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**MULTINATIONAL CORPORATIONS AND THE
ENVIRONMENT IN VIETNAM: POLICY RESPONSES**

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Acronyms

ABB	Asea Brown Boveri
BOD	Biological Oxygen Demand
CAC	Command And Control (method)
CIEM	Central Institute for Economic Management (Vietnam)
COD	Chemical Oxygen Demand
DANIDA	Danish International Development Agency
DOI	Department of Industry
DOSTE	Department of Science, Technology and Environment
EIA	Environmental Impact Assessment
EMU	Environmental Management Unit
EPZs	Export Processing Zones
EU	European Union
FDI	Foreign Direct Investment
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GDSMAQ	General Department for Standards, Measurement and Quality
GSO	General Statistics Office
IMF	International Monetary Fund
ISO	International Standardisation Organisation
IZs	Industrial Zones
JICA	Japan International Cooperation Agency
MNCs	Multinational Corporations
MNRE	Ministry of Natural Resources and Environment
MOC	Ministry Of Construction
MOI	Ministry Of Industry
MOLISA	Ministry Of Labour, Invalids and Social Affairs
MOSTE	Ministry Of Science, Technology and Environment
MOTrans	Ministry Of Transport
MPI	Ministry of Planning and Investment
NEA	National Environmental Agency (Vietnam)
OECD	Organisation for Economic Cooperation and Development
P&G	Procter and Gamble
SOE	State-Owned Enterprise
TCVN	Tieu Chuan Viet Nam (Vietnam Standards)
TSS	Total Suspended Solid
UNCTAD	United Nations Conference on Trade and Development
UK	United Kingdom
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
US	United States
USD	United States Dollar
VES	Vietnamese Environmental Standards
VND	Vietnamese Dong

WB
WHO
WTE

World Bank
World Health Organisation
Waste Treatment Equipment

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Introduction

Background

Since the launch of the *doi moi* (economic renovation) policy in 1986, Vietnam has experienced rapid economic development. An important factor behind this economic growth has been the significant inflow of foreign direct investment (FDI). FDI has contributed considerably to the economic development process through market expansion, investment capital generation, technology and management know-how transfer, and stimulation of structural change. Eighty-six of the five hundred largest MNCs in the world have invested and are now operating in Vietnam (MPI, 2002).

Problems and impediments do however exist with respect to FDI in Vietnam. Along with the positive impact of FDI on economic development, researchers and policy makers have observed several negative aspects. For example, FDI was claimed to have an imbalanced sectoral and regional distribution, result in import substitution and low value-added export orientation, and have a small employment generation impact. Recently, environmental damage was raised and argued as an additional "possible" negative impact of FDI on the sustainable development of Vietnam (CIEM, 1997a).

In the international literature, the impact of FDI on the environment of the recipient country, particularly developing countries, has been considered by several research studies, both quantitative and qualitative. The common conclusion was that, in general, FDI has both a positive and negative impact (for example see studies of Jha, 1999; Hansen, 1999; Gouming et. al, 1999). As to the "net" FDI effect on the environment, the popular consensus is that this is context-dependent (OECD, 1999; UNCTAD, 1999). First, whether FDI can become a constructive "engine" for sustainable development much depends on the presence of the right institutional framework in the host country, although even when environmental laws and regulations are in place, the positive environmental impact of FDI can only be realised if they are properly implemented and enforced in practice (OECD, 2001). Second, the environmental repercussions of FDI lies in the corporate environmental management practices adopted by the foreign investors which depend on the size and ownership of the company, the market, together with industry and regulatory forces (both formal and informal).

In contrast to the abundant information about the impact of FDI on the environment in the international literature, studies relating to Vietnam have been limited and confined to touching on different aspects of the subject and providing specific case evidence. Field research has looked at FDI in a particular sector (for instance, Nguyen and Nurul (2000), Tonje (1998)), and instances of FDI environmental violation on an ad-hoc basis without providing an overall perspective. These studies do not provide sufficient information for policy making since the factors that influence foreign investors' decision-making in choosing a particular environmental management practice have not been examined systematically and analytically. Only by doing so, will a true picture of the environmental protection attitude of FDI in Vietnam be revealed.

Objective of the Study

The purpose of this report is to determine the actual environmental impact of FDI and to identify the specific factors that favourably influence MNC decision-making with respect to the environment. In order to achieve this goal, the study aims to:

- look at the role of FDI in the economic development of Vietnam as well as the current environmental management system in Vietnam.
- review the current situation regarding industrial pollution in some selected industries and the impact of FDI on the environment as compared to the domestic sector.
- examine the environmental impact and behaviour of MNCs towards the environment in five polluting industries, namely the food processing, beverage, textile, pulp and chemical industries.
- construct the determinants of MNCs' behaviour towards environmental protection and set out policy implications for environmental management in Vietnam.

Methodology

The project will apply the following methodologies:

- synthesise published data and information on FDI trends and structure, its role in economic development, and the current system of FDI-related environmental management in Vietnam.
- use comparative methods to verify the impact of foreign (i.e. MNC) investment on the environment. The comparison is made between the foreign and domestic sectors using records on emission discharged into wastewater, air etc. with respect to national environmental standards.
- conduct a survey of twenty MNCs operating in the most polluting industries in Vietnam in order to obtain information and identify the main determinants relating to the attitude of MNCs' towards the environment in order to formulate an environmental protection behaviour model of MNCs in Vietnam.

Structure of the Report

Based on the objectives set out for the study, this report is organised into five chapters. Chapter 1 examines the trend and role of FDI in Vietnam during the last decade. Chapter 2 discusses the legal and institutional environmental framework in Vietnam with a focus on environmental regulations relating to FDI. In chapter 3, an overall picture of industrial pollution is described followed by a summary of the available evidence on the impact of FDI on the environment. Chapter 4 is the key section of the report and provides the environmental impact findings from a survey of twenty MNCs (in comparison with the domestic sector), together with the determinants of the MNCs' behaviour towards environmental protection in Vietnam. Finally, chapter 5 concludes the report by providing policy implications and raising several questions for further discussion and research.

Chapter 1:

Foreign Direct Investment and Economic Development in Vietnam

1.1. Foreign Direct Investment Trends in Vietnam

Vietnam has achieved rapid economic development since its *doi moi* (economic renovation) policy was launched in 1986. Foreign direct investment has been an engine of economic growth during these years. After the Law on Foreign Investment was promulgated in 1987, Vietnam has been successful in attracting foreign direct investment (FDI), especially during the first half of the 1990s. By the end of 2001, accumulated FDI approvals amounted to 3,855 projects with a total legal capital of USD 48 billion. Of this, 3,029 FDI projects were in operation with a legal capital of USD 38 billion and actual implemented capital of USD 19.7 billion¹.

