow-up need to be made in an incremental but continuous fashion. He stresses the importance of an approach that can be implemented quickly, that can evolve over time, and that includes a mechanism for tracking and evaluating the success of monitoring and follow-up.

This is consistent with the notion of adaptive environmental management in the face of uncertainty. Morrison-Saunders and Bailey (2000) report on the environmental management activities for six case studies that had undergone EIA in Western Australia. They find evidence of a flexible approach that promotes ongoing and adaptive environmental

management and monitoring and is based on meeting environmental objectives rather than prescriptive mitigation requirements alone.

They find that, with an adaptive environmental management approach, project managers respond to inaccurate and unexpected impacts, which may otherwise have been ignored. Morrison-Saunders and Bailey (2000) also suggest that it is useful to focus on environmental management outcomes during EIA follow-up studies to determine the extent to which the environment was protected as intended by the EIA process.

Dik and Morrison-Saunders (2002) identify a preference for approval conditions requiring environmental management plans (EMPs) among both staff of the EIA regulators and environmental managers in industry in Western Australia over conditions prescribing specific mitigation measures. This preference appears to stem from the flexibility that this type of condition offers the proponent the simplicity both of production conditions and auditing for regulators. In addition to preferring this flexible approach to EIA follow-up, state officials in charge of EIA suggest that EMPs are more likely to result in a positive environmental outcome.

Marshall and Morrison-Saunders (2003) see that an EMS could be adapted to meet most of the EIA follow-up needs. EIA follow-up forms the linkage between EIA and project's operational management.

## 5.4 SCOPING OF ELEMENTS FOR THE EIA/EMS LINKAGE

The four key elements of EIA follow-up include (Arts et al, 2001):

- **Monitoring:** the collection of data and comparison with standards, predictions or expectations;
- **Evaluation:** the appraisal of the conformance with standards, predictions or expectations as well as the environmental performance of the activity;
- **Management:** making decisions and taking appropriate action in response to issues arising from monitoring and evaluation activities; and
- **Communication:** informing the stakeholders as well as the general public about the results of EIA follow-up.

Essential requirements of follow up monitoring and management as defined by Au and Sanvicens (1996) are as follows:

- inspect and check the implementation of the terms and conditions of project approval;
- review or re-assess the environmental implications of any design changes;
- monitor the actual effects of the project activities on the environment and the community;
- monitor the timing, sequence, location and extent of the actual project activities to anticipate the likely environmental effects;

- verify the compliance with regulatory requirements and applicable standards or criteria;
- formulate and implement action plans to avoid, reduce, or rectify any adverse impacts;
- verify the accuracy of the EIA predictions and the effectiveness of the mitigation measures;
- provide feedback to project management control to adjust the programming, design or location of the activities or the method of carrying them out;
- provide feedback to the EIA process to improve impact prediction and mitigation practices; and
- provide feedback to future planning and design of development.

Tables 5.1 to Table 5.5 are the five matrixes showing the potential relationship between EIA and EMS. The results show that there is potential for EMS-EIA follow up linkage and for using EMS for execution of EIA follow-up requirements because there are aspects of ISO 14001 EMS that can be used for EIA follow-up.

Table 5.1 *Inspect and check the implementation of approval terms and conditions and formulate and implement impact minimization action*

<p>Essential requirements of EIA follow up monitoring and management</p>	<p>Inspect and check the implementation of the terms and conditions of project approval</p> <p>Formulate and implement action plans to avoid, reduce, or rectify any adverse impacts</p>
<p>Aspects of ISO 14001 EMS that can meet or can be modified to meet the requirements of EIA follow up</p>	<p><i>Commitment and policy</i> (ISO 14001 – clause 4.2): In this phase, the organization defines an environmental policy and ensures commitment to it. ISO 14001 provides that creating an environmental policy is the first step in implementing an EMS as it formally outlines the commitment of an organization to environmental management.</p> <p><i>Objectives and targets</i> (ISO 14001 – clause 4.3.3) The objectives and targets of the organization are in conformation of legal and other documented requirements (i.e. codes of practice, local government agreements, non-regulatory guidelines) which pertain to organization’s environmental aspects (Williams et al., 1998)</p> <p><i>Environmental management programmes</i> (ISO 14001 – clause 4.3.4) With the commitment in mind and having formulated a plan to fulfill its policy, organization plans how these are going to be achieved through its environmental management programs (EMPs). EMPs are required to address documented environmental objectives and targets and assist with improving environmental performance (Williams et al., 1998). More specifically, an EMP outlines time schedules, resources and responsibilities to achieve set objectives and targets.</p> <p><i>Implementation and operation</i> (ISO 14001 – clause 4.4) The next step in ISO 14001 EMS requirements is that the organization puts the plan into action by providing resources and support mechanisms. Implementing the programs means getting human, physical, and financial resources in place to achieve the organization’s objectives and targets (Tibor, 1996).</p> <p>With a system in place to mitigate and monitor organization’s environmental aspects, it ensures, if the objectives and targets encompasses the terms and conditions of project approval, or at least provides a framework for implementation of the terms and conditions of project approval and help to avoid, reduce, or rectify any adverse impacts.</p>

Table 5.2 Review environmental implications of design changes

Essential requirements of EIA follow up monitoring and management	Review or re-assess the environmental implications of any design changes
Aspects of ISO 14001 EMS that can meet or can be modified to meet the requirements of EIA follow up	<p><i>Planning</i> (ISO 14001 - clause 4.3) The organization must formulate a plan to fulfill the environmental policy. Planning is based on a review of the organization's activities, products and services, the environmental aspects and risks, legislation and other requirements, and available options for improvement (Craddock and Cumming, 1998).</p> <p><i>Environmental aspects</i> (ISO 14001 - clause 4.3.1) ISO 14001 requires the organization to identify the environmental aspects in order to determine which have or can have significant environmental impacts and prioritize these as such (Tibor, 1996; Williams et al., 198). This ensures that the aspects relative to these significant impacts are reflected in the organization's objectives and targets (Tibor, 1996).</p> <p>This practice allows for identification of environmental implications of the project operation with any design change, assess the adequacy of the mitigation measures previously recommended in the EIA, and determine what measures or design modifications are necessary to achieve the intended environmental performance.</p>

Table 5.3 Monitor effects of the project activities on the environment and the community

Essential requirements of EIA follow up monitoring and management	<p>Monitor the actual effects of the project activities on the environment and the community</p> <p>Monitor the timing, sequence, location and extent of the actual project activities to anticipate the likely environmental effects</p>
Aspects of ISO 14001 EMS that can meet or can be modified to meet the requirements of EIA follow up	<p><i>Checking and corrective action</i> (ISO 14001 - clause 4.5) The organization is required to measure, monitor and evaluate its environmental performance against its objectives and targets. A major aspect of implementing an EMS is to check and monitor the system, discover problems, and correct them (Tibor, 1996). It is essential that those operations with activities which may lead to significant environmental impacts be regularly monitored. It is required that records are kept to assist in the tracking of environmental performance, and results used to make compliance with both legal and other documented requirements (Williams et al., 1998).</p> <p><i>Emergency preparedness and response</i> (ISO 14001 - clause 4.4.7) The organization must be ready to respond to abnormal operating conditions, accidents and emergency situations (Tibor, 1996). It is important that the organization identifies and documents emergency preparedness and response procedures for the prevention and mitigation of associated environmental impacts.</p> <p><i>Structure and responsibility</i> (ISO 14001- clause 4.4.1) Management structure, as well as the implementation of an EMS and its maintenance responsibilities needs to be documented, defined and communicated throughout the organization (Williams et al., 1998). Furthermore, commitment to continual funding of the implementation and maintenance of the EMS is fundamental</p> <p>With these mechanisms, EMS provides pre-determined event-action or emergency plans which tie to the monitoring programmes or inspection/surveillance results, with well defined responsibilities, channels of communication and actions for effective effects monitoring and impact management.</p>

Table 5.4 Provide feedback to project management control and EIA process

<p>Essential requirements of EIA follow up monitoring and management</p>	<p>Provide feedback to project management control to adjust the programming, design or location of the activities or the method of carrying them out;</p> <p>Provide feedback to the EIA process to improve impact prediction and mitigation practices; and</p> <p>Provide feedback to future planning and design of development.</p>
<p>Aspects of ISO 14001 EMS that can meet or can be modified to meet the requirements of EIA follow up</p>	<p><i>Review and continual improvement</i> (ISO 14001 - clause 4.6)                  In this phase the organization reviews and continually improves the EMS to achieve improvements in overall environmental performance. To improve its overall environmental performance it is essential for an organization to review and subsequently continually improve its EMS. The review looks at the EMS audit results, at changing circumstances and the organization's commitment to address possible changes in policy, objectives, and other EMS elements (Tibor, 1996). To complete the circle of continual improvement, management should plan corrective and preventive action to improve the EMS and should follow up to ensure the actions were taken and were effective (Tibor, 1996).</p> <p>This mechanism provides continual feedback on overall environmental performance and thus, provide feedback to project management control to adjust the programming, design or location of the activities or the method of carrying them out; provide feedback to the EIA process to improve impact prediction and mitigation practices; and provide feedback to future planning and design of development.</p>

Table 5.5 Verify the compliance with regulatory requirements and applicable standards and the accuracy of the EIA predictions and the effectiveness of the mitigation measures

<p>Essential requirements of EIA follow up monitoring and management</p>	<p>Verify the compliance with regulatory requirements and applicable standards or criteria</p> <p>Verify the accuracy of the EIA predictions and the effectiveness of the mitigation measures</p>
<p>Aspects of ISO 14001 EMS that can or can be modified to meet the requirements of EIA follow up</p>	<p><i>Checking and corrective action</i> (ISO 14001 - clause 4.5)                  One of the fundamentals of continual improvement required under ISO 14001 EMS is the periodical audit of the EMS by fair-minded external or internal persons. The aim is to make sure the EMS “conforms to planned arrangements for environmental management” and has been properly implemented and maintained. The other aim of the EMS audit is to provide information on its results to management (tibor, 1997).</p>

In this research, preliminary analysis of documentary data regarding EIA and EMS components and procedures is done to develop a general framework for EIA/EMS linkage. Proposed EIA/EMS linkage hypothesizing the role of EMS in meeting EIA follow-up requirements is illustrated in Figure 5.5.



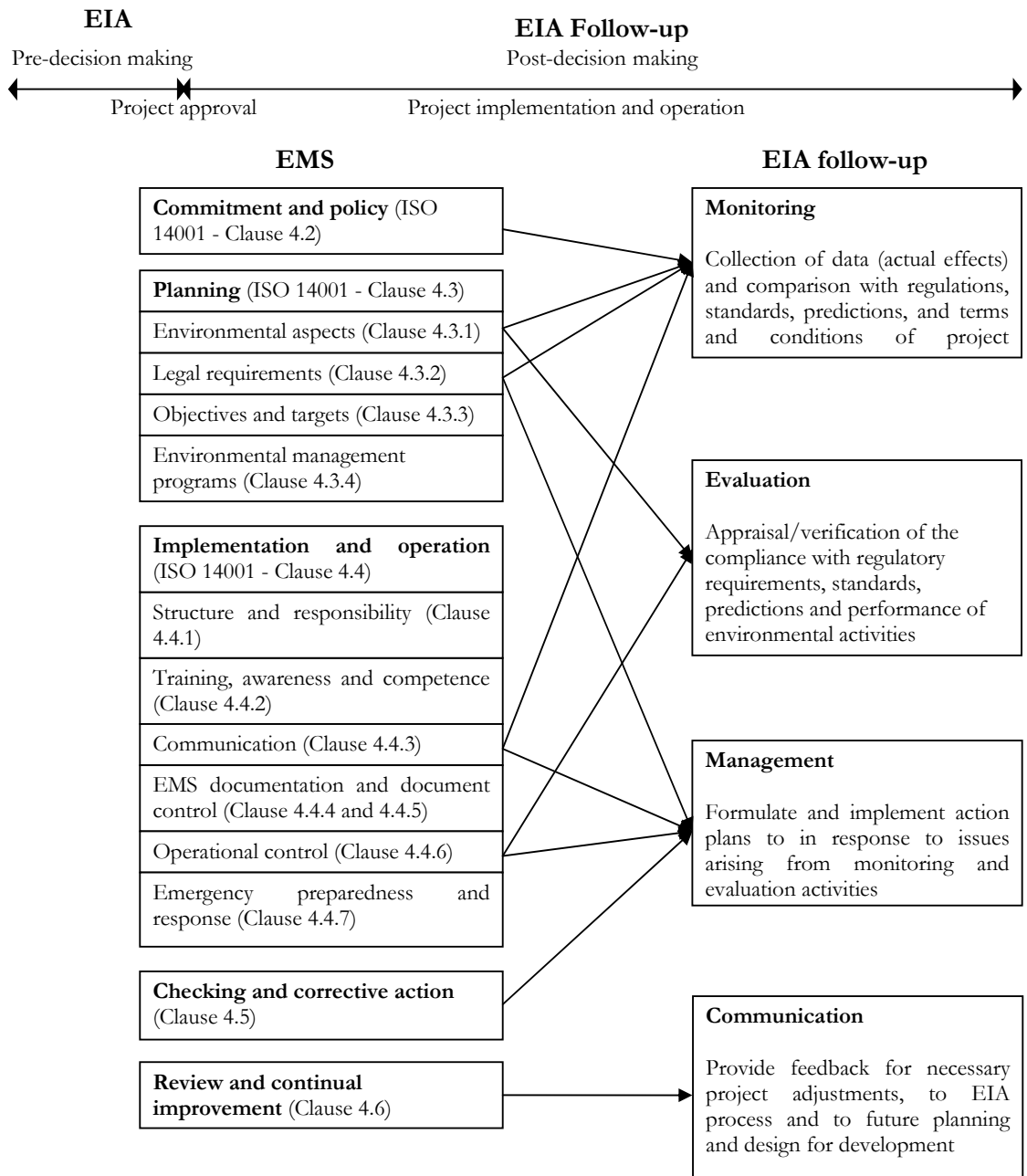


Figure 5.5 EIA/EMS linkage

The framework will be refined through detailed case studies of two projects which have undergone EIA and currently having an EMS in place (see Section 6.3.1). Experiences of environmental managers obtained from the open-ended interviews will provide more support for the development of the proposed linkages, which are tested through the interviews and quantitative survey with target population companies.

ISO 14001 EMS standard forms the basis for elements of this management system for comparison while Art et al. (2001) and Au and Sanvicens (1996) composition of EIA follow-up elements and requirements are used for the comparison purpose.

## **5.5 CONCLUSION**

EIA and EMS are important environmental tools at the planning and operational stages of the project. Impact assessment at the pre-decision stage of the project is necessary but, to achieve the environmental protection purposes, ongoing environmental management measures at the post-decision stage is important to mitigate the occurring environmental consequences of the project. ISO 14001 is an important management tool that helps to achieve corporate environmental objectives during the operational stage of the project. Its role in addressing corporate environmental issues, besides other benefits, has been widely recognized and therefore, this management tool proves to be a potential tool in meeting EIA follow up requirements.

# CHAPTER 6

## RESEARCH METHODOLOGY

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This chapter explains the research methodology to come up with the model of firm compliance with environmental laws. First, a discussion of triangulation and the rationale for choosing the method is presented. It is followed by the overall research design. The advantages, disadvantages and application of triangulation - three methods of case studies, key informants interviews and survey questionnaire - will be discussed to provide justification for the selection of these methods. Then comes the discussion of the issues focused upon in the conduct of the research including validity and reliability. The next sub-section details the methods for data collection and the section concludes with a discussion of the data analysis techniques used.

### 6.1 RESEARCH DESIGN

For the purpose of exploration of the determinants of firm compliance with environmental laws, besides the review of related literature, the research aims to uncover and understand the reasons for compliance and noncompliance in the view points of actual firms operating in Vietnam through exploratory data collection and analysis. Determinants of firms' compliance behavior are developed around the generic framework of Scott's "Three Pillars of Institutions" in the specific context of Vietnam using qualitative data. The use of EMS in

meeting the follow up requirements of EIA is studied in depth for development of variables. Triangulation method is used for development of variables employing explorative case studies and interviews, which will be quantitatively tested through the use of the survey questionnaires. The overview of research design and methodology is presented in Figure 6.1.

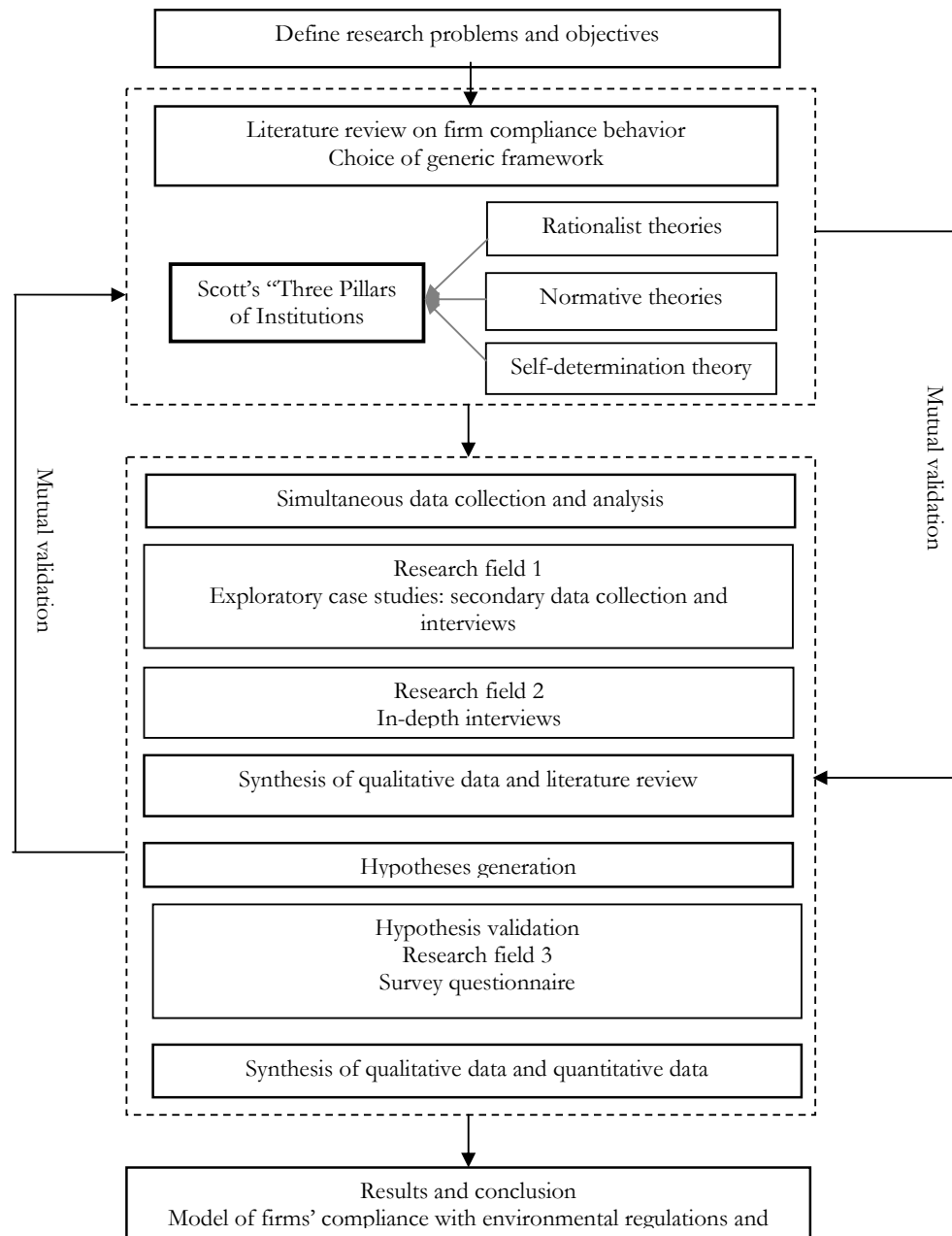


Figure 6.1 Research design and methodology

The research is carried out through four main phases including:

**Phase 1:** Defining research problems and objectives

In this step, overall research objectives and specific ones are clearly identified, guiding the implementation of the next steps to achieve the set objectives.

**Phase 2:** Choice of generic conceptual framework

After the research objectives have been defined, a literature review of firm compliance theories is done to determine the choice of generic framework. Scott's "Three Pillars of Institutions" is selected as the generic conceptual framework for the study as it provides for an encompassing framework for the study of organizations which looks into all three elements of firm behavior including the regulative, normative and cognitive aspects.

**Phase 3:** Operationalisation of the theoretical framework

Determinants of firms' compliance behavior are developed around the generic framework of three pillars of institutions in the specific context of Vietnam using qualitative data. The use of EMS in meeting the follow up requirements of EIA is studied in depth for development of variables.

Explorative case studies and interviews are used in combination with literature review for development of variables for the conceptual framework of firm compliance. The developed framework is then validated using a survey questionnaire with quantitative data analysis in Phase 4.

The interviews with open ended questions are conducted with environmental managers (or equivalent) in fifteen companies who have been certified to ISO 14001 EMS and have EIA for their current facilities. The interviews are audio-taped and subsequently transcribed. The transcribed data is analysed using coding of key words and themes of which the results were synthesized into a series of hypotheses which are then quantitatively tested in the next step through extensive survey questionnaire with the sample population of 63 companies under study.

#### **Phase 4:** Testing the hypotheses

In phase 4, hypotheses are tested and research questions answered using quantitative data from the survey. The combination of three methods of case studies, interviews and survey is based on the triangulation concept which states that information about a single phenomenon should be collected by using at least three different techniques (Hammersley and Atkinson, 1983). The three methods serve as supplemental evidence and cross-checks on information collected through the other methods, and thus improve the findings' validity. This is consistent with the grounded theory approach that acknowledges the use of different sources of data with each help to partially validate the others.

### 6.2.1 Generation versus Verification

Testing and discovering have always been the basic task of doing research. Normally, in a research study, the emphasis is placed in one form or another. History has witnessed shifts in emphasis over these two forms of research orientation with books and research projects on verification dominating the bookshelves for many years now. This is consistent with Glaser and Strauss's (1967) observation of the primacy of verification on their contemporary sociological scene and hence, the absence of generation theory studies. In saying this, the purpose is not to discuss the conflict between verifying and generating theory or the concerns over the primacy of either of the two forms. As Glaser and Strauss (1967) observe, primacy of emphasis depends only on the circumstances of research, on the interests and training of the researcher, and the kinds of material he needs for his theory. This research employs a combination of generation and verification methods. The determinants of firm compliance are generated as the results of the qualitative case studies and interviews, which are then tested by the quantitative survey.

A framework of firm compliance with environmental laws is developed based on a generic framework of firm behavior of Scott (2001). The task of verification is done throughout the course of the research by mutual verification among different sets of data (literature review, case studies, and interviews) and finally, by the quantitative data using the survey

questionnaires. In the next sections, Section 6.3 on Data Collection and Section 6.4 Data Analysis, details of the data collection and data analysis of case studies, key informant interviews, and survey are discussed.

## **6.2.2 Qualitative versus Quantitative**

Historically linked with the change in emphasis between generation and verification of theory was the clash between advocates of quantitative and qualitative data. Quantitative research is concerned with the collection and analysis of numerical data, whereas qualitative research is concerned with non-numerical and unstructured data (Punch 1998) consisting of “language in the form of extended text” (Miles and Huberman, 1994; p.9).

This research again does not discuss this conflict since each form of data is useful for both verification and generation of theory (Glaser and Strauss, 1967). In the case of this study, both forms are necessary, not quantitative used to test qualitative, but both used as supplements, as mutual verification. They are different forms of data on the same subject, which, when compared, each generate theory (see Section 6.3 on Data Collection).

Miles and Huberman (1994) detail six different types of qualitative research strategies. They are ethnography, field study, participant and non-participant observation strategies, interview strategies and archival strategies. Yin (1994) takes a slightly different approach to that of Miles and Huberman (1994) by identifying case studies, experiments, survey, history, and computer based analysis of archival records as research strategies.



According to Marshall and Rossman (1989) the two fundamental techniques used to gather information in qualitative research are observation and in-depth interviewing. Observation techniques are utilised when the events, behaviours and artifacts in the chosen social setting are systematically described. An in-depth interview has been described by Marshall and Rossman (1989) as an interaction between an interviewer and interviewee with the purpose of obtaining valid and reliable information. According to Ryan and Bernard (2000), there are three types of qualitative data - audio, text and video, with the various techniques employed for collection and analysis of qualitative text data.

Qualitative data can be collected using a range of methods and from an array of sources including interview transcripts, recordings and notes, observation records and notes, documents and the products and records of material culture, audio visual materials, and personal experience materials (Punch, 1998). The spoken and/or written representations and records of human experience are studied, based upon observation, interviews and/or documents. The data require some form of processing once collected, but prior to analysis, for example, transcribing a tape recording (Miles and Huberman, 1994).

There is more flexibility in the timing of the structure of the research for qualitative research compared with quantitative (Figure 6.2).

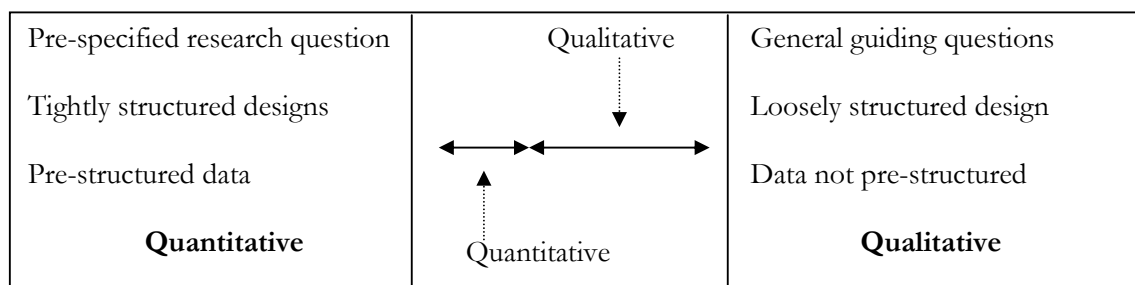


Figure 6.2 Pre-specified versus unfolding: the timing of structure (Punch, 1998)

The left hand side of the figure describes the characteristics of the quantitative method while the right hand side describes the qualitative one. As seen in the middle portion of Figure 6.2, the timing of qualitative method is much longer than that of the quantitative method. In quantitative research the research questions are pre-specified, the research design is tightly structured and the data are pre-structured. On the right hand side of Figure 6.2, at the start of data collection, there is little structure to the data. There are no pre-established codes or categories. During the analysis of the data, the structure of the data, codes and categories emerge from the data (Punch, 1998). Qualitative research can take on a range of structures from pre-specified research questions through to general guiding questions, and from structured to loosely structured design and data.

The characteristics of qualitative research as presented above direct the focus of this research on qualitative during the initial phases of the research for a number of reasons. First, it is the nature of the research problem which lends itself to qualitative type of research. In this case, it is an attempt to uncover the nature of companies' compliance behavior and experiences on EIA and EMS which are linked with lots of documentary data and qualitative data in the form of transcripts of interview of the participants. These are techniques normally associated with qualitative methods (see Yin, 1994; Marshall and Rossman, 1989). Second, it is the purpose of the research which calls for the need to go to the field and discover what happens there without being imposed by knowledge from the literature (see Strauss and Corbin, 1990). Section 6.3 on Data Collection and Section 6.4 on Data Analysis discuss the types of data collected and analysis techniques employed.

### 6.2.3 Triangulation Method

Triangulation has been broadly defined as “the combination of methodologies in the study of the same phenomenon” (Denzin, 1978; p. 291). Triangulation can occur within a single method, which addresses internal consistency and reliability issues using a latent variable approach with multiple indicators (Jick, 1979). For example, examining multiple scales in one survey could be considered a within-method approach. On the other hand, between-method triangulation can address issues related to external validity and provide evidence of cross-validation (Jick, 1979). In this case, both an interview and a survey can be used to provide convergent validity information, which contributes to construct validity. Jick (1979) recommends the use of qualitative data as an integral part of triangulation, for it “functions as the glue that cements the interpretation of multimethod results” (p. 609). Miles and Huberman (1994) suggest that researchers can triangulate in different ways: by data source (for example, workers, students, researchers), by specific methods (for example, interview, survey, observation), or by data type (for example, qualitative, quantitative).

Rogelberg and Brooks-Laber (2001) argue that the use of multiple methods can advance understanding of constructs, which leads to scientific progress. Jick (1979) states that triangulation can result in greater confidence in results, more creativity in research design, better understanding of divergent results, and a more comprehensive integration of theories. Triangulating with qualitative methods allows the researcher to measure the construct in a more proximal manner, thus allowing a clearer understanding of the complexity of the situation under investigation. This is in contrast with quantitative methods, which provide for the estimation of effect sizes, but distances both the researcher and the generalisability of results from the phenomenon of interest.

In the present research, a triangulation approach is proposed to be employed to address firm compliance behavior with regard to environmental laws, using both qualitative (secondary data, open-ended interviews) and quantitative methods (survey). This serves as an application of triangulation using qualitative methods to add to the understanding of existing quantitative results.

Researchers (for example, Barney et al., 2001; Jick, 1979) have long argued that qualitative and quantitative methodology should be used to complement one another. If verification is done by using only one technique, there may be a problem with data validity. It is thus often preferable to combine different methods rather than use a single method in assessing needs (Reviere and Berkowitz, 1996). Hammersley and Atkinson (1983), in their triangulation concept, argue that information about a single phenomenon should be collected by using at least three different techniques. Different methods will serve as supplemental evidence and cross-checks on information collected through other methods. The information gathered from various sources can corroborate one another. For example, although key informant surveys require minimal time and resources, they are impressionistic. Surveys, by contrast, are usually expensive, but provide the target populations' view (to the extent they know them) and can clarify information obtained from other sources.

In fields such as organizational behavior, qualitative methodology is rarely used in conjunction with quantitative methodology (Locke, 2001; Locke and Golden-Biddle, 2002). In part, insufficient training (Cooper, 2001) and a lack of clear and detailed descriptions of

triangulation (Jick, 1979) have contributed to this state of affairs. As such, this research seeks to enhance construct validity through the use of qualitative in combination with quantitative methods.

The multimethod approach has been applied in firm behavior study and environmental management. Berson et al. (2003) uses an induction-deduction-verification process to study leadership behaviors. The level specification begins with induction of constructs, followed by qualitative and quantitative operationalizations, convergence of information via triangulation and aggregation tests, and continued construct development until the level of analysis is accurately specified. Using both theory and data from the literature on leadership, they provide an example of this (Berson et al., 2003).

Fillis (2006) uses data triangulation combining both conventional quantitative and qualitative methods of the postal survey, the in-depth interview and biographical data to explore the behaviour of small firms. According to the author, adoption of a biographical approach to entrepreneurship research can result in the uncovering of rich descriptions of valuable data, which would otherwise remain undiscovered if more conventional approaches were adopted.

Regarding the weaknesses of multiple methods, use of different methods with different groups of respondents can yield different perspectives, sometimes contradictory on the findings (Laffrey et al., 1989). Combining multiple methods can be expensive. In the context of limited resources, executing a single method very well may present greater benefit than executing multiple methods poorly. Also, multiple methods should only be used when they

are a necessary part of answering the questions under investigation. Some of the methods, for example, observation, require substantial personal resources and do not add to the information gained through other methods.

Miller and Solomon (1996) acknowledge that better planning and clearer conception of the methodological direction would help to eliminate some of the “trial and error” problems, and save the time and expense for the data collection. The important principle is that the researcher has to apply correctly and appropriately the qualitative and/or quantitative methods to fit the stated objectives (Reviere and Berkowitz, 1996).

In the following sections, the advantages, disadvantages and application of the three methods conforming with the triangulation concept, that meet the research objectives are discussed and developed for the data collection. They are the most commonly used methods of secondary data analysis, interviews and survey questionnaire.

**1. Secondary Data Analysis.** Different from survey, which involves the firsthand collection of data, secondary data analysis makes use of available data. According to Singleton and Straits (1999), the sources of available data may be placed in five broad categories: (1) public documents and official records, including the extensive archives of the U.S. Census Bureau, (2) private documents, (3) mass media, (4) physical, nonverbal materials, and (5) social science data archives. These categories provide a useful summary of data sources, although they do not constitute a mutually exclusive typology. Any data source may be placed in one or more of these categories.

Secondary data analysis provides the social researcher with the best and often the only opportunity to study the past, to understand social change, to study cross cultural problems, to improve knowledge through replication and increased sample size and to reduce research costs (Hyman, 1972). In secondary data analysis, the evaluation and refinement of the data is important (Singleton and Straits, 1999).

As the foregoing studies on firm behavior and records of firms' environmental performance are available from literature and the firms themselves, secondary data analysis is selected for this study. Especially, the EIA reports are systematically maintained within firms and the relevant authorities and the documentation of firm ISO 14001 EMS is a compulsory part of certified firms, that make it convenient for the researcher to access this source of data for assessment of the status and performances of firm compliance with environmental laws, the constituents of the current organizational fields of Vietnam corporate environmentalism and its associated institutions. Environmental records, impact assessment report and management activities archives are thus collected for analysis.

**2. Key Informant Interview.** Key informants are the experts. They may be the lawyers, judges, physicians, ministers, planners, group leaders, and service providers who are aware of the needs and services perceived as important by a community (Witkin and Altschuld, 1995). Surveys involving these people are generally quick and relatively inexpensive to conduct. Interviews with key informants can help to identify the important issues, such as areas of unmet needs, organizational factors, and information on existing records or barriers, and previous programs and new solutions for the research questions (Witkin and Altschuld, 1995).

Key informant interview has a number of disadvantages. Since key informants are important members of their communities, these people may have an organisational perspective on community viewpoints and may be biased toward the activities in which they themselves are involved. Key informant reports often overestimate problems facing the target population and underestimate the population's willingness to participate in programming (Witkin and Altschuld, 1995).

As recommended by Witkin and Altschuld (1995), Reviere and Berkowitz (1996), key informant interviews should be used at the same time with survey questionnaires. It can help to identify issues and areas of the research and to provide input to questionnaire content. Key informant interview is therefore selected as part of a larger data collection strategy of this research. It includes interviews with environmental managers and key persons in the company's management board of companies in Vietnam for their inputs on determinants of firm compliance and noncompliance behavior.

**3. Survey of firms.** Survey research in its many forms has been widely considered as the most common technique to measure moods, thoughts, attitudes and behaviours (Reviere and Berkowitz, 1996). It is frequently used in firm behavior assessment (for example, Fillis, 2006).

Survey offers several advantages. It can provide detailed descriptions of populations accurately and economically. It is relatively easy to self-administer. It can gather a great deal of data in a relatively short period of time because respondents do not have to be in the presence of the survey assessor. Data collected can generally be aggregated and analysed by computer processing.



One disadvantage of survey is that it deals almost exclusively with reports of behaviour rather than observation of behaviour. Subsequently it does not provide a very good understanding of the context within which behaviour may be interpreted over an extended period of time. For this kind of understanding, the best approach is field research, or case studies, discussed in the previous subsection which helps to address the bias of survey if the data is interpreted by views of respondents rather than actual observation of the case under study.

In addition, the survey process can be complex, time-consuming, and expensive (Edwards and Thomas, 1993). This is actual the case of the current research when the survey is done in the two distant regions of Vietnam (the North and the South). It is very difficult to get respondents' approval to take part in the survey. Efforts have been made to design the survey in a way that makes it easy for interviewees to understand and answer. Additional financial support is sought and provided by the Asia Research Institute of NUS.

Despite the disadvantages, the survey is a significant part of comprehensive assessments of human institutions and human behaviours (Witkin and Altschuld, 1995). Therefore, survey is selected as one of the data collection methods for this research. The chosen survey method is based on constructed and validated methods (for example, Miller and Solomon, 1996). In the present study, environmental managers of target firms are surveyed using the developed questionnaires. Details of the firm survey are discussed in section 6.2.

**4. Combination of multi-methods.** The multimethod approach of this research includes three data collection methods: the firm survey, interviews with environmental managers/staff, and secondary data analysis. These techniques are used to develop and assess the determinants of firms' compliance with environmental laws. The assessment covers

several issues: how valid are the constructed attributes, what factors are determining firms compliance and noncompliance performance and how firms view the importance of each attribute to their own firms. Each of the three methods provides information that can corroborate one another.

The secondary data analysis and open ended interviews use qualitative data to develop the attributes of firm compliance behavior. The developed attributes are combined with the literature review on firm compliance with develop a framework of firm compliance with environmental laws. The firm survey, which is then employed, uses quantitative statistical analysis to test whether an attribute belongs to a specific firms' motivation and help to rank the attributes in order of importance. The construct analyses provide cross-checks on the hypotheses testing.

Together, the three methods identify the most important attributes for policy making process to ensure compliance of firms. In the next sections, details of the data collection and data analysis of the secondary data, open ended interview and survey questionnaire, are discussed.

### **6.3 RESEARCH VALIDITY AND RELIABILITY**

Tests that can be used to establish the quality of empirical research are construct validity, internal validity, external validity and reliability (Yin, 1994; Kvale, 1996). These tests verify the appropriate conduct of the research and the analysis of the data. The features of each test and how this research incorporated validity and reliability are explained in the following sections.

### 6.3.1 Construct Validity

Construct validity is concerned with establishing the correct operational measures for the concepts under study (Yin, 1994). This can be achieved by using multiple sources of evidence, establishing a chain of evidence and having the draft case study reviewed by the participants (Yin, 1994) (in the case of this study the interviewees). In line with Yin's (1994) multiple sources of evidence, there are different ways that data can be triangulated according to Denzin (1989). They are: data triangulation (time, space and person), investigator triangulation (more than one investigator), theory triangulation (more than one perspective), and methodological triangulation (within-method and between method).

Construct validity is enhanced in the following ways (Yin 1994; Brownell, 1995):

- Employing multiple sources of evidence: interviews with environmental managers of companies selected for the study; environmental information from internal company reports (for example, annual reports, stand-alone environmental reporting); documentary data from external sources such as the print media, government, industry associations, documentation on the EIA and EMS and review of academic journals which were used to develop the interview questions; and quantitative data from the survey
- Collecting data, using multiple methods: secondary data collection; interviews; and survey
- Establishing a chain of evidence: compiling verbatim interview transcripts from audio tapes of the interviews; having transcripts reviewed by interviewees; and note-taking throughout the various stages of the data analysis.

In this thesis, triangulation is pursued by employing multiple data sources, that is, interview, documentary and survey method (Figure 6.3).

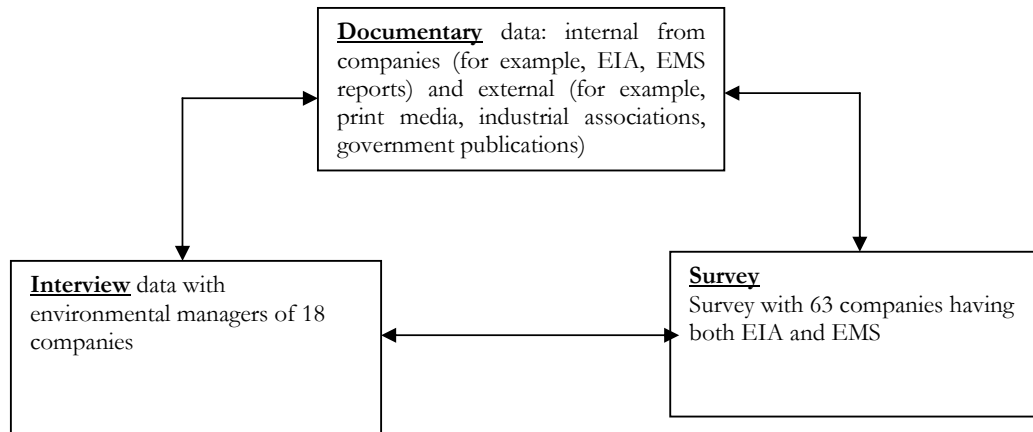


Figure 6.3 Multiple sources of evidence

### 6.3.2 Internal Validity

Internal validity is concerned with establishing a causal relationship to determine whether event X led to event Y and could be used to make inferences. It is applicable for causal (or explanatory) case studies and not for exploratory or descriptive studies (Yin, 1994). Specific tactics that can be used to achieve internal validity are “pattern matching, explanation-building and time series analysis” (Yin, 1994; p.35). As suggested by Yin (1994; p.113), a similar procedure to explanation-building that commonly cited hypothesis-generating (see Glaser and Strauss, 1967) can be used to achieve internal validity for exploratory case studies. As the objective of this the current research is not to test the effects of environmental laws/programs on firms, internal validity is not relevant.

### **6.3.3 External Validity**

External validity is concerned with establishing the degree of generalisation of the study's findings beyond the cases studied. In case study research the (Brownell, 1995; p.64): “notion of generalisability does not apply because the unit of analysis is the case itself, as opposed to the multiple individuals, situations, places and contexts which may be implicated in a single case”.

The researcher is aiming to “generalise a particular set of results to some broader theory” (Yin, 1994; p.36), that is, analytical generalisation. Yin suggests that external validity is not always needed for case studies and qualitative data. The intention of the case studies and interviews is not to generalise externally. The generalization is done in Phase 3 using survey questionnaires.

### **6.3.4 Reliability**

The objective of a study and its reliability is to ensure that procedures are documented to allow reproduction of the results should the same case study be undertaken by another researcher (Yin, 1994; Brownell, 1995; Kvale, 1996). The procedures will also demonstrate how consistent the results are (Kvale, 1996). The goal is to minimise the biases and errors in the study.

To obtain and maintain reliability for the case studies and interview methods, it has been suggested that a case study protocol and database be prepared (Yin, 1994; Brownell,

1995), though there is no agreed prescription. The case study protocol is a guide which provides details on the planned phases of the study (Brownell, 1995) for the researcher to follow, but also provides a record on what was done and how it was done. The protocol consists of at least four topics (Yin, 1994; Brownell, 1995): project overview, a list of field procedures to be undertaken or considered, a set of case study research questions and a plan of the proposed structure of the final report.

In this case study of the firms operating in Vietnam, an overview of the firm was developed prior to and through the data collection phase illustrating the emerging findings. Notes detailing the names of the interviewees, their job positions, their companies and the date, time and location of the interview will be kept in the researcher's journal.

When the interview questions are being prepared a form of checklist is used to assist in the refinement of the questions. A report framework is compiled illustrating the preliminary plan of how the findings would be presented.

#### **6.4 DATA COLLECTION**

Exploratory and explanatory qualitative case study research and data analysis techniques, supplemented by quantitative analysis in the later stage of the research, are used in this thesis. Three sets of data collection were performed: (i) secondary data (documentation, archival records, and so on), (ii) interview data and (iii) survey. Documentary information and archival records are collected to establish an understanding of the issues related to firms' compliance practices with regard to environmental laws and the use of EMS in implementing EIA

recommendations. These types of data, along with the technical literature review, formed the basis for the design of the interviews. The second set of data is derived from in-depth individual face-to-face interviews with fifteen companies that have done EIA and implemented ISO 14001 EMS. The last set of data is the survey questionnaire. The three sets of data are collected and analyzed conforming to the general procedure of theoretical sampling and constant comparison which provide for simultaneous collection and analysis of data. The literature is reviewed along the way.

#### **6.4.1 Secondary Data Collection**

Documentary information has been regarded as a source of data relevant to exploratory research (Goulding, 2002). In this research, variety of documents collected includes:

- written reports of events;
- administrative documents - proposals, progress reports, and other internal documents;
- formal studies or evaluations of the same “site” under study; and
- articles appearing in the mass media.

These documents are not treated as definite findings but rather are used to corroborate and augment evidence from other sources (Yin, 1994). First, they are helpful in verifying the correct spellings and titles or names of organizations that are mentioned in the interview. Second, the documents provide other specific details to corroborate information from other sources for further inquiry into the topic if contradiction happens to occur among the three

sources of collected data. Third, this information is used to make inferences such as new questions about EM activities of the companies in response to EIA requirements.

The most important source of this documentary data comes from archival records of organizations that have carried out EIA for their projects and currently implementing an ISO 14001 EMS. Those documents include EIA reports, lists of impacts, impact assessment and ISO 14001 EMS related documents, which are aimed at:

a) exploring the role of ISO 14001 EMS in implementing EIA follow up requirements, focusing on:

- the identification and prediction of potential impacts in EIA documents prepared at the pre-decision making stage of the project and their associated mitigation measures;
- the occurrence of actual impacts as a result of project implementation as identified by project's EMS;
- the implementation of environmental management activities to address potential and actual impacts - pre-planned in EIA report or ongoing adaptive management (ISO 14001 EMS); and
- the implementation of environmental monitoring/management programmes - compared with the proposed monitoring and management plans in EISs.

b) exploring the organizational field of corporate environmentalism for Vietnamese industry and its dominating institutions, focusing on:

- the institutional framing of the organizational field of corporate environmentalism for Vietnamese business community; and



- the institutions situated within the population of firms operating in Vietnam.

Individual impact predictions made during the pre-decision stages of EIA for each project will be recorded, together with whether or not individual predictions had an associated environmental management action related to them. In this context, it is important to see if those impacts predicted in the EIA were actually identified in practice during the operation stage of the project and how impacts that were predicted to occur were mitigated in practice under ISO 14001 EMS.

All environmental management activities proposed and/or undertaken for the case studies are recorded and compared. The relationship between impact prediction and the implementation of appropriate management actions are also examined.

Examination of environmental monitoring and environmental management plan reports is necessary in order to see if the EIA proposed monitoring programs are conformed to by firms under their ISO 14001 EMS. Management activities in response to impacts recorded for the case studies are identified and then compared against the components of the EMS to determine the elements of EMS that can facilitate or can be modified to meet EIA follow-up requirements.

The environmental impacts are coded under the six groups of water, air and soil pollution, natural resources consumption, ecological and health impacts. Environmental management activities are recorded and marked with relevant environmental concerns that they help to address as presented in the documents studied. The management activities are coded under the two broad groups of regulative responses (R) and social-ecological responses

(S). The coding provides a measure of institutional elements influencing corporate behavior.

The consideration of pollution impacts as well as the implementation of activities to address regulative requirements (for example, emission level, waste water discharge standards) would reflect firm's regulative compliance. The consideration of social and ecological impacts and associated activities to address corporate social and ecological concerns such as public health, landscaping, however, would reflect the normative and cognitive aspects of firm compliance, a motivation originated from firm's norms of morality and social responsibilities. It is, however, noted that there is no clear division between the two types of management activities in terms of influencing institutions. Some measures may reflect both regulative and normative perspective of compliance. For example, water pollution control measures would not only help the company to meet the regulatory requirement but also improve the working and living environment for company staff and local community. Whereas one activity is implemented serving both objectives, it is labeled with both signs of (R) and (S).

Actors mentioned in the data are coded as they manifest relevant constituents of the organizational fields. The actors would include both those that influence the corporate behavior through legal channels (such as regulators, enforcement agencies), internal process (such as parent companies), business interaction (peer groups, customers) and social channels (such as local community).

The findings from documentary data analysis would reveal the importance of ongoing adaptive management programs in mitigating and monitoring both predicted and unexpected impacts. Organizational field and its associated institutions are framed with participating actors and their environmental perspectives.

Both environmental managers of organizations and EMS consultants are accessed for collection of records since these two groups of people are key informants involved in EIA and EMS of a project and an organization.

## **6.4.2 Interviews**

This section discusses issues around choosing appropriate interview strategy for the research which is followed by the preparation and conduct of interviews.

### **6.4.2.1 Choice of interview strategy**

The second source of data came from individual face-to-face interviews (Miles and Huberman, 1994) that are conducted employing a structured sequence of questions (Marshall and Rossman, 1989; Yin, 1994; Kvale, 1996; Taylor and Bogdan, 1998). The majority of questions are exploratory (Yin, 1994) aiming at investigating why companies, for example, adopt particular programs and environmental tools, especially EIA and ISO 14001 EMS, and what actions and what components of the ISO 14001 EMS companies are taking/using in response to identified environmental impacts or EIA follow-up requirements. This form of interview is chosen because it has the potential to generate rich and detailed accounts of the individual's experience, which is consistent with grounded theory approach (Goulding, 2002).

All interviewees received the same series of questions in the same order. The interview questions are semi-structured in that a limited number of questions required a yes/no

response, while the remainders are open-ended and provide interviewees with an opportunity to elaborate on the issues while expressing facts and opinions. The questions are designed in this way in order to allow flexibility in the responses and not to prompt answers (Foddy, 1994).

The face-to-face interview method is preferred to a mailed questionnaire for the purposes of this research, as a mailed questionnaire is less likely to enable the collection of the exploratory type of information than using interviews (Parker, 1998). The data collected in the interviews can be classified as data with “local groundness” because it is collected in close proximity to the specific situation and not through the mail (Miles and Huberman, 1994).

Different forms of interviews have been identified by Kvale (1996). They vary according to content, such as seeking factual information, attitudes, opinions, narratives and/or life histories. Kvale (1996) describes two purposes that an interview can have. Firstly, “empirical”, where information is gathered on a particular topic; and secondly, “theoretical”, where a theory is tested or developed. Interviews can be conducted in a variety of formats including individual or group face-to-face verbal interchange, mailed or self-administered questionnaires, telephone surveys, and electronic interviewing via fax, email and internet (Punch, 1998).

Interviews can differ in the degree of structure from a well-structured sequence of questions, through focused interviews following a particular set of questions to an open-structure with no predetermined sequence or formulation of questions, where respondents are asked for facts as well as their opinions (Denzin, 1978; Marshall and Rossman, 1989; Yin, 1994; Kvale, 1996; Taylor and Bogdan, 1998). In a structured interview, each interviewee

receives the same series of questions in the same order (Punch, 1998; Fontana and Frey, 2000). Interviews are a useful way of obtaining large amounts of data quickly and provide the means for immediate follow up questions, if required, for clarification or to obtain additional information (Marshall and Rossman, 1989).

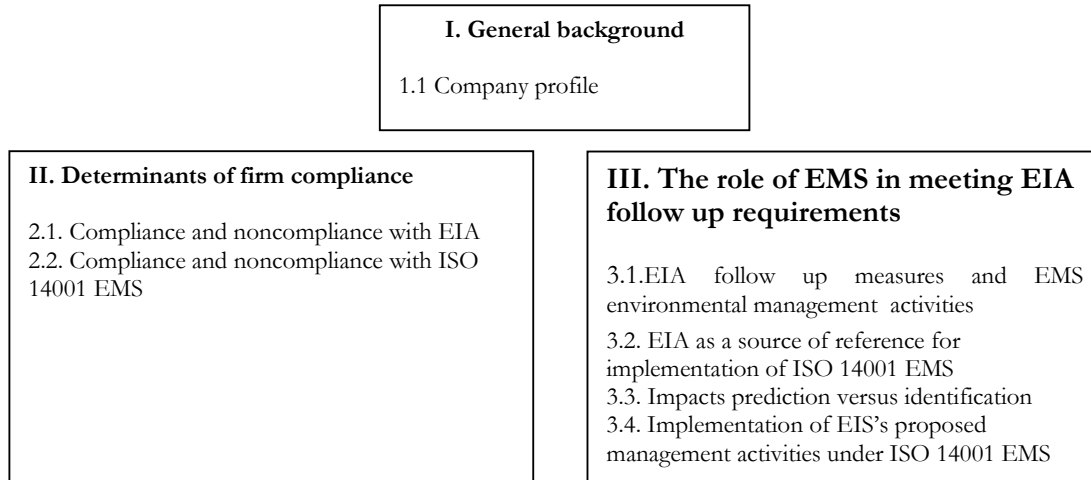
There are two broad types of questions that can be asked in an interview - open and closed. In open-ended questions the interviewee has total freedom and flexibility to respond, whereas in closed questions they are limited to the alternatives provided (Davis and Cosenza, 1993). It is claimed that open questions allow interviewees to express their view in their own words (Foddy, 1994). In the case of closed questions, they are more structured in that interviewees are required to tick a category/box, variability in answers is reduced and they are easier to answer and the responses are easier to computerise and analyse (Foddy, 1994). Even though open and closed questions have different characteristics, the quality of the collected data will be dependent upon, for example, the level of knowledge that the interviewee has, how interviewees interpret the questions, the responses given by individual interviewees to the question, how the interviewer interprets the responses and the type of coding performed (Foddy, 1994). In this research, quality of the interview is assured by selecting all key environmental management personnel, who are considered to best know about their firms' environmental activities. Interviews are conducted face to face and thus make it possible for the interviewers to assist the respondents in any questions that they do not understand.

#### 6.4.2.2 Preparation of interview questions

This section describes the selection and preparation of the interview questions. The interview questions are composed after the analysis of the documentary data and review of the literature in the following areas:

- environmental management approaches: EIA and EMS and other environmental management measures;
- determinants of compliance and noncompliance with environmental initiatives (both regulatory and voluntary), including EIA and EMS;
- organizational field constituents;
- EIA impact predictions, mitigation measures and monitoring programs;
- EMS identification of impacts, environmental management plans; and
- the use of EMS to carry out EIA recommendations.

The interview questions are structured around four key themes, which are grouped into three main categories including general background of the company, the environmental issues identified under EIA and EMS, and application of EMS in implementing recommendations of EIA reports (Figure 6.4).



*Figure 6.4 Interview question themes*

Figure 6.4 lists the key issues that are included in the interview questions and are divided into two main sections - one on determinants of firm compliance with environmental initiatives and one on the role of ISO 14001 EMS in meeting EIA follow up requirements.

### **6.4.2.3 Conduct of interviews**

The interviews were planned to be conducted over a two-month period between June and July 2005 but were extended over a period of five months from June 2005 to December 2005 because the target interviewees were either reluctant to participate or located in different areas of the country from the North to the South. Given the area of research, the intent is to conduct the interviews primarily with environmental managers and environmental consultants involved in setting up ISO 14001 EMS for the company. Environmental managers are selected for several reasons: (i) it is envisaged that they would have a background in environmental issues; (ii) if a company has an environmental manager, or equivalent, then environmental issues are viewed as important in some way to the company; and (iii) the

position of the environmental manager is generally in a senior level of management.. For those organisations where an environmental manager is not available or a position does not exist, a person in an equivalent position or a relevant senior manager within the company is interviewed

The methods for recording interviews for documentation and later analysis are note taking and the usual way of audiotape recording (Kvale, 1996).

### **6.4.3 Survey**

The last set of data is survey questionnaire aiming at quantifying the results of the qualitative analysis performed with the documentary data and the interviews. The main aim of the survey is to prioritize, refine and validate the findings in the preceding stages of data analysis. Survey questionnaire is chosen as a method of data collection because it has been widely considered as the most common technique to assess thoughts, attitudes and behaviors (Singleton and Straits, 1999). It allows for economical access to large number of respondents without the need to be present in the field (Witkin, 1994; Berkowitz, 1996).

As stated early in Section 6.1, the data are collected from companies which had both EIA and ISO 14001 EMS in Vietnam. By the time of the survey (2005), there were 113 companies meeting the requirements of which 50 are randomly selected for participation in the survey, which by chance, include 9 out of 12 interviewed in Phase 2. The survey with those companies that participated in the interviews presents a convenience in terms of the established contacts. This also does not affect the data results as the nature of the



interview and survey is different, one explores the determinants of compliance, the other focuses on rating of such constructs. The other 14 companies which had not been certified to ISO 14001 EMS are also surveyed for additional views on firm compliance with environmental laws from the perspective of companies with lower level of environmental awareness compared to those that have been certified to ISO 14001 EMS.

#### **6.4.3.1 Method of questionnaire distribution**

The choice of methods for distributing the questionnaire is important to ensure the highest rate of return consistent with time and budget constraints. Some frequently used methods for distributing questionnaires are mailing, surveys of households, brief surveys published in local newspapers, surveys of specific population that receive regular newsletters (Witkin & Altschuld, 1995). This research is aimed at studying the firms countrywide. These issues determine the method of distributing the questionnaire of mailing to avoid time consuming and expensive traveling.

The pilot test of the survey of firms was conducted with 10 firms in December 2005. Out of 10 firms approached, only one agreed to participate in the survey. The response rate was so low that this mailed survey was considered unsuccessful. The method for distributing the questionnaire was therefore reconsidered and changed to face-to-face interviews. The objective is to ensure access to most sampled firms.

#### **6.4.3.2 Designing the questionnaire and importance weights of attributes**

Since the purpose of the survey is to seek respondents' opinions on the hypotheses developed in Stages 1 and 2 of the data analysis and to refine and to prioritize various categories, it is necessary to find out the degree of agreement of propositions and degree of importance of categories by assigning weights to them. The weight expresses the importance of each category and its attributes relative to the others and indicates what the decision makers are most concerned about in a quantitative way (Edward and Newman, 1982).

Likert scale to elicit weights is chosen for this research because it is relatively straightforward to ask respondents to indicate the level of agreement of a hypothesis and level of importance of an attribute on a fixed scale. The weight expresses the importance of each attribute relative to the others and indicates what the decision makers are most concerned in a quantitative way (Edwards and Newman, 1982). This research uses a five-point scale where 1 represents "not important", 5 represents "very important" and "do not agree" and "totally agree" relatively for question on importance rating and agreement rating.

The Likert scale, however, has its limitations. One is the difference in perception of the points on the scale because people do not necessarily have the same scale of value. For example, one decision maker's "4" on the scale may not have the same level of importance as another decision maker's "4" on the same scale. Therefore one major assumption in using the Likert scale is that raters have the same values when they indicate the same number of the scale.

The questionnaire is divided into 5 parts: Company profile, Environmental Management Measures, EIA and EMS, and EIA-EMS linkage, the same as the contents of interviews but has been changed in the form of questions asked from open-ended to structured, closed ones. The questions are a performance of test of the findings from the interview to test the developed model.

#### **6.4.3.3 Statistical sampling**

As the objectives of the study are to determine the reasons for compliance and noncompliance with environmental laws of firms operating in Vietnam, the study targets those firms that have implemented both EIA and EMS as these tools are the most popular environmental management measures in Vietnam and represent both regulatory and voluntary initiatives of firms. Therefore, the research can capture firm's views on both compliance and beyond compliance behavior. Besides, 14 firms that have not been certified to ISO 14001 EMS are also selected for additional and possible different views of those with lower environmental awareness compared to the certified ones.

Among social aspects affecting firm behavior, this research chooses to investigate the population groups of different business structure, firm size, location and operation. From the specific context of the business community in Vietnam, the target sample is stratified into different categories for comparative analysis:

1. Business structure
  - 100% foreign owned companies

- Joint ventures
  - State owned enterprises
  - Private (local) firms
2. Firm size
- Large firms: over 300 employees
  - Small and medium firms: less than 300 employees
3. Location
- Northern provinces
  - Central provinces
  - Southern provinces
4. Operation
- Manufacturing
  - Services

There were 113 companies in Vietnam certified to ISO 14001 EMS by the time of the survey implementation in December 2005. Those companies have been invited to participate in the survey. However, many refused due to a number of reasons as mentioned in Section 6.4.2 and 6.4.3.

Overall, the sources agreeing to data collection are two companies willing to provide documents on their EIA and EMS, eighteen environmental managers participating in the in-depth interviews and 63 responding to the surveys (57%), which are lower than the average response rate of 73.5% of face-to-face interview (see Hox and De Leeuw, 1994) and the average response rate in Vietnam in case of other similar studies carried out by established agencies (such as General Statistics Office, U.S. Commercial Service, and so

on) which have authority or large business networks. The surveys of this type can achieve the response rate of from 80% to 98% (General Statistics Office of Vietnam, 2006).

## 6.5 DATA ANALYSIS

This section discusses the process of data analysis and the various stages involving constructs generation and verification. In the next section of analysis strategies, the discussion of open coding, as the most elemental stage of data analysis which helps to generate categories, is detailed. The last set of survey data is analyzed quantitatively to help refine, prioritize and validate the constructs developed as the results of documentary data and interviews data analysis. Statistical analysis methods using t-test of the means, factor analysis and ANOVA test are used to analyse the survey data.

### 6.5.1 Selection of data analysis strategies

Marshall and Rossman (1989; p.112) describe qualitative data analysis as: “a search for general statements about relationships among categories of data”.

Bringing order, structure and meaning to the collected data is the process of data analysis and the purpose of reporting this data is to present the phenomenon under study (Marshall and Rossman, 1989). According to Miles and Huberman (1994) qualitative data analysis consists of three activities: data reduction, data display and conclusion drawing and verification (see Figure 6.5).

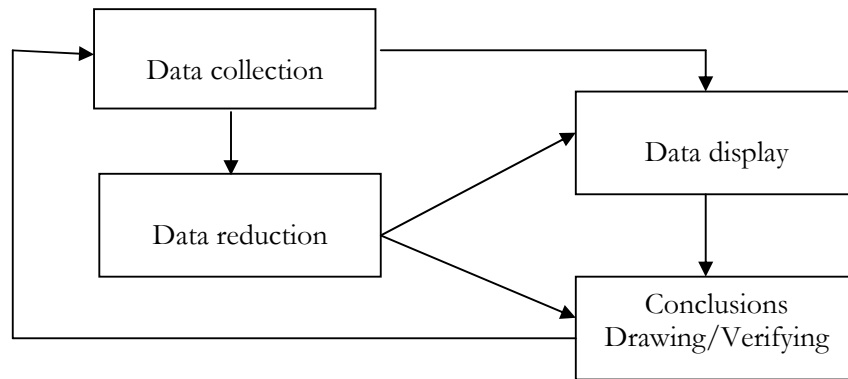


Figure 6.5 Components of data analysis: interactive model (Miles and Huberman 1994)

Figure 6.5 illustrates the continuous looping and forward and backward movement with respect to data collection, data reduction, data display and conclusion drawing. Data are collected via the face-to-face interviews and the subsequent transcriptions, recording the word-by-word conversation between the interviewer and interviewees are prepared. These data are coded enabling categories and themes to be identified (Marshall and Rossman, 1989).

The operations of data analysis consist of open coding (Miles and Huberman, 1994) and are described in the following sub-sections. Memo is used throughout the research journey noting ideas the researcher collected during the data collection process and thus, helps to reorient the researcher at the later stages (Goulding, 2002).

The coding process first includes line by line analysis of documentary data and memos to identify key words or phrases describing the experience under study. The results of documentary data analysis help to identify all possible categories which form the basis for the preparation of the face to face interviews and can be revisited anytime during the analysis process for additional information assisting the interviews and surveys.

The process of analyzing interview data, for this reason, also involves line by line analysis of full transcription of interviews. This stage is associated with open coding.

The last set of data is survey aiming at refining, prioritising and verifying the results of Step 1 and 2 analysis of documentary and interviews data. Hypotheses about the phenomenon under study are then tested statistically using the t-test, factor analysis and ANOVA test.

### **6.5.2 Open coding**

Open coding is the process of breaking down the data into distinct units of meaning which are then analyzed line by line to identify key words or phrases which connect the informant's account to the experience under investigation. Data of different size - whole paragraphs, sentences, phrases or words - can be coded (Miles and Huberman, 1994). The basic units of analysis could be composed of an entire interview, a book, words, sentences, paragraphs, or even pages.

In analysing data, the process normally starts with line by line analysis during which every line of the text/transcribed interview is searched for key words or phrases which give insight into the behaviour under study. Codes are then clustered into categories that seem to indicate a relationship which says something about the behaviour (Goulding, 2002).

Figure 6.6 illustrates how categories are generated from the interview data for this thesis (using the question on reasons why companies implement an EMS as an example).

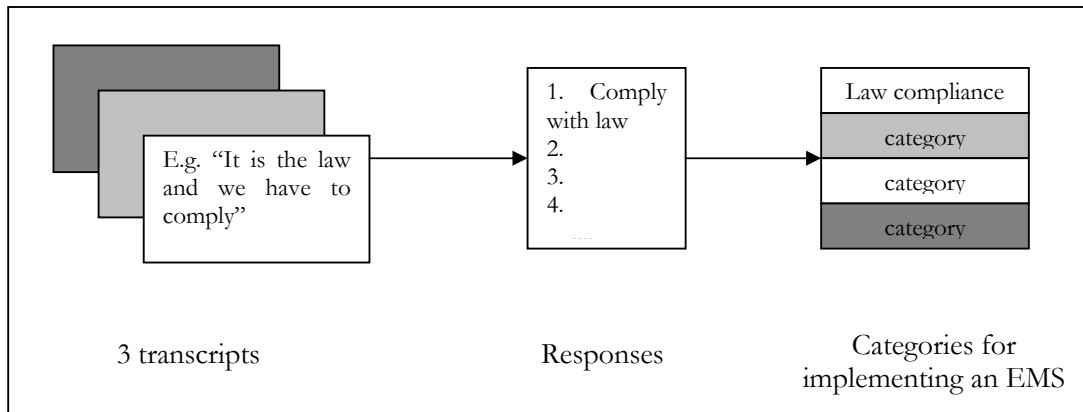


Figure 6.6 Generating categories from interview transcripts with example question

Figure 6.6 depicts the three transcripts from the environmental managers and the consultants that had been compiled. For each individual question asked in each interview, the three responses are compiled. The transcribed text is then read line by line with key words, sentences, phrases and/or paragraphs being highlighted using colour pens.

Pre-definition of categories to the interview questions is not performed. Categories are not imposed because the interviewer wants to give the interviewees as much flexibility and freedom as possible in their response to questions and wants to obtain the key issues and concerns as perceived by the interviewees. This provides a richer source of raw data.

### 6.5.3 Mean importance ratings

Mean importance ratings for every attributes are calculated using Equation 1.

$$a_h = \frac{1(n_1) + 2(n_2) + 3(n_3) + 4(n_4) + 5(n_5)}{(n_1 + n_2 + n_3 + n_4 + n_5)} \text{ (Equation 1)}$$

Where:



- $a_h$  is the mean
- $n_1 \dots n_5$  are the number of responses indicating the level of importance from 1 to 5 respectively

Having calculated the mean importance ratings from the information provided by the sample, the next step is to assess the importance of the attributes. Statistical tests of the mean are carried out. For each attribute, the null hypothesis ( $H_0$ ) is that the attribute is unimportant and the alternative hypothesis ( $H_1$ ) that the attribute is important.

To test the null hypothesis  $H_0 : \mu < \mu_0$  against the alternative hypothesis  $H_1 : \mu \geq \mu_0$ , where  $\mu$  is the population mean.  $\mu_0$  is the critical rating above which the attribute is considered important. In this study,  $\mu_0$  is fixed at 3 because by definition given in the rating scale, ratings above 3 (that is, 4 and 5) represent 'important' and 'very important' attributes. The decision rule is to reject  $H_0$  when the calculated t value is larger than  $t_{(n-1, \alpha)}$  as shown in Equation 2.

$$t = \frac{\bar{x} - \mu_0}{s_x / \sqrt{n}} > t_{(n-1, \alpha)} \quad (\text{Equation 2})$$

where:

- the random variable  $t_{(n-1, \alpha)}$  follows a t-distribution with n-1 degrees of freedom
- $\bar{x}$  is the sample mean
- n is the sample size, which is 385

The level of significance,  $\alpha$  for this study is set at 0.05 following the conventional risk level (Cohen, 1988). This means that there is a 95% certainty that the result is not due to chance and that the finding is significant at the 0.05 level. The probability of mistakenly rejecting the null hypothesis is 5% and the probability of accepting the null hypothesis when it is true is 95%.

From the table of critical values of t-distribution, for degrees of freedom = 62 (63-1), and the level of significance for a two-tailed test at 0.05, the t value is  $\pm 1.645$ . In this case, since the objective is to decide the attributes with  $\mu \geq \mu_0$ , only the positive side is considered, it meant that if the calculated t value is larger than 1.645, the null hypothesis is rejected. It is then concluded that the attribute is important.

Results of the pilot study from the interviews with 15 companies showed that all 23 and 26 attributes (or reasons for compliance and noncompliance, respectively) had Sig. value less than 0.05, with test value = 3 and 95% confidence. The indication is that the respondents in the pilot study considered all tested attributes in the questionnaire as 'rather important' and all attributes are important for investigation. Results of t-test of the means of the main survey are discussed in Chapter 7.

#### **6.5.4 Statistical tests for difference between means of each attribute**

The next tests are to assess the equality of population means when the population is classified into groups based on three business factors: business structure, operations and size. The common technique used to identify such equality is the Analysis of Variance (ANOVA),

for more than two groups and independent sample t test, for two groups under comparison (Hair et al., 1995). The equality of population means of factor business structure is tested by three-way ANOVA, and the equality of population means of three other factors operations, company size and ISO 14001 certified and non ISO 14001 certified companies are tested by independent sample t test. The dependent variables for the ANOVA analyses are attributes one at a time with independent variables of business structure. SPSS 11.4 was used to perform three-way ANOVA tests for each of the attributes.

*Three-way ANOVA for the difference between means under effect of business structure:*

The null hypotheses for the main effects of the three-way ANOVA say that:

1.  $H_0: \mu_{B1} = \mu_{B2} = \mu_{B3} = \mu_{B4}$ : There is no main effect of the four business structure categories (B1, B2, B3, B4) in the population
2.  $H_1$ : not all  $\mu_b$  are equal

The null hypothesis is tested by calculating F. The significance level (Sig) of  $F_R$  is found by comparing  $F_R$  with critical values for the chosen  $\alpha$  (0.05) and  $(x-1, N_T -xyz)$  degrees of freedom. If  $\text{Sig} < \alpha = 0.05$ , the main effect of R is significant at level  $\alpha$ .  $H_0$  is rejected, and the analyst concludes that Variable R has an effect in the population. If, on the other hand,  $\text{Sig} > \alpha$ , the main effect of R is not significant at level  $\alpha$ , and  $H_0$  is not rejected.

*Independent sample t test for the difference between means under effect of company operation, size and ISO certification*

The Independent samples t test compares the mean scores of two groups on a given variable.

Null Hypothesis: The means of the two groups are not significantly different.

Alternative Hypothesis: The means of the two groups are significantly different.

1.  $H_0: \mu_{O1/S1/I1} = \mu_{O2/S2/I2}$  : There is no main effect of the three business operation/size and ISO certification categories (O1/S1/I1 and O2/S2/I2) in the population

2.  $H_1$ : not all  $\mu_{O1/S1/I1}$  are equal

The Levene's test for equality of variances is carried out. It will decide if the null hypothesis is rejected or accepted (the two groups have approximately equal variance on the dependent variable or not). If the Levene's test is significant (the value under Sig. is less than .05), the null hypothesis is rejected, the two variances are significantly different. If it is not significant (Sig. is greater than .05), the null hypothesis is accepted, the two variances are not significantly different; that is, the two variances are approximately equal.

Also, the results of the independent samples t test are read. The top line is read if the variances are approximately equal. The bottom line is read if the variances are not equal. If the Sig. is less than .05, the null hypothesis is rejected; the two means of the attribute are significantly different. If the Sig. is more than .05, null hypothesis is accepted, the two means of the attribute are not different.

SPSS 11.4 is used to perform three-way ANOVA test and independent samples t test for each of the attributes. Results of these tests were displayed in Chapter 7.

### **6.5.5 Content analysis**

In the theoretical model of this research, three dependent criteria (i.e., regulative, normative and cognitive pillars) are constructed to accommodate the attributes. To ensure validity and reliability of these constructs, this research needs to develop reliable and valid measures for these dependent criteria. The measurement procedures are based on the statistical tests of the survey questionnaire. At the same time, results of these tests are correlated with results collected from the observation, the interviews, as well as results from previous studies.

Content validity is tested using questions about other reasons to be added of the survey form (see Appendix 2). In the survey questionnaire, companies are asked to provide additional attributes that needed to be considered as well as attributes that needed to be deleted from the questionnaire. If the result shows no valid attribute added into the model, it may conclude that the model has content validity.

### **6.5.6 Factor analysis**

The factor analysis computed by SPSS 11.4 is applied to test the construct validity to identify the correlation among the attributes and their common factor loadings. Factor analysis is established by relating a measuring instrument to a general theoretical framework in order to determine whether the instrument is tied to the concepts they are employing (Nachmias, 1995). In the present research, factor analysis helps to identify a meaningful structure of relationships between the attributes and the factors presented in Table 6.1 and Table 6.2.

It is worth noting that that resulting hypothesis regarding the relationships between the identified attributes and factors is the combined result of literature review, documentary data and interview data analysis.

*Table 6.1 Hypotheses for the factor analysis – determinants of compliance*

<b>Factors affecting compliance</b>	<b>Reasons for compliance (Attributes)</b>
H1: Factor “Rules/Laws Sanctions” includes two attributes	Probability of violation detection and being sanctioned
	Noncompliance cost is not small
H2: Factor “Gains/Losses/Consequences Calculation” includes five attributes	Enable company to reduce material wastage
	Improve company’s procedures
	Easy to integrate with other management systems
	Reduce company’s operating costs
	Help to enhance company’s productivity
H3: Factor “Personal morality” includes three attributes	Improve workers’ health, safety and welfare
	Employee/Agent disobeys Owner/Principal's order to violate
	Company to contribute to efforts to protect the environment
H4: Factor “Social influence” includes five attributes	Be essential in company’s overseas drive
	Be insisted upon by stakeholders/parent company
	Concern for social reputation
	Increase company’s competitiveness
	Community and peer groups are compliant
H5: Factor “Legitimacy” includes two attributes	Procedure fairness
	Appropriateness and effectiveness of the law
H6: Factor “Shared understanding of compliance” includes one attribute	Law compliance as taken for granted activities/Belief in abiding by law

Hair et al. (1995) state that factor analysis is a highly useful and powerful multivariate statistical technique for extracting and identifying sets of related variables from examination of the raw data alone. It can develop a single composite measure to represent the entire set of related variables. Factor analysis provides direct insight into the interrelationships among variables or respondents and empirical support for addressing conceptual issues relating to the underlying structure of the data. It also plays an important complementary role with other multivariate techniques through both data summarization and data reduction. From the data summarization perspective, factor analysis provides the researcher with a clear

understanding of which variables may act in concert and how many variables may actually be expected to have impacts in the analysis.

Table 6.2 Hypotheses for the factor analysis – determinants of noncompliance

Factors affecting noncompliance	Reasons for noncompliance (Attributes)
H'1: Factor "Rules/Laws Sanctions" includes two attributes	Low probability of violation detection
	Sanctions are not serious
H'2: Factor 'Gains/Losses/Consequences Calculation' includes three attributes	Increased cost of operation
	Complicated working procedures
	Difficult to integrate with other systems
H'3: Factor " includes four attributes	Lack of financial and technological ability to comply
	Lack of EM human resources
	Ignorance of law/difficulties in understanding environmental regulations
	High cost of implementation
H'4: Factor 'Commitment' includes eight attributes	Not believe in the value of the rule/regulations
	Lack of co-operation of or difficulties made by local government
	Lack of leadership concerns and commitment
	Low management awareness
	Defeated expectations, perceived unfairness, and other forms of slippage
	Employee/Agent disobeys Manager/Principal's order to comply
	Noncompliance of legal requirements
	Difficulties in changing working tradition
H'5: Factor 'Social influence' includes two attributes	The clients do not recognize it
	Community and peer groups are non-compliant

The application of factor analysis requires sufficient correlations of the data matrix (Hair et al., 1995). These correlation matrixes are usually tested by the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. The KMO measure of sampling adequacy is an index for comparing the magnitudes of the observed correlation coefficients to the magnitudes of the partial correlation coefficients (Norusis, 1994). Small values for the KMO measure indicate that factor analysis on the attributes may not be appropriate, because correlations between pairs of variables cannot be explained by other attributes. The index ranges from

zero to one, reaching one when each attribute is perfectly predicted without error by the other attributes (Hair et al., 1995). In an early work, Kaiser (1974) suggests the following guideline for interpreting KMO: 0.90 or above is marvelous, 0.80 is meritorious, 0.70 is middling, 0.60 is mediocre, 0.50 is miserable, and below 0.50 is unacceptable.

In deciding the number of factors to extract in the analysis, latent root criterion technique was applied. Only factors having latent roots or eigenvalues greater than 1 are considered significant. All factors with latent roots or eigenvalues less than 1 are considered insignificant and disregarded. Varimax rotation is applied to interpret the factors. This tool has proved to be very successful as an analytic approach to obtaining orthogonal rotation of factors. The advantage of varimax rotation is that it maximizes the sum of variances of required loadings of the factor matrix. Besides it seems to give a clearer separation of the factors compared to other methods (for example, quartimax, equimax) (Hair et al., 1995). Kaiser's (1974) experiment indicates that the factor pattern obtained by varimax rotation tends to be more invariant than that obtained by the quartimax method when different subsets of variables are analyzed (Hair et al., 1995).

In interpreting the factors, a decision must be made regarding which factor loadings are worth considering. To ensure the practical significance, the rule of thumb may be used as a means of making a preliminary examination of the factor matrix. Usually, factor loadings greater than  $\pm 0.3$  are considered to meet the minimal level; loadings of  $\pm 0.4$  are considered more important; and if the loadings are  $\pm 0.50$  or greater, they are considered practically significant. Thus the larger the absolute size of the factor loading, the more important the loading is in interpreting the factor matrix. A 0.30, 0.50 and 0.70 loading account for 10%, 25% and 50% of the variance respectively. Loading 0.80 and above is considered extremely high



and considered very important (see Hair et al., 1995). With the objective of obtaining a power level of 80%, the use of 0.05 significance level and the sample size of 63, the factor loadings of 0.30 and above are considered significant. Thus factor loadings lower than 0.30 are deleted from the factor matrix.

Another norm used in factor analysis is the communality. The communality of an attribute represents the amount of variance accounted for by the factor solution for that attribute. Attributes with large communality ( $>0.50$ ) indicate that a large amount of the variance in each of these attributes has been extracted by the factor solution. Small communalities show that a substantial portion of the variance in an attribute is unaccounted for by the factors.

In this study, the interpretation of the factor matrix is started with the first attribute on the first factor and horizontally from left to right. It looks for the highest loading for that attribute on any factor. This procedure is continued for each attribute until all 23 and 26 attributes, relatively, had been underlined once for their highest loading on a factor. After the factors are interpreted, a summated scale is formed by combining several attributes into a single composite measure. In simple terms, all of the attributes loading highly in one factor are combined, and the average score of these attributes is used as the replacement attribute. This summated scale is used to test the validity of the results against the concepts developed from Scott's "Three Pillars of Institutions".