1.1.1. Principal Stages of FDI Inflow

FDI inflow into Vietnam since 1988 can be viewed as having three distinct stages:

Experimental Stage (1988-1990). During this period, an institutional framework for attracting FDI was developed for the first time. However, FDI inflow was relatively low due to the substantially closed trade and market conditions. Foreign investors at that time were not confident in the economic situation and the investment environment of Vietnam. Total licensed capital during this period was only USD 1.6 billion.

Growth Stage (1991-1996). This period was characterised by a dramatic inflow of FDI. Along with the announcement of the policy on the diversification of international economic relations, Vietnam made significant efforts in negotiating its participation in regional and international economic organisations. The domestic investment environment was improved by the development of a comprehensive regulatory framework, trade liberalisation, removal of business restrictions, and successful measures regarding macroeconomic stabilisation. These factors made Vietnam attractive to foreign investors, and hence the inflow of FDI grew substantially and reached a peak of USD 8.6 billion annual registered investment in 1996. As a result, total FDI approvals during the six years 1991-96 were USD 24.8 billion, which accounted for 64.5 percent of total inflows for the last thirteen years (see table 1.1).

¹ Excluding Vietnamese contribution, terminated and withdrawn FDI projects.

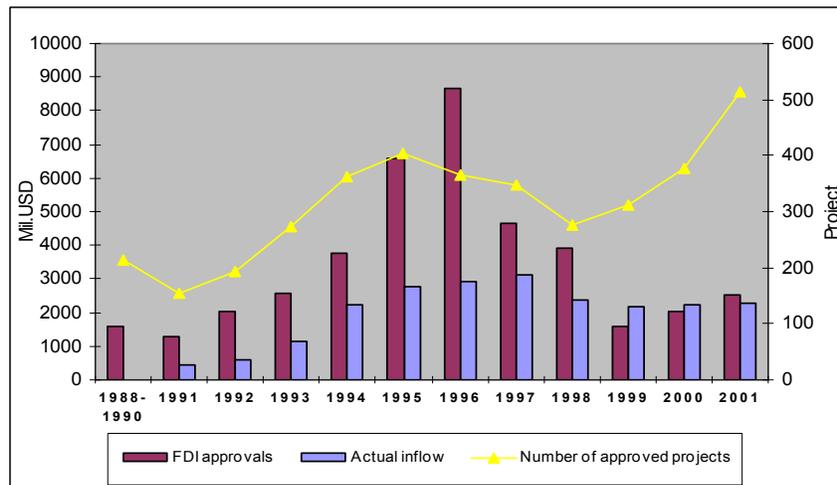
Table 1.1: Stages of FDI Inflow in Vietnam

	Stage 1:	Stage 2:	Stage 3:	
	1988-1990	1991-1996	1997-2001	1988-2001
I Number of Projects				
Newly Licensed	214	1762	1824	3800
Increased Capital ^a	1	424	882	1307
Withdrawn	6	291	479	776
Terminated	2	16	13	31
Still in operation ^b	206	1661	2993	2993
II Total Capital (USD mil.)				
Newly Licensed	1582	24884	14649	41115
Increased Capital	0.3	2920	3742	6663
Withdrawn	26	2663	6981	9670
Terminated	0.3	244.7	51	296
Still in operation ^c	1556	26452	37812	37812
III Implemented Capital (USD mil.)				
Foreign Capital	n.a.	10076	12208	22284
Vietnamese Capital	n.a.	1472	1058	2530

Note: a- This is the increase in capital due to the expansion of currently operating projects.
 b- This figure can be defined as the total of newly licensed projects minus number of withdrawn and terminated projects.
 c- This figure is accumulated capital in each period.

Source: The authors' own calculations from the data of Ministry of Planning and Investment (MPI), 2002

Figure 1.1: FDI Inflow Trends 1988-2001



Source: Ministry of Planning and Investment (MPI), 2002

Fluctuation Stage (1997-to present). FDI inflows fell sharply in 1997 and decreased over the following two years due to the regional financial crisis (1997-1998). In 2000, the government made an important adjustment towards establishing more favourable conditions for attracting FDI by amending the Foreign Investment Law for the fourth time. Together with the economic recovery of the crisis economies, this helped Vietnam to slowly increase its FDI inflows, although not to the level that it was able to reach in the first half of the 1990s. It is important to note, however, that although FDI approvals decreased, actual implemented capital remained relatively stable during the period 1997-2001 (see figure 1.1).

This overall outcome for FDI results from the government's constant efforts in creating a favourable business environment to attract foreign investors over the last fifteen years. Since the Foreign Investment Law was passed in 1987, it has been amended four times² in order to provide more favourable investment conditions. At present, the Foreign Investment Law is considered to be relatively advanced, as compared to the respective laws of other developing countries, in terms of not only the conditions to protect foreign investors, but also the sectors opened to foreign investment (IMF, 1999).

Within the context of the increasing competition for FDI in the region and lower FDI inflows in recent years, the government of Vietnam in 2001-2002 made further policy improvements to attract FDI, namely:

- issued the list of investment projects calling for FDI during the period 2001-2005 (2002);
- encouraged FDI in residential housing (2002);
- shortened the list of FDI projects that require the export of 80% of production output (2002);
- further improved the legal framework and policy for FDI attraction, including abolishing irrelevant barriers to FDI (2002);
- moved towards unifying domestic and foreign investment regulations in order to establish an equal investment environment (from 2002 onwards);
- allowed foreign investment in equitised enterprises in selected areas (2002);
- introduced equitisation of FDI projects to diversify the form of investment by foreign investors (2002);
- reduced the foreign currency surrender requirement from 80% in 1998 to 50% in 2000 and further to 30% in 2001³;
- expanded the investment areas which allow FDI (2001);
- allowed the foreign investor to use land use rights for mortgage (2001).

The above policies measures will hopefully attract more foreign investment into Vietnam in the coming years. It is anticipated that Vietnam will attract FDI inflows of about USD

² In the years 1990, 1992, 1996 and 2000.

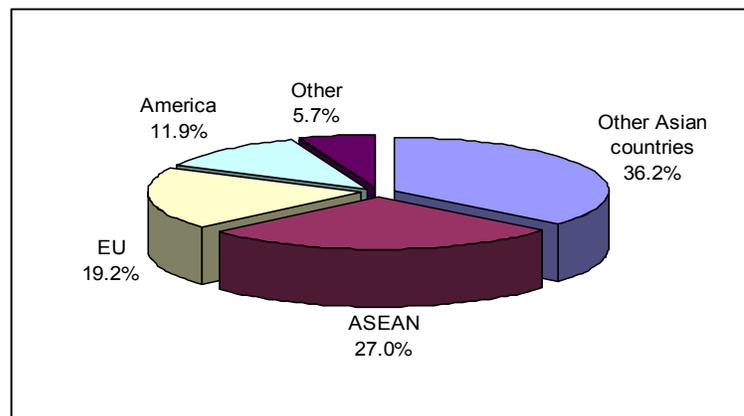
³ See CIEM (2002).

12 billion during the period 2001-2005 and by 2005, FDI will contribute towards 15% of GDP, 25% of total exports and 10% of total budget revenue⁴.

1.1.2. Pattern of FDI in Vietnam

Source of FDI. During the period 1988-2001, Vietnam attracted foreign investment from sixty-six countries and regions of the world. The majority of FDI comes from the countries of Asia, accounting for 63.2% of total FDI approvals (Figure 1.2). All the five leading foreign investors in Vietnam are from East Asia, namely, Singapore, Taiwan, Japan, Korea, and Hong Kong, and they were the source of 48.4% of projects and 46.4% of total licensed capital. Recent years, however, have witnessed an increasing share of FDI from Europe and the United States. For example, the share in total licensed capital from the EU increased from 17.3% to 22% between the periods 1991-1995 and 1996-2000. A similar trend can be seen in the case of the United States with a three-fold increase in FDI over the period 1995-2000. In addition, in many cases, the big multinational companies of the EU and US have invested in Vietnam through their affiliates or subsidiary companies in Asian countries (for instance, P&G, Coca Cola, Unilever, ABB).

Figure 1.2: FDI by Source



Source: Ministry of Planning and Investment (MPI), 2002

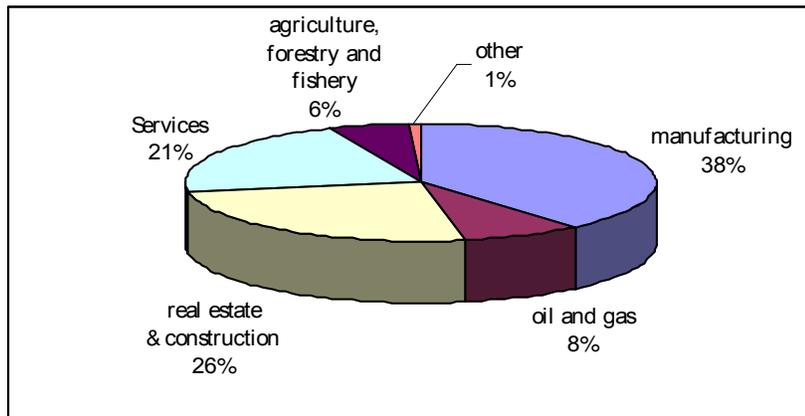
Sectoral distribution of FDI. In the early 1990s, FDI inflow was concentrated mainly in oil, hotel and office sectors. However, 1996-2001 revealed a shifting trend of FDI inflow towards the manufacturing sector, including export-oriented manufacturing and infrastructure construction. At present, the manufacturing sector has absorbed the lion's share of the FDI inflow (accounting for 38% of total FDI in 2001), followed by real estate & construction, and the services sector (accounting for 26% and 21% respectively) (Figure 1.3). This trend towards the manufacturing sector will continue into the coming

⁴ Resolution No. 09/2001/NQ-CP of the Government on "Accelerating attraction and efficiency of FDI in Vietnam during the period 2001-2005", dated August 28, 2001.

years as a result of policies to promote FDI in the labour-intensive and export-oriented sectors.

Regional distribution of FDI. The regional distribution of FDI is extremely unbalanced. FDI has been concentrated in regions and cities with more favourable infrastructure and services. During 1988-2001, South-East Vietnam attracted nearly 50% of total FDI approvals, the Red River Delta followed with a share of 26%. Currently, the five provinces and cities leading in FDI absorption are Ho Chi Minh City (accounting for 28% of total licensed FDI), Hanoi (20%), Dong Nai (13.5%), Binh Duong (6.7%) and Ba Ria - Vung Tau (4.8%). The Northern Highlands of Vietnam has been largely neglected by foreign investors largely because of poor infrastructure conditions. Despite the government's adoption very recently of preferential policies and additional promotional measures in favour of FDI in remote and mountainous areas, such imbalances are expected to persist for some time to come.

Figure 1.3: FDI Distribution by Sector



Source: Ministry of Planning and Investment (MPI), 2002

Types of ventures. The majority of FDI is in the form of equity joint-ventures, accounting for 40% of total projects and 59% of total licensed investment capital. However, the share of 100% foreign-owned affiliates has been growing for the last few years. The main reasons for this is that first, more and more foreign investors prefer to have ownership control over their ventures, and second, government policy now allows investors to be free in choosing their form of investment. At present, 55.5% of the total number of projects and 29.4% of total licensed capital are 100% foreign-owned.

1.2. The Role of FDI in Vietnam's Economic Development

In general, FDI usually brings into the recipient country both direct and indirect benefits. By investing abroad, foreign firms will directly influence macro variables like capital formation, employment, market access opportunities, export earnings, tax revenue, and ultimately the growth of output and income of the host country. Indirectly, foreign investment may also influence the structure of the host economy, improve workforce skills, and transfer technology and management know-how (Blomstrom and Kokko, 2001).

In the case of Vietnam, FDI has become an important component of the national economy and has made a considerable contribution to economic growth and development as Table 1.2 below illustrates. The contribution to GDP by the FDI sector has grown rapidly, from 2.0% in 1992 to 13.3% in 2001. Similarly, its contribution to total exports grew from 5.3% to 24% over the same period. At present, approximately 440,000 workers are employed by FDI projects in Vietnam.

Table 1.2: Role of FDI in Economic Development of Vietnam

	1992	1996	2000	2001
Actual FDI inflow (USD mil.)	492	2518	2043	2300
FDI inflow as a ratio of total investment (%)	21.0	28.6	18.6	18.0
FDI contribution to GDP (%)	2.0	7.4	12.7	13.3
Export by foreign affiliates (USD mil.)	112	920	3320	3570
Share of exports by foreign affiliates to total exports (%)	5.3	23.4	22.2	24.0
Number of employees in foreign affiliates (1,000 persons)	n.a.	220	349	439
Tax contribution as share of total budget revenue (%)	n.a.	4.8	5.2	6.0

Source: MPI (2001, 2002) and the authors' calculations from GSO (2001, 2002)

In addition to its important role in Vietnam's economic development, a study conducted by CIEM (1997b) showed that FDI had a significant impact through technology and management know-how transfer as well as market expansion. More importantly, FDI accelerated structural industrial change and promoted competition and the transition to a market economy. In 2000, FDI is dominant in the production of various industrial products in Vietnam such as crude oil (accounting for 100% of total output), automobiles (100%), televisions (83%), refrigerators (100%), paint (52%), soap and detergent (58%). FDI projects are leading the way in introducing advanced management systems like ISO 9000 and ISO 14000. In the area of the environment, many FDI firms have presented

sound practices in environmental friendly technology and management. However, problems and impediments do exist with respect to FDI in Vietnam, including:

Imbalance in sectoral distribution. FDI in Vietnam is concentrated mainly in the manufacturing and services sectors, representing 38% and 21% of total licensed investment capital respectively. Meanwhile, only 6% of total FDI capital was invested in agriculture, fishery and forestry.