## 6.6 CONCLUSION

Using the triangulation approach, the compliance behavior of firms operating in Vietnam is explored through the combination of the three methods of case study, interviews and survey. Through the case study and interviews, in addition to the literature review, a preliminary model of determinants of compliance and noncompliance with environmental laws and regulations is developed which is then quantitatively tested using the survey. The case study is conducted with two companies while the open-ended interviews are conducted with environmental managers of 18 companies which have implemented both EIA and ISO 14001 EMS for their firms. Open coding techniques are used to analyse the qualitative data of the interviews. The last set of survey with 63 companies is conducted to validate the findings from the case study and interviews. T test, factor analysis and ANOVA are used to analyse the survey results. These data analysis methods help to identify and prioritise the important factors determining firm compliance and noncompliance as well as the important effects of firm size, business structure, types of operation, and ISO 14001 certification on firm compliance and noncompliance behavior.

# CHAPTER 7

## RESULTS AND DISCUSSION

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This chapter presents the results of the analyses of the case studies, interviews and survey questionnaire.

As mentioned in Chapter 6 on Methodology, the current research applies simultaneous data collection and analysis. The three sets of data are collected and analyzed one by one, each set's results, together with the literature review, form the basis for the design of the next set of data to be collected. Specifically, the two case studies data are collected first and then analyzed for the design of the interviews. The interviews are then conducted and analyzed before the last set of data of surveys were collected for analysis. The results of each set of data refine and partly validate the findings from the data previously collected and analysed.

### 7.1 CASE STUDIES RESULTS AND DISCUSSION

Key results from the case studies comparing EIA and EMS of each case, the identified organizational field and its associated institutions are presented in this section. The analyses are made on EIA documentation including proponent's EIS and monitoring reports during project implementation, and ISO 14001 EMS documentation. Additional data for analyses are obtained from interviews with environmental management staff of the

companies and their ISO 14001 consultants to have more insight into issues presented in the documents as well as other issues of concerns that are not available from the written documents. The main categories under study include:

- Reference to EIS when implementing EMS
- Impact prediction and impact identification
- Occurrence of predicted impacts
- Reasons for predicted impacts not to occur
- EIA proposed mitigation measures versus ISO 14001 EMS implemented management activities
- Reasons for implementation of EIA proposed mitigation measures and EMS management activities
- Reasons for non-implementation of EIA proposed mitigation measures and EMS management activities
- Occurrence and reasons for occurrence of unexpected impacts
- Corporate environmentalism organizational field constituents.

The findings from case studies analysis reveal the role of EMSs in general and ISO 14001 EMS, in particular, in meeting EIA follow-up requirements through actual implementation of management activities and monitoring programs to mitigate both predicted and practically identified impacts of the projects. Also, as discussed in Chapter 6, the organizational field constituents and institutions of corporate environmentalism in Vietnam are discovered through the analysis. The findings are important guidance for the design of the interviews which is the next set of data to be collected after the completion of the case studies'

analysis. All the interview questions are structured around the issues identified in the case studies results to refine and partly validate them.

### **7.1.1 Reference to EIS When Implementing EMS**

Both firms interviewed state that they make reference to EIA when the companies start to work on the ISO 14001 EMS certification. It is found that companies refer to EIS because it contains legal requirements that companies have to meet. The requirements are project approval conditions as well as related regulations of relevant authorities. Besides, it provides information regarding environmental situation and impacts of the project and mitigation measures and monitoring plans which can be applied to mitigate those impacts.

### **7.1.2 Project's Number of Predicted Impacts versus Identified Impacts**

The EIA impact predictions and EMS impact identification are examined to determine the extent to which they are similar to each other to see if predicted impacts actually occur in practice, and if not, the reasons for their non occurrence.

In EIA reports of the case studies, impacts are identified through the line by line analysis of the text, which is the main form of the report. The impacts identification in ISO 14001 EMS documents, however, is presented in matrix form. The boxes with a tick (✓) represent environmental impacts identified.

By examining the actual impacts that occur in practice, the EIA unpredicted impacts are identified. They are also matched with environmental management actions to determine whether there are mitigation measures proposed to mitigate the predicted impacts or whether the companies are implementing actual management activities under ISO 14001 EMS to minimize those impacts.

In Case study 1, the number of impacts identified by company's ISO 14001 EMS during project implementation is much more than those predicted in the EIS. The difference is not considerable for Case 2. Besides, the results show that impacts identified under ISO 14001 EMS cover almost all EIS's predicted impacts. For illustration, Figure 7.1 presents the comparison between EIS impacts prediction versus EMS impacts identification of Case study 1.

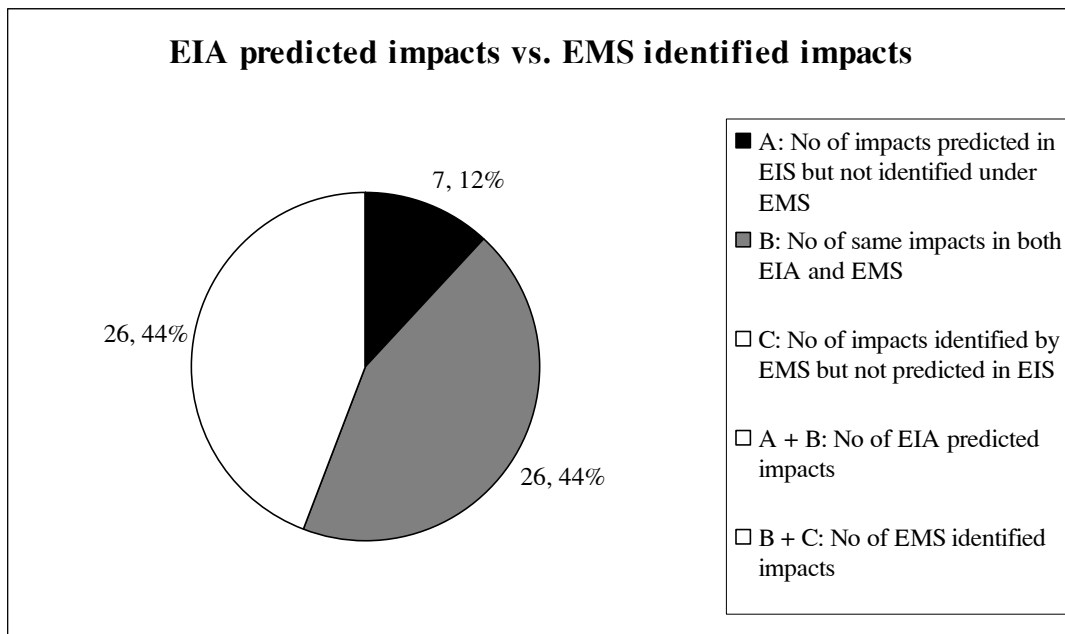


Figure 7.1 Case study 1: EIA predicted impacts versus. EMS identified impacts

In Case 1, the EIA report predicted 33 impacts while during the implementation of the EMS, the company identified 52 impacts. Of the total 59 impacts identified in both EIS and ISO 14001 EMS of Case 1, there are 26 impacts (44%) identified in both EIA and EMS, 26 impacts (44%) identified under EMS but not predicted in the EIS, and 7 impacts (12%) predicted in EIA but not identified under EMS (Figure 1). The result for Case 2 is 13 same impacts identified in both EIA and EMS, 44 impacts identified under EMS but not predicted in EIA and 28 impacts predicted in EIA but not identified from the company's current operation under ISO 14001 EMS. The accuracy of EIA impact prediction for Case 1 and Case 2 is 44% and 24%, respectively (see Appendix 3 and 4 Environmental Aspects and Impacts, the matrices showing the environmental aspects and impacts predicted and identified by the case studies). It is noted that the EIA prediction for Case 2 also includes impacts resulting from the construction process of the facility.

For EIA inaccurate impact predictions, interviews with the company's environmental manager and ISO 14001 EMS consultant are carried out to find the reasons for the non occurrence of impacts. According to interviewees, the reasons for EIA predicted impacts not to occur in practice include:

- application of mitigation measures that results in minimization or even non occurrence of impacts during project implementation;
- unimportant impacts that are not counted for during assessment; and
- changes in production with some activities moved to other plants or changes in product details leading to changes in technologies, process and thus, occurred impacts.

For unexpected impacts, interviews are also done to explore the reasons for the occurrence of those impacts. Main reasons provided by interviewees are:

- detailed requirements of EMS;
- production expansion;
- legal requirement update;
- higher awareness of leadership;
- more pressure from customers; and
- financial resources.

### **7.1.3 EIA Proposed Mitigation Measures versus ISO 14001 EMS Implemented Management Activities**

The findings on EIA proposed mitigation measures show that only 30% of predicted impacts in Case study 1 have direct mitigation measures to manage the impacts. The percentage of impacts that have direct mitigation measures of Case study 2 is a bit higher (37%), but still not address most of impact predictions. Of all measures proposed, most (73%) are end-of-pipe control measures, only 27% addressing the problems from the source. The results for Case study 2 are 68% and 32% respectively.

In Case 1, the ISO 14001 EMS implements a higher number of management activities to address the identified environmental problems of the company compared to those proposed in the EIS done at the pre-decision making stage of the project. For Case study 1, only 13 mitigation measures are proposed in the EIS while 55 are implemented under the ISO 14001 EMS of the company during project implementation. The number of proposed



mitigation measures and ISO 14001 management activities coded in Case 2 are 44 and 36, relatively. The findings for Case 1 are consistent with the findings on impact prediction and impact identification which show a larger number of impacts identified by EMS and a much less number of impacts predicted by EIA. As a results, more measures are implemented in practice to address the number of impacts identified, not limited to the small number of mitigation measures proposed for predicted impacts of which some are inaccurate and many impacts are not expected or considered.

In Case 2, however, the number of management activities proposed during the impact assessment process is almost the same as those implemented during the operation of the firm. This may be explained by the fact that the Case 2 (a famous Japanese corporation) is a leading enterprise in environmental management and thus, implement the EIA and EMS seriously. EIA proposed mitigation measures have been applied to mitigate the predicted impacts. In Case 1, however, there was little done in advance, and thus, many new initiatives are introduced later during the operation stage to address the impacts.

From the study of detailed documents regarding EIA and EMS of both cases, it seems that the ISO 14001 EMS provides a clear vision of the sources of impacts. Every activity of the operation is taken into consideration to see if it is adversely affecting the environment as required by the Clause 4.3.1 Environmental Aspects and Impacts. As a result, many management activities are implemented to control the impacts at their sources. On the contrary, the number of source control measures proposed in EIS is limited. It seems that the impact assessment categorizes the impacts by types of impacts, not aspects of impacts as the case of EMS, and mitigation measures are proposed for each impact category and thus, the focus is more on controlling the impacts once they have happened, not at their

sources. The situation is observed in both cases. The observations form the basis for the interview questions for the open-ended interviews to refine the findings of the case studies results.

#### **7.1.4 Relationship between Impacts Prediction/Identification and Associated Management Activities**

The next step in the case study analysis is to establish the relationship between EIA impact prediction and proposed mitigation measures and EMS impact identification and associated management activities.

The impact assessment, besides predicting impacts of the project on the environment, rates the significance of the impacts. It is found that the significance of impact is one of the main reasons for proposing appropriate mitigation measure to minimise the impacts. Another reason is legal requirements specifying the acceptable level of impacts and thus requiring the company to have appropriate measures to make sure the impacts are within the allowed standards. The important impacts are taken into consideration and responded to by one or more mitigation measures. However, there is no relationship observed between significance of impacts and number of associated mitigation measures.

In case of EMS, more significant impacts are observed to have more associated management activities. Illustration of the relationship is presented in Figure 7.2.

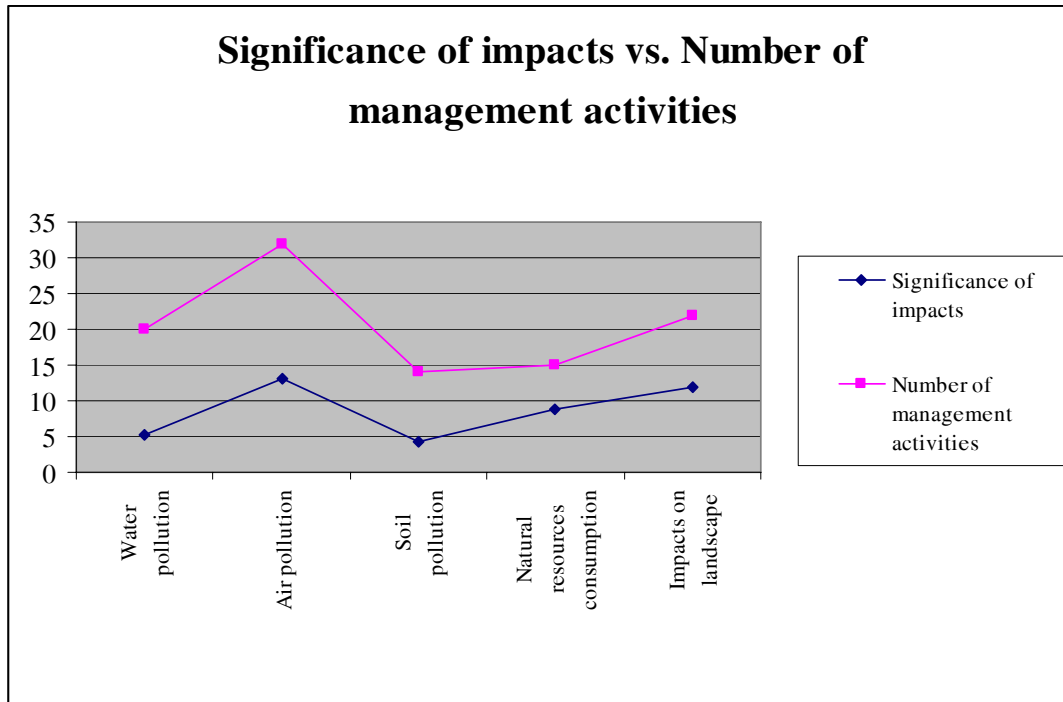


Figure 7.2 Case study 1: Significance of impacts vs. Number of management activities

In Case 1, air pollution is assessed to be significant and thus, many environmental management activities have been implemented to address the problem. On the contrary, the operation of the firm does not significantly affect the soil conditions in the area and thus, not many initiatives are conducted to deal with this type of impact.

### 7.1.5 Organizational Field and Institutions

Table 7.1 presents the resulting coding of impacts under the groups of water, air, soil pollution, natural resources consumption, ecological and social/health impacts proposed in the EIA reports of the two firm cases. The recorded management activities are marked with a (\*) on the relevant column of environmental concern that the measures address. The

results present the environmental concerns of firms, which will be further crosschecked with the results from interviews and survey.

Pollution control, reduction of natural resources consumption, mitigation of ecological and health impacts are recorded to be of concern for both cases. Environmental management measures are initiated to address the issues which include management measures, technological measures and educational measures. The coding shows multiple environmental concerns that the mitigation measures address as well as multiple measures to address each type of impact. For example, to prevent and mitigate water pollution impact, technological, management and education measures are all needed. Technological investment in waste water treatment helps firms meet the waste water discharge standards but also help to improve working environment and health protection for employees and local community. The dominance of institutions are thus, not clearly identified through the documentary data analysis and will be further explored through the interview and survey result in which key environmental management staff of firms present their views and indicate their rating of the institutional elements.

Overall, the two cases show both regulative and normative and cognitive concerns, consistent with literature on organizations' institutions (Scott, 2001; DiMaggio and Powell, 1991). Relevant laws and regulation regarding environmental management, health and safety are complied with. The most applicable and significant legal requirements that firms have to meet are Vietnam standards on water discharge, noise and air emissions levels. Additional requirements include health and safety protection, chemical storage procedure, and

emergency responses. Besides the regulative requirements, internal motivations of working environment improvement, health protection, good public relations, and customer pressure are also mentioned in the documents.

Table 7.1 *Environmental impacts and associated management measures*

Environmental aspects	Environmental management measures	Water pollution	Air pollution	Soil pollution	Natural resources consumption	Impacts on landscapes	Ecological impacts	Health impacts
<b>Waste water discharge</b>	Water treatment system Technological investment Water reduction and recycling Improved management system EHS education	*	*	*		*	*	*
<b>Chemical/oil usage and storage</b>	Material reduction; Reuse Safety equipment provision Storage safety Periodical reporting Improved management system EHS education	*	*	*		*		*
<b>Air emission</b>	Air pollution control measures Safety equipment provision Infrastructure investment Improved management system EHS education		*					*
<b>Noise generation</b>	Enhanced Maintenance Health protection Improved management system EHS education		*					*
<b>Solid waste disposal/storage</b>	Storage procedure compliance Material saving Waste reduction Solid waste treatment Improved management system EHS education	*	*	*		*	*	*
<b>Water and Energy usage (electricity, gas, pressure vessel)</b>	Energy saving Water reduction/recycle Emergency responses Technological investment Improved management system		*		*	*		*
<b>Health and safety problems</b>	Health protection, education							*

The issuance of the environmental law forms the formal structure for the organizational field of corporate environmentalism in Vietnam with the law being cited primarily in the documents. Other regulatory standards are also mentioned as sources of reference and compliance. Key players identified include regulatory and enforcement agencies (local department of natural resources and environment, and their subordinating division of inspection), parent company (Japanese parent company, Case 2), customer (such as IKEA Group, in Case 1), local community, professional institutions (research institutes), other companies (from the same industry or in the same location) and company staff. The organizational field players in Vietnam are found to be similar to that of other countries, such as the U.S (Hoffman, 1999). The special interest groups are not mentioned in the documents studied but their roles are further explored through the interviews and the survey.

## **7.2 INTERVIEWS RESULTS AND DISCUSSION**

Open ended interviews are carried out with 18 firms to explore their views on the reasons for compliance and noncompliance with environmental requirements and the role of ISO 14001 EMS in implementing EIA follow up requirements. The results are either recorded and then transcribed or in the text form written down by the interviewees themselves. The open coding techniques for secondary data analysis are applied to interpret the results.

### 7.2.1 Reasons for Implementation of EIA and EMS Requirements

In an EIA report, once impacts prediction have been made, mitigation measures are proposed and implemented to help mitigate the impacts. There are a number of reasons for implementing mitigation measures. Eighteen interviewees provided 36 responses regarding reasons for implementing environmental mitigation measures. The responses fall under main categories including: minimization of impacts/environmental protection, belief in abiding by law, enhancing healthy working environment, orientation for other environmental management activities, reduced investment cost/cost saving, environmental protection, health protection, legal compliance, customers' belief, reduced waste, and enhanced environmental awareness. These findings support the view by various authors regarding compliance behavior including both rationalist and normative advocates (Becker, 1968; Spence, 2001; Scholz, 1998; Tyler, 1990; Sutinen and Kuperan, 1999)

The most commonly identified reason for a mitigation measures to be implemented (78%) is to minimise environmental impacts. Of the 36 responses, 10 companies (55%) identified legal compliance as one of the most important reasons for implementation of EIA mitigation measures. Next, in order of importance, come cost saving (33%) and orientation for other environmental management activities (28%). Practical environmental protection of EIA practice which is the main aim of this management tool is only perceived by 3 companies (17%). Other benefits identified include enhancing customer's belief (17%), enhancing environmental awareness of the company (17%), health protection (17%) and reducing waste (11%) (see Table 7.2). The findings



support Scott's (2001) and DiMaggio and Powell's views on the importance of all three institutional elements of regulative, normative and cognitive in determining firms' compliance. Reasons for EIA mitigation measures and ISO 14001 EMS management activities to be implemented are presented in Figure 7.3 and Table 7.2.

Table 7.2 Reasons for compliance with EIA and EMS requirements

Reasons	EIA		EMS		Reasons given by respondents
	No. of responses (*)	%	No. of responses	%	
Minimization of impacts/Environmental protection	14	78%	13	72%	To minimise impacts on the environment To reduce the negative impacts To protect the environment
Legal compliance	10	55%	5	28%	To meet legal requirements To make sure we are within the allowed standards Compliance with law Provide legal status for project implementation
Enhance healthy working environment	3	17%	6	33%	To protect the health of our staff To improve healthy working environment
Orientation for other environmental management activities	5	28%			Brings to mind the issues of environmental impacts
Reduce investment cost/cost saving	6	33%	12	67%	Reduce investment cost
Customers' belief	3	17%	3	17%	Enhance customer's belief
Reduce waste/waste management	2	11%	8	44%	Reduce waste
Enhance environmental awareness	3	17%	9	50%	Enhance environmental awareness among employees
Effective usage of equipment			3	17%	Use equipment effectively
Operation efficiency/ Enhance productivity			5	28%	Boost operation efficiency Enhance productivity
Enhance corporate image			3	17%	Enhance corporate image
Total responses	46		67		

(\*): Number of responses for the identified reason. Each interviewee may indicate more than one reason.

The number of respondents indicating each reason is recorded and counted as presented in the column named “No. of responses”. Total number of responses is then added up accordingly.

Minimization of impacts to protect the environment is the prime purpose of proposing mitigation measures. Companies in general are aware of the environmental protection benefit of EIA and are thus, motivated to implement this environmental management tool.

*“When we have predicted that one activity will negatively affect the environment, we will find relevant measures to mitigate it, by which we can help to protect the environment.” (Interview 3)*

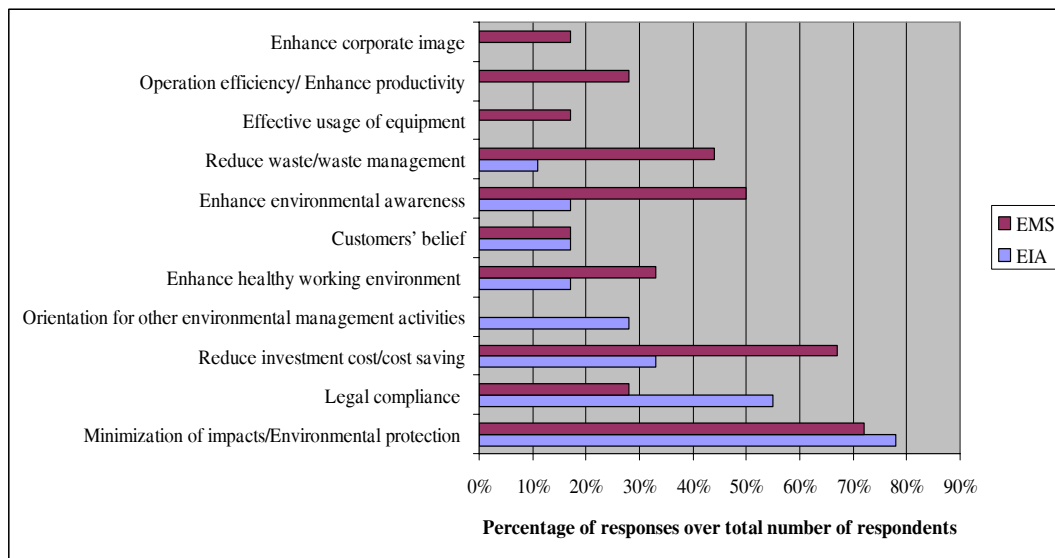


Figure 7.3 Reasons for compliance with requirements of EIA and ISO 14001 EMS

Environmental protection is also the most frequently mentioned reason for implementation of management measures under the ISO 14001 EMS requirements. Thirteen companies (72%) have implemented management measures to minimise their adverse impacts on the environment.

*“The management measures help to minimise impacts. They help to protect the environment. We implement appropriate measures to reduce negative impacts on the environment.” (Interview 4)*

Compliance with legal requirement is another important reason for implementing mitigation measures. The EIA report is required to include appropriate mitigation measures to manage negative impacts predicted. For the project to be approved adequate and appropriate mitigation measures to be implemented need to be presented to the relevant authorities.

*“...from the impacts predicted, we propose and implement mitigation measures to meet legal requirements...It is the law and we have to comply with it. We have to make sure we are within the allowed standards.” (Interview 7)*

For ISO 14001 EMS, the certification is a good public relation strategy for the companies which help to maintain good relationship with the relevant authorities through the image of a highly environmental aware business.

*“We always want to make sure that we comply with laws and have good relation with relevant authorities.” (Interview 3)*

The perception of EIA as a bureaucratic requirement to obtain project approval as identified in literature is evident in the interview results. Even though in Vietnam, like many other countries, there is a process for environmental review of project proposals, but the people responsible for the review often lack the necessary skills to effectively carry out the reviews. Legal compliance becomes one of the most important reasons for implementing this tool of environmental management:

*“Doing EIA means compliance with legal requirements. Completion of EIA provide us the necessary legal status for project implementation.” (Interview 2)*

A small number of companies considered enhancement of healthy working environment is one of their reason for proposing mitigation measures. The measures are proposed to *“protect the health of our staff”* and *“improve working environment.”* (Interview 18)

Another important benefit of EIA is that it helps orient later environmental management activities of the project. EIA has been the first environmental management activity that a project involves from the planning of the project and thus bring the issue of environmental management into the proponents’ consideration. This very first awareness about environmental protection guides the project participants to other environmental management activities like implementation of an EMS in the later stage of project

implementation. EIA is considered to be *“an orientation for our other environmental management activities”* (Interview 5). *“It brings to our mind the issues of environmental impacts and how to mitigate them”* (Interview 11).

Other reasons identified by interviewees regarding the benefits that drive companies to implement EIA and EMS include cost saving, waste reduction, and customers’ belief enhancement. The reasons, in respondents’ words, are:

*“we know where to invest in from the beginning and thus reduce investment cost.”* (Interview 15)

*“good planning for application of mitigation measures helps us reduce operation cost, reduce waste.”*(Interview 11)

*“it helps to enhance our customers’ belief with the implementation of environmental management activities including EIA.”* (Interview 7)

The norm of environmental protection, law compliance and morality of the respondents support the view of normative theorists such as Smith (1759), Sutinen and Kuperan (1999), and Allingham and Sandmo (1972). Firms comply because of a variety of internal motivations. Environmental management measures are applied as they see them to be the right thing to do. It is firms’ moral obligation to do good things for the community and as a result, receive the approval of others (Smith, 1759).

## **7.2.2 Reasons for Poor Implementation of EIA Follow up Requirements and ISO 14001 EMS**

An important issue of EIA is the difficulties to employ follow up measures in practice (Sadler, 1996; Dipper et al., 1998). Reasons for poor implementation of follow up measures identified in literature involve poor documentation, poor management commitment, poor communication, poor technical performance, lack of financial and staff resources and poor quality of EISs.

The responses from 18 interviewees are grouped into 8 main categories of management awareness and commitment, human resources, non compliance, quality of EIA, supporting facilities, working habit, difficulties in understanding legal requirements and unexpected issues. Lack of qualified staff and consultants (35%) and low quality of EIA with inappropriate proposed mitigation measures and inaccurate predictions (35%) are the most important reasons for poor implementation of proposed mitigation measures. Other reasons identified include low awareness of management staff (11%), non compliance with legal requirements (17%), and unexpected issues of production changes (products, process, and scale of operation) (17%) (see Table 7.3 and Figure 7.4).

Table 7.3 Reasons for poor implementation of EIA and ISO 14001EMS requirements

Reasons	EIA		EMS		Reasons given by respondents
	No. of responses	Percentage	No. of responses	Percentage	
Lack of human resources (qualified staff, consultants)	6	35%	5	28%	1. We don't have qualified staff and consultants 2. We have only 1 staff taking charge of EIA 3. We pick one staff who is an engineer
Poor quality of EIA (Inappropriateness of proposed measures, inaccurate predictions)	6	35%			1. The predictions are inaccurate 2. The technologies proposed are outdated
Poor supporting facilities (for waste treatment)			8	35%	1. Power cut off 2. Long distance or no local solid waste treatment station
Traditional working habit of local workers			4	22%	1. Don't care about hygiene, saving or other environmental related issue
Noncompliance of legal requirements	3	17%			1. Don't comply with legal requirements
Unexpected issues (Changes of operation over time)	3	17%	2	11%	1. Production plan has changed 2. Launch of new products 3. Application of new technologies and processes
Ignorance of/difficulties in understanding the legal requirements	2	11%	3	17%	1. Overlapping of legal requirements
Low management awareness and commitment	2	11%	3	17%	1. Low awareness of high-ranking staff 2. Don't consider the issue of priority
Total number of responses	24		25		

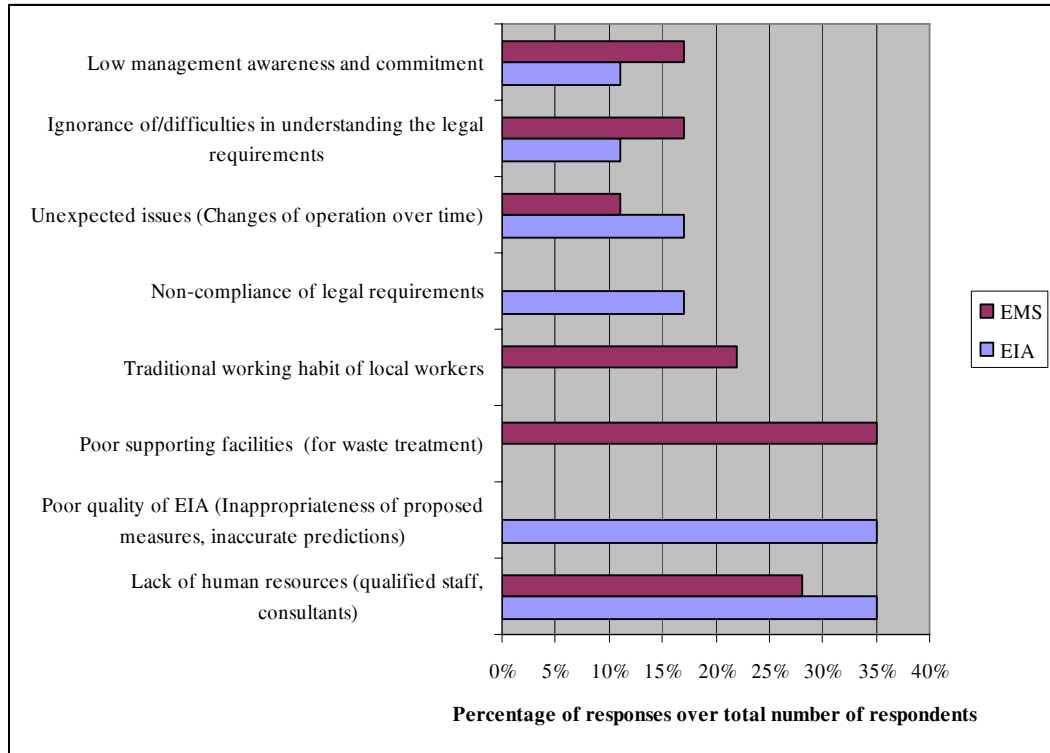


Figure 7.4 Reasons for poor implementation of EIA and ISO 14001 EMS requirements

With regard to the issue of management awareness and commitment to environmental protection, it has been claimed that:

*“the poor implementation is due to low environmental awareness of high-ranking staff. They don’t consider the issue as a priority. The attention is paid on other aspects of production resulting in low investment in environmental management, in terms of both financial and human resources.” (Interview 11)*

Of the most important reasons for poor implementation of mitigation measures are lack of qualified staff and consultants and poor quality of EIA report. This is consistent with literature on EIA which find lack of resources, including human resource, and



deficiencies in EISs as important constraints to the implementation of this environmental tool (Morrison-Saunders et al., 2003; Arts and Nootebloom, 1999; Sebastiani, 2001). The insufficiency of expertise needed in the means of providing training and carrying out activities is also recognized as a shortcoming of local EIA procedure (Le and Luc, 2000).

*“We don’t have qualified staff and consultants to properly carry out high quality EIA with high level of accuracy of predictions and making with recommendations with regards to mitigation measures to be applied.” (Interview 2)*

*“the predictions are inaccurate, mitigation measures proposed are inappropriate, the technologies proposed are outdated.”(Interview 5)*

Regarding the problem of lacking of qualified human resources involved in EIA process, respondents admit that during the EIA implementation, they lack both internal staff to take charge of the application of this environmental tool and external consultants to carry out the assessment:

*“There are many technical aspects of EIA that need experts of different fields to get involved in. We don’t have enough personnel to do this.” (Interview 9)*

*“We have only 1 staff taking charge of EIA. The person has background in physical science but not environmental engineering which are both necessary for the assessment, not to say the necessity of expertise in ecological and social sciences.” (Interview 13)*

Five companies identify lack of qualified staff as the main reason for poor implementation of the ISO 14001 EMS. Normally, the EMS team is tasked with existing personnel in the company who are not specialized in environmental field. Upon appointment, those staff are trained and are supposed to learn through working.

*“We pick one staff who is an engineer to take charge of the EMS and then train him to do the task.” (Interview 7)*

This is the case for many companies which do not have internal environmental professionals. Normally, the company assigns the existing staff, either from engineering or administrative department, to do the job.

Some companies fail to implement the environmental management activities as required under EIA and EMS because they *“do not comply with legal requirements”* (Interview 8). In these cases, the respondents refuse to explain the effects of their non-compliance. However, in the case of Vietnam, the enforcement is not strict and violation still occurs due to poor state and local monitoring and inspection of post-construction activities. In 2002, the Department of EIA Evaluation and Surveillance were established to inspect and survey the implementation of environmental protection measures provided in the EISs. The DONREs have the general responsibility to manage environmental issues but not to survey the performance of EIA follow up. As a result, respondents have stated that the monitoring requirements have been conformed to by environmental inspectors but the application of mitigation measures and other recommendations of EIA reports have been neglected. This issue of poor enforcement is also one of the problems in EIA implementation identified in the literature (Arts and Nootebloom, 1999). The

rationalist theories can also help to explain this issue of poor implementation because of low probability of detection (Scholz, 1998; Anderson and Lee, 1986; Milliman, 1986). It is worth noting here that in Vietnam, there are periodical environmental inspections of firms, mostly manufacturing facilities. These activities, however, are not part of the monitoring and other requirements specified in the EIA report. The Department of Impacts Assessment and Appraisal under NEA are only responsible for inspection of facilities with regard to their conformity with EIA requirements until the construction is completed. Post construction management to ensure EIA follow up implementation is not carried out by this department (NEA, 2002). This is why environmental parameters are sampled and tested but not necessarily mean proposed mitigation measures are implemented.

Poor supporting facilities are the most commonly identified reason for poor implementation of the EMS with 8 companies out of 18 interviewees (35%) regard this as a barrier to proper implementation of the system. The issue involves *“power cut off”* (Interview 3, 5, 6, 8, 9, 11, 17), *“long distance or no local solid waste treatment station”* (Interview 6, 8, 9, 13).

Traditional working habit of local employees and resistance to change, which have been identified in the literature as constraints to ISO 14001 EMS implementation (Ofori et al., 1999), also hinder the implementation process in the case of businesses operating in Vietnam. This is the problem with 4 companies which account for 22% of the sample. Those workers have *“low awareness of environmental management”* (Interview 4, 7, 9, 11). *“They just do their main duty of work and don’t care about hygiene, saving or other environmental related issues”* (Interview 7, 11).

Other reasons identified are “*overlapping of legal requirements which make it hard for companies to make reference and follow*” (Interview 3), changes of operation over time which require new operation process, new staff, etc. This is consistent with Ofori’s (1999), Mbohwa and Fukada’s (2003), and Prakash and Potoski’s (2006) conclusion about organizational change, operational issues, organizational structure and resources and management commitment as barriers to implementing ISO 14001 EMS.

The poor implementation is also considered to happen due to firms’ unexpected production changes including changes in products and manufacturing processes which make predictions inaccurate and result in occurrence of unexpected impacts. As a result, proposed mitigation measures are inappropriate and need to be revised or added for new impacts:

*“Our production plan has changed compared with the time of making EIA report. The impacts are thus different in practice and need appropriate mitigation measures to manage them.” (Interview 2)*

*“We develop all the times with launch of new products and application of new technologies and processes.” (Interview 5)*

The interview results find consistent responses explaining the poor implementation of both EIA proposed mitigation measures and ISO 14001 EMS management activities. The issues of human resource, non compliance, low management awareness, legal framework and unexpected changes have been well addressed in literature on EIA

and EMS both internationally and locally in Vietnam (Ofori, 1999; Prakash and Potoski's, 2006; Babakri et al., 2006).

### **7.2.3 The Role of ISO 14001 EMS in Implementing EIA Follow up Requirements**

The role of EMS in the follow up monitoring and management has been recognized in which it is stated that follow up will be aided by the presence of an EMS within the project proponent's organisation (EIA follow up workshop, 1995). The interviews explore how EIS has been used to implement the EMS and the elements of EMS that are useful for implementing EIA follow up monitoring and management.

#### **7.2.3.1 General format of EMS**

EMS is a system by which a company controls the activities, products and the processes that cause environmental impacts to minimise the environmental impacts of its operations. An EMS can identify a company's impacts on the environment, and help to create programs to properly manage environmental impacts.

The overview of ISO 14001 EMS implemented in 18 companies in Vietnam shows consistency in the format of the system applied. Basically, the system requires companies to have an environmental policy in place, identifying aspects and impacts, and proposing management activities to minimise impacts. The impacts are identified under 7 categories including air pollution, water pollution, soil pollution, impacts on landscape, natural resources consumption, health impacts and impacts on the ecology. Each aspect of

impacts is evaluated in term of its significance and consists of both source and end of pipe measures. The aspects are detailed to cover all activities of the business and then assessed what and how they would affect the environment.

Different from EIA in which mitigation measures are proposed for each predicted impact (for example, air pollution mitigation measures), the management activities under the ISO 14001 EMS are proposed for the environmental objectives such as reduce 10% of water consumption and energy consumption. This way of categorization makes it difficult to match the management activities with the impacts identified. It is not clear if all aspects of operation that have adverse impacts on the environment are being managed.

### **7.2.3.2 EIA follow up measures and EMS environmental management activities**

#### ***EIA follow up measures***

Follow up is an important step in EIA procedure to ensure that proposed mitigation measures are implemented. Popular approaches to follow up have been identified to include: inspection and surveillance, monitoring, environmental audit or environmental management plans (Section 5.1)

The interviews of 18 companies resulted in 21 responses about follow up measures that companies apply. The responses are grouped into 4 main categories of follow up measures (Au and Sanvicens, 1996) including:

- Monitoring: periodic sampling and/or continuous measurement of environmental parameters, levels of waste discharge or process emissions to ensure that regulatory requirements are met
- Environmental management plan: a systematic plan to address significant environmental issues of the corporate
- Environmental Audit - methodological examination to verify the accuracy of the EIA predictions, the effectiveness of mitigation measures, and the compliance with regulatory requirements, internal policies and standards, or environmental performance limits
- Inspection and Surveillance - to determine that the terms and conditions of the project approval are adhered to

Table 7.4 EIA follow up measures applied by responding firms

Measures	Number of companies	Percentage of total number of companies	Reasons given by respondents
Monitoring*	5	27%	Monitoring Periodical checking and sampling
Environmental management plans	12	67%	ISO 14001 EMS
Inspection and Surveillance (Implementing conditions of project approval)	4	22%	In accordance with project approval conditions
Environmental audit	2	11%	Periodical auditing
Total	21		

\*Note: Monitoring refers to a stand-alone monitoring plan that a company implement, not monitoring activities as part of the Environmental management plans (such as ISO 14001)

Table 7.3 shows that, of all follow up measures applied, environmental management plans are most popular (67%) to companies to implement recommendations of the EIA report. Twenty seven percent of the respondents carried out monitoring activities to ensure compliance with regulations and standards. Inspection and surveillance to check the implementation of conditions of project approval are done for 4 companies

interviewed (22%). Only 2 companies (11%) practise environmental audit to verify the accuracy of EIA report, effectiveness of mitigation measures and compliance with laws, regulations, and standards.