Regional imbalance. As discussed earlier, geographically, FDI is concentrated in regions and cities with more favourable infrastructure and services conditions such as the South-East and the Red River Delta. Other regions of the country have received very limited FDI, especially the Northern Highlands.

Low value-added exports and import-substitution. Although exports from FDI projects have increased considerably in recent years, generally, the import content of the FDI exports is high and value-added is very limited. In addition, a major concern is that import-substituting and non-tradable industries, such as, heavy industry, construction and real estate, transportation and telecommunications, accounted for 57% of the total imports of FDI enterprises and less than 1% of their total exports in 1998 (IMF, 1999, and Kokko,1997).

Potential loan burden. The loan component of FDI inflows has risen sharply in recent years, reaching 70% of total disbursements in 1999, compared with 6% in 1992⁵. This trend suggests that large repayments on FDI-related loans will fall due in the next few years at a time which will create a financial debt burden for the economy.

Job-generation effect is in doubt. The impact of FDI on employment is small. The 3,044 FDI projects in operation by the end of 2001 employed nearly 440,000 workers. In other words, each FDI project employed just 144 workers on average. There is no doubt that, to date, FDI in Vietnam has been concentrated in capital-intensive industries rather than labour-intensive sectors.

Potential "pollution haven" or the "race to the bottom" effect. Although FDI enterprises have been seen, in general, as environmentally friendly producers, there have been some instances of environmental damage caused by FDI projects. The transfer of obsolete technology and high material input consumption (with resultant high pollution potential) by some FDI projects has raised concerns about the environmental impact and the potential risk to public health (Vu and Dang (2002)).

⁵ See IMF (1999), Table II.6 for more details.

Chapter 2:

Regulatory Framework for Environmental Protection in Vietnam

2.1. The Institutional Framework for Environmental Management

Vietnam was for long time a centrally planned economy and in 1986, it launched a transitional process towards a market mechanism. In this context, the government has always played an important role in environmental management. At present, the existing institutional framework for environmental management in Vietnam is almost entirely a governmental institutional arrangement at the national and provincial levels.

At national level, the most important environmental management government agency is the National Environmental Agency (NEA), which operates under the umbrella of the Ministry of Science, Technology and Environment (MOSTE)⁶. The NEA was established at the beginning of 1994, out of the previous Department of Environment and Natural Resource Management of MOSTE. The NEA was delegated by MOSTE to undertake the following functions and tasks:

- study and formulate strategies, policies, bills and legislative documents on environmental protection and sustainable development for the government to consider and approve;
- take environmental protection measures in order to control the environmental impact of projects;
- control pollutants; manage domestic, industrial, agricultural and other wastes;
- set up and manage a base monitoring system for the whole country; and
- organise and guide public activities for environmental protection, participate in education and training, and enhance the environmental awareness of the general public.

It is important, however, to note that environmental management activities cannot be conducted by MOSTE (i.e. NEA) alone. This is because most environmental issues are cross-sectoral in nature. Therefore, the Law on Environmental Protection (1994) states that all ministries and state agencies should cooperate with MOSTE (NEA) in carrying out environmental protection within their sectors and within all agencies, institutions, and companies under their supervision. In response to this, many ministries and government agencies have appointed a department with responsibility for environmental affairs including the Ministry of Industry (MOI), Ministry of Transport (MOTrans.), Ministry of Construction (MOC), Ministry of Planning and Investment (MPI). In addition, some

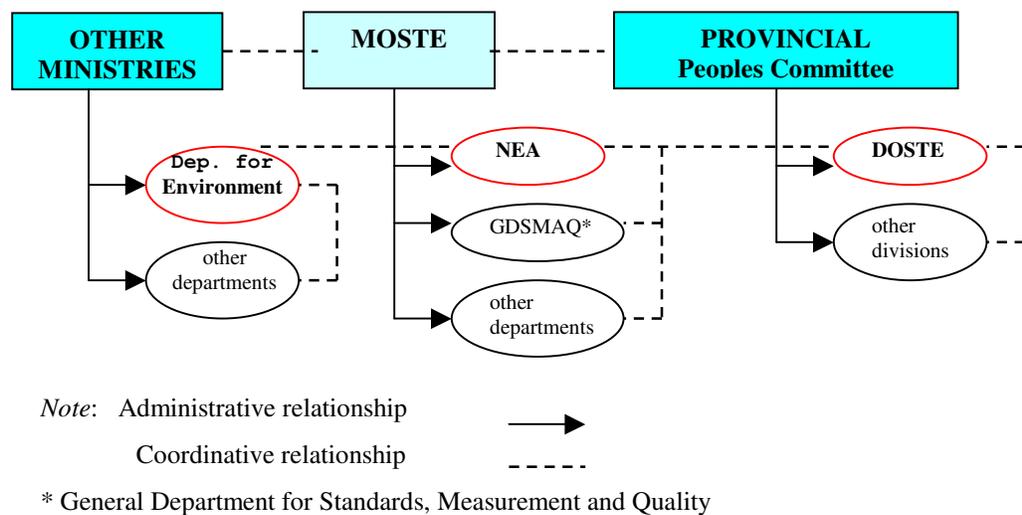
⁶ From September 2002, NEA will be separated from MOSTE and merged with the Land Management General Department to become the Ministry of Natural Resources and Environment (MNRE).

other ministries and agencies for land, forestry, agriculture, and fishery administration have general mandates to carry out supervisory functions closely related to environmental management.

At the provincial level, the environmental management administration is arranged similarly to that at the national level. For example, the provincial Department of Science, Technology and Environment (DOSTE) plays a similar role to MOSTE and has an environment division which is responsible for the supervision and management of environmental protection in the respective administrative area. This division is responsible for formulating plans for environmental protection, screening and approving new investment projects, and monitoring the implementation of environmental laws and regulations within the province.

The coordination and relationships between ministries and agencies in Vietnam with respect to environmental issues are illustrated in the following chart:

Chart 2.1: Links Between MOSTE and Other Ministries and Provincial Agencies Regarding Environmental Management



As mentioned earlier, environmental management by nature of its cross-sectoral character needs a coordinated policy approach. In Vietnam, the policy on environmental protection and sustainable development was systematically presented, for the first time, in the "National Plan for Environment and Sustainable Development in 1991-2000". Following adoption by the government in 1991, the plan was later detailed by a number of policy documents in the areas of land use, greening barren land, accelerating cleaner production, bio-diversity protection, drinking water supply and rural environment sanitation. At present, MOSTE has prepared the National Strategy for Environmental Protection for 2001-2010 and the Five-Year Action Plan for Environmental Protection 2001-2005. In parallel, MPI is preparing Vietnam's Agenda 21, which covers a comprehensive program for sustainable development in Vietnam. These documents together with other related

policies will serve as the main policy direction for environmental management and protection in the coming years.

2.2. Legal Framework for Environmental Management

The environmental legal framework in Vietnam has evolved over the last decade and comprises of: (i) the Law on Environmental Protection and regulations under that law; (ii) sectoral-specific laws and regulations relating to the environment; and (iii) provincial environmental regulations and standards. The major laws and regulations, mainly those of groups (i) and (ii), are listed in Box 2.1.

The Law on Environmental Protection was adopted by the National Assembly in late 1993 and took effect in January 1994. This law together with the various sectoral and investment laws (see Box 2.1) sets out a comprehensive legal framework for environmental protection in Vietnam. The Law on Environmental Protection identifies in general terms the responsibilities of the central government, provinces, organisations and individuals to prevent and remedy environmental deterioration and pollution; provides for the development of environmental criteria (standards) and the implementation of environmental impact assessments (EIAs) on new and existing facilities; provides for responsible parties to pay compensation for environmental damage; establishes the right of individuals and organisations to petition for the enforcement of environment regulations; calls for civil and criminal penalties for violations; and encourages international environmental cooperation⁷.

After the promulgation of the Law on Environmental Protection, a governmental decree (Decree No. 175/CP) was issued in late 1994 to provide broad guidelines for: the division of responsibilities in environmental protection among ministries, provinces and organisations; environmental impact assessments; environmental pollution prevention and disaster control; financial resources for environmental protection; and environmental inspections and standards.

In addition, during the last decade, the government has issued hundreds of legal documents in order to guide the implementation of the adopted environmental related laws. However, at present, Vietnam is facing several difficulties in implementing and fully adopting the promulgated environmental regulations. Firstly, the legal system has not been fully established. Several articles of the Law on Environmental Protection remain vague so that it is difficult to both implement and enforce the law. Secondly, environmental management agencies have only recently been established, and therefore, their capacity and resources in terms of personnel and working facilities are limited, making it difficult for them to fulfil their duties and functions adequately. Thirdly, the low effectiveness of the legal system in Vietnam as a whole limits the effectiveness and enforcement of the laws and regulations. As Vu (2001) has observed, Vietnam has mainly used environmental management instruments within the “Command and Control” (CAC) toolbox rather than through economic incentives.

⁷ More details can be seen in World Bank (1995) pp. 296-313.

Box 2.1: Major laws and regulations relating to environmental management in Vietnam

Laws:

Law on Dike Protection (1989); Law on Marine Aqua Resource Protection (1989); Law on People's Health Protection (1989); Law on Forestry Development and Protection (1991); Law on Land (1993); Law on Oil and Gas (1993); Law on Plant Disease Control and Protection (1993); Law on Environmental Protection (1994); Law on Mineral Resources (1996); Law on Radiation Control and Safety (1996); Law on Water Resources (1998); Supreme Code (amended in 1999).

Regulations:

- Decree No. 175/CP of the Government on guidelines for enforcement of the Law on Environmental Protection, October 18, 1994.
- Circular No 485/MTg of NEA on right and responsibility of environmental inspection activities.
- Instructions No.1420/MTg of NEA guiding on the assessment of the environmental impact of the existing enterprises, December 26, 1994.
- Decision No. 1806/QD-MTg of NEA on promulgation of the environmental assessment committee organization, rules, and certificates, December 31, 1994.
- Inter-ministerial Circular No. 155/TTLB of MOSTE and MOLISA on provisional regulations on environmental planning, April, 1994.
- Decision No. 299-QD/TDC of MOSTE promulgating Vietnamese environmental standards (including standards on water, air pollution level, March 1995.
- Instruction No.715/MTg of NEA guiding on formulating and appraising the environmental impact assessment report of foreign invested projects, April, 1995.
- Decree No. 26/CP of the Government regulating the penalties on violating the environmental standards, April 26, 1996.
- Decision No.1118/QD of MOSTE on issuance of sample documents related to surveys on illegal actions and administrative penalties, May 28, 1996.
- Decision No.2920/QD-MTg of MOSTE on applying the Vietnamese environmental standards, December, 1996.
- Circular No. 2781-TT/KCM of MOSTE on issuance, extension and cancellation of environmental standard certificates to industrial units, December 3, 1996.
- Instruction No.199/TTg of the Prime Minister on managing the solid waste in urban and industrial areas, April, 1997.
- Circular No.1100/TT-MTg of MOSTE on the guidance of formulating and appraising the environmental impact assessment report of investment projects, August 20, 1997.
- Decision No.2019/QD of MOSTE regulating technical requirements of imported second-hand equipments, December, 1997.
- Circular No. 490/1998/TT of MOSTE on the guidance of formulating and appraising the environmental impact assessment report of investment projects, April 29, 1998.
- Decision No.155/1999/QD-TTg of the Prime Minister on a taxation system for managing toxic solid waste, 16 July 1999.
- Instruction on the prevention of illegal exploitation of natural resources.
- Guidelines on the environmental evaluation of development projects.

2.3. Environmental Management over Production Activities

2.3.1. Environmental Standards

Prior to the Law on Environmental Protection (1994), Vietnam's environmental and hygiene standards were based on World Health Organisation (WHO) standards as established by the Ministry of Health in 1972. In 1995, MOSTE promulgated the Vietnamese Environmental Standards (VES), comprehensive environmental standards applicable for all businesses and peoples' activities in Vietnam, in accordance with the provision stated in the Law on Environmental Protection.