Monitoring is one of the requirements of the relevant authorities to check if companies are operating within allowed environmental standards:

*“We monitor our activities in accordance with law and regulations of the Ministry of Health” (Interview 15) or “we do periodical checking and sampling to ensure our environmental parameters are below allowed levels.” (Interview 8)*

A more systematic approach to EIA follow up has been to set up formal environmental management plans (EMPs) within the companies with allocation of staff, setting environmental objectives, environmental planning, budgeting, and so on to generally manage environmental issues of the company and with regard to EIA requirements, to carry out the proposed mitigation measures. The EMPs may take the form of a voluntary management plan set up by the companies themselves or more formally, the EMS in accordance with ISO 14001 standards.

*“implementing ISO 14001 EMS help us cover all environmental issues, including application of EIA proposed mitigation measures and monitoring requirements of relevant authorities.” (Interview 9)*

By the time of the interview, all participating companies were ISO 14001 certified. However, only some (3 companies) use the system to make up for follow up



requirements, others (9 companies) do not see it as a follow up mechanism but carry out separate actions (for example, separate monitoring plan, application of individual mitigation measures, and so on) to meet the requirements stated in the EIS. Another reason for not recognizing ISO 14001 EMS as a follow up mechanism is that the certification is recent and follow up has to be done long before the company has the EMS in place.

Another approach to follow up is inspection and surveillance to check if the project complies with project approval conditions. The company “*act in accordance with project approval’s conditions*” (Interview 9).

EIA is commonly viewed as a mandate to obtain project investment approval. Meeting the legal requirements and conditions of project approval is the only thing that companies consider when implementing the follow up requirements.

Some companies carry out environmental audit for comprehensive checking of their environmental performance:

*“we carry out periodical auditing of all environmental related issues such as level of impacts, effectiveness of management measures, and so on.” (Interview 14)*

Generally, the responses cover follow-up mechanisms that have been identified in the literature including monitoring (effects and compliance), environmental auditing, EPMS, and inspection and surveillance (Au and Sanvicens, 1996).

### 7.2.3.3 ISO 14001 environmental management activities

The implementation of management activities marks the next step in ISO 14001 EMS procedure where the organization puts the planned environmental management programs into action by providing resources and support mechanisms to achieve its environmental policy, objectives and targets.

Responses from 18 companies show the responding companies' pursuance with ISO 14001 standard. Elements identified to implement EMPs include:

- Internal management structure (human resource and financial investment);
- Environmental education;
- Operation procedures; and
- Documentation

Key words expressing the implementation of management activities by respondents are listed in Table 7.5.

*Table 7.5 Key words expressing the implementation of management activities*

<b>Elements of implementation</b>	<b>Measures</b>
Operation procedures	Strict instructions for divisions with significant impacts and aspects All divisions throughout the company consistently manage environmental systems under the same guidelines/rules
Internal management structure	Internal management system to cover environmental issues, staff appointments Establish an ISO 14001 division
Documentation	The EMS team records elements of the EMS
Environmental education	Training both leadership and employees

The elements of the ISO 14001 EMS implemented by companies reflect consistency with the requirements of the standard (Tibor, 1997).

### ***Internal management structure***

To implement environmental plans, the companies set up internal management structures with defined roles and responsibilities of staff in charge of implementation and maintenance of the system. Normally, an ISO 14001 division is established under the direct supervision of the management board. The division comprises of an environmental manager (head of the division) and other key staff from other divisions within the company of which the operations have significant impacts on the environment. The administrative department has the responsibility to maintain documentation and communication of environmental issues internally and externally to interested parties.

### ***Operation procedures***

Operation sections with significant impacts on the environment have to strictly follow working procedures to ensure meeting of environmental objectives and targets. According to the interviewees and their ISO 14001 EMS consultants, guidelines and environmental regulations are drafted and delivered to every level of business structure from managers to workers to ensure compliance. The guidelines and regulations are posted on notice board and public areas to catch attention and remind employees of their

environmental roles. This is actually the case of two firms visited in the Case Studies and some businesses participating in the interviews that offer a tour around the facilities during the interviews.

### ***Environmental Education***

Consultants are invited to provide training for key staff and all employees as a whole. The training is provided even before certification with the involvement of external consultants to make sure the company is internally capable of maintaining the system once it is implemented. Employees are educated about environmental issues and requirements of the EMS system to enhance their environmental awareness, making it possible for them to adapt to the new working rules and procedures.

### ***Documentation***

The role for documentation of EMS is clearly defined in the interviewed companies. With the help of external consultants, forms and detailed guidelines on using the documents are provided to key staff in charge of the ISO 14001 EMS.

#### **7.2.3.4 Reference to EIS when implementing ISO 14001 EMS**

With regards to the role of EIS in implementing ISO 14001 EMS, all interviewees mentioned that they have studied the EIS when start implementing EMS within their organizations. The main reasons for reference are identification of significant

impacts, legal requirements and general information about environmental issues of the project.

Twelve companies (67%) made reference to EIS because it is a legal requirement they have to conform to. For those companies, the EIA monitoring and management requirements must be identified when implementing the ISO 14001 EMS which requires the identification and compliance with all legal requirements.

*“The ISO 14001 EMS implementation requires for a procedure to identify and comply with both legal and other requirements pertaining to the organisation’s environmental aspects and EIA is one of these that we have to make sure we are complying with.”*

*(Interview 13)*

Fifty percent think the EIS is an useful source for identification of significant impacts of their operation.

*“The EIS report contains information about impacts identification”. “It helps us know about our activities that have significant impacts on the environment.” (Interview 9)*

### **7.2.3.5 Difficulties in making reference to EIA report**

The interviewees indicated 19 reasons regarding the difficulties in making reference to EIA during implementation of ISO 14001 EMS. The main obstacles include low quality

of EIA (12%), coordination problems (17%), poor documentation (11%) and changes in actual production (11%).

The major problem of low quality of EIA is again mentioned by respondents as the main barrier to referring to this document to assist implementation of the ISO 14001 EMS. This is the problem encountered by the majority of the responding companies (12 out of 18). It is revealed that the report contains “*inaccurate impacts predictions*”, “*outdated and inappropriate mitigation measures*” and “*untypical monitoring criteria*”. This lowers the usefulness of the report which, if properly done, would provide a lot of information for the implementation of the EMS.

Another problem in making reference to EIA is the poor coordination among different sections within the same company. This involves the issue of operational changes with changes of staff and “*information is not properly passed down to the other employees when the persons in charge retire or leave the company.*” (Interview 11)

Documentation is also not well structured and maintained by some companies leading to “*loss of documents*” (Interview 2) or “*taking time to find the EIA report*” (Interview 18).

The last mentioned difficulty is the changes in actual production from the time of the implementation of impacts assessment. This makes EIA an outdated document and does not provide much useful information for current situation.

“*A lot of changes have occurred and we have to do all the impacts identification again.*” (Interview 6)

The issues raised are typical problems of EIA which have been identified in literature about the constraints of this environmental tool. As having been mentioned by various researches in the field (Tran et al., 2000; Arts and Nootbloom, 1999; and Sebastiani, 2001), the quality of EIA is always questionable with inaccuracy of impact predictions and inadequacy of proposed mitigation measures. Again, it is the problem of coordination and documentation which have also been identified in literature (Morrison-Saunders et al., 2003; Sebastian, 2001). The issue of changes in production falls into follow up literature which manifests the necessity of assessment of impacts throughout the life cycle of the project, not just planning stage, to actually minimise the adverse impacts as they occur in practice during project implementation.

#### **7.2.3.6 Elements of EIA report that are useful for certification and implementation of EMS**

From the interviews, it can be seen that all elements of EIA report can assist the implementation of the EMS. The useful elements of EIS include: baseline analysis, impacts prediction, mitigation measures, monitoring plans and legal requirements.

Legal requirements including “*regulatory requirements and conditions for project approval*” are regarded by respondents as the most important element of the EIS. This is the main source of information that companies look for in the EIA report.

Another useful source of information is information about proposed mitigation

measures. According to interviewees, *“the section on proposed mitigation measures is used to review what the company has done and suggest what should be done”* (Interview 5).

One respondent states that:

*“The proposed measures in EIA are recommended by experts with years of experience in impacts assessment and management. It is a good instruction for our management plans.”* (Interview 17)

The impacts prediction is also useful to companies from which they would *“learn about their significant impacts that they should focus on”* during impact identification as required by ISO 14001 EMS implementation.

The monitoring plan is often referred to and reviewed in terms of its appropriateness of schedule and monitoring criteria to best facilitate the current situation of environmental management of the companies.

*“We review the monitoring plan proposed in EIA report and revise it to ensure the monitoring criteria are typical for each type of impact and they are meeting legal requirement updates.”* (Interview 9)

#### **7.2.3.7 Number of impacts predicted in EIA versus impacts identified by ISO 14001 EMS**

According to the interviewees, the EMS has identified more impacts than predicted in impacts assessment report. The impacts identified under EMS cover both EIA



predictions and EIA's unexpected ones which only occur and are realized during project's implementation.

The interviewees identify four main reasons for more impacts identified in practice than predicted. The most important reason which is mentioned by all the respondents is the accuracy of impact identification versus impact prediction. Twenty percent of the respondents identify detailed requirements of EMS as an important reason for more impacts identified under EMS than predicted in EIA. The last reason mentioned is the requirement for continuous improvement of EMS (11%).

Regarding the reasons for more impacts identified in practice than predicted in the EIA report, the interviewees express their view that *“during project implementation, the impacts are detailed and practical, the impact identification process takes into considerations all aspects of production within the facility”* while *“during impact assessment process, the impacts are predicted based on incomplete information about the project which may change during implementation”* (Interview 7, 10). This leads to more impacts identified in practice during project implementation than predicted in the pre-decision making stage.

Four other companies consider detailed requirements of EMS as a reason for detailed impact identification.

*“ISO 14001 EMS is very detailed, requiring assessment of all aspects of operation to identify all impacts of the organization. The EIA is more general, not detailed as such.”* (Interview 7)

The requirement for continuous improvement is also an important factor for timely identification of impacts. *“In EMS, it is required that we continuously monitor all environmental aspects of our operation. Therefore, we can timely identify impacts as soon as they occur and have appropriate responses to manage them.” (Interview 3)*

Generally, it is agreed that ISO 14001 EMS identifies more impacts than EIA predictions. It reflects the practical nature of EMS compared to EIA which is only used as a tool for impact prediction before the facilities come into operation. The accuracy and adequacy of EMS in terms of impacts identification are also thanked to the details of this standard that requires detailed identification of impacts and aspects of impacts and continuous monitoring of those impacts for discovery of new impacts once they occur.

### 7.2.3.8 Reasons for EIA predicted impacts not to occur in practice

Consistent with the results of the case studies, there are some EIA predicted impacts that do not occur in practice during project implementation.

Table 7.6 Reasons for EIA predicted impacts not occur in practice

Importance of reasons	Reasons	Percentage of total number of companies
1	Poor quality of EIA (EIS as paper work for project approval only)	34%
2	Change of product/project plan	28%
3	Unexpected impacts	17%
4	Unqualified consultants/assessors of EIA	11%

The interviewees provided 17 responses regarding reasons for EIA predicted impacts not occur in practice. The reasons include: poor quality of EIA (34%), change of production/project plan (28%), unexpected impacts (17%), and unqualified consultants (11%) (Table 7.6).

Six companies encountered the problem of poor quality of EIA, a popular problem of EIA implemented around the world (Sebastiani, 2001). For those companies, the assessment is done either *“as a bureaucratic requirement to get project approval”* or *“the predictions are inaccurate”* (Interview 5, 6, 9). For companies that do not take the assessment seriously to manage the adverse impacts aimed at by this environmental tool, the poor quality is reflected in all parts of the EIS from inaccurate predictions to inadequate mitigation measures. The report is thus of low value to apply in practice to manage the real impacts of the development. For most of the companies that admit their poor quality of EIA, the reason for predicted impacts do not occur during project implementation is due to inaccuracy of the predictions caused by a variety of reasons including lack of data, financial support, unqualified human resources and so on.

The second important reason for predicted impacts not to actually occur is the changes in production plan: *“lower volume during the first years of production”* (Interview 5), *“business expansion”* (Interview 9) and *“new manufacturing process/technology application”* (Interview 12).

Another reason is the issue of unexpectedness where *“new impacts occur due to unpredictable issues like accidents, power cut off, and so on”* (Interview 14).

The last mentioned reason is unqualified consultants/assessors. The assessment team either *“lack expertise to cover all necessary aspects of the assessment”* or *“are not well trained to carry out the task”* (Interview 6).

### 7.2.3.9 Implementation of EIA's proposed management activities under EMS

All respondents state that the ISO 14001 EMS helps to implement mitigation measures proposed in the EIS. Most of those mitigation measures have been implemented as they fall within the environmental protection objective of the EMS being applied by the organization or because it helps to enhance health, customer belief, comply with legal requirements and to maintain sustainable business.

For most of the interviewees (78%), the proposed mitigation measures are part of their ISO 14001 EMS's environmental management programs to minimise the identified adverse impacts on the environment. The mitigations measures are “*good recommendations for implementation of environmental management activities*” (Interview 11). The implementation of those measures “*are under coverage of our environmental management system. Even without EIA, we have to apply those measures as required by ISO 14001 EMS.*” (Interview 17)

Despite positive results regarding the implementation of EIA proposed mitigation measures, there are recommendations made in the EISs that are not implemented by organizations. The reasons for this non-implementation are non-occurrence of impacts (50%), inappropriateness of proposed measures (28%), and outdated technologies (17%) (see Table 7.7). These are consistent with literature and other findings of this research regarding quality of EIA which identifies inaccuracy of impact predictions and poor value of proposed mitigation measures (for example, Sebastiani, 2001; and Morrison-Saunders et al., 2003).

Table 7.7 Reasons for EIA proposed management activities not to be implemented by EMS

Importance of reasons	Reasons	Percentage of total number of companies
1	Non-occurrence of impacts	50%
2	Inappropriateness of proposed measures	28%
3	Outdated proposed technologies	17%

Half of the interviewees respond that the mitigation measures are not implemented during project operation because the impacts that those measures are meant to manage do not occur. The reasons for the non occurrence of impacts have been identified by respondents in Part C of the interview which consists of inaccuracy of predictions, changes of production, poor quality of EIA assessors, and unexpectedness issues of accidents, power cut off, and so on.

*“Not all impacts predicted really occur. Our production has changed in terms of products, process and technologies since the assessment and the real impacts are different from those identified in the impact assessment report. Therefore, we do not need to mitigate those impacts anymore.” (Interview 5)*

The next important reason for not implementing EIA proposed mitigation measures is the inappropriateness of those measures. According to respondents, *“the measures proposed are not the best solution to minimise the impacts. As such, we apply the more effective ones to better manage the issues” (Interview 13).*

The last reason for non-implementation of the EIA proposed mitigation measures is because the proposed technologies are outdated and more effective equipment are now available for businesses.

*“More advanced technologies are available for managing environmental impacts compared to the ones proposed in the EIA report. There is no reason not to apply those more effective modern technologies instead of the old ones recommended.”*  
(Interview 15)

#### **7.2.4 Summary**

In summary, based on the framework of the Three Pillars of Institutions, the compliance theories and the reasons for compliance and noncompliance provided by participating firms in the interviews, eighteen reasons for compliance and nineteen reasons for noncompliance with environmental laws, including EIA and EMS are identified following Table 7.8 and 7.9.

The determinants of firm compliance are used to develop a survey questionnaire for examining the firms’ reasons for compliance and noncompliance with environmental laws and to test the validity of the resulting framework of “Determinants of Firm Compliance/Noncompliance with Environmental Laws and Regulations”.

Table 7.8 *Reasons for compliance with environmental laws and regulations*

<b>Logic of action</b>	<b>Factors affecting compliance</b>	<b>Reasons for compliance (Attributes)</b>
<b>Regulative</b>		
<b>Instrumentality</b> Cost benefits calculations	Rules/Laws Sanctions	1. Probability of violation detection and being sanctioned
		2. Noncompliance cost is not small
	Gains/Losses/Consequences	3. Enable company to reduce material wastage
		4. Improve company's procedures
		5. Easy to integrate with other management systems
		6. Reduce company's operating costs
		7. Help to enhance company's productivity
<b>Normative</b>		
<b>Appropriateness</b> Identities, obligations, and conceptions of appropriate action	Personal morality	8. Improve workers' health, safety and welfare
		9. Employee/Agent disobeys Owner/Principal's order to violate
		10. Company to contribute to efforts to protect the environment
	Social influence	11. Be essential in company's overseas drive
		12. Be insisted upon by stakeholders/parent company
		13. Concern for social reputation
		14. Increase company's competitiveness
	Legitimacy	15. Community and peer groups are compliant
		16. Procedure fairness
		17. Appropriateness and effectiveness of the law
<b>Cognitive</b>		
<b>Orthodoxy</b> <b>Common beliefs</b> <b>Shared logics of action</b>	Shared understanding of compliance	18. Law compliance as taken for granted activities/Belief in abiding by law

Table 7.9 Reasons for noncompliance with environmental laws and regulations

Logic of action	Factors affecting noncompliance	Reasons for noncompliance
<b>Regulative</b>		
<b>Instrumentality</b> Cost benefits calculations	Rules/Laws Sanctions	1. Low probability of violation detection
		2. Sanctions are not serious
	Gains/Losses/Consequences Calculation	3. Increased cost of operation
		4. Complicated working procedures
		5. Difficult to integrate with other systems
<b>Normative</b>		
<b>Appropriateness</b> Identities, obligations, and conceptions of appropriate action	Capability (knowledge of the rules, and financial and technological ability to comply)	6. Lack of financial and technological ability to comply
		7. Lack of EM human resources
		8. Ignorance of law/difficulties in understanding environmental regulations
		9. High cost of implementation
	Commitment (determined by norms, perceptions of the regulators, and incentives for compliance)	10. Not believe in the value of the rule/regulations
		11. Lack of co-operation of or difficulties made by local government
		12. Lack of leadership concerns and commitment
		13. Defeated expectations, perceived unfairness, and other forms of slippage
		14. Employee/Agent disobeys Manager/Principal's order to comply
		15. Noncompliance of legal requirements
Social influence	16. The clients do not recognize it	
	17. Community and peer groups are non-compliant	
<b>Cognitive</b>		
<b>Orthodoxy</b> Common beliefs Shared logics of action	Shared understanding/taken for granted activities	18. Low management awareness
		19. Difficulties in Changing working tradition



## **7.3 THE FIRM SURVEY RESULTS AND DISCUSSION**

This section reports the results of the survey focusing on identifying the determinants of firm compliance and noncompliance with environmental laws and regulations. It answers the questions: What attributes of firm compliance are important? Is there any difference in view between the firms of different sizes, operations, business structures and ISO 14001 Certification?

Results of the firm survey include the importance ratings of the attributes and t-test of these means, results of the ANOVA for assessing the equality of population means based on business structure, firm size, operation and ISO 14001 Certification, and results of the factor analysis.

### **7.3.1 Respondents' Profile**

#### **7.3.1.1 Response rate**

In the main survey, out of approximately 90 approaches, 63 companies are willing to respond (70%). Some respondents received the survey and then returned by mail or email, the review process finds that some respondents do not rate some attributes or miss some questions about their profiles. The questions about the profiles are then confirmed via telephone. The rating of some attributes that are missed out by the respondents were not possibly redone due to the distant locations of the companies

interviewed and the unwillingness of the respondents to take part in the survey again. The respond rate is comparable to the average response rate of 73.5% of face-to-face interview (see Hox and De Leeuw, 1994).

### 7.3.1.2 Business structure, operation, size and location of respondent firms

Foreign owned companies comprise 58.7% of the total responding companies, while 14.3% are state owned companies, 19.0% are joint ventures and 7.9% are private companies (Table 7.10).

Fifty nine out of 63 responding companies (93.7%) specialize in industry and construction and four companies (6.2%) in services. Sixty percent of the total company respondents are large businesses and the remaining 40% are small and medium businesses. Companies located in the South, the North and the Central Vietnam constitute 69%, 25% and 6% respectively (Table 7.10).

*Table 7.10 Distribution of responding companies under business structure, operation, size and location*

Respondent profile		Number of respondents	%
<b>Business structure</b>	100% foreign Owned	37	58.7
	State Owned	9	14.3
	Joint Venture	12	19.0
	Private	5	7.9
<b>Operation</b>	Industry and Construction	59	93.7
	Services	4	6.3
<b>Size</b>	Large	38	60.3
	Small and Medium	25	39.7
<b>Location</b>	The South	43	68.3
	The North	16	25.4
	The Central	4	6.3

### 7.3.1.3 Environmental management measures being applied by companies

Together with the development of environmental mandate and growing concerns about environmental impacts of enterprises' operations, enterprises in Vietnam are more and more active in applying pollution control measures. The results of the survey find the measures applied fall under both regulatory and voluntary categories as presented in Table 7.11.

Table 7.11 *Environmental management measures implemented by firms*

Measures	Environmental management measures	Frequency	Percentage
<b>Regulatory measures</b>			
1.	EIA	63	100.0
2.	Environmental monitoring	45	71.0
3.	Inspection on environmental compliance with relevant standards	52	83.0
4.	Onsite wastewater treatment facility	10	15.0
5.	Wastewater treatment (offsite)	24	37.0
6.	Air pollution control measures	43	68.0
7.	Payment of emissions fees	33	53.0
8.	Hazardous waste management and treatment	9	14.0
9.	Landscaping by the government standard	34	54.0
10.	Environmental report	12	18.0
11.	Penalties, fines for violation	16	25.0
<b>Voluntary</b>			
1.	ISO 14001 EMS	53	84.0
2.	Education on law compliance	34	54.0
3.	Safety enhancement	39	62.0
4.	Training on environmental, health and safety	25	40.0
5.	Green production, 3R	15	24.0
6.	Responsible care	13	21.0
7.	5S	7	11.0
8.	Improving working healthy environment	33	52.0
9.	Environmental awards	12	19.0

The major measures applied by firms include the technical measures to deal with water pollution, air pollution, solid waste treatment and management measure of the implementation of environmental management systems, including ISO 14000 Certification. These measures have been recorded in the literature on environmental management practice in Vietnam (MOE, 2002). Regarding the regulatory measures, the most popular activities include mandatory environmental monitoring, landscaping, surveillance and inspection, fines and penalties for violation and environmental report. Voluntary measures are education and training programs, together with environmental, health and safety enhancement efforts. Incentives are also provided by companies to the employees and local community through environmental awards.

It has been reflected in the literature that Vietnam lacks onsite waste water treatment facilities installed by firms (NEA, 2007). Only 15% of surveyed firms have waste water treatment facilities. Others either have the waste water treated offsite at a local treatment plant or discharge directly into the environment. Despite the requirement on installation of treatment systems, some companies do not have air pollution control measures and emit the pollutants directly into the air.

The hazardous waste treatment is also a big problem with firms due to lack of treatment facilities. Most firms send the waste to the landfills together with general waste. Only a small number of firms (9) store their waste and send to licensed treatment plants.

#### **7.3.1.4 EIA Implementation and ISO 14001 EMS Certification and Implementation**

As the objective of the study is on firms that have implemented EIA and EMS, 100% of respondents are firms that have completed the impact assessment during the pre-decision making stage of the project. Seventy nine percent of respondents are certified to ISO 14001 EMS, accounting for 50% of the total certified companies (113) by the time of the survey. Most companies were certified rather recently in 2003 and 2004, the time with rapid environmental development in Vietnam. The intentional inclusion of thirteen companies who are not certified to ISO 14001 is to contrast their views with the more highly environmentally aware companies who have implemented the EMS.

#### **7.3.2 Reasons for Compliance with Environmental Laws and Regulations**

##### **7.3.2.1 Attributes rating, t test of the means and factor analysis**

Companies were asked to identify the reasons for compliance with environmental requirements, both regulatory and voluntary measures, and rank the identified reasons as follows: 1 = “not important” and 5 = “very important”.

Mean importance ratings and t values for all the attributes regarding firm compliance with environmental laws are shown in Tables 7.12. The reasons are presented in order of

importance from the most important reason to the least important one based on the calculated mean.

Table 7.12 Ranking of determinants of firm compliance with environmental laws/requirements

Reasons for compliance	Regulatory			EIA		
	Rank	Mean	T	Rank	Mean	T
Law compliance	1	3.8367	7.097	1	4.1607	8.491
Concern for social reputation	2	3.6316	4.169	8	3.4821	2.529
Noncompliance cost is not small	3	3.5957	5.999	10	3.3509	2.776
Increase company's competitiveness	4	3.5476	3.575	3	3.9643	6.913
Probability of violation detection and sanctioned	5	3.5000	3.676	5	3.6400	6.271
Appropriateness and effectiveness of the law	6	3.4651	3.263	6	3.6316	6.187
Improve workers' health, safety and welfare	7	3.4255	3.919	2	4.0179	9.289
Be essential in company's overseas drive	8	3.2895	1.924	4	3.6792	5.532
Reduce company's operating costs	9	3.2558	1.425	12	3.0889	.467
Help to enhance company's productivity	10	3.0732	.464	16	2.9245	-.504
Community and peer groups are compliant	11	3.0000	.000	7	3.5294	5.610
Improve company's procedures	12	2.8889	-.927	18	2.6735	-1.999
Be insisted upon by stakeholders/parent company	13	2.6774	-2.061	13	2.9412	-.297
Company to contribute to efforts to protect the environment	14	2.6667	-3.788	9	3.3878	2.987
Enable company to reduce material wastage	15	2.6596	-2.183	11	3.2182	1.848
Easy to integrate with other management systems	16	2.5814	-3.030	17	2.8519	-1.033
Procedure fairness of environmental authorities	17	2.4615	-3.376	15	2.9273	-.405
Employee/Agent disobeys Owner/Principal's order to violate	18	2.3673	-4.769	14	2.9286	2.9286

Regarding the reasons for compliance with environmental laws, the norm of law compliance is regarded as the most important determinant of firm compliance behavior. This finding supports the normative theory of compliance which holds that firms comply because of 'compliance norm' (Tyler, 1990). Since it is the law which has been mandate, it is the right thing for firms to comply with it. This is true for the case of EIA, one of the most popular regulatory environmental management instrument used by the Vietnamese government and by other countries worldwide (Buckley, 1989; Lawrence, 1993; and Lee and Colley, 1990).

In implementing the regulatory environmental management measures, firms are most concerned with protecting their reputation, avoiding sanctions for noncompliance, enhancing company's competitiveness, reducing operating cost, and accessing international market (t value larger than 1.645) (Table 7.12). Perception of the appropriateness and effectiveness of the law is also an important factor determining the compliance of firms.

It is noted from the survey results that the cost concern regarding implementation of EIA is not regarded as highly important as other regulatory environmental management measures. This may be due to the fact that EIA is very strict and it is a must for firms to have their impact assessment report approved before they can proceed with the implementation of the project. For this reason, firms do not have options to invest in EIA or not. Also important is the social pressure from other companies who have implemented EIA that motivate firms to implement accordingly. This is shown by the high ranking of this reason (number 7) among others.

The important reasons for implementation of voluntary environmental management measures identified by firms are also similar to the reasons for compliance with environmental laws as presented in Table 7.13. Firms seem to be motivated to implement compliance and beyond compliance measures on the same basis of compliance norms, social influence (enhanced competitiveness, enhanced social reputation, and overseas development), cost/benefit concerns (improved working procedures, and reduced operating costs) and morality (improved working environment, health, safety and welfare of employees). The findings provide stronger validation for both rationalist and normative theories of compliance (Berker, 1968; Scholz, 1998; Spence, 2001; Tyler,

1990) and also Scott's view of the importance of all the three regulative, normative and regulative elements of institutions (Scott, 2001).

Despite the similarities, the results show more reasons motivating the implementation of voluntary measures than the regulatory ones. The implementation of voluntary measures reflect more concerns for the integration with other management systems, waste reduction (t value larger than 1.645). The fear of detection and sanction is also regarded to be important but not as important as that of compliance with environmental laws and regulations. This may reflect the fact that the compliance with environmental regulations is one of the requirements of ISO 14001 EMS and the certification is subject to annual inspection by accreditation body. Besides, firms implementing voluntary measures are not responding to the noncompliance cost pressure (Table 7.13). This kind of cost seems not to be a big problem for such firms as they are performing well, meeting all the relevant environmental standards and there is low probability of being fined for environmental violation. As mentioned by some respondents, the voluntary certification is a big advantage for the company that helps them establish good relationship with and good image in the eyes of inspection and enforcement agencies. The inspections, therefore, are less frequent than those with poor environmental performance.



Table 7.13 Ranking of reasons for implementation of voluntary environmental management measures

Reasons for compliance	Voluntary			EMS		
	Rank	Mean	T	Rank	Mean	T
Enable company to reduce material wastage	1	4.3462	12.299	1	4.3043	9.927
Concern for social reputation	2	4.3019	10.920	6	3.9167	4.864
Increase company's competitiveness	3	4.2632	10.877	2	4.2895	12.158
Company to contribute to efforts to protect the environment	4	4.2115	11.652	4	4.1250	8.652
Law compliance	5	4.1395	7.944	3	4.1579	8.674
Improve company's procedures	6	3.9412	9.948	8	3.7381	5.581
Be essential in company's overseas drive	7	3.9216	6.024	11	3.5897	2.945
Help to enhance company's productivity	8	3.9000	8.654	7	3.7632	5.984
Reduce company's operating costs	9	3.8333	5.674	12	3.4865	2.389
Improve workers' health, safety and welfare	10	3.7414	4.918	5	4.0238	6.637
Probability of violation detection and being sanctioned	11	3.6216	3.967	9	3.7241	4.638
Community and peer groups are compliant	12	3.5484	3.770	13	3.4688	3.695
Appropriateness and effectiveness of the law	13	3.5000	4.636	10	3.6579	4.979
Easy to integrate with other management systems	14	3.4783	4.008	15	3.3953	2.470
Noncompliance cost is not small	15	3.4048	2.327	14	3.4167	2.440
Be insisted upon by stakeholders/parent company	16	3.0000	.000	17	2.6667	-2.119
Procedure fairness of environmental authorities	17	2.8125	-1.030	16	2.9286	-.433
Employee/Agent disobeys Owner/Principal's order to violate	18	2.7576	-1.391	18	2.5938	-2.523

It is noted that the case of agency losses is not a problem for companies in implementing environmental management measures. The employees are performing well in accordance with managerial orders. Legitimacy and pressure from parent companies are also not important factors determining the implementation of voluntary measures of firms with very low ranking compared to other reasons (No. 17) (see Table 7.13). The important reasons for implementation of environmental requirements, from the highest to lowest ratings, are presented in Table 7.14.

Table 7.14 *Determinants of firm compliance behavior*

Ranking	Regulatory measures	EIA	Voluntary measures	ISO 14001 EMS
1	Law compliance	Law compliance	Enable company to reduce material wastage	Enable company to reduce material wastage
2	Concern for social reputation	Improve workers' health, safety and welfare	Concern for social reputation	Increase company's competitiveness
3	Noncompliance cost is not small	Increase company's competitiveness	Increase company's competitiveness	Law compliance
4	Increase company's competitiveness	Be essential in company's overseas drive	Company to contribute to efforts to protect the environment	Company to contribute to efforts to protect the environment
5	Probability of violation detection and sanctioned	Probability of violation detection and sanctioned	Law compliance	Improve workers' health, safety and welfare
6	Appropriateness and effectiveness of the law	Appropriateness and effectiveness of the law	Improve company's procedures	Concern for social reputation
7	Improve workers' health, safety and welfare	Community and peer groups are compliant	Be essential in company's overseas drive	Help to enhance company's productivity
8	Be essential in company's overseas drive	Concern for social reputation	Help to enhance company's productivity	Improve company's procedures
9			Reduce company's operating costs	Probability of violation detection and being sanctioned
10			Improve workers' health, safety and welfare	Appropriateness and effectiveness of the law
11			Probability of violation detection and being sanctioned	Be essential in company's overseas drive
12			Community and peer groups are compliant	Reduce company's operating costs
13			Appropriateness and effectiveness of the law	Community and peer groups are compliant
14			Easy to integrate with other management systems	Noncompliance cost is not small
15			Noncompliance cost is not small	Easy to integrate with other management systems

The ranking of reasons for implementation of environmental management measures (both voluntary and regulatory) is illustrated in Figure 7.5.

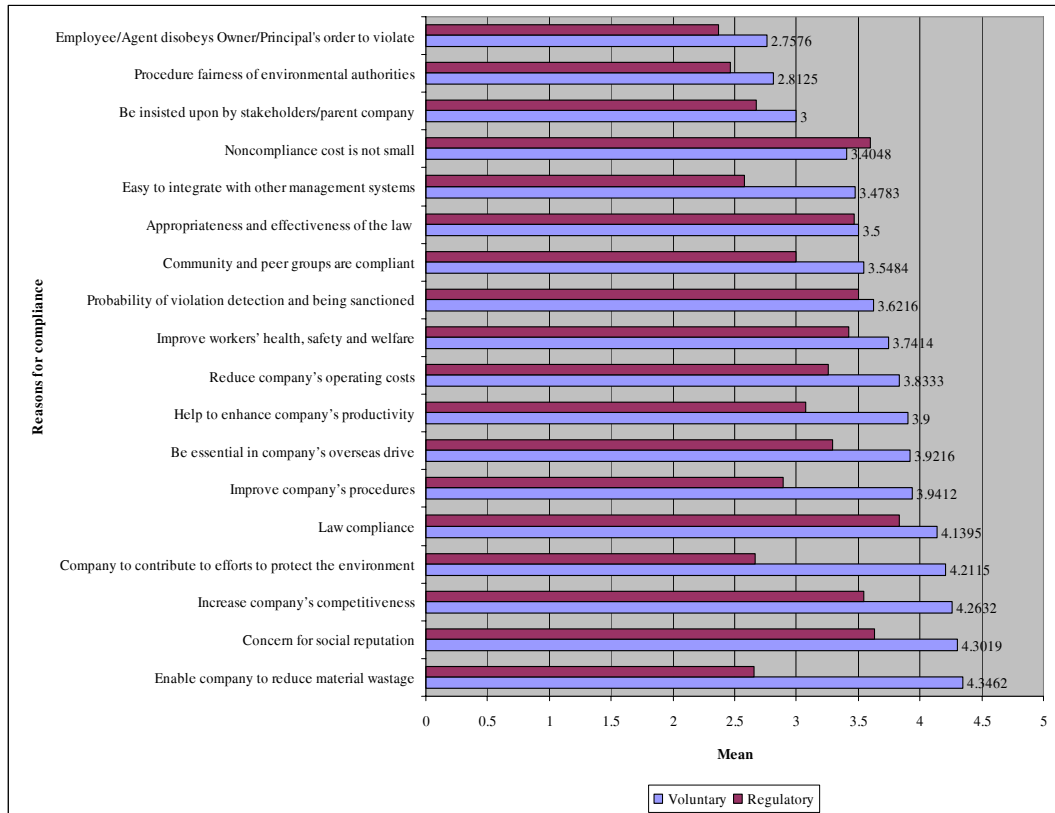


Figure 7.5 Determinants of firm compliance behavior

The ranking of reasons for implementation of EIA and ISO 14001 EMS is illustrated in Figure 7.6.

The factor analysis results in the successful output for reasons for compliance with regulatory requirements with KMO value over .50 indicating the sampling adequacy and the factor analysis is appropriate for the sample.

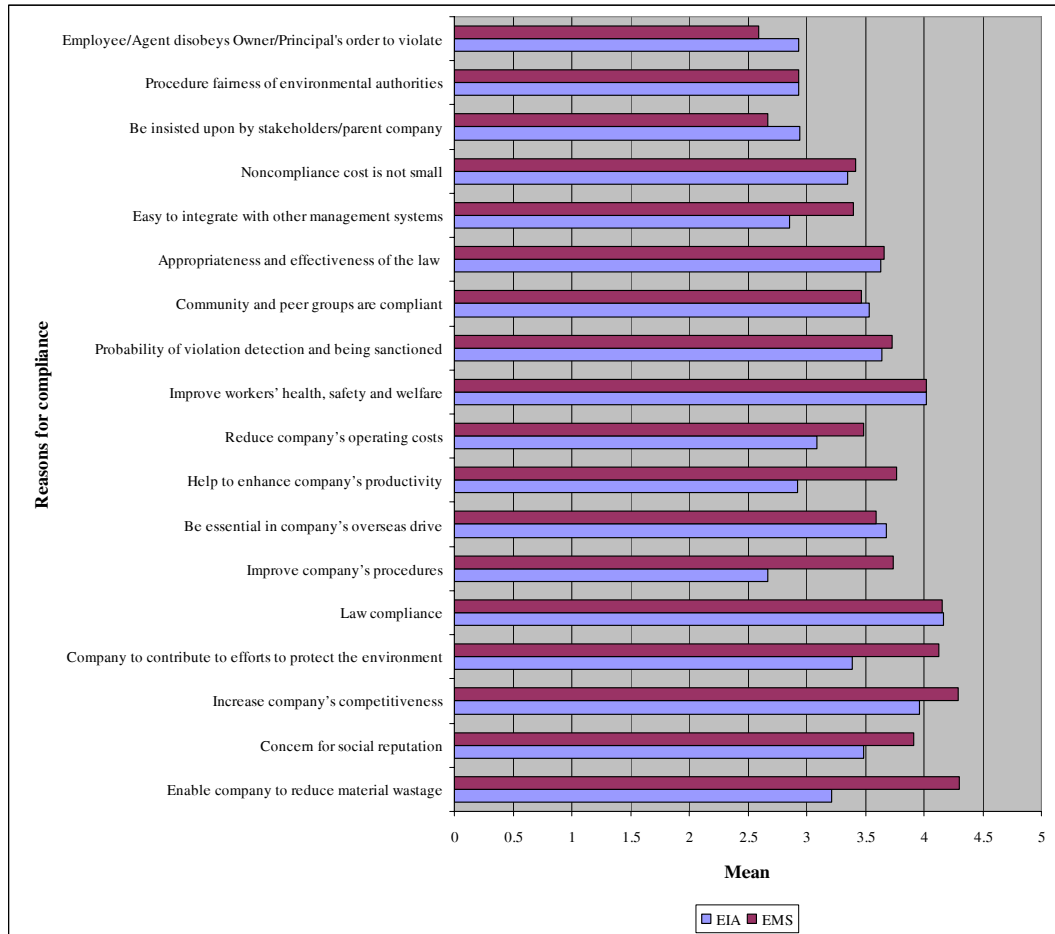


Figure 7.6 Determinants of firm compliance behavior - EIA and EMS

The categorization of reasons for implementation of regulatory requirements is used to generalize for the model of noncompliance behavior for two reasons:

- the objective of the analysis is to detect the structure of attributes; and
- the attributes for compliance with regulatory and voluntary requirements are set the same in the questionnaire.