The VES system includes the emission standards of environmental pollutants and the environmental standards regarding air quality; effluent standards and environment quality standards regarding water quality; soil quality standards and soil-residue-prone pesticide allowable limit; and regulations such as the maximum allowable road and general environment noise level. For water quality, for example, the following four standards are in effect⁸:

- (1) water quality standard of surface water (TCVN 5942 - 1995) for 31 items and 2 types.
- (2) water quality standard of coastal water (TCVN 5943 - 1995) for 26 items and 3 types.
- (3) water quality standard of underground water (TCVN 5944 - 1995) for 22 items.
- (4) effluent standard of industrial wastewater (TCVN 5945 - 1995) for 33 items and 3 types.

In addition to national environmental quality standards, the provincial and municipal governments of Vietnam are authorised to issue environmental regulations and standards relevant to their specific situation as far as they do not violate the provisions indicated in the Law on Environmental Protection and are lower than national environmental standards. For example, the Hanoi Peoples Committee can adopt waste fees to be applied within the capital's territory. Similarly, the Ho Chi Minh City government is allowed to introduce more strict standards on wastewater discharged by enterprises and businesses.

2.3.2 Environmental Monitoring

An environmental monitoring system was established in 1994 in accordance with clause 4, Article 37 of the Law on Environmental Protection. The clause stipulates that one of the state's environmental management functions is to develop and manage a monitoring system in Vietnam. The National Environmental Agency has been authorised to carry out nationwide monitoring activities to measure environmental quality. By 1999, this system consisted of 19 monitoring stations that conduct fixed-point measurements at 72 stations for air, 109 stations for water quality, 200 stations for acid rain, 29 stations for radiation, and 52 stations for noise. In addition, other organisations and agencies (such as the Hydro-meteorological Service, Irrigation Department, and Hydro-geological Department) also undertake monitoring activities on water and air quality within their functional arrangements.

⁸ TCVN (1995) 5942-5.

In addition to the environmental monitoring system at the national level, the provincial DOSTE also has a function to periodically check the condition of polluting effluent at the pollutant generating source i.e. factories. According to the law, factories are required to measure gas emissions, effluent, etc, and report the results to DOSTE at regular intervals.

2.3.3. Inspection of Environmental Protection

According to the Law on Environmental Protection, MOSTE is responsible for specialized inspections that survey the state of environmental protection. To do this, MOSTE carries out environmental inspections at production units (i.e. enterprises, firms, businesses etc.), which are under the ministry's or local authorities' management, to check how and what kind of measures the production unit has introduced to ensure environmental protection. Following a request to the management authority of a production unit to submit the necessary documents, MOSTE can respond by carrying out an inspection at the production site. If this leads to evidence of serious environmental damage caused by the production unit, the inspection team can recommend a temporary shutdown of production activity. The inspectors in charge are from the central and provincial governments, who give advice to the authorities concerned regarding the necessary changes to the polluting production unit and the required environmental protection measures.

2.3.4. Environmental Impact Assessment: EIA

Articles 17 and 18 of the Environment Protection Law stipulate that large projects whose environmental impact is considered significant are required to submit an environmental impact assessment (EIA) to MOSTE for appraisal. The main objective of the EIA is to minimise potential environmental problems by ensuring that they are foreseen and addressed at an early stage of the investment project's planning and design. In general, EIAs provide information on present and future demand for environmental resources and propose alternative scenarios for designing the activity.

For existing production enterprises, MOSTE classifies them into three categories:

- enterprises that do not require the preparation of an EIA, but have to provide information on the possible environmental impact of their production activity to the environmental authorities;
- enterprises that are required to prepare a brief EIA and to submit it to the environmental authorities for appraisal; and
- enterprises that are required to prepare a detailed EIA and to submit it to the environmental authorities for appraisal.

Based on the EIA report received from the enterprise, the environmental authorities have a number of different options for dealing with the enterprise in accordance with the extent of the environmental impact. For example, the enterprise can be either allowed to continue production activity; allowed to continue production activity with a condition of

implementing environmental improvement measures; or required to change technology or relocate the production site; or in the worst case, required to stop production activity.

Similarly, all new investment projects in Vietnam (including both domestic and foreign investment projects) are classified into two groups:

- investment projects that are required to prepare a detailed EIA and to submit to the environmental authorities for appraisal. These are projects which may potentially cause long-term environmental pollution or serious environmental damage. According to the regulation, twenty-five different types of investment projects are subject to a detailed EIA⁹.
- investment projects that do not require the preparation of a detailed EIA. However, investors will have to include information in the investment license application on the possible environmental impact of the project and commit to protecting the environment during the investment project cycle.

The environmental authorities will review the EIA document of investment projects belonging to the first group, or the license application belonging to the second group and decide whether to allow the proposed investment project to be undertaken.

However, it should be noted that in reality, the above formal regulation for incorporating environmental impact consideration into investment decision-making are only for large-scale investments. In Vietnam, many small-medium and informal investments, which account for a significant proportion of environmental degradation, are outside the scope of the EIA process. Moreover, as indicated by the United Nations Development Programme current EIA regulations in Vietnam concentrate mainly on the investment project appraisal stage rather than on the actual implementation of the EIA recommendations¹⁰. There have been cases where the investor did not undertake all the proposed EIA preventive measures after the EIA was accepted and the investment was undertaken.

2.3.5. System of Pollution Charges and Fees

In principle, environmental legal regulations have identified enterprises' responsibility for environmental damage. For example, Article 7 of the Law on Environmental Protection clearly stipulates that organisations (i.e. enterprises) making use of the environment for production would have to contribute financially to environmental protection and any damage to the environment would have to be compensated for according to the law. This has created a legal condition for Vietnam to introduce a system of pollution fees and charges similar to what other countries have done¹¹.

However, only small steps have been made in order to apply economic instruments like environmental charges or fees in Vietnam. To date, the government has applied a limited number of economic instruments such as natural resource taxes, fees on using vehicles,

⁹ Circular No. 490/1998/TT-KHCNMT of MOSTE dated April 29, 1998 on the guidance of formulating and appraising the environmental impact assessment report of the investment projects.

¹⁰ See more in details in UNDP (1995), pp.44-45.

¹¹ More details can be seen in MPI, UNDP and SDC (2001a).

penalties for violating environmental standards. In addition, some local regulators require enterprises and households to pay fees for waste collection or wastewater drainage services. Meanwhile, many other economic instruments, which can positively influence firms' decision-making and behaviour in undertaking up-stream prevention measures for environmental protection are not widely used in Vietnam (such as pollution charges/fees, pollution quotas, tradeable pollution permits, environmental banks/funds).

2.4. Environmental Regulations Regarding Multinational Corporations

Vietnam does not have separate environmental standards and regulations for foreign investment although some relevant clauses governing foreign investors' environmental behaviour can be found in a number of national as well as FDI laws and regulations. In principle, foreign investors must abide by Vietnamese environmental laws and regulations and meet the host country's environmental standards. Article 34 of the Law on Foreign Investment stipulates that enterprises with foreign-owned capital shall, during their operation, take all precautions necessary for the protection of the environment. Furthermore, in order to prevent pollution, Article 29 of the Law on Environmental Protection states that the importation of technology and equipment not meeting environmental standards, and waste importation are strictly forbidden.

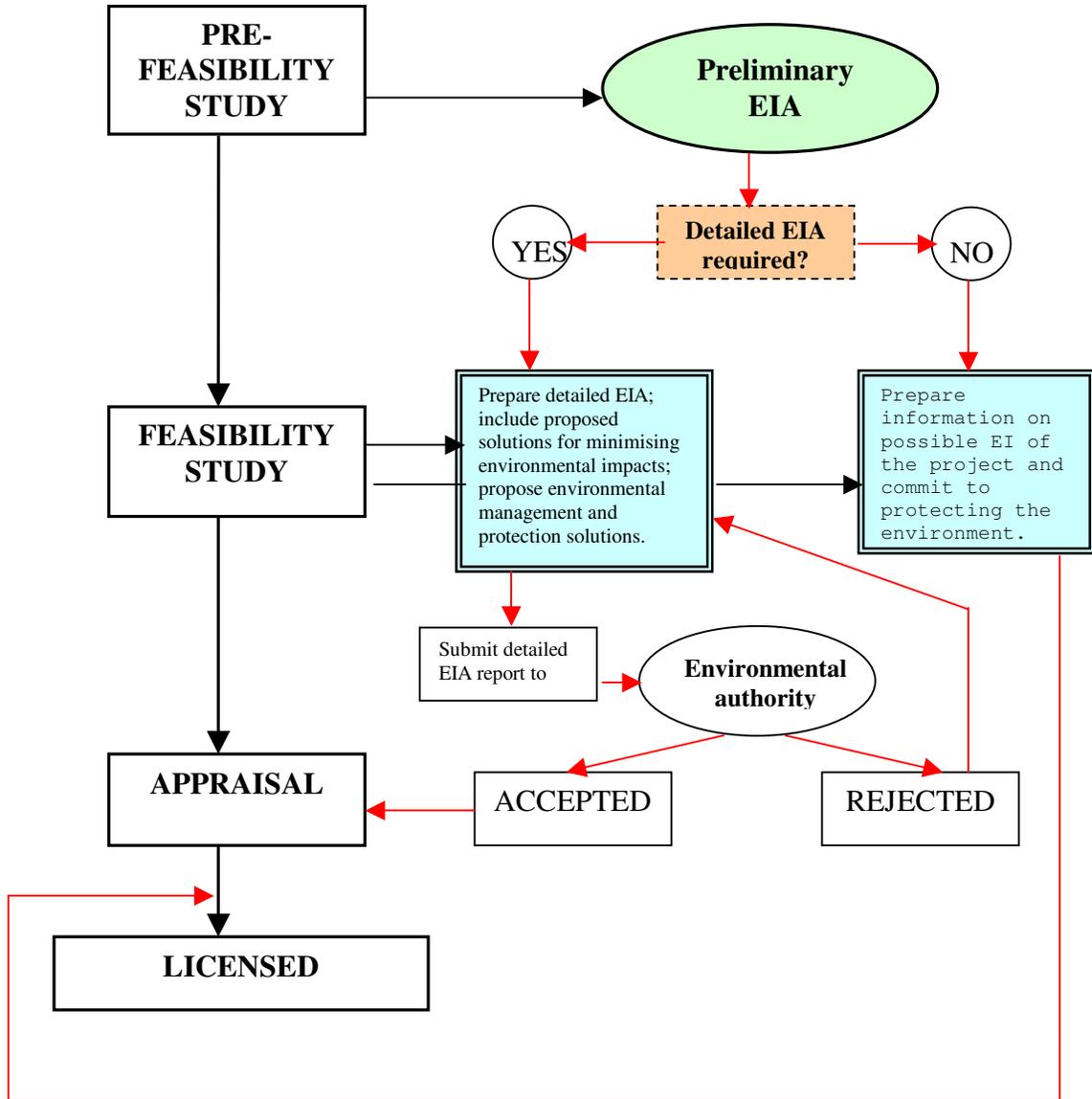
There are, however, some specific policy and administrative procedures governing the screening and monitoring of FDI with respect to environmental protection. As mentioned earlier, the government's decree on the "Provisions for guiding foreign investment in Vietnam"¹² have some clauses encouraging foreign investment in environmentally sound technology or new technology for controlling environmental pollution. In the meantime, this decree limits foreign investment in the exploitation of rare and precious mineral resources, and in those areas that threaten human health and destroy natural resources.

In addition, new foreign investors may be required to submit detailed Environmental Impact Assessment (EIA) reports, as mentioned earlier, to the environmental authority before a license is granted. The steps for incorporating environmental impact consideration into foreign investment decision-making are shown in the following diagram (see chart 2.2).

In practice, however, there were cases where the foreign company started the investment process before the EIA was completed and approved. As a result, it has been difficult to ensure the implementation of the measures set out in the EIA. Tonje (1998) has argued that the companies make good EIAs, but they may fail to implement the measures quoted in the reports which brings into question the level of environmental monitoring and enforcement in Vietnam.

¹² Degree No 24/2000/ND-CP of the Government dated July 31,2000.

Chart 2.2: Integration of the EIA Procedure into FDI Licensing in Vietnam



Chapter 3:

The Environment and FDI in Vietnam

3.1. Current Status of Industrial Pollution in Vietnam

3.1.1. Industrial Pollution Trends

Vietnam's rapid industrial development during the last decade has contributed significantly to environmental deterioration, mainly in urban areas, with respect to air pollution, water pollution, and solid waste problems. In 1996, Vietnam had only sixteen industrial areas, this figure had increased to sixty-six by the year 2000. Industrial areas are located in twenty-seven of the sixty-one provinces of Vietnam; of these, sixty-two are industrial zones (IZs), three are export-processing zones (EPZs), and one is a high-tech park. Only 8% currently have a central wastewater treatment system, while 30% are in the process of infrastructure development. The most obvious features of industrial areas that cause environmental and public health risks are the inadequate pollution treatment infrastructure and the technologically obsolete equipment found in most industries, together with their location in densely populated areas. As a result, environmental quality in large cities with high industrial concentration has significantly worsened during the last decade.