The results of factor analysis of reasons for compliance with regulatory requirements on

environmental management show that 18 attributes are loaded into 6 factors which have eigenvalues greater than 1. These loadings are presented in Table 7.15.

Table 7.15 Factor loadings of the attributes – determinants of compliance

Attributes	Factor loadings					
	1	2	3	4	5	6
<b>Factor 1</b>						
Enable company to reduce material wastage	667					
Improve company's procedures	748					
Easy to integrate with other management systems	765					
Reduce company's operating costs	511					
Help to enhance company's productivity	638					
Law compliance	638					
<b>Factor 2</b>						
Be insisted upon by stakeholders/parent company		594				
Concern for social reputation		821				
Increase company's competitiveness		833				
<b>Factor 3</b>						
Community and peer groups are compliant			828			
Appropriateness and effectiveness of the law			796			
<b>Factor 4</b>						
Probability of violation detection and being sanctioned				886		
Procedure fairness				518		
<b>Factor 5</b>						
Noncompliance cost is not small					768	
Company to contribute to efforts to protect the environment					548	
Be essential in company's overseas drive					676	
<b>Factor 6</b>						
Improve workers' health, safety and welfare						531
Employee/Agent disobeys Owner/Principal's order to violate						835

The naming of factors is based on relevant compliance literature presented in Chapter 2 using terms by other theorists for each groups of related attributes. For example, according to rational theorists, the gains/losses calculation of compliance with laws refers to the concern for high noncompliance cost and smaller economic benefits of

noncompliance than that of compliance. Attributes reflecting this economic calculation are then termed 'gains/losses calculation'.

Factor F1 included six attributes 'Enable company to reduce material wastage', 'Improve company's procedures', 'Easy to integrate with other management systems', 'Reduce company's operating costs', 'Help to enhance company's productivity' and 'Law compliance'. Five out of the six attributes were all related to the gains and losses that firms might derive of the implementation of the environmental management measures for their production. Based on literature of compliance theories presented in Chapter 2, this factor was named after the rationalist approach's term 'Gains-Losses Calculation' reflecting the rational calculation of the financial benefits of environmental management activities. Attribute 'Law Compliance' was not related to this category and was removed from the factor and regrouped in Factor 'Shared understanding of compliance'. Factor F2 had three attributes 'Be insisted upon by stakeholders/parent company', 'Concern for social reputation' and 'Increase Company's competitiveness'. This factor is concerned with the 'Social influence'. This finding indicates that social pressure is becoming more important in the context of Vietnam, a country undergoing rapid economic development with more and more efficient operation of the media and active participation of related stakeholders of firms. Future studies should look into this issue.

Factor F3 included two attributes 'Community and peer groups are compliant', and 'Appropriateness and effectiveness of the law', and Factor F4 included two attributes 'Probability of violation detection and being sanctioned' and 'Procedure fairness'. These factors were related to social pressure and legitimacy and thus, can be combined with Factor F2 factor under the title 'Social pressure and legitimacy'. The attribute

‘Probability of violation detection and being sanctioned’ did not match the common feature of the group and was thus discarded from the factor.

Factor F5 and F6 included five attributes ‘Noncompliance cost is not small’, ‘Company to contribute to efforts to protect the environment’, ‘Be essential in company’s overseas drive’, ‘Improve workers’ health, safety and welfare’ and ‘Employee/Agent disobeys Owner/Principal's order to violate’. These attributes matched the research hypothesis regarding the substantive norms of compliance ‘Personal morality’. The attribute ‘Noncompliance cost is not small’ was not related to this factor and was discarded.

The two attributes discarded from other factors ‘Noncompliance cost is not small’ and ‘Probability of violation detection and being sanctioned’ was regrouped into one factor ‘Rules, laws and sanctions’. The attribute ‘Law compliance as taken for granted activities’ was named under the factor ‘Shared understanding of compliance’.

In total, the analysis arrived at five factors determining firm compliance behavior. The mean of importance rating of the attributes in each factor are presented in order of importance in Table 7.16.

Table 7.16 Means of factor ratings

Rank	Factor	Mean			
		Regulatory	EIA	Voluntary	EMS
1	Shared understanding of compliance	3.8	4.1	4.1	4.2
2	Rules/laws and sanctions	3.5	3.5	3.5	3.6
3	Social influence and legitimacy	3.1	3.4	3.6	3.5
4	Morality	3.0	3.5	3.6	3.6
5	Gains/losses calculation	2.9	2.9	3.2	3.1

The results of the t values, the mean importance ratings of attributes and factors seem to indicate that the sampled firms was motivated to comply to environmental requirements by their awareness of law compliance, deterrence measures, social pressures and legitimacy of laws, and moral motives. This finding lends support to Scott's "Three Pillars of Institutions" and theories of firm compliance where compliance behavior is stated to be based on a combination of the regulative, normative and cognitive elements of institutions (Scott, 2001; DiMaggio and Powell, 1991). It also lends support to the indication that foreign businesses (majority of the sampled firms) in Vietnam are highly aware of environmental protection. However, the fear of sanctions is still an important factor determining firms' compliance with environmental laws. Low rating of factor 'Gains/losses calculation' indicates that firms are not well aware of the savings that they can derive from the implementation of environmental management systems. It might help to improve firms' operation but it is not the reason determining, but rather the result of, the implementation of environmental management measures. The model of firm compliance is derived from the analysis as shown in Figure 7.7. The attributes are grouped into 5 factors as a result of factor analysis, which are then put under the related pillars of regulative, normative and cognitive reasons. As noted in Chapter 1 under the subsection 1.6 Methodology and again in Chapter 6 Research Methodology, the three sets of data are simultaneously analyzed and together with the literature review, act as cross checking the results from each other. The interviews results in this section are analyzed and combined with the compliance literature, Scott's Three Pillars of Institutions in Chapter 3, and case studies result which are then synthesized into the Figure 7.7 below.



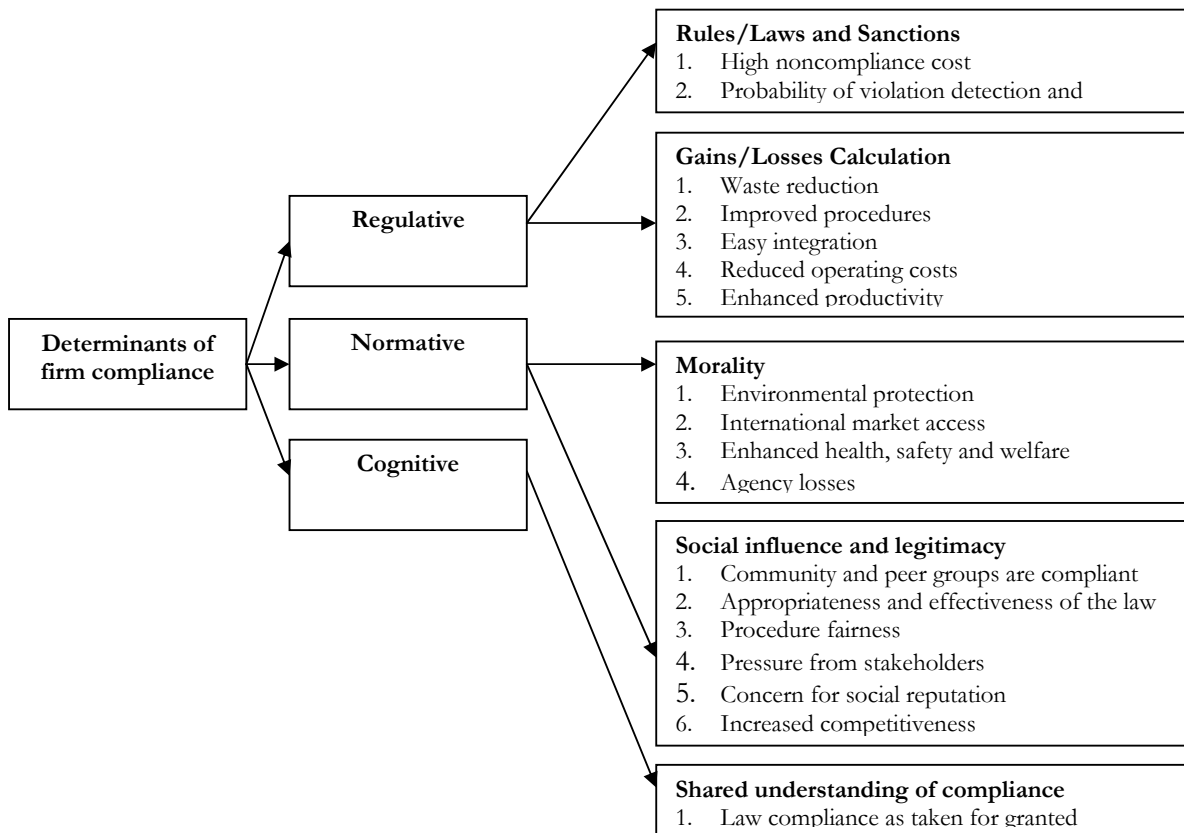


Figure 7.7 Model of firm compliance

### **7.3.2.2 Effects of business structure, size, and types of operation on the importance ratings of attributes**

#### **7.3.2.2.1 Size effects**

The significance level of Levene's test for equality of variances (Sig.) and the t test for equality of means calculated from the independent samples t test for two groups of large firms and small and medium firms are presented in Table 7.17. The Sig. values for the t test for equality of means smaller than the chosen  $\alpha$  (0.05) are bolded. These bolded Sig. values signify the significant effects of firm size.

There are size effects on firms' compliance determinants 'Enable company to reduce material wastage', 'Improve company's procedures', 'Reduce company's operating costs', 'Probability of violation detection and being sanctioned', 'Improve workers' health, safety and welfare', 'Employee/Agent disobeys Owner/Principal's order to violate', and 'Law compliance as taken for granted activities/Belief in abiding by law'.

The firm size effects on the reasons for compliance with different types of environmental requirements (Sig. less than .05) are presented in Table 7.17.

Among the attributes, large firms place more importance on the perceived benefits of environmental management for firms' operation (reduced costs, reduced waste, improved working procedures) in motivating compliance behavior than smaller firms (Table 7.18).

Table 7.17 Results of independent t test for firm size effects

Attributes	Regulatory		Voluntary		EIA		EMS	
	Levene's Test	T Test	Levene's Test	T Test	Levene's Test	T Test	Levene's Test	T Test
	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.
Enable company to reduce material wastage	.921	<b>.011</b>	.172	.836	.435	.182	.983	.611
		.009		.825		.172		.615
Improve company's procedures	.590	.103	.023	.651	.048	.034	.029	.732
		.109		.607		<b>.045</b>		.690
Easy to integrate with other management systems	.538	.192	.636	.284	.020	.198	.186	.275
		.214		.318		.226		.319
Reduce company's operating costs	.020	.005	.175	.888	.682	<b>.003</b>	.093	.609
		<b>.002</b>		.894		.003		.656
Help to enhance company's productivity	.068	.333	.296	.057	.019	.099	.270	.064
		.390		.049		.121		.062
Probability of violation detection and being sanctioned	.877	.303	.075	<b>.004</b>	.140	.834	.337	.590
		.316		.020		.853		.672
Noncompliance cost is not small	.048	.118	.578	.197	.034	.080	.541	.498
		.089		.270		.057		.523
Improve workers' health, safety and welfare	.169	.264	.709	.116	.085	<b>.001</b>	.124	<b>.004</b>
		.304		.134		.000		.003
Be essential in company's overseas drive	.707	.407	.743	.635	.295	.418	.277	.035
		.416		.637		.440		.048
Be insisted upon by stakeholders/parent company	.594	.350	.068	1.000	.200	.006	.547	.729
		.306		1.000		.002		.726
Employee disobeys Owner/Principal's order to violate	.344	<b>.022</b>	.386	.810	.678	.229	.377	.782
		.036		.825		.223		.810
Concern for social reputation	.966	.465	.638	.237	.024	.125	.695	.979
		.472		.238		.146		.981
Increase company's competitiveness	.845	.946	.456	.158	.508	.093	.711	.364
		.947		.194		.082		.379
Community and peer groups are compliant	.824	1.000	.327	.338	.195	.051	.179	.119
		1.000		.411		.037		.112
Procedure fairness	.505	.088	.073	.780	.016	.330	.361	.547
		.120		.827		.373		.573
Appropriateness and effectiveness of the law	.800	.391	.068	.562	.560	.870	.651	.374
		.398		.606		.873		.417
Contribution to environmental protection	.238	.264	.075	.710	.623	.647	.607	.880
		.263		.663		.663		.878
Belief in abiding by law	.111	.076	.011	.975	.003	.003	.257	<b>.028</b>
		.059		.979		<b>.001</b>		.010

This is an issue that has been reflected in the literature that smaller businesses tend to have less availability of resources and time to address environmental issues (NetRegs, 2003), and thus, they are not well aware of the benefits that environmental management measures may bring about to their business. Larger firms may also be more likely to adopt environmental management plans in order to reduce costs (Henriques and Sadorsky, 1996).

*Table 7.18 Means difference between large and small and medium firms' rating*

Environmental requirements	Attributes	Means	
		Large firms	Small and medium firms
Regulatory requirements	Enable company to reduce material wastage	2.9655	2.1667
	Reduce company's operating costs	3.6296	2.6250
	Employee/Agent disobeys Owner/Principal's order to violate	2.5758	1.9375
EIA	Improve company's procedures	2.9355	2.2222
	Reduce company's operating costs	3.4516	2.2857
	Improve workers' health, safety and welfare	3.7500	4.5000
	Law compliance as taken for granted activities/Belief in abiding by law	3.8571	4.6667
Voluntary requirements	Probability of violation detection and being sanctioned	3.9200	3.0000
EMS	Improve workers' health, safety and welfare	3.7037	4.6000
	Law compliance as taken for granted activities/Belief in abiding by law	3.9615	4.5833

Besides, large firms also exhibit more fear of violation detection and sanctions. The explanation has also been provided in the literature that larger firms are more often expected to be industry leaders and at the forefront of implementing environmental management strategies (Henriques and Sadorsky, 1996), leading to more cautious actions to maintain their good public relations. Violation and sanctions would greatly harm the business image. This view is also reflected in the interviews with firms which state that good environmental records are important in maintaining good relationship with relevant government authorities.

'Improve workers' health, safety and welfare' and 'Law compliance as taken for granted activities/Belief in abiding by law', however, are stressed by small and medium firms. This may reflect that fact that the responding firms are those with high environmental awareness. Normally, small and medium firms are less likely to implement environmental management measures, especially the voluntary ones like ISO 14001 EMS. Firms that have implemented this environmental program, despite having less resources compared to larger firms, exhibit deeply cultivated compliance norms, morality and commitment to social obligation, including the improvement of workers' health, safety and welfare.

#### **7.3.2.2.2 ISO 14001 certified versus non-ISO 14001 certified firms**

Table 7.19 shows the results of the independent sample t test comparing the mean scores of two groups: ISO 14001 certified companies and non-ISO 14001 certified companies. The Sig. values for the t test for equality of means smaller than 0.05 are bolded, indicating the significant effects of ISO 14001 Certification.

The concerns for systems integration, possible detection and sanctions, stakeholders' pressure, agency losses, social reputation, environmental protection and compliance norm differ between ISO 14001 certified and non-certified firms. The mean rating of those attributes between ISO 14001 certified and non-certified firms is presented in Table 7.20 and illustrated in Figure 7.8.

Table 7.19 Results of independent t test for mean difference between ISO 14001 certified and non-ISO 14001 certified firms' rating

Attributes	Regulatory		Voluntary		EIA		EMS	
	Levene's Test	T Test	Levene's Test	T Test	Levene's Test	T Test	Levene's Test	T Test
	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.
Enable company to reduce material wastage	.145	.168	.478	.813	.009	.943	.521	.050
		.077		.797		.960		.257
Improve company's procedures	.745	.100	.065	.411	.007	.402	.652	.692
		.044		.202		.510		.705
Easy to integrate with other management systems	.455	.975	.253	<b>.000</b>	.074	.134	.266	.648
		.972		.000		.219		.490
Reduce company's operating costs	.369	.187	.228	.947	.649	<b>.003</b>	.	.680
		.197		.963		.003		.
Help to enhance company's productivity	.868	.086	.407	.148	.030	.018	.482	.177
		.244		.216		.067		.351
Probability of violation detection and being sanctioned	.552	.822	.202	<b>.011</b>	.061	<b>.000</b>	.	.745
		.805		.145		.000		.
Noncompliance cost is not small	.243	.920	.615	.935	.140	.319	.	.571
		.904		.943		.281		.
Improve workers' health, safety and welfare	.831	<b>.000</b>	.014	.151	.120	<b>.039</b>	.281	.219
		.005		.060		.010		.489
Be essential in company's overseas drive	.673	.933	.084	.815	.007	.343	.974	.640
		.950		.752		.270		.740
Be insisted upon by stakeholders/parent company	.087	<b>.003</b>	.722	<b>.007</b>	.780	.529	.001	.629
		.000		.041		.557		.889
Employee disobeys owner's order to violate	.000	.805	.000	.450	.201	<b>.019</b>	.	.118
		.889		.760		.085		.
Concern for social reputation	.368	.486	.000	.004	.015	.474	.148	.916
		.569		<b>.000</b>		.557		.661
Increase company's competitiveness	.012	.882	.488	.574	.401	.873	.797	.646
		.922		.602		.879		.734
Community and peer groups are compliant	.303	.165	.274	.204	.957	.377	.	.516
		.305		.309		.514		.
Procedure fairness	.753	.357	.437	.061	.003	.556	.540	.567
		.402		.080		.656		.527
Appropriateness and effectiveness of the law	.602	.093	.439	.391	.124	.469	.	.676
		.187		.448		.453		.
Company to contribute to efforts to protect the environment	.000	.167	.266	.764	.736	<b>.029</b>	.500	.515
		<b>.000</b>		.685		.089		.571
Law compliance as taken for granted activities	.321	<b>.011</b>	.045	.659	.017	.052	.206	<b>.039</b>
		.004		.493		.005		.434

Firms with good public image or very concerned about public relations like ISO 14001 certified firms are more worried about scandals, including violation detection and sanctions, that may harm their reputation. This explains the higher level of importance that ISO 14001 certified firms placed on the probability of violation detection compared to non-ISO 14001 certified companies. The social reputation is highly ranked by both groups of firms regarding the implementation of voluntary measures. However, firms that have not been certified to ISO 14001 showed more concern for this attribute as this is one of the main reasons driving firms to implement voluntary measures.

Table 7.20 Means difference between ISO 14001 certified and non-ISO 14001 certified firms' rating

Environmental requirements	Attributes	Means	
		ISO 14001 certified firms	Non-ISO 14001 certified firms
Regulatory requirements	Improve workers' health, safety and welfare	3.2564	4.2500
	Be insisted upon by stakeholders/parent company	2.7931	1.0000
	Company to contribute to efforts to protect the environment	2.6216	3.0000
	Law compliance as taken for granted activities/Belief in abiding by law	3.7073	4.5000
EIA	Reduce company's operating costs	3.3611	2.0000
	Probability of violation detection and being sanctioned	3.4474	4.2500
	Improve workers' health, safety and welfare	3.9130	4.5000
	Company to contribute to efforts to protect the environment	3.2368	3.9091
Voluntary requirements	Easy to integrate with other management systems	3.2500	4.3000
	Probability of violation detection and being sanctioned	3.7576	2.5000
	Be insisted upon by stakeholders/parent company	2.6923	4.1429
	Concern for social reputation	4.1395	5.0000
EMS	Law compliance as taken for granted activities/Belief in abiding by law	4.2222	3.0000

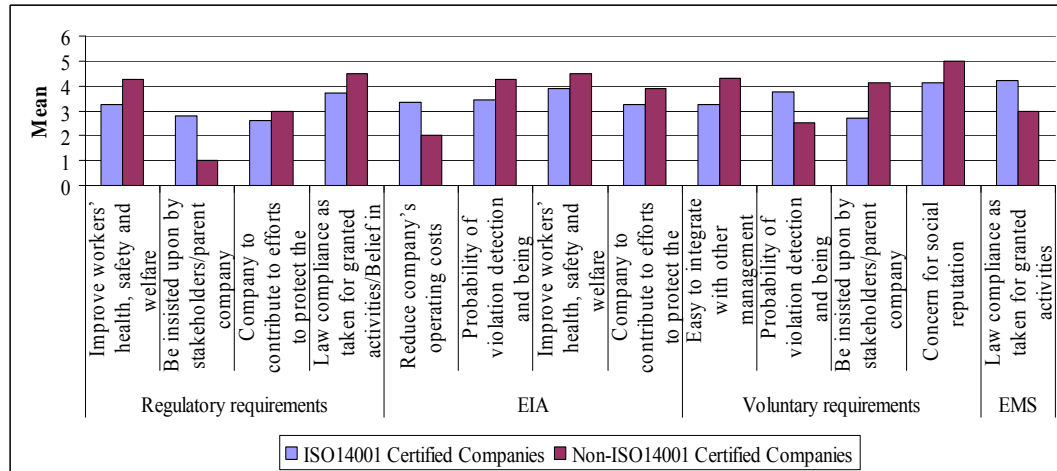


Figure 7.8 Means difference between ISO 14001 certified and non-ISO 14001 certified firms' rating

Companies that have not been certified to ISO 14001 EMS seem to be more driven towards the positive outcomes that the implementation might bring about like social reputation and improved working environment. The encouragement of firms to implement environmental management measures should take this into account to help firms fully perceive the benefits of the implemented measures, motivating their positive participation. This finding supports the results on firm size effect (Malloy, 2003; Henriques and Sadorsky, 1996) since in the context of Vietnam, leading firms in implementation and certification of ISO 14001 EMS are large firms and firms with foreign elements. The test for the rating difference between foreign firms and other forms of businesses is carried out and discussed in the subsection on effects of business structure.

Reduced operating cost is more highly ranked by ISO 14001 certified companies. This might be due to the fact that these companies have extensive experience in environmental management and thus, well perceive the benefit of cost saving through implementation of environmental management activities. Companies with a



good track record of legislative compliance would have less intervention from regulatory bodies and less incidents which result in liability, and hence delays, disruptions and increased costs, in their normal operations.

The ranking of stakeholders' pressure on firm's implementation of environmental management measures differs between the two groups. It is true that ISO 14001 is a popular environmental program that involves different stakeholders, including the parent companies during the implementation process. Some companies implement the system under the pressure from the parent companies. This explains why more emphasis are placed on this attribute by these companies compared to others.

From the mean rating of important reasons for implementation of ISO 14001 EMS, firms who have implemented ISO 14001 more focus on the shared understanding of environmental management than those who have not implemented the standard. The literature about ISO 14000 implementation and certification states that ISO 14001 implementation would help companies to enhance the compliance with increasingly stringent environmental regulations, both at the national and international levels (Ofori et al., 1999; Potoski and Prakash, 2005a). Implementation of an EMS in an organization makes environmental performance the job and concern of everyone in, or connected with, the organization. The training components of the EMS help to enhance to the environmental awareness of the employees who can then contribute to the improvement of the organization's environmental performance (Ofori et al., 1999). The compliance norm is considered both as a driver for implementation and a benefit that ISO 14001

EMS can bring about. Firms are motivated to implement the standard due to their highly cultivated compliance norm, which is then enhanced through the implementation of the standard.

However, less emphasis is put on the belief in abiding by laws as an important determinant of firms' implementation of regulatory requirements by ISO 14001 certified companies than non-ISO 14001 certified ones. This attribute is considered very important for non-ISO 14001 certified firms determining their compliance with environmental laws and regulations. Firms that have implemented ISO 14001 usually go beyond compliance, and thus, need less effort to perform their compliance.

#### **7.3.2.2.3 Effects of field of operation**

The mean difference between the rating of firms operating in the field of manufacturing and construction and firms in service sector was calculated by the independent samples t test. The results of the test is presented in Table 7.21 illustrating the Sig. values of the Levene's test for equality of variances and t test for equality of means, the two most important values that help to read the results of the test. The mean ratings by firms operating in the manufacturing sector and service sector are shown in Table 7.22.

There is almost no difference in the emphasis firms operating in different sectors put on the determinants of their compliance behavior.

In the implementation of EIA, industrial firms are more concerned about the noncompliance cost, community pressure, the law legitimacy and environmental protection effects of the implementation. Manufacturing and construction sector normally has more impacts on the environment than the service sector and thus is under higher pressure from the community and the regulators. With more negative impacts on the environment, these firms are more driven towards implementing environmental protection measures.

The service sector, on the other hand, are more concerned for their overseas development when implementing both EIA and EMS. This is inconsistent with the literature that businesses, in general, should take care of their public image through demonstrated commitment to the protection of the environment (Tibor and Feldman, 1997).

Table 7.21 Results of independent t test for effects of fields of operation

Attributes	Regulatory		Voluntary		EIA		EMS	
	Levene's Test	T Test	Levene's Test	T Test	Levene's Test	T Test	Levene's Test	T Test
	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.
Enable company to reduce material wastage	.086	.252	.406	.366	.003	.609	.298	.481
		.074		.433		.070		.486
Improve company's procedures	.544	.353	.758	.176	.073	.445	.242	.977
		.475		.197		.178		.965
Easy to integrate with other management systems	.257	.338	.005	.220	.145	.437	.248	.837
		.350		<b>.000</b>		.196		.745
Reduce company's operating costs	.288	.992	.152	.866	.138	.283	.537	.196
		.991		.770		.055		.173
Enhance company's productivity	.642	.717	.772	.261	.111	.116	.004	.038
		.720		.233		.024		<b>.000</b>
Probability of violation detection and being sanctioned	.921	.567	.152	.780	.401	.264	.092	.490
		.615		.652		.191		.088
Noncompliance cost is not small	.440	.772	.069	.777	.011	.451	.007	.396
		.751		.603		<b>.007</b>		<b>.020</b>
Improve workers' health, safety and welfare	.485	.236	.526	.667	.684	.193	.376	.276
		.342		.649		.349		.338
Be essential in company's overseas drive	.278	.517	.168	.537	.115	<b>.011</b>	.004	.496
		.502		.278		.010		<b>.047</b>
Be insisted upon by stakeholders/parent company	.773	.163	.110	.420	.019	.915	.151	.378
		.268		.173		.769		.174
Employee disobeys order to violate	.114	.168	.705	.301	.766	.077	.082	.429
		.064		.337		.047		.244
Concern for social reputation	.765	.832	.113	.189	.019	.739	.033	.878
		.856		.090		.461		.662
Increase company's competitiveness	.272	.921	.272	.976	.568	.291	.001	.356
		.881		.962		.338		<b>.009</b>
Community and peer groups are compliant	.487	.096	.331	.901	.003	.102	.001	.166
		.149		.873		<b>.000</b>		<b>.001</b>
Procedure fairness	.084	.095	.137	.157	.001	.911	.015	.890
		.026		.064		.687		.668
Appropriateness and effectiveness of the law	.210	.635	.373	1.000	.001	.089	.162	.296
		.453		1.000		<b>.000</b>		.172
Company to protect the environment	.446	.126	.877	.429	.324	<b>.040</b>	.192	.110
		.161		.370		.034		.059
Law compliance as taken for granted	.262	.301	.334	.760	.088	.858	.188	.817
		.173		.743		.752		.736

Table 7.22 Means difference between rating by firms from industry and service sector

Environmental requirements	Attributes	Means	
		Manufacturing and Construction	Services
EIA	Noncompliance cost is not small	3.3774	3.0000
	Be essential in company's overseas drive	3.5918	4.7500
	Community and peer groups are compliant	3.5745	3.0000
	Appropriateness and effectiveness of the law	3.6792	3.0000
	Company to contribute to efforts to protect the environment	3.4667	2.5000
Voluntary requirements	Easy to integrate with other management systems	3.5238	3.0000
EMS	Help to enhance company's productivity	3.8529	3.0000
	Noncompliance cost is not small	3.4688	3.0000
	Be essential in company's overseas drive	3.5429	4.0000
	Increase company's competitiveness	4.3235	4.0000
	Community and peer groups are compliant	3.5357	3.0000

In the context of Vietnam, most manufacturing companies surveyed are subsidiaries of multinational corporations. The operation of those companies, such as Honda, Yamaha, Toyota, Ajinomoto, is targeted towards the domestic market. The global market access is not very important for these Vietnam-based companies. Three out of four respondents from the service sectors are local companies that would be motivated towards the international market. Besides, those services companies are all in hospitality sector serving international tourists and business visitors, and thus, might be well aware of their need to access the international market.

Concern for the integration with other management systems when implementing the voluntary management systems is emphasized by firms from the manufacturing and construction sector. The implementation of voluntary programs adds to the number of existing management systems of the company which is often more complex in manufacturing firms than the services ones.

In implementing ISO 14001 EMS, firms specializing in manufacturing and construction show more concern for community pressures and are more aware of the role of this management system in helping to enhance productivity and competitiveness. These issues have been recorded in ISO 14001 literature recognizing the benefits of ISO 14001EMS certification and implementation in enhancing productivity and competitiveness (VPC, 2005; Tibor and Fieldman, 1997). Regarding the pressure from the peer group and community, the implementation of this management program is widespread in Vietnam, especially among the manufacturing sector that drives companies in the same sector to implement.

It is noted that as there is big difference between the sample sizes of the two groups under comparison with very limited number of firms from service sectors, the difference may not be accurate. Future research should look into this issue for stronger validation of this sector differentiation in general and in the business context of Vietnam in particular.

#### **7.3.2.2.4 Effects of business structure**

The significance levels (Sig.) of the effects of business structure calculated from the three-way ANOVA are presented in Table 7.23. The F values smaller than the chosen  $\alpha$  (0.05) are bolded. These bolded F values signify the significant effects of business structure on the emphasis firms put on different reasons for compliance with different environmental requirements.

Firms of different business structures, namely 100% foreign-owned companies, joint ventures, state owned companies and private companies, show different levels of significance they put on the concerns for waste reduction, procedure improvement, productivity enhancement, workers' health and welfare, overseas market access, social reputation, competitiveness, community and peer groups' pressure, and legitimacy.

Table 7.23 *Significance of business structure effects*

Attributes	Regulatory requirements	Voluntary requirements	EIA	EMS
	Sig.	Sig.	Sig.	Sig.
Enable company to reduce material wastage	.121	<b>.007</b>	.323	.066
Improve company's procedures	.311	<b>.013</b>	.342	.128
Easy to integrate with other management systems	.514	.959	.268	.971
Reduce company's operating costs	.124	.265	.865	.194
Help to enhance company's productivity	.125	<b>.018</b>	.977	.122
Probability of violation detection and being sanctioned	.916	.465	.202	.082
Noncompliance cost is not small	.685	.699	.859	.544
Improve workers' health, safety and welfare	.441	.656	.446	<b>.001</b>
Be essential in company's overseas drive	.246	<b>.013</b>	.271	.078
Be insisted upon by stakeholders/parent company	.120	.385	.541	.353
Employee/Agent disobeys Owner/Principal's order to violate	.536	.182	.570	.691
Concern for social reputation	.184	.052	<b>.030</b>	.346
Increase company's competitiveness	<b>.000</b>	.107	.148	.053
Community and peer groups are compliant	<b>.003</b>	.708	.700	.776
Procedure fairness	.116	.266	.293	.992
Appropriateness and effectiveness of the law	.415	.514	.656	<b>.016</b>
Company to contribute to efforts to protect the environment	.216	.257	.463	.049
Law compliance as taken for granted activities	.405	.165	.547	.077

The difference by groups is calculated by multiple comparisons of means to identify groups that have different ratings from each other. The significance level (Sig.) smaller than .05 signifies the significant difference in means ratings between the groups of

firms by business structure. The results of multiple comparisons and the mean ratings are presented in Table 7.24 and Table 7.25. For the attributes that are identified to be significantly affected by business structure effects, the results for comparisons between groups, however, provided the Sig. values larger than .05 and thus, are not presented in the Table 7.24.

Table 7.24 Multiple comparisons for significance of business structure effects

Attributes		Joint Venture	State owned	Private
Enable company to reduce material wastage	Foreign owned	.014		
	Private	.019		
Help to enhance company's productivity	Joint Venture			.031
Be essential in company's overseas drive	Foreign owned		.016	
Increase company's competitiveness	Foreign owned	.000		
Concern for social reputation	Private		.032	
Improve workers' health, safety and welfare	Foreign owned	.013	.002	
Appropriateness and effectiveness of the law	Foreign owned	.032		

Table 7.25 Mean ratings of business structure groups

Environmental requirements	Foreign owned	Joint Venture	State owned	Private
<b>Regulatory</b>				
Increase company's competitiveness	<b>3.0000</b>	<b>4.3333</b>	3.5000	4.5000
Community and peer groups are compliant	2.7143	3.0909	3.6250	3.0000
<b>Voluntary</b>				
Enable company to reduce material wastage	<b>4.5357</b>	<b>3.7273</b>	4.2222	<b>5.0000</b>
Improve company's procedures	4.2222	3.6364	3.6667	3.5000
Help to enhance company's productivity	3.9655	<b>3.3636</b>	4.1667	<b>4.5000</b>
Be essential in company's overseas drive	<b>3.5862</b>	4.3333	<b>4.7778</b>	3.5000
<b>EIA</b>				
Concern for social reputation	3.6667	3.0833	<b>2.6667</b>	<b>4.8000</b>
<b>EMS</b>				
Improve workers' health, safety and welfare	<b>4.4615</b>	<b>3.3750</b>	<b>3.0000</b>	4.0000
Appropriateness and effectiveness of the law	<b>4.0000</b>	<b>3.1250</b>	3.1667	3.5000

With large rating difference, joint ventures and private enterprises show more concern about the increase of company's competitiveness than foreign owned companies.

This may present the current market situation in Vietnam where joint ventures and



private firms are making hard efforts to compete with the foreign owned enterprises which have more competitive advantages both locally and internationally with strong financial and technological supports from the parent companies, the established international brand names. This is consistent with the survey result showing less concern of foreign companies for international market access and community pressure compared to state owned enterprises. The foreign companies are leading in environmental management in Vietnam. The decisions to implement environmental management programs are always part of the bigger efforts by the parent companies applicable for the whole regional or international network of the corporation. These subsidies are less influenced by the local community and peer groups pressure than the state owned enterprises that are under lots of pressures from both domestic and international business forces streaming into Vietnam.

Private firms show greater concern for social reputation compared to state enterprises. This exhibits an important issue of the Vietnamese business environment where private companies are operating in an uneven playing field with state owned enterprises. State enterprises enjoy lots of incentives in terms of government subsidies, tax exemption, low land lease costs and other incentives (Tenev et al., 2003). The findings of the survey of both private and state owned enterprises in 11 cities in Vietnam by Tenev et al. (2003) reveal that private enterprises face more difficulties in accessing bank financing, land and other critical resources. Besides, administrative burdens are also uneven. Private firms have to spend more time to deal with government regulatory requirements, such as higher frequency of inspections, than state owned enterprises do. Private firms have to look for ways to boost their competitive edge including quality, productivity and social reputation.

The mean rating also shows foreign firms' high level of morality reflected by the great efforts on improving working environment for the welfare of their workers. Those firms also have comprehensive understanding of the legal systems and are very concerned about the legitimacy of the laws. This reflects the business culture they have from their overseas operations, which are still in the preliminary stage of development in Vietnam with low awareness of laws and regulations as a popular fact among the people and business community.

### **7.3.3 Reasons for Noncompliance with Environmental Laws and Regulations**

#### **7.3.3.1 Attributes rating, t test of the means and factor analysis**

The mean importance rating and t test of the reasons for noncompliance with environmental requirements are presented in Table 7.26 and Table 7.27.

In the ranking of reasons for noncompliance with regulatory and voluntary requirements, there is a consensus regarding the three important reasons for non compliance with both kinds of regulatory and voluntary requirements. The reasons received different ranking but generally are considered to be among the seven important reasons for noncompliance. They are: employee/agent disobeys manager/principal's order to comply, ignorance of law/difficulties in understanding environmental regulations, lack of financial and technological ability to comply.

Firms complain about the inconsistent and overlapping rules and regulations and the frequent changes of laws and regulations making it difficult for firms to keep update and interpret all the relevant rules that firms have to comply. This is one of the big problems with Vietnamese rules and regulations system (Tenev, 2003). The confusions provide opportunities for bureaucratic discretion (Tenev, 2003) leading to likely noncompliant behavior of firms.

Table 7.26 *Ranking of determinants of firm noncompliance behavior to environmental laws and regulations*

No.	Reasons for noncompliance	Regulatory			EIA		
		Rank	Mean	T	Rank	Mean	T
1.	Ignorance of law/difficulties in understanding environmental regulations	1	4.0000	11.541	1	4.0000	8.660
2.	Lack of EM human resources	2	3.7308	3.875	9	3.0612	.339
3.	Employee/Agent disobeys Manager/Principal's order to comply	3	3.7273	6.197	7	3.2895	2.224
4.	Low management awareness	4	3.7097	4.794	10	3.0000	.000
5.	Lack of financial and technological ability to comply	5	3.6857	5.096	3	3.7021	4.450
6.	Lack of leadership concerns and commitment	6	3.4286	2.766	17	2.4615	-3.470
7.	Increased cost of operation	7	3.2121	1.560	5	3.4118	3.273
8.	High cost of implementation	8	3.1707	1.226	4	3.5111	3.006
9.	Difficulties in Changing working tradition	9	3.1622	1.291	19	2.2857	-5.620
10.	Noncompliance of legal requirements	10	3.0000	.000	8	3.0937	.619
11.	Sanctions are not serious	11	2.7273	-2.502	16	2.5143	-2.928
12.	Complicated working procedures	12	2.6667	-1.781	15	2.5333	-3.089
13.	Defeated expectations, perceived unfairness, and other forms of slippage	13	2.6333	-2.083	2	3.7500	3.892
14.	Difficult to integrate with other systems	14	2.5806	-3.474	12	2.6341	-2.933
15.	The clients do not recognize it	15	2.5161	-2.468	14	2.5918	-2.862
16.	Low probability of violation detection	16	2.4194	-5.211	11	2.7111	-2.106
17.	Community and peer groups are non-compliant	17	2.4054	-5.276	13	2.6286	-1.928
18.	Lack of co-operation of or difficulties made by local government	18	2.3778	-3.618	6	3.4063	2.881
19.	Not believe in the value of the rule/regulations	19	2.0769	-3.402	18	2.4333	-2.538

Even though compliance with environmental regulations is considered to be significantly determined by management awareness and commitment, the attributes 'Low management awareness' and 'Lack of leadership concerns and commitment' are not rated highly by firms as important reasons determining noncompliance with EIA. This again, as explained in section 7.3.2 on reasons for compliance, might be due to the nature of EIA as a pre-decision making procedure and its implementation has been applied early stage of project implementation and thus, is not much influenced by the commitment and awareness of managerial staff who take charge during the operational stage of the project.

Lack of co-operation of or difficulties made by local government is the only attribute considered important in the implementation of EIA but not other measures. This is consistent with literature stressing the role the cooperation of relevant authorities in implementing this environmental tool (Morrison-Saunders et al., 2003; Arts and Nootebloom, 1999; Sebastiani, 2001) as it uses very technical methods and requires combined efforts of different government departments and agencies and between governmental environment managing agencies and responsible stakeholders.

Similar to the reasons for non compliance with EIA, firms give low rating of the attribute 'Lack of leadership concerns and commitment' as an unimportant reason for poor implementation of ISO 14001 EMS. A possible explanation for this low ranking is that ISO 14001 is a management tool that is implemented mostly by firms with very high environmental awareness. Besides, one of the requirements of ISO 14001 is commitment and policy. Therefore, the implementation of this management tool receives due concerns and commitment of companies' leadership. This is not consistent with

literature recognizing management commitment as one of important obstacle to implementation of ISO 14001 EMS (Griffith, 1994). This may reflect the constraint of this research that focuses on firms with very high environmental awareness, those that have done EIA and also implemented ISO 14001 EMS, in Vietnam. Further research would look into this to expand the sample to include a wider variety of firms for more representative views on the issue. The difference in the views of firms with high environmental awareness (ISO 14001 certified) and those that are less active in environmental protection is examined by the comparisons of means using the method of independent samples t test.

Table 7.27 *Ranking of reasons for poor implementation of beyond compliance measures*

No	Reasons for noncompliance	Voluntary measures			ISO 14001 EMS		
		Rank	Mean	T	Rank	Mean	T
1.	Lack of EM human resources	1	4.0270	8.185	1	3.9756	7.340
2.	High cost of implementation	2	3.5745	4.616	2	3.8205	6.482
3.	Employee/Agent disobeys Manager/Principal's order to comply	3	3.5556	6.614	3	3.6750	6.509
4.	Ignorance of law/difficulties in understanding environmental regulations	4	3.4412	2.774	4	3.6111	7.416
5.	Complicated working procedures	5	3.3429	2.325	9	3.0732	.573
6.	Lack of financial and technological ability to comply	6	3.3333	1.796	6	3.3750	2.563
7.	Lack of leadership concerns and commitment	7	3.2571	2.172	16	2.1000	-6.324
8.	Low management awareness	8	2.9211	-.502	8	3.1842	1.227
9.	Difficulties in changing working tradition	9	2.9091	-.573	5	3.3333	2.563
10.	Difficult to integrate with other systems	10	2.8788	-1.000	14	2.3000	-3.633
11.	Increased cost of operation	11	2.7805	-1.070	11	2.6389	-1.926
12.	Noncompliance of legal requirements	12	2.6667	-1.871	10	2.6667	-1.641
13.	Community and peer groups are non-compliant	13	2.6000	-3.766	15	2.1429	-7.735
14.	Defeated expectations, perceived unfairness, and other forms of slippage	14	2.5484	-2.528	12	2.5789	-2.400
15.	Low probability of violation detection	15	2.5429	-3.174	13	2.5000	-3.384
16.	Lack of co-operation of or difficulties made by local government	16	2.3953	-3.366	7	3.2222	1.276
17.	Sanctions are not serious	17	2.3000	-3.427	18	1.8636	-5.139
18.	The clients do not recognize it	18	2.0571	-5.150	17	2.0000	-6.602
19.	Not believe in the value of the rule/regulations	19	1.6757	-7.278	19	1.7742	-11.062

From Table 7.27, it is also noted that difficulties in changing working tradition of employees is not an important reason for poor implementation of other environmental management measures but presents a very important obstacle to the implementation of ISO 14001. This again is due to the nature of this management system that requires combined efforts of the whole companies, focusing especially on the development of working procedures which are very hard for workers to follow properly.

The overall ranking of firms on important reasons for poor implementation of environmental requirements (t value larger than 1.645), from the highest to lowest ratings, are presented in Table 7.28.

environmental requirements is confirmed to be appropriate with KMO over 0.50 (.552).

The categorization of reasons for poor implementation of beyond compliance requirements is used to generalize the model of noncompliance behavior for two reasons:

- the objective of the analysis is to detect the structure of attributes; and
- the attributes for compliance with regulatory and voluntary requirements are set the same in the questionnaire.

Table 7.28 Ranking of important reasons for poor implementation of environmental requirements

Ranking	Regulatory measures	EIA	Voluntary measures	ISO 14001 EMS
1	Ignorance of law/difficulties in understanding environmental regulations	Ignorance of law/difficulties in understanding environmental regulations	Lack of EM human resources	Lack of EM human resources
2	Lack of EM human resources	Defeated expectations, perceived unfairness, and other forms of slippage	High cost of implementation	High cost of implementation
3	Employee/Agent disobeys Manager/Principal's order to comply	Lack of financial and technological ability to comply	Employee/Agent disobeys Manager/Principal's order to comply	Employee/Agent disobeys Manager/Principal's order to comply
4	Low management awareness	High cost of implementation	Ignorance of law/difficulties in understanding environmental regulations	Ignorance of law/difficulties in understanding environmental regulations
5	Lack of financial and technological ability to comply	Increased cost of operation	Complicated working procedures	Difficulties in Changing working tradition
6	Lack of leadership concerns and commitment	Lack of co-operation of or difficulties made by local government	Lack of financial and technological ability to comply	Lack of financial and technological ability to comply
7	Increased cost of operation	Employee/Agent disobeys Manager/Principal's order to comply	Lack of leadership concerns and commitment	

The factor analysis of the reasons for the failure to implement beyond compliance

The difference in ranking of reasons for poor implementation of different environmental requirements (regulatory, voluntary, EIA and EMS) is illustrated in Figure 7.9.

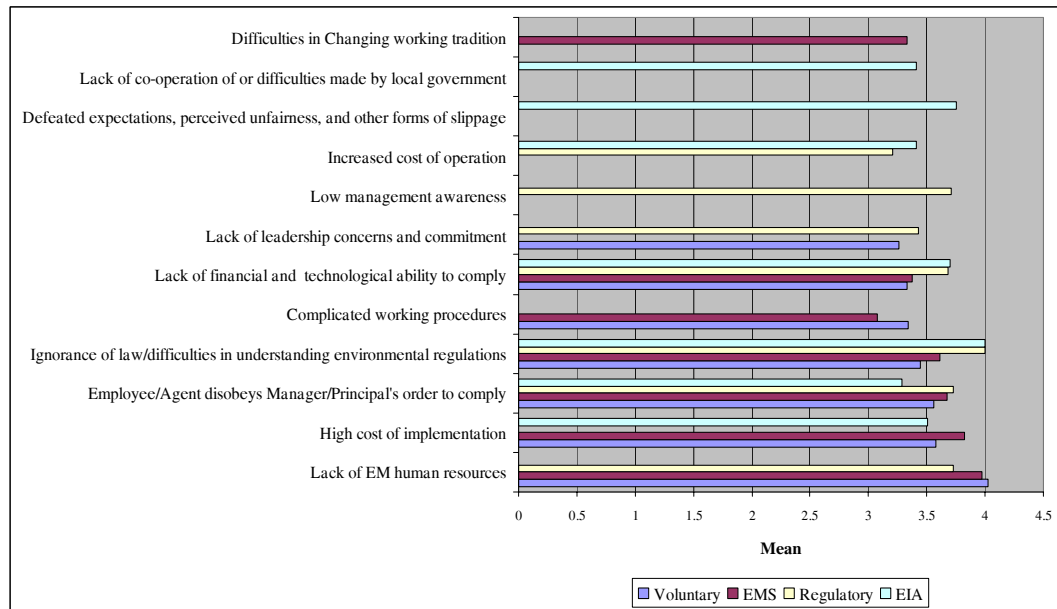


Figure 7.9 Ranking of determinants of noncompliance behavior

Seven factors with eigenvalues greater than 1 are derived from the analysis. Attribute 'Lack of EM human resources' has factor loading much lower than other attributes from the same factor (.490). It is not likely that the attribute contributes to the factor and thus, is removed from the factor. Factor loadings of the attributes for noncompliance behavior are presented in Table 7.29.

Factor 1 includes four attributes 'Increased cost of operation', 'Complicated working procedures', 'Defeated expectations, perceived unfairness and other forms of slippage' and 'Lack of co-operation of or difficulties made by local government'. This factor is concerned with firms' calculation of the gains and losses they would derive from the implementation of environmental management measures and firms' perception of regulator unfairness and other form of slippage. This factor is thus named 'Gains/Losses Calculation and Perception of Regulators' matching Hypothesis H<sup>2</sup> 'Gains/Losses/Consequences Calculation' and H<sup>4</sup> 'Commitment'.



Table 7.29 Factor loading of the attributes – determinants of noncompliance

Attributes	Factor loadings						
	1	2	3	4	5	6	7
<b>Factor 1</b>							
Increased cost of operation	.581			.561			
Complicated working procedures	.810						
Defeated expectations, perceived unfairness, and other forms of slippage	.756						
Lack of co-operation of or difficulties made by local government	.608		.578				
<b>Factor 2</b>							
Lack of leadership concerns and commitment		.619					
Sanctions are not serious		.735					
Low probability of violation detection	.546	.712					
Difficult to integrate with other systems		.679					
<b>Factor 3</b>							
The clients do not recognize it			.552	.443			
Difficulties in Changing working tradition			.703				
Lack of management awareness			.827				
<b>Factor 4</b>							
Lack of EM human resources				.490			
Employee/Agent disobeys Manager/Principal's order to comply				.939			
Not believe in the value of the rule/regulations					.709		
Noncompliance of legal requirements	.531				.625		
Community and peer groups are non-compliant					.689		
<b>Factor 5</b>							
Ignorance of law/difficulties in understanding environmental regulations						.900	
<b>Factor 7</b>							
High cost of implementation							.839
Lack of financial and technological ability to comply		.486					.666

Four attributes ‘Sanctions are not serious’, ‘Low probability of violation detection’, ‘Difficult to integrate with other systems’ and ‘Lack of leadership concerns and commitment’ are loaded on Factor 2. The attributes do not reveal anything in common. Only two out of four factors are related to their fear of deterrence measures by the regulators and thus are chosen to represent this factor ‘Rules/Laws and Sanctions’.

The attributes 'Lack of leadership concerns and commitment' and 'Difficult to integrate with other systems' are discarded from the factor for their irrelevance to the common characteristic of the group.

Factor 3 includes three attributes 'The clients do not recognize it' and 'Difficulties in Changing working tradition' and 'Lack of management awareness' and Factor 4 includes five attributes 'Lack of EM human resources', 'Employee/Agent disobeys Manager/Principal's order to comply', 'Not believe in the value of the rule/regulations', 'Noncompliance of legal requirements', and 'Community and peer groups are non-compliant'. The two factors can be grouped into one factor of 'Commitment and Social Influence', representing a combination of hypothesized Factor H'4 'Commitment' and Factor H'5 'Social Influence'. Lack of human resources is not related to this group and is discarded from the group and then regrouped with other relevant attributes under Factor 5 'Capability'.

Factor 5 is concerned with firms' capability to implement the required management measures and includes three attributes 'Ignorance of law/difficulties in understanding environmental regulations', 'High cost of implementation' and 'Lack of financial and technological ability to comply'. The attributes 'Lack of leadership concerns and commitment' and 'Difficult to integrate with other systems' that are discarded from Factor 2 can be put under Factor 'Commitment and Social influence' and Factor 'Gains/Losses Calculation and Perceptions of Regulators', relatively.

In summary, the factor analysis results in the loadings of four reliable factors consisted of 19 attributes. These factors include those identified in the research

hypotheses. However, it is not clearly divided into different pillars of institutions identified by Scott (2001). This again confirms the literature about the varied importance put on each element of institutions by different people and that these elements act in combination to affect firm behavior. The elements vary among themselves and among firms regarding the emphasis firms put on them (Scott, 2001).

It is worth noting that in the classification of reasons for noncompliance, some attributes are in between the normative and cognitive reasons. For example, the reason ‘noncompliance with the laws/requirements’ may reflect a substantive norm of noncompliance in which firms do not recognize compliance as the right thing to do and they should follow the rules as a moral act. At the same time, at a higher level of cognitive dimension of institutions, it may reflect a social reality that noncompliance is a popular act and it is ‘the way people do things’.

### **7.3.3.2 Additional attributes and other comments**

Seventeen out of 63 valid respondents provide additional attributes that should be included in the model of firm noncompliance behavior. The remaining indicates that the list of attributes set in the survey form is comprehensive and that they do not suggest other attributes. It is interesting to find that there are only two identical attributes added to the list by different respondents. They are ‘Lack of waste treatment facilities’ and ‘Low waste management’. This is consistent with literature on environmental management in Vietnam highlighting the lack of treatment facilities for both waste water and solid waste, especially hazardous waste. The poor solid waste management is stressed by many respondents who say that the waste collectors put together the general and

hazardous waste that have been categorized by the companies themselves. It is even worse that the hazardous waste is also sent to the landfill due to the lack of treatment facilities and poor waste management. The waste water treatment is also a big problem with many industrial zones that do not have the treatment facilities in place as required or ignore the violation of firms operating within the estate to attract firms to their IZs (MOE, 2002).

In short, the additional attributes suggested by the respondents are adequate and thus added to the list under the factor “ ” to complete the model of determinants of noncompliance behavior. The result lends broad support to the construct of the 18 and 19 attributes of firm compliance and noncompliance in Vietnam, respectively. The model for determinants of noncompliance behavior of firms is developed combining compliance literature, institutional literature and the results of case studies and interviews and is presented in Figure 7.10.

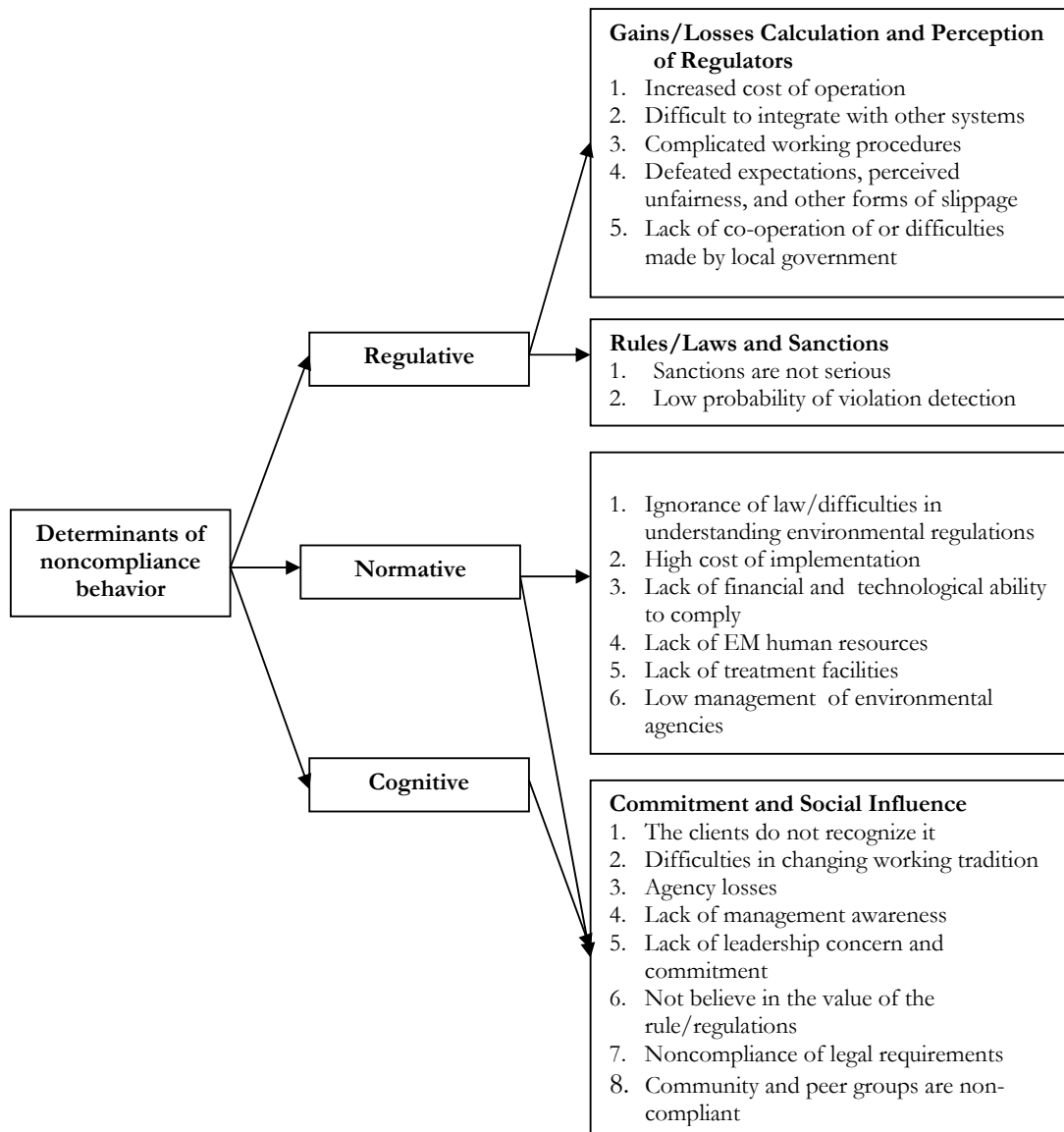


Figure 7.10 Determinants of firms' noncompliance behavior

### **7.3.3.3 Effects of size, ISO 14001 certification, business structure and fields of operation on firms' noncompliance behavior**

#### **7.3.3.3.1 Size effect**

The results of the independent samples t test for mean ratings for two groups of large firms and small and medium firms are presented in Table 7.30. The significance level of Levene's test for equality of variances (Sig.) and the t test for equality of means are calculated. The Sig. values for the t test for equality of means smaller than the chosen  $\alpha$  (0.05) are bolded. These bolded Sig. values show the significant difference rated by firms, and thus signify the significant effects of firm size on firm noncompliance behavior.

There are different ratings between large and small and medium firms for a number of reasons for noncompliance, including: concern for systems integration, public relation effects on clients, human resource shortage, legitimacy of laws, complexity of working procedures, low level of compliance among employees, probability of violation detection, implementation cost, level of sanctions, and firm's .

The firm size effects on the rating of reasons for noncompliance with different types of environmental requirements (Sig. less than .05) are presented in Table 7.31.

Table 7.30 Results of independent t-test for firm size effects on non compliance behavior

Attributes	Regulatory		Voluntary		EIA		EMS	
	Levene's Test	T Test	Levene's Test	T Test	Levene's Test	T Test	Levene's Test	T Test
	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.
Noncompliance of legal requirements	.	.255	.057	.361	.462	.944	.768	.921
		.		.462		.947		.925
Low probability of violation detection	.240	.630	.180	<b>.012</b>	.280	.719	.377	.139
		.587		.010		.750		.121
Increased cost of operation	.426	.083	.005	.675	.321	.609	.041	<b>.006</b>
		.103		.594		.588		.001
Complicated working procedures	.237	.208	.296	.970	.529	<b>.001</b>	.788	.992
		.312		.973		.002		.992
Difficult to integrate with other systems	.758	<b>.038</b>	.246	.083	.516	.240	.000	.797
		.083		.037		.261		.837
High cost of implementation	.603	.559	.497	<b>.008</b>	.107	.234	.127	<b>.043</b>
		.564		.014		.197		.068
Sanctions are not serious	.023	.127	.904	<b>.007</b>	.442	.067	.447	<b>.005</b>
		.094		.008		.063		.115
The clients do not recognize it	.138	<b>.025</b>	.595	.574	.023	.286	.124	.153
		.009		.524		.227		.118
Employee disobeys manager's order to comply	.896	.843	1.000	1.000	.283	<b>.015</b>	.222	.823
		.858		1.000		.040		.834
Lack of financial and technological ability to comply	.706	.577	.346	<b>.016</b>	.692	.076	.542	<b>.004</b>
		.556		.023		.082		.003
Lack of EM human resources	.576	<b>.004</b>	.136	.223	.000	.337	.431	.204
		.007		.265		.381		.168
Not believe in the value of the rule/regulations	.214	.095	.329	.511	.329	.739	.025	.443
		.358		.447		.701		.326
Lack of co-operation of or local government	.979	.431	.664	.502	.543	<b>.019</b>	.207	.238
		.442		.486		.032		.293
Ignorance of law	.445	1.000	.034	.911	.029	.291	.260	.212
		1.000		.924		.338		.237
Lack of leadership concerns and commitment	.481	<b>.002</b>	.365	<b>.021</b>	.370	.126	.103	.220
		.001		.008		.144		.274
Community and peer groups are non-compliant	.566	.273	.194	1.000	.060	.105	.944	.950
		.330		1.000		.148		.950
Defeated expectations, perceived unfairness	.193	<b>.032</b>	.149	.624	.577	<b>.009</b>	.183	.061
		.065		.560		.009		.039
Low management awareness	.321	.399	.365	.753	.340	.110	.226	<b>.017</b>
		.367		.783		.144		.006
Difficulties in changing working tradition	.792	.409	.058	.067	.028	.300	.425	.799
		.458		.119		.360		.850

Table 7.31 Means difference between large and small and medium firms' rating

Environmental requirements	Attributes	Means	
		Large firms	Small and Medium firms
Regulatory requirements	Difficult to integrate with other systems	2.4348	3.0000
	The clients do not recognize it	2.2609	3.2500
	Lack of EM human resources	3.4211	4.5714
	Lack of leadership concerns and commitment	3.7200	2.7000
	Defeated expectations, perceived unfairness, and other forms of slippage	2.4091	3.2500
EIA	Complicated working procedures	2.8667	1.8667
	Employee/Agent disobeys Manager/Principal's order to comply	3.5000	2.8333
	Not believe in the value of the rule/regulations	2.3913	2.5714
Voluntary requirements	Low probability of violation detection	2.2727	3.0000
	High cost of implementation	3.8065	3.1250
	Sanctions are not serious	1.9524	3.1111
	Lack of financial and technological ability to comply	3.6429	2.7143
	Lack of leadership concerns and commitment	3.1111	3.7500
	Defeated expectations, perceived unfairness, and other forms of slippage	2.5000	2.7143
EMS	Increased cost of operation	2.2609	3.3077
	High cost of implementation	4.0000	3.4615
	Low probability of being convicted	1.6316	3.3333
	Lack of financial and technological ability to comply	3.6429	2.7500
	Defeated expectations, perceived unfairness, and other forms of slippage	2.3704	3.0909

Small firms are more concerned about legitimacy of laws, increased operation cost and the availability of human resources to comply than large firms. 'Not believe in the values of laws', 'defeated expectations, perceived unfairness, and other forms of slippage' and 'lack of human resources' are more significant for small and medium firms to conform to environmental requirements than large firms. The smaller the business, the less the availability of resources and time available to address environmental issues (NetRegs, 2003). The positive press coverage (Solomon and Mihelcic, 2001), and expectation to be industry leader (Henriques and Sadorsky, 1996) of large firms put them at the forefront of implementing environmental management strategies. As stated, the large firms surveyed, mostly foreign companies, are leading in environmental management in Vietnam. The decisions to implement environmental management programs are always part of the bigger efforts by the parent companies for the whole regional or



international network of the corporation. These subsidies are less influenced by their perception of regulators and values of the regulations than small firms. Small firms also exhibit low environmental awareness and it is more likely for these firms to violate the regulations if they are unlikely to be detected compared to large firms that place very low level of significance on the low probability of violation detection as a determinant of noncompliance.

Large firms also place more emphasis on the concern for implementation cost. Henriques and Sadosky (1996) recognize that larger firms are subject to greater coordination costs that may hinder firms' compliance. Besides, complexity and coordination difficulties are important issues that make larger firms more likely to be non-compliant. This is reflected through the survey result showing that there is more concern for the complexity of working procedures as a result of the implementation of and compliance with environmental impacts assessment requirements.

#### **7.3.3.3.2 ISO 14001 certified versus non-ISO 14001 certified firms**

Table 7.32 presents the results of the independent sample t test comparing the mean scores of two groups: ISO 14001 certified companies and non-ISO 14001 certified companies. The Sig. values for the T Test for equality of means smaller than 0.05 are bolded, indicating the significant effects of ISO 14001 certification on firms' noncompliance with environmental requirements.

Table 7.32 Results of independent t test for mean difference between ISO14001 certified and non-ISO14001 certified firms' rating

Attributes	Regulatory		Voluntary		EIA		EMS	
	Levene's Test	T Test	Levene's Test	T Test	Levene's Test	T Test	Levene's Test	T Test
	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.
Noncompliance of legal requirements	.789	<b>.007</b>	.774	.372	.304	.124	.	.051
		.152		.608		.509		.
Low probability of violation detection	.	<b>.007</b>	.341	.443	.321	.517	.	.077
		.		.713		.627		.
Increased cost of operation	.	.116	.844	.182	.597	.602	.865	.078
		.		.415		.641		.380
Complicated working procedures	.485	.795	.334	.052	.059	.878	.008	.316
		.781		.224		.807		.757
Difficult to integrate with other systems	.	.535	.994	.198	.760	<b>.033</b>	.462	.535
		.		.403		.101		.693
High cost of implementation	.327	.322	.028	.004	.957	.464	.	.822
		.389		.090		.575		.
Sanctions are not serious	.	.665	.	.124	.230	<b>.004</b>	.533	.615
		.		.		.001		.566
The clients do not recognize it	.735	<b>.045</b>	.735	.210	.217	.386	.053	.450
		.351		.497		.334		.785
Employee disobeys manager's order to comply	.001	<b>.047</b>	.000	.110	.660	.599	.820	.704
		.570		<b>.000</b>		.639		.776
Lack of financial and technological ability	.669	.739	.126	1.000	.186	.629	.359	.848
		.762		1.000		.730		.838
Lack of EM human resources	.811	.083	.482	.182	.000	.897	.015	.244
		.112		.294		.932		.588
Not believe in the value of the rule/regulations	.492	.662	.	<b>.031</b>	.006	.155	.000	<b>.002</b>
		.812		.		.432		.414
Lack of co-operation of local government	.284	<b>.000</b>	.728	<b>.048</b>	.692	.867	.731	.762
		.007		.154		.876		.853
Difficulties in understanding environmental regulations	.054	1.000	.164	.132	.883	.163	.000	.258
		1.000		.438		.157		<b>.000</b>
Lack of leadership concerns and commitment	.201	.645	.	.289	.047	.323	.656	<b>.022</b>
		.533		.		.620		.187
Community and peer groups are non-compliant	.	<b>.016</b>	.038	.395	.408	<b>.000</b>	.685	.193
		.		.746		.000		.226
Defeated expectations, perceived unfairness	.410	<b>.045</b>	.	.584	.039	.239	.094	.221
		.143		.		.082		.634
Low management awareness	.002	.029	.	.265	.869	<b>.044</b>	.668	<b>.003</b>
		.547		.		.097		.025
Difficulties in Changing working tradition	.117	<b>.025</b>	.416	.069	.000	.651	.725	<b>.004</b>
		.433		.181		.778		.224

The non-compliance behavior of ISO 14001 certified companies is more influenced by the issue of agency losses, the difficulties in changing working traditions, and the low management awareness than firms that are not certified to the standard. Non-ISO 14001 certified firms, on the other hand, place higher level of significance on the noncompliance norm, low probability of violation detection, low public relation effects, lack of cooperation of government agencies, regulators' unfairness, poor performance of community and peer groups, and low values of laws as reasons determining their noncompliance. The means ratings of those attributes that are significantly unequal between ISO 14001 certified and non-certified firms are presented in Table 7.33.

Generally, it is shown that ISO 14001 certified firms are more highly aware of their environmental protection responsibilities. These firms believe in compliance with laws and wish to perform well despite the low probability of violation detection or even when others are not compliant. It is very different from non-ISO 14001 certified firms who show the low environmental awareness and that they would violate law if others are doing the same thing and if they perceive low possibility of being caught.

ISO 14001 certified firms seem to have more problems with management awareness in implementing EIA but not in implementing EMS. This is understandable as the implementation of EIA is usually at the early stage at the project and the environmental awareness of the company will be enhanced gradually together with the business development. Once the decision is made regarding the implementation of ISO 14001 EMS, it reflects the commitment and high environmental awareness of the managerial staff to the implementation of the standard. The low management commitment represents a bigger challenge for non-certified firms.

Table 7.33 Means difference between large and small and medium firms' rating

Environmental requirements	Attributes	Means	
		ISO 14001 certified firms	Non-ISO 14001 certified firms
Regulatory requirements	Noncompliance of legal requirements	2.8235	4.5000
	Low probability of violation detection	2.3667	4.0000
	The clients do not recognize it	2.4138	4.0000
	Employee disobeys manager's order to comply	3.8000	3.0000
	Lack of co-operation of or difficulties made by local government	2.2143	4.6667
	Community and peer groups are non-compliant	2.3611	4.0000
	Defeated expectations, perceived unfairness	2.4583	3.3333
	Difficulties in Changing working tradition	3.2286	2.0000
EIA	Difficult to integrate with other systems	2.7429	2.0000
	Low probability of being convicted	2.7241	1.5000
	Community and peer groups are non-compliant	2.3000	4.6000
	Low management awareness	3.1563	2.1667
Voluntary requirements	Employee disobeys manager's order to comply	3.5882	3.0000
	Not believe in the value of the rule/regulations	1.6111	4.0000
	Lack of co-operation of or difficulties made by local government	2.2821	3.5000
EMS	Not believe in the value of the rule/regulations	1.6897	3.0000
	There are difficulties in understanding environmental regulations	3.5882	4.0000
	Lack of commitment (norms, perceptions of the regulators, and incentives for compliance).	2.0263	3.5000
	Low management awareness	3.0571	4.6667
	Difficulties in changing working tradition	3.2273	4.5000

Also, non-ISO 14001 certified firms seem to have more difficulties in understanding environmental regulations. ISO 14001 certified firms have better understanding of the environmental regulations as it is part of the certification requirements. Besides, most ISO 14001 certified firms in Vietnam are large firms while it is not popular for small

and medium firms to implement this environmental management system. The non certified firms are more likely to lack of resources to study the environmental requirements.

#### **7.3.3.3.3 Effects of field of operation**

The results of the independent samples t test and the mean rating by firms working in the manufacturing and service sector are presented in Table 7.34 and Table 7.35 illustrating the Sig. values of the Levene's test for equality of variances and t test for equality of means. Sig. smaller than .05 signifies that the rating is significantly unequal between the ratings of the two groups.

Generally, firms operating in the industrial sector are more likely to violate environmental regulations than service companies due to noncompliance norms. Besides, industrial firms are also more concerned about the difficulties in changing working tradition of their employees. The manufacturing activities of the industrial sector present more impacts on the environment, and thus, these firms have more problems conforming to environmental laws and regulations, including the working tradition of employees. The service sector, on the other hand, shows more concern for the difficulties of system integration, lack of cooperation by the government agencies, high cost of implementation and complexity of the working procedures. The respondents from service sector are local companies that are new to the environmental management initiatives. This may explain their concern.

Table 7.34 Results of independent t-test for effects of fields of operation

Attributes	Regulatory		Voluntary		EIA		EMS	
	Levene's Test	T Test	Levene's Test	T Test	Levene's Test	T Test	Levene's Test	T Test
	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.
Noncompliance of legal requirements	.054	<b>.028</b>	.015	.265	.017	.017	.010	.252
		.000		<b>.001</b>		<b>.000</b>		<b>.002</b>
Low probability of violation detection	.414	.260	.002	.260	.009	.579	.139	.063
		.235		<b>.003</b>		.041		.030
Increased cost of operation	.402	.571	.325	.659	.083	.712	.485	.798
		.609		.598		.564		.786
Complicated working procedures	.342	.513	.002	.176	.005	.351	.080	<b>.040</b>
		.390		<b>.000</b>		<b>.001</b>		.000
Difficult to integrate with other systems	.409	.820	.077	.757	.007	.417	.006	.232
		.809		.326		<b>.005</b>		<b>.001</b>
High cost of implementation	.956	.327	.005	.302	.481	.062	.003	.638
		.410		<b>.001</b>		.108		.165
Sanctions are not serious	.080	<b>.033</b>	.000	.574	.006	.350	.031	.813
		.000		.153		<b>.004</b>		.546
The clients do not recognize it	.011	.398	.014	.077	.046	.481	.214	.094
		<b>.013</b>		<b>.000</b>		.254		.031
Employee disobeys manager's order to comply	.896	.843	.000	.112	.331	.923	.754	.580
		.858		<b>.000</b>		.904		.564
Lack of financial and technological ability to comply	.547	.627	.051	.473	.017	.570	.082	.400
		.548		.191		.065		.211
Lack of EM human resources	.219	.082	.555	.401	.325	.475	.809	.244
		.039		.363		.423		.167
Not believe in the value of the rule/regulations	.002	.156	.024	.200	.007	.527	.059	.514
		<b>.000</b>		<b>.001</b>		.062		.050
Lack of co-operation of or difficulties made by local government	.052	.820	.883	.684	.503	.561	.016	.182
		.667		.709		.492		<b>.000</b>
Ignorance of law/difficulties in understanding environmental regulations	.537	.259	.108	.062	.557	.210	.090	.559
		.391		.022		.156		.589
Lack of leadership concerns and commitment	.189	.854	.004	.514	.218	.815	.010	.844
		.798		<b>.037</b>		.733		.487
Community and peer groups are non-compliant	.422	.499	.005	.109	.011	.325	.005	.681
		.490		<b>.000</b>		<b>.002</b>		.205
Defeated expectations, perceived unfairness, and other forms of slippage	.198	.066	.004	.323	.	.607	.009	.341
		.058		<b>.004</b>		.		<b>.002</b>
Low management awareness	.514	.926	.013	.885	.017	.106	.233	.883
		.906		.619		<b>.000</b>		.814
Difficulties in changing working tradition	.306	.259	.056	.879	.006	.571	.008	.344
		.165		.570		<b>.029</b>		<b>.017</b>

Table 7.35 Means difference between rating by firms from manufacturing and service sector

Environmental requirements	Attributes	Means	
		Industry and Construction	Services
Regulatory	Noncompliance of legal requirements	3.1875	2.0000
	Sanctions are not serious	2.8000	2.0000
	The clients do not recognize it	2.5714	2.0000
	Not believe in the value of the rule/regulations	2.2174	1.0000
EIA	Noncompliance of legal requirements	3.2069	2.0000
	Complicated working procedures	2.5714	2.0000
	Difficult to integrate with other systems	2.6053	3.0000
	Sanctions are not serious	2.5625	2.0000
	Community and peer groups are non-compliant	2.6875	2.0000
	Low management awareness	2.9143	4.0000
	Difficulties in Changing working tradition	2.3043	2.0000
Voluntary requirements	Noncompliance of legal requirements	2.7273	2.0000
	Low probability of violation detection	2.4839	3.0000
	Complicated working procedures	3.2813	4.0000
	High cost of implementation	3.5349	4.0000
	The clients do not recognize it	2.1563	1.0000
	Employee/Agent disobeys Manager/Principal's order to comply	3.5152	4.0000
	Not believe in the value of the rule/regulations	1.7576	1.0000
	Lack of leadership concerns and commitment	3.2813	3.0000
	Community and peer groups are non-compliant	2.6486	2.0000
	Defeated expectations, perceived unfairness, and other forms of slippage	2.6071	2.0000
EMS	Noncompliance of legal requirements	2.7500	2.0000
	Complicated working procedures	3.0000	4.0000
	Difficult to integrate with other systems	2.2222	3.0000
	Lack of co-operation of or difficulties made by local government	3.1515	4.0000
	Community and peer groups are non-compliant	2.1579	2.0000
	Difficulties in changing working tradition	3.3810	3.0000

There are differences in the ratings of other attributes but generally, these attributes are either considered unimportant to both industrial and service companies or the differences are not significant.

### 7.3.3.4 Effects of business structure

The significance levels (Sig.) of the effects of business structure on determinants of firms' noncompliance calculated from the three-way ANOVA are presented in Table 7.36. The F values smaller than the chosen  $\alpha$  (0.05) are bolded. These bolded F values signify the significant effects of business structure on the emphasis firms put on different reasons for noncompliance with different environmental requirements.

Table 7.36 *Significance of business structure effects*

	R	V	EIA	EMS
	Sig.	Sig.	Sig.	Sig.
Noncompliance of legal requirements	.300	.222	<b>.000</b>	<b>.037</b>
Low probability of violation detection	.622	.352	<b>.004</b>	.374
Increased cost of operation	.673	<b>.000</b>	.054	<b>.008</b>
Complicated working procedures	.447	.349	.345	<b>.001</b>
Difficult to integrate with other systems	.229	<b>.003</b>	<b>.030</b>	.140
High cost of implementation	.548	.856	.281	.449
Sanctions are not serious	.800	.227	.444	.006
The clients do not recognize it	.299	<b>.037</b>	.145	.051
Employee/Agent disobeys Manager/Principal's order to comply	.751	<b>.000</b>	<b>.014</b>	<b>.002</b>
Lack of financial and technological ability to comply	.907	.557	<b>.007</b>	.386
Lack of EM human resources	.987	.236	.385	.310
Not believe in the value of the rule/regulations	.914	.491	.207	.517
Lack of co-operation of or difficulties made by local government	.952	.405	.071	<b>.030</b>
Ignorance of law/difficulties in understanding environmental regulations	<b>.032</b>	.214	.212	<b>.000</b>
Lack of leadership concerns and commitment	.978	<b>.013</b>	.068	.263
Community and peer groups are non-compliant	.212	.359	.389	<b>.040</b>
Defeated expectations, perceived unfairness, and other forms of slippage	.197	.210	.669	.067
Low management awareness	.192	.063	.194	.354
Difficulties in changing working tradition	.908	.558	.179	.908

Foreign-owned companies, joint ventures, stated owned enterprises and private companies, give different ratings for the significance of compliance norm, violation detection and sanctions, operation cost, working procedures, systems integration, clients' recognition, agency losses, financial and technological , government



cooperation, laws comprehension, leadership concerns and commitment, and community and peer group pressure on the compliance behavior of firms.

The significance levels (Sig.) obtained from the results of multiple comparisons for ratings difference between groups are presented in Table 7.37. The significance level smaller than .05 signifies the significant difference in ratings between the two specified groups. Attributes that are identified as not being significantly affected by business structure effects by the ANOVA test (Sig. values larger than .05) are not presented in the Table 7.37. The significance of business structure effects are interpreted based on the mean ratings (Table 7.38).

Table 7.37 Multiple comparisons for significance of business structure effects

Attributes	Environmental Requirements	Business structure	100% Foreign Owned	Joint Venture	State Owned
Low probability of violation detection	EIA	100% Foreign Owned			.012
		Private			.012
Increased cost of operation	Voluntary	100% Foreign Owned		.000	.012
	EMS	100% Foreign Owned		.005	
Complicated working procedures	EMS	100% Foreign Owned			.008
		Private		.042	.013
Employee/Agent disobeys Manager/Principal's order to comply	Voluntary	100% Foreign Owned		.000	.001
	EMS	State Owned	.002	.041	
Lack of financial and technological ability to comply	EIA	100% Foreign Owned			.004
		Joint Venture			.022
Ignorance of law/difficulties in understanding environmental regulations	EMS	Joint Venture			.018

Table 7.38 presents the mean ratings of attributes which have significantly different ratings by the four business structure groups under study. The mean ratings that are significantly differed between groups of business structures (Sig. smaller than .05) are bolded.

Table 7.38 Mean ratings of business structure groups

Attributes	100% Foreign Owned	Joint Venture	State Owned	Private
<b>Regulatory Measures</b>				
Ignorance of law/difficulties in understanding environmental regulations	4.1053	4.0000	3.8333	3.0000
<b>Voluntary Measures</b>				
Increased cost of operation	<b>3.4000</b>	<b>1.5000</b>	<b>1.8333</b>	3.0000
Difficult to integrate with other systems	3.0526	2.5000	3.2000	1.0000
The clients do not recognize it	2.4500	1.2500	2.0000	1.0000
Employee/Agent disobeys Manager/Principal's order to comply	<b>3.2500</b>	<b>4.0000</b>	<b>4.0000</b>	3.5000
Lack of leadership concerns and commitment	3.5000	2.7500	3.3333	2.0000
<b>EIA</b>				
Noncompliance of legal requirements	3.8000	2.5000	2.3750	3.0000
Low probability of violation detection	<b>2.5385</b>	2.6250	<b>3.5556</b>	<b>1.5000</b>
Difficult to integrate with other systems	2.8636	2.2727	2.8333	1.5000
Employee/Agent disobeys Manager/Principal's order to comply	3.1500	3.8182	2.6667	4.0000
Lack of financial and technological ability to comply	<b>3.9286</b>	<b>3.8182</b>	<b>2.3333</b>	4.0000
<b>EMS</b>				
Noncompliance of legal requirements	3.0455	2.3750	1.4000	3.0000
Increased cost of operation	<b>3.0000</b>	<b>1.5000</b>	2.8333	3.0000
Complicated working procedures	<b>2.7826</b>	<b>3.5000</b>	<b>3.7500</b>	<b>2.0000</b>
Employee/Agent disobeys Manager/Principal's order to comply	<b>3.3636</b>	<b>4.0000</b>	<b>4.2500</b>	3.5000
Lack of co-operation of or difficulties made by local government	1.8125	1.8750	1.4000	2.0000
Ignorance of law/difficulties in understanding environmental regulations	3.1667	<b>4.0000</b>	<b>2.5000</b>	3.5000
Community and peer groups are non-compliant	2.3889	2.7500	2.4000	2.0000

The results show that private and state owned enterprises are not paying due attention and efforts to the study of environmental laws and regulations as much as foreign owned companies and joint ventures. This is consistent with the literature on environmental

management in Vietnam with firms that have foreign elements are leading in the implementation of environmental management measures (Dao, 2002; VPC, 2005). Unless they are unaware of the rules/regulations, they would comply.

State owned companies and private enterprises seem to indicate that even though they know about these environmental regulations and programs (like EMS), they do not comply or exhibit poor compliance. The noncompliance is due to other reasons rather than awareness of rules and regulations. They are low awareness of employees, fear of complicated working procedures and low probability of violation detection. These concerns reflect low environmental awareness of state companies and that they would violate if it is unlikely to be detected. This is similar to the case of private firms which are more likely to violate because of low probability of detection. The results present low environmental awareness of local firms in general.

In foreign firms, more efforts are put on education to raise employees' environmental awareness than in local firms. The case of employees disobeying manager's order to comply in foreign firms is not as troublesome as that of state owned enterprises. This is a big problem for state firms attempting to implement and certify to ISO 14001 EMS. Employees' environmental awareness is also not of big concern for these firms during the implementation of EIA. This may due to the technical nature of EIA that does not incorporate requirements for employees training and involvement like EMS. The ISO 14001 implementation requires firms to identify training needs and to assure that personnel from departments with significant impacts on the environment receive the

appropriate training. The implementation of the EMS requires commitment of individuals and resources to achieve the goals outlined in the Environmental Policy, Targets and Objectives (Wong, 1998).

It is noted from the findings that state owned enterprises are not much concerned about financial issues of the implementation of environmental management measures. This again reflects the fact that state enterprises enjoy lots of incentives and subsidies from the government such that investment in environmental management is not a big problem for them compared to other forms of businesses that are self financed and have to be very efficient in every investment decision (Tenev et al., 2003).

The results exhibit important implications for environmental decision making process in Vietnam. As state and private enterprises are driven by rational calculation. Regulators should make them more aware of the deterrence measures that would be enforced on them. Stricter inspection and sanctions should be applied to reduce noncompliance of these firms.

For foreign firms, the rules and regulations should be made more available, clear and easy to understand for businesses to comply.

#### **7.3.4 The Role of ISO 14001 EMS in Implementing EIA Follow up Requirements**

To determine the role of ISO 14001 EMS in implementing EIA follow up requirements, companies are asked to indicate if they refer to the EISs and reasons for reference

when implementing ISO 14001EMS. A number of statements about the ISO 14001 EMS' coverage of EIA impact predictions, mitigation measures and monitoring schedule are provided for respondents to rank their level of agreement. The responding companies are also requested to rank the reasons for EIA predicted impacts not to occur in practice as identified by the ISO 14001 EMS and the reasons for more impacts identified than predicted. Hypothesis testing techniques are used to determine the results. T value larger than 1.645 specifies the positive responses regarding the role of ISO 14001EMS in implementing EIA follow up requirements.

### 7.3.4.1 Reference to EIA when implementing ISO 14001 EMS

All ISO 14001 certified firms (79.4%) state that EIA is the first and one of the most important documents they refer to when starting to implement ISO 14001 EMS. The respondents are then asked to rank the identified reasons for reference and the usefulness of the elements of EIA report on the 5-point scale with 1 = “not important” and 5 = “very important”. Mean importance ratings and t values for all the reasons for reference to EIA and level of usefulness of EIA elements are presented in Table 7.39.

Table 7.39 Mean importance ratings and t-test of the mean

	Mean	T	Ranking
<b>Reasons for reference to EIA</b>			
EIA as legal requirements have to be met	4.2353	11.966	1
Use of information	3.4808	6.872	2
<b>Usefulness of EIA elements</b>			
Legal requirements	3.6154	5.575	1
Baseline study	3.5577	7.459	2
Impacts predictions	2.7647	-1.898	3
Mitigation measures	2.9412	-.444	4
Monitoring	2.4615	-5.554	5

The findings confirm the results of the interviews about the usefulness of EIA to provide information for the implementation of ISO 14001 EMS. Firms study the impacts assessment report to find relevant legal requirements that they have to conform to and also the baseline conditions of the project. Other parts on impact prediction, mitigation measures and monitoring plan are not considered to be useful (t value smaller than 1.645).

### 7.3.4.2 ISO 14001 EMS' coverage of EIA predicted impacts and mitigation measures

The survey requires the respondents to identify their level of agreement for the provided statements regarding ISO 14001's coverage of EIA predicted impacts and proposed mitigation measures by ranking from 1 (not agree) to 5 (totally agree).

The agreed assumptions regarding the role of ISO 14001 in implementing EIA mitigation measures and monitoring requirements are summarized using the hypothesis testing techniques (the average scores are in brackets) and are presented in Table 7.40.

Table 7.40 Level of agreement over ISO 14001 EMS' coverage of EIA predicted impacts and mitigation measures

Level of agreement	Statements
Agree	<ol style="list-style-type: none"> <li>1. Almost all impacts predicted in EIA actually occur in practice as identified by the ISO 14001 EMS (4.1).</li> <li>2. Under ISO 14001 EMS, more impacts are identified than predicted in EIA (3.8).</li> <li>3. Under ISO 14001 EMS, all proposed management activities in EIA are implemented (3.9).</li> <li>4. Management measures in EMS are much more than those proposed in EIA and as such cover not only EIA recommendations but also other environmental aspects and impacts (3.8)</li> <li>5. Under ISO 14001 EMS, monitoring activities scheduled in EIA are closely conformed with, or even improved for better results (3.8).</li> </ol>

The t test of the means show positive results (t larger than 1.645), supporting the hypothesis that almost all impacts predicted in EIA actually occur in practice as identified by the ISO 14001 EMS. Under ISO 14001 EMS, more impacts are identified than predicted in EIA. ISO 14001 EMS covered and implemented almost all proposed management activities in EIA. Management measures in EMS are much more than those proposed in EIA and as such cover not only EIA recommendations but also other environmental aspects and impacts not predicted in EIA. Besides, under ISO 14001 EMS, monitoring activities scheduled in EIA are closely conformed with, or even improved for better results regarding environmental protection of firms.

#### **7.3.4.3 Reasons for more impacts identified than predicted**

The reasons given by firms regarding the occurrence of more impacts compared to EIA impact predictions are summarized in Table 7.41.

The most important reason identified by respondent firms is more leadership concern for environmental issues at the time of ISO 14001 EMS implementation compared to the concern during the project's early stage of pre-decision making when EIA was carried out. This is consistent with earlier finding comparing the ratings of reasons for noncompliance with environmental requirements between ISO 14001 certified firms and non-certified ones. It is found that ISO 14001 certified firms seem to have more problems with management awareness in implementing EIA but not in implementing EMS. Together with business development, by the time of ISO 14001 EMS

implementation, the environmental awareness of leadership has been raised to a much higher level than previously when doing the impacts assessment.

Table 7.41 Ranking of reasons for more impacts identified than predicted

Level of importance	Reasons	Mean
Important	1. More concern from company's leadership	4.1429
	2. Tighter requirements of ISO 14001	3.9831
	3. Legal update	3.9310
	4. EMS is more practical and detailed than EIA	3.9167
	5. Production expansion	3.7692
	6. Company's requirements are higher than those in EIA	3.5556
	7. More pressure from customers	3.3396
Not important	8. Financial availability of the company	2.9070

Other important reasons include tighter requirements of ISO 14001 EMS, legal updates and the practical nature of ISO 14001 EMS. Less important reasons are production expansion and higher environmental targets of the companies themselves. These reasons reflect the general development trend over time of businesses with business development going together with more concern for environmental issues.

#### 7.3.4.4 Reasons for predicted impacts not to occur in practice

The views of firms on the non-occurrence of EIA predicted impacts are obtained and interpreted using the hypothesis testing techniques. T value higher than 1.645 signifies the importance of reasons (means are in brackets). The results are presented in Table 7.42.



It is found that the application of EIA proposed mitigation measures have yielded some successful outcomes. Some predicted impacts have been mitigated and no longer impose harmful effects on the environment.

Table 7.42 Reasons for EIA predicted impacts not to occur in practice

Level of importance	Reasons
Important	1. Mitigation measures applied (4.1)
Less important	2. Impacts not considerable to be accounted for (3.5) 3. Inaccuracy of predictions (3.4) 4. Production/activities be moved to other plants (3.4) 5. Change of production plan (3.2)

Some impact predictions are considered inaccurate as reported from the results of the impact identification during the operation stage of the project. The change in production plan and removal of some production activities to other locations are also reasons explaining the non occurrence of some impacts.

#### 7.3.4.5 Reasons for EIA’s proposed mitigation measures being implemented and not being implemented by EMS

The reasons for EIA’s proposed mitigation measures being implemented and not being implemented by EMS in views of responding firms are ranked on the five point scale similar to other questions in the interviews. The same hypothesis testing technique is applied to determine the importance of identified reasons. The test results are shown, from highest ranking to the lowest, in Table 7.43.

The implementation of EIA proposed activities under ISO 14001 EMS are considered to be within the objectives and perceived benefits of this management system. The predicted impacts are implemented as they help firms to achieve healthy working

environment, legal compliance and compliance with other requirements of ISO 14001 EMS, environment protection, enhanced customers' belief and sustainable business.

Table 7.43 Reasons for EIA's proposed mitigation measures being implemented and not being implemented by ISO 14001EMS

Level of importance	Reasons
Implementation	
Important	Healthy working environment for staff (4.3)
	Legal requirements (4.2)
	Activities as requirement of ISO 14001 (4.1)
	Environmental protection (4.0)
	Enhance customer's belief (3.9)
	Sustainable business (3.7)
Non implementation	
Important	Impacts do not occur (4.2)
	More applicable/advanced technology available to replace the proposed measures (3.7)
	Inappropriate proposed mitigation measures (3.6)
Not important	Change of project/production plan (3.3)

The reasons for non-implementation of EIA proposed mitigations measures are mostly due to the non-occurrence of impacts, followed by the technological availability of companies to employ more advanced measures. The poor quality of EIA with inappropriate proposed mitigation measures is again referred to as an important reason for non-implementation, which has been mentioned in EIA literature as one of the big shortcomings of this impact assessment tool (Morrison-Saunders et al., 2003; Arts and Nootebloom, 1999).

## 7.4 CONCLUSION

The data analysis results reveal the important institutions influencing corporate environmental compliance behavior in Vietnam and the key players in the organizational field of corporate environmentalism in Vietnam. The important institutions that influence firm's decision to comply or not to comply with environmental laws and

regulations include regulatory and enforcement agencies, parent company, customer local community, professional institutions and other companies or business community.

Through the case studies and interviews, the preliminary framework of firm compliance and noncompliance developed in the literature are further developed into the model of firm compliance and consists of 18 attributes of compliance and 19 attributes of noncompliance.

The sampled firms highly rate the compliance norm as the most important reason for compliance to environmental management initiatives, both regulatory and voluntary. At lower rankings, but also important, are enforcement measures to ensure detection and sanctions on violators, social influence, and morality. Firms state their fear of being detected, convicted and sanctioned. The probability of violation detection and level of sanctions are important factors that get high attention from firms.

Businesses are likely to implement environmental programs under pressure from public forces like stakeholders, community and peer groups and their perception of the legitimacy of regulations and regulators. They are very concerned about their social reputation that would be enhanced by good environmental performance and adversely, be harmed by poor performance in environmental management activities. The appropriateness and effective of laws outcome and the fairness of regulators are important in determining firms' compliance to the regulations.

The improvement of workers' health, safety and welfare and environmental protection are also considered important for firms determining their implementation

of environmental management activities. Large firms, firms with high environmental awareness seem to be well aware of the benefits of the environmental management activities while small and medium firms are not. Large firms also show more concern for public image and would try to avoid any act that would harm their reputation. Joint ventures and private enterprises show more concerned about the enhancement of company's competitiveness than foreign owned companies and foreign companies are less concerned for international market access and community pressure than state owned enterprises.

The finding lends support to Scott's Three Pillars of Institutions and theories of firm compliance where compliance behavior is stated to be based on a combination of the regulative, normative and cognitive elements of institutions. It also lends support to the indication that foreign businesses (majority of the sampled firms) in Vietnam are highly aware of environmental protection. However, the fear of sanctions is still an important factor determining firms' compliance to environmental laws.

# **CHAPTER 8**

## **DISCUSSION AND RECOMMENDATIONS**

### **1) MODEL OF FIRM COMPLIANCE**

### **2) EIA/EMS RELATIONSHIP**

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This chapter summarizes the findings of the research based on which recommendations are made with regard to the enhancement of firms' compliance with environmental laws, regulations and also voluntary initiatives such as ISO 14001 EMS. The summary of findings discusses the determinants of firm compliance and non compliance with both regulatory and voluntary environmental requirements, including EIA and ISO 14001 EMS. The different views by different groups of firms in terms of firm size, operation, business structure and ISO 14001 certification are also discussed. From the understanding of determinants of firm compliance behavior, recommendations for policy making regarding environmental management are developed. The findings lend support to the framework of Scott's Three Pillars of Institutions encompassing regulative, normative and cognitive elements which together form the basis of firms' compliance behavior and that the elements vary among themselves and over time in which elements are dominant. It also supports the use of triangulation approach to study the firm compliance behavior.

## 8.1 SUMMARY OF FINDINGS AND DISCUSSION

The present study proposes the use of triangulation method to study the firms' compliance behaviour with regard to environmental laws and other requirements. This approach consists of three data collection methods: the survey, interviews and case studies. The case studies and interview are useful to explore views on important factors shaping their compliance behavior to conceptualize the framework of firm compliance which are then quantitatively validated through the survey. The three sets of data serve as mutual validation of the findings from each method. The factor analysis of the survey results is valuable for testing the construct validity of the conceptualisation of the framework of Scott's "Three Pillar of Institutions".

As discussed in Chapter 3, the determinants of firm compliance behavior are grouped into three categories of regulative, normative and cognitive elements based on the general framework of Scott's "Three Pillars of Institutions". The framework are further developed into the model of firm compliance and noncompliance using the case studies and open-ended interviews and consisted of 18 and 19 attributes of compliance and noncompliance respectively. Results of the firm survey indicate that the sampled firms stress the significant effects of all the three regulative, normative and cognitive elements in determining firm compliance behavior. Regarding the determinants of compliance, the compliance norm is ranked first, followed by social influence, morality and deterrence measures of the regulators. Results from the interviews and the case studies also

confirm the importance of these attributes. Further analysis looking into the rating difference among groups of different size, fields of operation, business structures and ISO 14001 certified and non-certified firms find different level of importance that those groups firms put on different reasons for the firms' compliance and noncompliance with different types of environmental requirements.

### **8.1.1 Determinants of Compliance**

Firm compliance behaviour is found to be based on three institutional elements of organizational behaviour: regulative, normative and cognitive. Each element reflects relevant business concerns. The regulative elements include rules, laws, sanctions, violation detection and conviction and gains/losses calculation. The normative elements influencing organizational behaviour comprise of social influence, legitimacy, morality, and commitment. The cognitive element is represented by firms' shared logics of actions.

Regarding regulative motivations, firms indicate their fear of being detected, convicted and sanctioned for environmental violations. The probability of violation detection and level of sanctions are important factors that receive high attention from firms.

The normative and cognitive elements are found to be important in determining firms' compliance with environmental laws and regulations. Businesses are likely to implement environmental programs under the pressure from public forces like stakeholders, community and peer groups and their perception of the legitimacy of regulations and regulators. They are very concerned about their social reputation that would be

enhanced by good environmental performance and adversely, be harmed by poor performance in environmental management activities. The appropriateness and effectiveness of laws outcomes and the fairness of regulators are important in determining firms' compliance with the regulations.

The improvement of workers' health, safety and welfare and environmental protection are also considered important for firms determining their implementation of environmental management activities.

Firms implementing voluntary programs like ISO 14001 EMS are also driven by the economic benefits of this EMS that help to reduce their operating cost and material wastage and to enhance firms' productivity. This, however, seems not to be perceived benefits of regulatory measures that can motivate firms' compliance. This lends support to the indication that regulatory measures like EIA are more of a paper work to gain project approval than having any practical benefit for firms.

The factor analysis of firm survey results in the loadings of 5 factors of compliance (that is, rules, laws and sanctions; gains/losses calculation; morality; social influence and legitimacy; and shared understanding of compliance) and 4 factors of noncompliance (that is, gains/losses calculations and perception of regulators; rules, laws and sanctions; ; and commitment and social influence) consisting of 18 and 19 attributes respectively (see Section 7.3.2.1 and 7.3.3.1). These loadings correspond with the conceptualization of the reasons for compliance and noncompliance with environmental laws in the context of Vietnam; based on the framework of Scott's "Three Pillars of Institutions" (refer to Table 7.8 and 7.9). This lends support to the research hypothesis that Scott's "Three



Pillars of Institutions” can be used as a framework for the development of a model of firm’ compliance with environmental laws and regulations.

The reasons for compliance and noncompliance with environmental laws and regulations are concerned with all the determinants of compliance and noncompliance addressed in the compliance literature (rationalist theories, normative theories and disaggregate theories). The finding lends supports for the combined effects of institutional elements in forming the basis of firms’ compliance and noncompliance with environmental regulations and other requirements. The framework is presented in Table 8.1. The highest level is the institutional forces that influence human/organizational behavior which are interpreted into factors determining firm compliance with environmental laws and other requirements. An inference of those factors can be made into relevant business concerns. In the lowest level beside these specific concerns of businesses are a number of policies making implications and measures to promote firm compliance (Table 8.1).

Table 8.1 Model of firm compliance

Institutional elements	Factors	Determinants of compliance	Proposed measures
<ul style="list-style-type: none"> <li>▪ Regulative elements</li> </ul>	<ul style="list-style-type: none"> <li>▪ Rules, laws and sanctions</li> <li>▪ Gains/losses calculation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance cost</li> <li>▪ Violation detection and conviction</li> <li>▪ Waste reduction</li> <li>▪ Working procedures</li> <li>▪ Integration</li> <li>▪ Operation cost</li> </ul>	<ul style="list-style-type: none"> <li>▪ Appropriate sanctions</li> <li>▪ Swift and certain violation detection</li> <li>▪ Availability of information regarding deterrence measures</li> <li>▪ Publicizing the perceived benefits of environmental management for businesses with practical examples</li> </ul>
<ul style="list-style-type: none"> <li>▪ Normative elements</li> </ul>	<ul style="list-style-type: none"> <li>▪ Social influence</li> <li>▪ Legitimacy</li> <li>▪ Morality</li> <li>▪ Commitment</li> </ul>	<ul style="list-style-type: none"> <li>▪ Community and peer groups' pressure</li> <li>▪ Stakeholders pressure</li> <li>▪ Appropriate and effectiveness of laws/requirements</li> <li>▪ Procedure fairness</li> <li>▪ Compliance norm</li> <li>▪ Environmental protection</li> <li>▪ Workers' health</li> <li>▪ Safety and welfare</li> <li>▪ Workers' awareness</li> <li>▪ Knowledge of laws and regulations</li> <li>▪ Financial and technological resources</li> <li>▪ Implementation cost</li> <li>▪ Human resources</li> <li>▪ Available treatment facility of environmental agency</li> <li>▪ Leadership concern and commitment</li> <li>▪ Belief in values of regulations</li> <li>▪ Working tradition</li> <li>▪ Management awareness</li> </ul>	<ul style="list-style-type: none"> <li>▪ Promotions of business community activities</li> <li>▪ Publications on best practice cases (through business associations)</li> <li>▪ Media coverage</li> <li>▪ Formation of interest groups building for policy makers, enforcement agencies and environmental agencies</li> <li>▪ Organization of environmental awareness raising campaigns/workshops for businesses at all levels</li> <li>▪ Consistent and unambiguous laws/regulations/requirements</li> <li>▪ Cleared defined roles and responsibilities of management agencies</li> <li>▪ Leveling playing fields for business operating in all different sectors (equal access to financing, effective administrative procedures, frequency of inspections)</li> <li>▪ Training and detailed instructions on implementation</li> <li>▪ Financial incentives and technical assistance for firms and enforcement officials</li> <li>▪ Environmental management training programs for companies' staff</li> <li>▪ Improved environmental infrastructure</li> </ul>
<ul style="list-style-type: none"> <li>▪ Cognitive elements</li> </ul>	<ul style="list-style-type: none"> <li>▪ Shared logics of action</li> </ul>	<ul style="list-style-type: none"> <li>▪ Shared understanding of compliance</li> </ul>	<ul style="list-style-type: none"> <li>▪ Environmental education</li> <li>▪ Media coverage</li> <li>▪ Formation of interest groups</li> <li>▪ Enhanced enforcement</li> </ul>

Environmental compliance performance of firms of different sizes and firms operating in different field sectors varies. Large firms, firms with high environmental awareness like those with ISO 14001 certification and foreign companies seemed to be well aware of the benefits of the environmental management activities while small and medium firms were not. They also showed more concern for public image and would try to avoid any act that would harm their reputation.

Firms operating in the field of manufacturing and construction are more concerned about implementation cost, community pressure and environmental protection outcomes of different environmental initiatives while service companies put more emphasis on international market access as important reasons driving their implementation of environmental management measures. The results reflect the fact that manufacturing and construction sector are having more negative impacts on the environment than the service sector and thus are under more pressure from the public and the government to take appropriate measures to minimise their impacts. Many sampled industrial firms are foreign businesses operating in Vietnam with focus on local market while service firms are all in hospitality area serving international market. Further research should look into this issue for more accurate results.

The difference was shown in the concern for social reputation between state and private enterprises. This seemed to reflect an uneven playing field between these two economic sectors in Vietnamese market in which private firms are having lots of disadvantages over their competitors in terms of incentives and subsidies from the government. Enhancing social reputation is one of the efforts of the private sector to compete with state companies.

### 8.1.2 Non-compliance

Regarding the reasons for noncompliance with regulatory and voluntary requirements, firms cite three important reasons for non compliance with both kinds of regulatory and voluntary requirements. The reasons receive different rankings but generally are considered to be among the seven most important reasons for noncompliance. The identified reasons reflect the logic of appropriateness that firms follow when implementing environmental management programs including agency losses, ignorance of law/difficulties in understanding environmental regulations, lack of financial and technological ability to comply.

Capacity, commitment and social influence are important reasons determining compliance. The complexity and ambiguity of rules and regulations and the enforcement problems often lead to the ignorance of or difficulties in understanding relevant environmental regulations for businesses, resulting in noncompliance. Low environmental awareness of workers and coordination problems within firms may result in agency losses with employees disobeying owners' and managing staff's order to comply. Firms with low level of financial and technological ability also have problems exhibiting good environmental performance. This is supported by the additional comments by responding firms regarding the lack of treatment facilities and poor management of environmental agencies, especially in terms of waste water treatment and solid waste and hazardous waste collection and treatment.

The implementation of EIA encounters certain obstacles that are considered important to this environmental management tool but not other environmental management programs under study. Due to the nature of EIA as a pre-decision making procedure and its implementation has been applied early stage of project implementation, 'Low management awareness' and 'Lack of leadership concerns and commitment' do not seem to be important reasons hindering EIA implementation. On the other hand, the highly technical and complex nature of EIA make co-operation of local government very important for the implementation of EIA.

Lack of leadership concern and commitment is considered one of the most important reasons hindering the success of ISO 14001 EMS implementation and certification. Besides, the implementation of this voluntary environmental management system also encounters difficulties in changing working traditions of the employees, an attribute not important for the implementation of other environmental requirements. This finding is supported by the findings on the difference rating between ISO 14001 certified and non-certified firms. ISO 14001 certified firms are highly aware of the difficulties in changing working traditions of employees and the difficulties made by lack of leadership concern and commitment in the implementation of this environmental management system.

Small firms, mostly private ones, are more concerned about legitimacy of laws, increased operation cost and the availability of human resources to comply than large firms. Smaller businesses usually have less available resources and time to address environmental issues. As mentioned in the literature and concluded from earlier findings, large firms surveyed, mostly foreign companies, are very active in environmental management activities in Vietnam. The decisions to implement environmental

management programs are always directed by the parent companies. These firms exhibit very good environmental performance while private and small firms and state owned enterprises show low level of environmental awareness and that it is more likely for these firms to violate the regulations if there is low probability of violation detection. The findings are consistent with literature on firm compliance (Becker, 1968; Scholz, 1998) and the earlier findings on determinants of firm compliance behavior and the findings on the effect of ISO 14001 certification on firm compliance that ISO 14001 certified firms, mostly firms with foreign elements, are more highly aware of their environmental protection responsibilities and better understanding of environmental regulations.

As reflected in the earlier section on firm compliance, large firms have more difficulties in integrating environmental programs with other management systems within their companies. The integration requires behavioural change aiming to achieve a “unity of purpose” within the organization (Stapleton, 1997). The large firm size is associated with coordination difficulties due to firms’ complex structure with diverse divisions and responsibilities and greater likelihood of cultivating sub-cultures of noncompliance and employees’ resistance to change (Henriques and Sadorsky, 1996). The organisation’s employees are often accustomed to a compliance model that makes it difficult for them to adapt to organizational changes (Wong, 1998). Reasons for noncompliance in more complex firms with regard to the integration with other systems include the obscuring of oversight through the diffusion of responsibility and greater coordination and implementation costs.

It is noted from the findings that state owned enterprises are not very concerned about financial issues of the implementation of environmental management measures. The state owned companies have easy access to financing for environmental management

while other forms of businesses have to be very efficient in every investment decision (Tenev et al., 2003).

### **8.1.3 The Role of ISO 14001 EMS in Implementing EIA Follow up Requirements**

The respondents agree that the implementation of ISO 14001 EMS cover the requirements of EIA follow up. Within the scope of ISO 14001 EMS, more impacts are identified than predicted in EIA and more management activities are actually implemented, compared to the number of mitigation measures proposed in EIA, to address the wider range of identified impacts. The findings are confirmed by all three sets of data of case studies, interviews and survey.

EIA is regarded as an important reference document during the implementation of ISO 14001 EMS, providing necessary information on the relevant environmental legal requirements of the project and supporting data on project's baseline conditions.

The finding on more impacts being identified under ISO 14001 EMS than predicted in EIA report is explained by the higher level of concern of companies on environmental issues at the operational stage of the project leading to company's higher environmental targets and objectives, the tighter requirements of ISO 14001 environmental management system, legal updates, practical nature of EMS, production expansion and pressure from customers.

Some EIA predicted impacts do not actually occur in practice. There are several reasons for their non-occurrence. Some proposed mitigations measures have been

applied that help to minimise the impacts on the environment. Other explanations include inaccurate predictions, removal of production facilities and activities and change of production plans.

The implementation of management activities under ISO 14001 EMS turn out to meet or even go beyond EIA follow up requirements. EIA follow ups are the legal requirements that firms have to at least comply with. The compliance is also within the scope and environmental objectives and target of ISO 14001 EMS.

The findings of the study show that it is possible to improve compliance with environmental policies and other voluntary programs through a combination of measures that address the wide range of institutional elements affecting organizational behavior. The proposed measures are presented in Section 8.3 Recommendations.

## **8.2 RECOMMENDATIONS**

The findings suggest important measures to be implemented by environmental management authorities in their efforts to promote compliance with the regulations and other environmental initiatives.

The regulations should be made more consistent, reducing the ambiguity of laws to make them more understandable to firms and more enforceable for enforcement agencies. Efforts should be made to provide information for firms, especially small and medium enterprises, regarding the potential benefits of the environmental management



initiatives, especially regulatory requirements, being promoted to motivate firms to adopt. Also, the enforcement would be swift and severe enough for firms to keep them away from potential violation. Education measures should also be enhanced for firms of small and medium size and local firms, both state and private, to raise their environmental awareness.

Fairer playing fields should be created to raise the awareness of firms, especially the state owned enterprises, when they have to compete with others firms with better social reputation and public image with regard to environmental protection. Besides, community and peer groups activities should be enhanced as an important part of the compliance promotion process among the business community in Vietnam.

### **8.2.1. Rules, Laws and Sanctions**

Most businesses are concerned about deterrence measures that involve violation detection, conviction and sanctions. It is important to make sure that firms are under surveillance such that their violation is timely detected. Upon detection, there should be swift, certain and appropriate sanctions on the violators making them pay for their noncompliance. The sanctions should take into account the compliance cost to set appropriate level of penalty. Penalty should be higher than compliance cost to make rational actors aware of the financial losses as a result of their noncompliance.

To this end, the compliance promotion measures are proposed to include:

- Appropriate sanctions

- Swift and certain violation detection
- Dissemination of information/workshops/educational programs about the presence of deterrence measures

To achieve better enforcement of environmental laws and regulations, building and positive incentives and rewards should be available for officials who make contribution to environmental protection. Enforcement officials should be trained and well paid to act in the interest of the community. Corruption should be dramatically reduced to make sure violators are detected and sanctioned with stiff penalties.

Policymakers need to focus on developing an even more transparent and consistent regulatory system. They need to foster a more even playing field for all business sectors and reduce the costs of complying with rules and regulations. Firms from different sectors, stated owned enterprises, private firms or foreign invested companies, should be treated equally with regard to financial access, administrative procedures, and enforcement activities (such as frequency of inspections and penalties).

### **8.2.2. Operational Gains and Losses**

Gains/losses calculation is an important element influencing organizational behavior. The compliance can be enhanced if firms are aware of the benefits of the implementation. The commonly cited benefits are reduced waste, operation cost reduction, improved working procedures and easy integration with other systems. Businesses are motivated to implement an environmental programs associated with potential benefits for the companies' operations. Business associations are important

instruments that help disseminate the information regarding those benefits to their members. Publicizing the perceived benefits of environmental management for businesses with practical examples through seminars, training workshops, and media are possible measures to promote compliance and better environmental performance of businesses.

### **8.2.3 Social Influence**

Community, peer groups and stakeholders are important forces that may put pressure on firms to comply with environmental regulations. Customers' concern and support for environmental friendly products can force firms to improve their good environmental performance. The awareness of firms' stakeholders and parents companies can be transformed into actions at the subsidiary level to act in conformity of the corporation's overall environmental objectives. Firms are influenced by their peer groups. Business associations can be important instruments that help promote community-business activities and publications on best business practices, and hence enhance the influence of the community and other businesses on firms to improve their environmental performance. Social influence and incentives in form of awards such as the Green Business Award by the Vietnam Association for Conservation of Nature and Environment have attracted the attention of many businesses. This kind of activity is useful in raising business' environmental awareness and encouraging better performance in environmental protection of business community.

## **8.2.4 Morality**

Personal characteristics of individuals working within the organizational culture may decide the extent to which their organization complies with the law. The values and attitudes of individuals within firms will impact on the organization's performance against regulatory standards. Firms with high level of commitment to social obligation of environmental protection, improvement of workers' health and safety prove to be performing better in compliance with environmental requirements.

Morality can be developed internally and externally. Business morality should be enhanced through strict regulations on business conduct, sufficient laws and law enforcement to deal with corruption, fraud and other forms of unethical behaviour, and educational measures. Civil organizations including consumers, conservationists, and business associations can also be formed to put pressure on businesses for more ethical actions that foster the interests of the community. Media also plays an important role in exposing irresponsible behavior of firms. These measures together can help to cultivate a sense of responsibility in individuals and businesses.

## **8.2.5 Legitimacy**

Compliance is also based on the perceived legitimacy of the authorities charged with implementing the regulations, the appropriateness and effectiveness of policy outcomes. The findings suggest that a key determinant of perceived legitimacy is the fairness built into the procedures used to develop and implement policy. Defeated

expectations, perceived unfairness, and other forms of slippage may undermine the legitimacy leading to noncompliance of firms. Effectiveness of the outcome, the extent to which conservation is realized and firms are made better off, and the appropriateness of regulations to address the concerned problems have been found to affect firms' compliance.

To promote legitimacy of laws, policymakers need to introduce greater fairness, transparency, and consistency in the treatment of firms of different types, especially private firms. Besides, compliance is associated with credibility of government and its commitment to the implementation of new laws and regulations. To achieve better enforcement, the policy should include measures that enhance government to commit itself and take lead in the implementation of environmental initiatives. This can help to increase business confidence in the government. The enforcement can also be enhanced if policies are based on the collective interests of entrepreneurs. Business associations and their activities such as environmental awareness raising campaigns/workshops present instruments of collective actions that can internalize public benefits of regulations and environmental management.

Administrative reforms can also greatly help to enhance enforcement capability and credibility of the government and environmental management agencies. In the present administrative system in Vietnam, many government agencies that have important interactions with the business community have overlapping responsibilities and lack clear accountability. This often results in slow administrative decision making (Tenev et al., 2003). The model of "one door" applied at the administrative district level with regard to land use transfer, certificates of land use rights, and so on has improved the

administrative services significantly in terms of accessibility, transparency, effectiveness, and efficiency (Do et al., 2002). Time spent on processing administrative services has been reduced dramatically. The same model should be applied in the case of environmental management procedure.

### **8.2.6 Capability**

Noncompliance is found to occur because of the regulated firms' lack of capability including poor knowledge of the rules, lack of human resources, lack of financial and technological ability to comply, lack of environmental infrastructure and management capability of environmental agencies.

The inconsistency of laws should be eliminated. The frequency of laws amendment should be limited. To reduce confusions for businesses, newly amended laws should be complete, able to supersede existing old laws. Regulations should be reviewed on a regular basis from the point of their efficiency and enforceability. Regulations that have outlived their usefulness or relevance should be deleted from the system.

The findings also call for the development and application of cooperative measures to ensure compliance, with the full range of compliance assistance strategies such as seminars, workshops and campaigns to disseminate information on environmental management, technological assistance, and capability building for regulators to enable them to provide compliance advice for businesses and perform properly in the management process.

Again, an even playing field should be created, making it easier for private firms to access financing sources, and hence, have resource to invest in environmental management activities. banks are reluctant to make loans to private enterprises because these firms do not enjoy the government guarantees associated with state ownership and that banking staff often lack the training and expertise to carry out proper risk appraisal of projects, based on which they can give loans to private firms (Tenev et al., 2003). This necessitates the capability building for the banking sector in Vietnam.

More wastewater and solid waste treatment facilities should be developed nationwide, especially in the industrial zones and the nearby areas for easy access for businesses in need of the service. This should be done together with capability building programs for waste management agencies.

### **8.2.7 Commitment**

Commitment of firms is determined by norms, perceptions of the regulators, and incentives for compliance. Business perceptions of regulator fairness, belief in values of rules are likely to have a positive influence on long-term compliance with the law. Employees' working traditions are also important in the implementation process leading to successful outcomes of the environmental programs.

Environmental management training programs for companies' staff and capability building for environmental agencies are possible measures to boost business'

commitment. Again, the legitimacy of laws should be enhanced by measures suggested in section 8.2.5 to promote commitment.

Financial incentives and technical assistance should also be made available for businesses to encourage better performance in environmental protection. Financial aids, loans or grants to firms for pollution treatment can help to enhance the environmental awareness of industrial plants and catalyze creative solutions to the environmental problems. Businesses can be more committed to environmental protection as they realize that it is not only environmentally beneficial but also economically viable.

### **8.2.8 Shared Logics of Action**

Cognitive elements present the shared conceptions and logics of action that shape firms' compliance actions. Law compliance can be achieved if people internalize the norm of compliance and have a proactive attitude toward morality. Similar to the promotion of moral business culture, shared conceptions of compliance can be developed through education at schools and by media or by public pressures from interest groups such as customers, environmental NGOs, and so on.

### **8.2.9 ISO 14001 EMS as a Mechanism to Implement EIA Follow up**

It is noted from the findings that ISO 14001 EMS contains elements that are relevant to the requirements of EIA follow up with regard to impact identification, management and continual improvement through monitoring and inspection. ISO 14001 EMS



provides a mechanism for follow up implementation that should be promoted for implementation in the enterprise sector. If made mandatory for implementation in firms that have been subject to EIA during the planning state of the project, uniform follow up can be achieved with lessened enforcement burden for the government agencies in charge of environmental management.

### **8.3 CONCLUSION**

Understanding determinants of compliance is key to achieving compliance with laws and regulations. Regulations governing business environmental management that can address the concerns of businesses would be able to achieve high level of compliance. A model of firm compliance has been developed, which can help to design policy making strategies aiming at promoting business environmental performance. A triangulation method using three sets of data, namely case studies, interviews and survey, can be used to obtain firms' perceptions of motivations for compliance and noncompliance.

The case studies explore firms' actual environmental performance through site visits and internal data of firms' environmental records and documents, an aspect that the interview and survey could not deal with. The interviews exploring firms' views on reasons for compliance and non compliance, together with the compliance literature, help to develop the conceptual framework that is grounded from firms' input data. The survey identifies the importance of the attributes based on t-test of the mean. Results of this research prove that the triangulation method is useful, especially for the conceptualization process and that the three methods can supplement and cross-check each other and produce convincing results.

The research findings show that firms are motivated to comply primarily because of their internalized norm of compliance. Effective law enforcement with certain and swift violation and sanctions is the second most important reason for compliance. Firms also act in compliance with laws and show good environmental performance when they are under social pressure from customers, parent company or peer and interests groups. Morality is important in determining firms' decisions to implement environmental management programs.

Regarding motivations for non compliance, ignorance of laws, difficulties in understanding environmental regulation and lack of capability for implementation of environmental management requirements are most important for firms. High cost of compliance and perception of poor enforcement would hinder firms' compliance.

The ANOVA test findings show the differences in the level of significance that firms of different sizes, business structures, firms operating in different fields, and ISO 14001 certified and non-certified firms place on the determinants of compliance and noncompliance.

Large firms are more motivated to comply by perceived benefits of environmental management on their operation than small and medium enterprises. Large firms are also driven toward compliance due to their fear of deterrence measures. Similarly, ISO 14001 certified firms are well perceived of the benefits of environmental management and shows higher level of concern about bad public image that violation detection and sanctions may bring about compared to non ISO 14001 certified firms. Non-certified

firms show attention to the social effect and benefits of the voluntary environmental management programs.

Determinants of compliance are significantly different between firms in the manufacturing and service sectors. Manufacturing enterprises are more concerned about the noncompliance cost, community pressure, coordination problems, the laws legitimacy and environmental protection effects of the implementation. The service sector, on the other hand, shows more concern for their overseas development.

With regard to effects of business structure on compliance, implementation of environmental management measures is considered by joint ventures and private firms as useful to help enhance their competitiveness and promote social reputation. Foreign firms, however, are more driven by civic motives favoring environmental and health improvement for their workplaces.

The research shows that much is needed to be done to improve compliance with environmental laws and regulations and to promote implementation of environmental management programs in Vietnam. From the government side, efforts are required to ensure the consistency of laws and improve the of policy making and government agencies. The promotion of environmental programs is necessary among business community. Business associations, interest groups such as customers and conservationists, and media are possible instruments for the promotion of environmental awareness and hence, better environmental performance of the enterprise sector. Educational institutions also play a role in the enhancement of individual and firms' internalized norm of compliance. In general, effective policy outcomes require

combined efforts of different players in the organizational field of corporate environmentalism including the government, business, NGOs (including business associations, research and educational institutions, special interest groups) and the public.

# CHAPTER 9

## CONTRIBUTION TO KNOWLEDGE AND RECOMMENDATIONS FOR FURTHER RESEARCH

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This chapter presents the research contribution to practice and knowledge, as well as its limitations and suggestions for future study.

### 9.1 CONTRIBUTION TO KNOWLEDGE

A model of firm compliance and non compliance behavior (Table 8.1) has been developed. Firm compliance or non compliance with environmental laws and regulations are driven by regulative, normative and cognitive reasons. Rules, laws and sanctions; gains/losses calculation; morality; social influence and legitimacy; and shared understanding of compliance are the five factors affecting firms' decision to comply with laws. Similarly, gains/losses calculations and perception of regulators; rules, laws and sanctions; and commitment and social influence are reasons motivating non compliance.

Scott's "Three Pillars of Institutions" can be developed into specific factors determining firm' compliance with environmental laws and regulations.

The findings from the factor analysis indicate that the breakdown of Scott's "Three Pillars of Institutions" into firms' motivations for compliance and noncompliance of this study is rational. The resulting reasons for compliance and noncompliance with environmental laws and regulations confirm the views of both rational and normative theorist regarding compliance behavior. More importantly, an encompassing approach to studying firm compliance behavior is necessary. There is close inter-relationship between the firm compliance behavior and the framework of Scott's Three Pillar of Institutions and the theories of compliance including the rationalist theories, normative theories and disaggregate theories. Scott's "Three Pillars of Institutions" provide a generic framework sufficiently explain why firms comply and do not comply with environmental laws and other requirements. Each of Scott's pillars of institutions could be developed into various business concerns that either promote or hinder their compliance. The model of firm compliance with environmental laws and regulations is capable of dealing with most aspects of firm compliance behavior. Compared to other studies in firm compliance (rationalist, normative and cognitive theories), the resulting model of compliance of this research is more detailed and comprehensive. It encompasses the views of both rational and normative theorists across fields of study from sociology to psychology to political science. It is suggested that the resulting model of firm compliance can be a useful basis for designing environmental policies/programs that could address firms' concerns and thus, promote implementation and compliance.

The model of firm compliance covers a large number of policy making strategies that can be used to appraise the current laws, regulations and environmental programs or to develop new rules and regulations. The policy makers may focus on certain variables in this framework according to the place, time and policy-making requirements, as demonstrated in the case study of firms in Vietnam.

## 9.2 LIMITATIONS OF THE STUDY

There are some limitations in data gathered from the survey. The sampling targets firms that have implemented both EIA and ISO1400EMS and in the context of Vietnam. It focuses on firms with high level of environmental awareness which are mostly large foreign firms and manufacturing ones. This makes it impossible for the study to capture views of firms with low level of environmental awareness, the views of domestic firms, and views of firms operating in other business sectors, and thus the comprehensive view of Vietnam's enterprise sector.

An inherent feature of the survey approach is that the quality of the data is limited. To address this problem, the research relies on three sets of data which can act as mutual validation.

Another problem is selection bias. The provinces selected in this research project are from developed provinces in Vietnam where large numbers of firms are situated. Therefore, the picture of business environments that emerges illustrates issues but is not

representative of the whole environmental management experience of the enterprise sector in Vietnam.

The interviews and survey include lots of perception information that are particularly prone to biases. Therefore, efforts have been made to include and space out questions that are expected to show certain causal relationships and correlations. The ratings of reasons for compliance are highly correlated to the rating of noncompliance determinants. For example, if attribute “Probability of violation detection and being sanctioned” is important for firms in determining their compliance, then the “Low probability of violation detection” and “Sanctions are not serious” would significantly hinder compliance.

The weights of the attributes in the questionnaire are calculated based on Likert scale. This weight reveals respondents’ perception of the level of importance of the attributes. However the weights obtained from Likert scale may not be totally reliable because different respondents may attach different values to different points of the scale.

### **9.3 RECOMMENDATIONS FOR FURTHER STUDY**

Other areas of research related to the findings of this thesis are presented in this section. Research opportunities exist in the investigation of compliance with other environmental regulations and programs not specifically addressed under this study such as OHSAS 18000, Green Globe 21 and so on. The application and compliance with each of the environmental laws and regulations need to be examined with regard to view of firms



from different business sectors, geographical areas, firm size, and fields of operation. Sector specific environmental management program such as Green Globe 21 for the tourism and hospitality should be studied aiming at comparing it with other environmental regulations and programs to find their similarity as well as differences. Given the variety of environmental rules, regulations and programs, further studies should look into mechanisms for integration of environmental management programs with other management systems existing within a firm to assist firms in the implementation process.

Additional research could involve comparative international studies so that the compliance behavior of businesses in other countries is investigated. It could also try to apply the model in other fields of study such as economics, political study, sociology, psychology, management.

Further research should investigate the compliance behavior with regard to environmental laws of firms from other sectors such as agriculture that have not been studied under the current research. The sample should be improved to include more small and medium firms, firms from service sector and firms from other provinces not included in this research to capture a more representative view of the enterprise sector in Vietnam. This adds to the validation of the models with regards to the size, field of operation, structure and geographical effects on compliance behavior.

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# APPENDICES

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## APPENDIX 1: INTERVIEW QUESTIONNAIRE

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Dao Mai Anh (Ph.D candidate)  
Department of Building  
School of Design and Environment  
National University of Singapore  
Singapore 117566

Dear Sir/Madam

### **Interview questionnaire on EIA-ISO 14001 EMS linkage**

#### **Introduction**

This interview is a part of my Ph.D. research at the National University of Singapore. The objective of the research is to explore the reasons for implementation of EIA and ISO 14001 EMS and the possible linkage between EIA and ISO 14001 EMS and thus, develop a model of firm compliance to environmental laws and regulations.

The interview comprises of three sections and would take approximately 30 minutes to complete. May I invite you to participate in this interview? Your responses will be used for academic purposes only. Your profile will be kept confidential.

May I ask you a few questions?

## **I Company profile (2004-2005)**

1.1. Company name:

1.2. Business structure:

- 100% foreign owned
- State-owned
- JV
- Others (*please specify*):

1.3. Turnover:

1.4. Number of employees:

1.5. Location:

1.6. Operations:

1.7. Respondent's designation:

## **II EIA and EMS**

1. What are the reasons for implementation of EIA requirements?
2. What are the reasons for implementation of ISO 14001 EMS?



3. What are the reasons for poor implementation of EIA follow up requirements?
4. What are the reasons for poor implementation of ISO 14001 EMS?
5. Do your companies have follow up measures to implement the environmental management requirements specified in EIA? If so, please identify these measures.
6. What are the environmental management activities implemented within the framework of ISO 14001 EMS within your company?


### **III EIA-ISO 14001 EMS linkage**

1. Did you make reference to EIS when implementing ISO 14001 EMS?
2. If EIS is used as a source of reference for the implementation of ISO 14001 by your company, what are the reasons for the reference?
3. If EIS is used as a source of reference for the implementation of ISO 14001 by your company, what are elements of EIA report that are useful for certification and implementation of ISO 14001 EMS?
4. What are the difficulties that your company encounter when making reference to EIA when implementing ISO 14001 EMS?
5. Between EIA and ISO 14001 EMS of your company, which one has identified more number of impacts? *(please indicate with a "tick" again the appropriate answer.)*
  - a. .... EIA
  - b. .... ISO 14001 EMS
6. Do impacts identified in EIA actually occur in practice as identified by the ISO 14001 EMS?
7. If more impacts are identified under ISO 14001 EMS, what are the reasons for more impacts being identified in practice than predicted?

8. If less impacts are identified under ISO 14001 EMS, what are the reasons for more impacts being predicted than actually occurring?
9. What are the reasons for EIA predicted impacts not occur in practice?
10. Do management measures implemented under ISO 14001 EMS cover EIA recommendations?
11. What are the reasons for EIA proposed mitigation measures activities being implemented?
12. What are the reasons for EIA proposed mitigation measures not being implemented?

**End of the interview.**

**Thank you very much!**



## APPENDIX 2: SURVEY QUESTIONNAIRE

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Dao Mai Anh (Ph.D candidate)  
Department of Building  
School of Design and Environment  
National University of Singapore  
Singapore 117566

Dear Sir/Madam

### **Interview questionnaire on determinants of firms compliance**

#### Introduction

This interview is a part of my Ph.D. research at the National University of Singapore. The objective of the research is to explore the determinants of firm compliance to environmental law and the role of ISO 14001 EMS in meeting the regulatory requirements of EIA.

The interview would take approximately 20 minutes to complete. May I invite you to participate in this interview? Your responses will be used for academic purposes only. Your profiles will be kept in confidentiality.

May I ask you a few questions?

## I. Company profile (2004-2005)

- 1.1. Company name
  
- 1.2. Business structure
  - 100% foreign owned
  - State-owned
  - JV
  - Private
  - Others (*please specify*):
  
- 1.3. Turnover
  
- 1.4. Number of employees
  
- 1.5. Location
  
- 1.6. Operations:
  
- 1.7. Respondent's designation

## II. Environmental management measures

2.1. *Does your company implement any environmental management measure/initiative? If so, please indicate whether these are regulatory or voluntary initiatives by ticking in the appropriate box.*

	Measures	Regulatory	Voluntary
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

## 2.2. Reasons for implementation of management activities

Please indicate reasons for implementation of management activities (both regulatory and voluntary) by ticking the boxes on the left and rate their importance by circling the appropriate number 1, 2, 3, 4, or 5 with "1" represents "not important" and "5" represents "very important". Please specify other possible reasons, if any, by filling in the empty boxes below.

	Reasons	Importance of reasons - regulatory	Importance of reasons - voluntary
<i>Regulative</i>			
1.	Enable company to reduce material wastage	1-2-3-4-5	1-2-3-4-5
2.	Improve company's procedures	1-2-3-4-5	1-2-3-4-5
3.	Easy to integrate with other management systems	1-2-3-4-5	1-2-3-4-5
4.	Reduce company's operating costs	1-2-3-4-5	1-2-3-4-5
5.	Help to enhance company's productivity	1-2-3-4-5	1-2-3-4-5
6.	Probability of violation detection	1-2-3-4-5	1-2-3-4-5
7.	Swift, certain, and appropriate sanctions upon detection	1-2-3-4-5	1-2-3-4-5
8.	Noncompliance cost is not small	1-2-3-4-5	1-2-3-4-5
<i>Normative</i>			
9.	Improve workers' health, safety and welfare	1-2-3-4-5	1-2-3-4-5
10.	Company to contribute to efforts to protect the environment	1-2-3-4-5	1-2-3-4-5
11.	Belief in abiding by law of the company/employees	1-2-3-4-5	1-2-3-4-5
12.	Be essential in company's overseas drive	1-2-3-4-5	1-2-3-4-5
13.	Be insisted upon by stakeholders/parent company	1-2-3-4-5	1-2-3-4-5
14.	Employee/Agent disobeys Owner/Principal's order to violate	1-2-3-4-5	1-2-3-4-5
15.	Concern for social reputation	1-2-3-4-5	1-2-3-4-5
16.	Increase company's competitiveness	1-2-3-4-5	1-2-3-4-5
17.	Community and peer groups are compliant	1-2-3-4-5	1-2-3-4-5
18.	Procedure fairness	1-2-3-4-5	1-2-3-4-5
19.	Effective of policy outcome		
20.	Appropriateness of the law	1-2-3-4-5	1-2-3-4-5
<i>Cognitive</i>			
21.	Shared understanding/common beliefs of law compliance	1-2-3-4-5	1-2-3-4-5
22.	Law compliance as business culture	1-2-3-4-5	1-2-3-4-5
23.	Law compliance as taken for granted activities	1-2-3-4-5	1-2-3-4-5
24.	<i>(Other reasons)</i>	1-2-3-4-5	1-2-3-4-5
25.	<i>(Other reasons)</i>		
26.	<i>(Other reasons)</i>	1-2-3-4-5	1-2-3-4-5

### 2.3. Reasons for poor implementation of EIA mitigation measures and EMS environmental management activities

Please indicate reasons for poor implementation of proposed mitigation measures in EIA by ticking the boxes on the left and rate their importance by circling the appropriate number 1, 2, 3, 4, or 5 with "1" represents "not important" and "5" represents "very important". Please specify other possible reasons, if any, by filling in the empty boxes below.

	Reasons	Importance of reasons - regulatory	Importance of reasons - voluntary
	<i>Regulative</i>		
1.	Noncompliance of legal requirements	1-2-3-4-5	1-2-3-4-5
2.	Low probability of violation detection	1-2-3-4-5	1-2-3-4-5
3.	Increased cost of operation	1-2-3-4-5	1-2-3-4-5
4.	Complicated working procedures	1-2-3-4-5	1-2-3-4-5
5.	Difficult to integrate with other systems	1-2-3-4-5	1-2-3-4-5
6.	High cost of implementation	1-2-3-4-5	1-2-3-4-5
7.	Noncompliance cost is smaller than that of compliance	1-2-3-4-5	1-2-3-4-5
8.	Sanctions are not serious	1-2-3-4-5	1-2-3-4-5
9.	Low probability of being convicted	1-2-3-4-5	1-2-3-4-5
	<i>Normative</i>	1-2-3-4-5	1-2-3-4-5
10.	The clients do not recognize it	1-2-3-4-5	1-2-3-4-5
11.	Employee/Agent disobeys Manager/Principal's order to comply	1-2-3-4-5	1-2-3-4-5
12.	Lack of financial and technological ability to comply	1-2-3-4-5	1-2-3-4-5
13.	Lack of EM human resources	1-2-3-4-5	1-2-3-4-5
14.	Lack of leadership concerns	1-2-3-4-5	1-2-3-4-5
15.	Not believe in the value of the rule/regulations	1-2-3-4-5	1-2-3-4-5
16.	Lack of co-operation of or difficulties made by local government	1-2-3-4-5	1-2-3-4-5
17.	There are difficulties in understanding environmental regulations	1-2-3-4-5	1-2-3-4-5
18.	There are difficulties in understanding the EIA/EMS requirements	1-2-3-4-5	1-2-3-4-5
19.	Ignorance of law	1-2-3-4-5	1-2-3-4-5
20.	Lack of commitment (norms, perceptions of the regulators, and incentives for compliance).	1-2-3-4-5	1-2-3-4-5
21.	Community and peer groups are non-compliant	1-2-3-4-5	1-2-3-4-5
22.	Defeated expectations, perceived unfairness, and other forms of slippage	1-2-3-4-5	1-2-3-4-5
23.	Mistrust of agency discretion	1-2-3-4-5	1-2-3-4-5
	<i>Cognitive</i>		
24.	Low management awareness	1-2-3-4-5	1-2-3-4-5
25.	Difficulties in Changing working tradition	1-2-3-4-5	1-2-3-4-5
26.	Environmental management has not become the business culture	1-2-3-4-5	1-2-3-4-5
27.	No shared understanding/common beliefs in environmental law compliance	1-2-3-4-5	1-2-3-4-5
28.	<i>(Other reasons)</i>	1-2-3-4-5	1-2-3-4-5
29.	<i>(Other reasons)</i>	1-2-3-4-5	1-2-3-4-5
30.	<i>(Other reasons)</i>	1-2-3-4-5	1-2-3-4-5

### III EIA and ISO 14001 EMS

3.1 Have your company done the environmental impact assessment? (Please indicate with a “tick” against the appropriate answer)

- a. .... Yes
- b. .... No

3.2 Have your company been certified to ISO 14001? (Please indicate with a “tick” against the appropriate answer)

- a. .... Yes
- b. .... No

If your company has done EIA or have been certified to ISO14001 EMS, please proceed with questions in Section 3 and 4. If not, the interview stops here. Thank you.

#### 3.3 EIA follow-up measures

Please specify your company’s EIA follow-up measures by ticking the boxes on the left. Please specify other possible reasons, if any, by filling in the empty boxes below.

	Measures
	<ul style="list-style-type: none"> <li>▪ Monitoring programs required by EIA</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Inspection and Surveillance</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Voluntary EMPs</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Environmental Audit</li> </ul>
	<ul style="list-style-type: none"> <li>▪ ISO14001 EMS</li> </ul>
	<ul style="list-style-type: none"> <li>▪ (Other measures)</li> </ul>
	<ul style="list-style-type: none"> <li>▪ (Other measures)</li> </ul>
	<ul style="list-style-type: none"> <li>▪ (Other measures)</li> </ul>

#### 3.4 Reasons for implementation of EIA and ISO 14001 EMS

Please indicate reasons for implementation of management activities in EIA and EMS by ticking the boxes on the left and rate their importance by circling the appropriate number 1, 2, 3, 4, or 5 with “1” represents “not important” and “5” represents “very important”. Please specify other possible reasons, if any, by filling in the empty boxes below.

	Reasons	Importance of reasons - EIA	Importance of reasons - EMS
	<i>Regulative</i>		
1.	Enable company to reduce material wastage	1-2-3-4-5	1-2-3-4-5
2.	Improve company's procedures	1-2-3-4-5	1-2-3-4-5
3.	Easy to integrate with other management systems	1-2-3-4-5	1-2-3-4-5
4.	Reduce company's operating costs	1-2-3-4-5	1-2-3-4-5
5.	Help to enhance company's productivity	1-2-3-4-5	1-2-3-4-5
6.	Probability of violation detection	1-2-3-4-5	1-2-3-4-5
7.	Swift, certain, and appropriate sanctions upon detection	1-2-3-4-5	1-2-3-4-5
8.	Noncompliance cost is not small	1-2-3-4-5	1-2-3-4-5
	<i>Normative</i>		
9.	Improve workers' health, safety and welfare	1-2-3-4-5	1-2-3-4-5
10.	Company to contribute to efforts to protect the environment	1-2-3-4-5	1-2-3-4-5
11.	Belief in abiding by law of the company/employees	1-2-3-4-5	1-2-3-4-5
12.	Be essential in company's overseas drive	1-2-3-4-5	1-2-3-4-5
13.	Be insisted upon by stakeholders/parent company	1-2-3-4-5	1-2-3-4-5
14.	Employee/Agent disobeys Owner/Principal's order to violate	1-2-3-4-5	1-2-3-4-5
15.	Concern for social reputation	1-2-3-4-5	1-2-3-4-5
16.	Increase company's competitiveness	1-2-3-4-5	1-2-3-4-5
17.	Community and peer groups are compliant	1-2-3-4-5	1-2-3-4-5
18.	Procedure fairness, and	1-2-3-4-5	1-2-3-4-5
19.	Effective of policy outcome		
20.	Appropriateness of the law	1-2-3-4-5	1-2-3-4-5
	<i>Cognitive</i>		
21.	Shared understanding/common beliefs of law compliance	1-2-3-4-5	1-2-3-4-5
22.	Law compliance as business culture	1-2-3-4-5	1-2-3-4-5
23.	Law compliance as taken for granted activities	1-2-3-4-5	1-2-3-4-5
24.	<i>(Other reasons)</i>	1-2-3-4-5	1-2-3-4-5
25.	<i>(Other reasons)</i>	1-2-3-4-5	1-2-3-4-5
26.	<i>(Other reasons)</i>	1-2-3-4-5	1-2-3-4-5

### 3.5 Reasons for poor implementation of EIA mitigation measures and EMS environmental management activities

Please indicate reasons for poor implementation of proposed mitigation measures in EIA by ticking the boxes on the left and rate their importance by circling the appropriate number 1, 2, 3, 4, or 5 with "1" represents "not important" and "5" represents "very important". Please specify other possible reasons, if any, by filling in the empty boxes below.



	Reasons	Importance of reasons	Importance of reasons
	<i>Regulative</i>		
1.	Noncompliance of legal requirements	1-2-3-4-5	1-2-3-4-5
2.	Low probability of violation detection	1-2-3-4-5	1-2-3-4-5
3.	Increased cost of operation	1-2-3-4-5	1-2-3-4-5
4.	Complicated working procedures	1-2-3-4-5	1-2-3-4-5
5.	Difficult to integrate with other systems	1-2-3-4-5	1-2-3-4-5
6.	High cost of implementation	1-2-3-4-5	1-2-3-4-5
7.	Noncompliance cost is smaller than that of compliance	1-2-3-4-5	1-2-3-4-5
8.	Sanctions are not serious	1-2-3-4-5	1-2-3-4-5
9.	Low probability of being convicted	1-2-3-4-5	1-2-3-4-5
	<i>Normative</i>	1-2-3-4-5	1-2-3-4-5
10.	The clients do not recognize it	1-2-3-4-5	1-2-3-4-5
11.	Employee/Agent disobeys Manager/Principal's order to comply	1-2-3-4-5	1-2-3-4-5
12.	Lack of financial and technological ability to comply	1-2-3-4-5	1-2-3-4-5
13.	Lack of EM human resources	1-2-3-4-5	1-2-3-4-5
14.	Poor quality of EIA/EMS (inaccurate impact predictions/identifications, inappropriate mitigation/management measures)	1-2-3-4-5	1-2-3-4-5
15.	Lack of leadership concerns	1-2-3-4-5	1-2-3-4-5
16.	Not believe in the value of the rule/regulations	1-2-3-4-5	1-2-3-4-5
17.	Lack of co-operation of or difficulties made by local government	1-2-3-4-5	1-2-3-4-5
18.	There are difficulties in understanding environmental regulations	1-2-3-4-5	1-2-3-4-5
19.	There are difficulties in understanding the EIA/EMS requirements	1-2-3-4-5	1-2-3-4-5
20.	Ignorance of law	1-2-3-4-5	1-2-3-4-5
21.	Lack of commitment (norms, perceptions of the regulators, and incentives for compliance).	1-2-3-4-5	1-2-3-4-5
22.	Community and peer groups are non-compliant	1-2-3-4-5	1-2-3-4-5
23.	Defeated expectations, perceived unfairness, and other forms of slippage	1-2-3-4-5	1-2-3-4-5
24.	Mistrust of agency discretion	1-2-3-4-5	1-2-3-4-5
	<i>Cognitive</i>		
25.	Low management awareness	1-2-3-4-5	1-2-3-4-5
26.	Difficulties in Changing working tradition	1-2-3-4-5	1-2-3-4-5
27.	Environmental management has not become the business culture	1-2-3-4-5	1-2-3-4-5
28.	No shared understanding/common beliefs in environmental law compliance	1-2-3-4-5	1-2-3-4-5
29.	<i>(Other reasons)</i>	1-2-3-4-5	1-2-3-4-5
30.	<i>(Other reasons)</i>	1-2-3-4-5	1-2-3-4-5
31.	<i>(Other reasons)</i>	1-2-3-4-5	1-2-3-4-5

## IV. EIA-EMS linkage

### 4.1. Reference to EIA when doing EMS

Please indicate reasons for reference to EIA report and useful EIA elements when implementing ISO 14001 EMS by ticking the box on the left and rate their importance by circling the appropriate number 1, 2, 3, 4, or 5 with "1" represents "not important" and "5" represents "very important". Please specify other possible reasons and elements, if any, by filling in the provided boxes and rate their importance accordingly.

#### a) Reasons for reference

Reasons	Importance of reasons
▪ EIA as legal requirements have to be met	1-2-3-4-5
▪ Use of information	1-2-3-4-5
▪ (Other reasons)	1-2-3-4-5
▪ (Other reasons)	1-2-3-4-5
▪ (Other reasons)	1-2-3-4-5

#### b) Use of EIA report

Elements of EIA report	Importance for usage
▪ Legal requirements	1-2-3-4-5
▪ Baseline study	1-2-3-4-5
▪ Impacts predictions	1-2-3-4-5
▪ Mitigation measures	1-2-3-4-5
▪ Monitoring	1-2-3-4-5
▪ (Other elements)	1-2-3-4-5
▪ (Other elements)	1-2-3-4-5
▪ (Other elements)	1-2-3-4-5

### 4.2. Impact prediction and identification

a) Please indicate your level of agreement over following statements by circling appropriate number 1, 2, 3, 4 or 5 with "1" represents "disagree" and "5" represents "totally agree"

Statements	Level of agreement
▪ Almost all impacts predicted in EIA actually occur in practice as identified by the ISO 14001 EMS.	1-2-3-4-5
▪ Under ISO 14001 EMS, more impacts are identified than predicted in EIA.	1-2-3-4-5

b) *Reasons for more impacts being identified in practice than predicted*

*Please indicate reasons for more impacts being identified in practice than predicted by ticking the box on the left and rate their importance by circle the appropriate number 1, 2, 3, 4, or 5 with “1” represents “not important” and “5” represents “very important”. Please specify other possible reasons, if any, by filling in the empty boxes below.*

<b>Reasons</b>	<b>Importance of reasons</b>
▪ Tighter requirements of ISO 14001	1-2-3-4-5
▪ Legal update	1-2-3-4-5
▪ Company's requirements are higher than those in EIA	1-2-3-4-5
▪ Production expansion	1-2-3-4-5
▪ More concern from company's leadership	1-2-3-4-5
▪ More pressure from customers	1-2-3-4-5
▪ Financial availability of the company	1-2-3-4-5
▪ EMS is more practical and detailed than EIA	1-2-3-4-5
▪ <i>(Other reasons)</i>	1-2-3-4-5
▪ <i>(Other reasons)</i>	1-2-3-4-5
▪ <i>(Other reasons)</i>	1-2-3-4-5

c) *Reasons for predicted impacts not to occur*

*Please indicate reasons for EIA’s predicted impacts not to occur in practice by ticking the box on the left and rate their importance by circle the appropriate number 1, 2, 3, 4, or 5 with “1” represents “not important” and “5” represents “very important”. Please specify other possible reasons, if any, by filling in the empty boxes below.*

<b>Reasons</b>	<b>Importance of reasons</b>
▪ Mitigation measure applied	1-2-3-4-5
▪ Inaccuracy of predictions	1-2-3-4-5
▪ Change of production plan	1-2-3-4-5
▪ Impacts not considerable to be accounted for	1-2-3-4-5
▪ Production/activities be moved to other plants	1-2-3-4-5
▪ <i>(Other reasons)</i>	1-2-3-4-5
▪ <i>(Other reasons)</i>	1-2-3-4-5
▪ <i>(Other reasons)</i>	1-2-3-4-5

**4.3. Environmental management activities**

a) *Please indicate your level of agreement over following statements by circling appropriate number 1, 2, 3, 4 or 5 with “1” represents “totally disagree” and “5” represents “totally agree”*

Statements	Level of agreement
<ul style="list-style-type: none"> <li>▪ Under ISO 14001 EMS, all proposed management activities in EIA are implemented.</li> </ul>	1-2-3-4-5
<ul style="list-style-type: none"> <li>▪ Management measures in EMS are much more than those proposed in EIA and as such cover not only EIA recommendations but also other environmental aspects and impacts</li> </ul>	1-2-3-4-5
<ul style="list-style-type: none"> <li>▪ Under ISO 14001 EMS, monitoring activities scheduled in EIA are closely conformed with, or even improved for better results.</li> </ul>	1-2-3-4-5

*b) Reasons for ELA's proposed mitigation measures being implemented by EMS*

*Please indicate reasons for ELA's proposed mitigation measures being implemented by EMS by ticking the box on the left and rate their importance by circle the appropriate number 1, 2, 3, 4, or 5 with "1" represents "not important" and "5" represents "very important". Please specify other possible reasons, if any, by filling in the empty boxes below.*

Reasons	Importance of reasons
<ul style="list-style-type: none"> <li>▪ Legal requirement</li> </ul>	1-2-3-4-5
<ul style="list-style-type: none"> <li>▪ Enhance customer's belief</li> </ul>	1-2-3-4-5
<ul style="list-style-type: none"> <li>▪ Environmental protection</li> </ul>	1-2-3-4-5
<ul style="list-style-type: none"> <li>▪ Sustainable business</li> </ul>	1-2-3-4-5
<ul style="list-style-type: none"> <li>▪ Activities as requirement of ISO 14001</li> </ul>	1-2-3-4-5
<ul style="list-style-type: none"> <li>▪ Healthy working environment for staff</li> </ul>	1-2-3-4-5
<ul style="list-style-type: none"> <li>▪ (Other reasons)</li> </ul>	1-2-3-4-5
<ul style="list-style-type: none"> <li>▪ (Other reasons)</li> </ul>	1-2-3-4-5
<ul style="list-style-type: none"> <li>▪ (Other reasons)</li> </ul>	1-2-3-4-5

*c) Reasons for ELA proposed management activities not to be implemented under EMS*

*Please indicate reasons for ELA's proposed activities not being implemented by ticking the box on the left and rate their importance by circle the appropriate number 1, 2, 3, 4, or 5 with "1" represents "not important" and "5" represents "very important". Please specify other possible reasons, if any, by filling in the empty boxes below.*

Reasons	Importance of reasons
<ul style="list-style-type: none"> <li>▪ More applicable/advanced technology available to replace the proposed one</li> </ul>	1-2-3-4-5
<ul style="list-style-type: none"> <li>▪ Change of project/production plan</li> </ul>	1-2-3-4-5
<ul style="list-style-type: none"> <li>▪ Impacts do not occur</li> </ul>	1-2-3-4-5
<ul style="list-style-type: none"> <li>▪ Inappropriate proposed mitigation measures</li> </ul>	1-2-3-4-5
<ul style="list-style-type: none"> <li>▪ (Other reasons)</li> </ul>	1-2-3-4-5
<ul style="list-style-type: none"> <li>▪ (Other reasons)</li> </ul>	1-2-3-4-5
<ul style="list-style-type: none"> <li>▪ (Other reasons)</li> </ul>	1-2-3-4-5

*d) Reasons for implementation of management activities in response to ELA's unexpected impacts*

Please indicate reasons for implementation of management activities in response to EIA's unexpected impacts by ticking the box on the left and rate their importance by circle the appropriate number 1, 2, 3, 4, or 5 with "1" represents "not important" and "5" represents "very important". Please specify other possible reasons, if any, by filling in the empty boxes below.

Reasons	Importance of reasons
▪ ISO 14001 requirements	1-2-3-4-5
▪ Legal and relevant parties' requirements	1-2-3-4-5
▪ Sustainable business	1-2-3-4-5
▪ Environmental awareness	1-2-3-4-5
▪ Operation efficiency	1-2-3-4-5
▪ (Other reasons)	1-2-3-4-5
▪ (Other reasons)	1-2-3-4-5
▪ (Other reasons)	1-2-3-4-5

**End of the interview.**

**Thank you very much!**

### Appendix 3 Case study 1: Environmental aspects and impacts

Environmental aspects	Terms used in original documents	Physical impacts								Ecological impacts				Socio-economic impacts		Number of impacts			EMS versus EIA		
		Water pollution		Air pollution		Soil pollution		Natural resources consumption		Impacts on landscapes		Impacts on ecology		Health impacts							
	Terms used in EIA report (*)	EMS	EIA	EMS	EIA	EMS	EIA	EMS	EIA	EMS	EIA	EMS	EIA	EMS	EIA	EMS	EIA	Same impacts identified in both EIA and EMS	Impacts identified in EMS but not predicted in EIA	Impacts predicted in EIA but not identified in EMS	
Communal wastewater discharge	Wastewater from latrine with high BOD5, COD, N, P, Ni2+, Cr6+ level that threatens life of water species and deteriorate surrounding landscape	*	*			*					*		*		*		2	4	1	1	3
Industrial wastewater	Dirty and smelly wastewater that can cause environmental related diseases negatively affect human and other species' life	*	*	*	*	*	*			*	*	*	*	*	*		6	6	6	0	0
Chemical usage and storage	Chemicals affecting water clearance	*	*	*		*				*				*	*		5	2	2	3	0
Air emissions	Chemicals, dust, and other air emissions affects life of surrounding residents			*	*									*	*		2	2	2	0	0
Noise	Noise from manufacturing activities			*	*									*	*		2	2	2	0	0
Solid waste	Soil pollution, deteriorating soil quality		*				*				*	*	*	*	*		3	5	3	0	2
Solid waste storage	Dust affecting human health, air quality. Waste dumped into water bodies affects surface and underground water quality		*	*	*					*	*						2	3	2	0	1
Use of pressure vessel	Air emissions Accidents (explosions)			*				*		*				*	*		4	1	1	3	0
Oil usage and storage	Wastewater containing oil affect soil and water quality, human and living species' wellbeing	*	*	*	*	*	*	*		*		*	*	*	*		7	5	5	2	0
Hazardous waste storage		*		*			*			*				*			5	0		5	0
Water usage		*						*									2	0		2	0
Electricity consumption				*				*		*				*			4	0		4	0
Gas consumption and storage				*				*		*				*	*		4	1	1	3	0
Solid waste from construction process										*							1	0		1	0
Coal usage	Air pollution, natural resources consumption			*	*			*									2	1	1	1	0
Safety issues	Labour accidents													*	*		1	1		0	1
<b>Total</b>																	52	33	26	25	7

Note: (\*) In ISO 14001 EMS documents, impacts associated with each environmental aspects are marked in the Environmental Aspects and Impacts Identification Matrix. The impacts are therefore not presented in expressions like the case of EIA. In this matrix, identified impacts in EMS documents are marked with a (\*) without quoting of terms used in the original documents.

Appendix 4 Case study 2: Environmental aspects and impacts

Environmental aspects	Terms used in original documents	Physical impacts								Ecological impacts				Socio-economic impacts		Number of impacts			EMS versus EIA		
		Water pollution		Air pollution		Soil pollution		Natural resources consumption		Impacts on landscapes		Impacts on ecology		Health impacts							
	Terms used in EIA report (*)	EMS	EIA	EMS	EIA	EMS	EIA	EMS	EIA	EMS	EIA	EMS	EIA	EMS	EIA	EMS	EIA	Same impacts identified in both EIA and EMS	Impacts identified in EMS but not predicted in EIA	Impacts predicted in EIA but not identified in EMS	
Communal wastewater discharge during the construction stage	Impacts on sanitary condition of the facility and on the Cong river		*			*						*		*	0	5	0	0	5		
Construction wastewater discharge	Water pollution		*												3	4	2	1	2		
Communal wastewater discharge during the operational stage	Impacts on ecology, water pollution, consumption of lots of water,	*	*			*		*	*		*		*		*	0	1	0	0	1	
Industrial wastewater	Significant impacts on the ecology, and surrounding water body, consumption of water, and health of local residents and workers	*	*	*		*		*	*	*		*		*	*	*	6	5	3	3	2
Rain water during construction stage	Reduce crop productivity, impacts on water and landscape		*							*		*			0	3	0	0	3		
Rain water during operational stage	Rain water containing oil resulting in water pollution and negative impact on ecology and public health		*									*		*	0	3	0	0	3		
Chemical usage and storage	Waste water containing oil and solid waste is smelling and can affect soil quality, water ecology and human health			*		*		*		*				*	6	0	0	6	0		
Air emissions during construction stage	Dust, and other air emissions affects life of surrounding residents and floral ecology and animals		*		*					*		*			0	5	0	0	5		
Air emissions during operational stage	Air emissions affecting public health	*		*	*			*		*				*	*	5	3	2	3	1	
Noise generation during construction	Noise affecting local residents' life													*	0	1	0	0	1		

Noise generation during operation	Health impacts on workers, air and noise pollution			*	*					*				*	*	3	2	2	1	0
Heat generation during construction	Health impacts on construction workers														*	0	1	0	0	1
Heat generation during operation	Impacts on workers' health, increase temperature			*	*			*						*	*	3	2	2	1	0
Solid waste generation	Water pollution and impacts on water ecology	*	*	*		*		*		*		*	*	*	*	7	3	2	5	1
Oil usage and storage	Wastewater containing oil affect soil and water quality, resulting in reduced crop productivity and negative impacts on human and animals' health	*	*	*	*	*	*	*		*			*	*		6	0	0	6	0
Fuel usage		*		*		*		*		*			*			6	0	0	6	0
Water usage								*								1	0	0	1	0
Electricity consumption				*				*		*				*		4	0	0	4	0
Gas consumption and storage				*		*		*		*				*		5	0	0	5	0
Construction of workers' accommodation	Cutting down trees												*		*	0	2	0	0	2
Safety issues during construction	Labor risks, accidents for construction workers														*	0	1	0	0	1
Safety issues during operation	Labour accidents for workers													*		2	0	0	2	0
<b>Total</b>																<b>57</b>	<b>40</b>	<b>13</b>	<b>44</b>	<b>28</b>

Note: (\*) In ISO 14001 EMS documents, impacts associated with each environmental aspects are marked in the Environmental Aspects and Impacts Identification Matrix. The impacts are therefore not presented in expressions like the case of EIA. In this matrix, identified impacts in EMS documents are marked with a (\*) without quoting of terms used in the original documents.