3.1.1.1. Industrial Wastewater Pollution

Wastewater from urban households and industrial areas are a major cause of water pollution in the large cities of Vietnam. In particular, wastewater from chemical, textile, leather products, paper, pulp, food processing, metal, and machinery plants is having a seriously harmful effect on water quality. According to the results of water monitoring surveys made in 1999 and 2000, the water quality of the rivers and lakes in Hanoi and Ho Chi Minh City - the biggest industrial centres of Vietnam - has worsened considerably over the last few years¹³ (MOSTE 1999, 2001). The main reason for this is that wastewater from domestic and industrial activity is left untreated. For example, another survey on wastewater treatment in selected water polluting industries conducted by the Ministry of Industry in 1999 found that only 13.5% of a total of 104 enterprises treated wastewater in such a way as to meet national standards (table 3.1). The reasons why enterprises do not have wastewater treatment systems are: first, financial constraints; second, a lack of information about wastewater treatment equipment; and third, the poor enforcement of environmental standards and regulations puts insufficient pressure on enterprises to invest in environmental protection.

¹³ For example, BOD concentration in the Red River next to Hanoi increased from about 6mg/l in 1996 to 11 mg/l in 2000.

The above situation has caused the indexes for surface water organic pollutants, such as BOD, COD, coliform bacillus and heavy metals, to exceed permissible levels in many rivers and lakes of Vietnam, particularly those in the vicinity of industrial areas¹⁴.

Table 3.1: Number of Enterprises Treating Wastewater

Sub-sector	Number of enterprises visited	Number of enterprises treating wastewater that meet the national standard
Textile	18	0
Chemical	21	10
Paper & Pulp	21	1
Food Processing	22	1
Metal Working	22	2
Total	104	14

Source: JICA and Ministry of Industry, 2000.

3.1.1.2. Air pollution

A high concentration of air pollutants, such as sulphur dioxide, nitrogen oxides and carbon monoxide, were found in areas surrounding industrial zones and areas with heavy traffic. For example, measurements taken in seventeen industrial zones found that sulphur dioxide concentration at cement plants in Haiphong, brick plants in Lao Cai, industrial zones in Hanoi (Thuong Dinh), Ho Chi Minh City (Tan Binh) and Phuoc Long, were double the maximum acceptable level¹⁵. It is important to note that air pollution is more obvious in the older industrial areas, where most industries are small-scale, poorly equipped and are spread out in inner city populated areas. Meanwhile, the newly developed industrial areas usually have gone through EIAs and, therefore, air pollution caused by industrial activities is not significant.

3.1.1.3. Solid waste pollution

Waste disposal is becoming a serious environmental problem in Vietnam as the industrialization and urbanization process accelerates. According to statistics from the four big cities of Vietnam, i.e. Hanoi, Haiphong, Danang and Ho Chi Minh City, industrial waste accounts for 15-26% of the total solid waste generated daily. More importantly, 35-41% of industrial disposal is considered as hazardous waste. Hazardous waste generated by industries has been growing rapidly, from 1,930 to 2,574 tonnes/day between 1997-1999. Evidence of the main sources of hazardous waste generation in selected cities of Vietnam in 1998 are illustrated in table 3.2 below:

¹⁴ See NEA (1997) for more details.

¹⁵ Government of Vietnam (2000b).

Table 3.2: Load of Industrial Hazardous Solid Waste in selected Provinces and Cities of Vietnam (tonne/year)

Province/ City	INDUSTRY						TOTAL
	Electronics and electric	Machinery	Chemical industry	Light industry	Food processing	Other industries	
Hanoi	1801	5005	7333	2242	87	1640	18108
Haiphong	58	558	3300	270	51	420	4657
Quang Ninh	-	15	-	-	-	-	15
Danang	-	1622	73	32	36	170	1933
Quang Nam	-	1554	-	-	10	219	1783
Quang Ngai	-	-	-	10	36	40	86
Ho Chi Minh City	27	7506	5571	25002	2026	6040	46172
Dong Nai	50	3330	1029	28614	200	1661	34884
Ba Ria - Vung Tau	-	879	635	91	128	97	1830
TOTAL	1936	20469	17941	56261	2574	10287	109468

Source: Environmental Survey 2001, NEA

The most serious problem is that the majority of the industrial hazardous waste is not separately disposed and properly treated. Industrial hazardous waste is very often mixed with domestic waste, and in many cases, is delivered to the waste field without prior treatment. This has created a serious negative impact on soil and ground water quality as well as on people's health.

3.1.2. Highly Polluting Industries in Vietnam

3.1.1.1. Chemical industry:

The main products of the chemical industry in Vietnam are petroleum, natural gas, superphosphate fertilizer, pesticide, rubber products, detergent, batteries and inorganic chemicals. The chemical industry is considered to be a high polluting industry given its potentially negative impact on environmental quality and people's health through hazardous waste, wastewater, and air pollution.

In Vietnam, most of the existing chemical factories were established before the Law on Environmental Protection was promulgated. Therefore, measures for environmental protection were neglected and waste treatment and management systems were not properly established. During the last decade, as a result of the *doi moi* economic policy and the promotion of FDI, foreign invested projects were attracted to this sector. At

present, there are 197 FDI projects operating in the chemical industry with a total investment capital of USD 1.8 billion. Among those, FDI projects are dominant in producing specific chemical products such as petroleum (100% of total production output), soap and detergent (59%), and paint (52%).

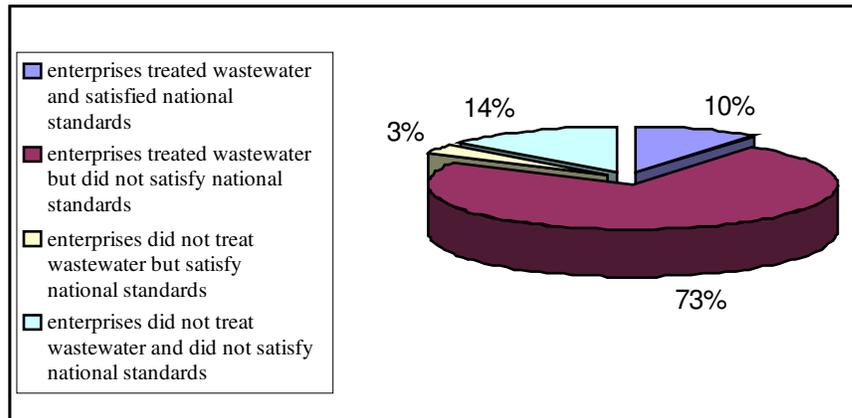
Generally, the environmental performance of the chemical industry is very poor, particularly with respect to domestic companies. A survey conducted by the Japanese International Cooperation Agency (JICA) in collaboration with the Ministry of Industry (MOI) in 1999 of twenty-one domestic state-owned enterprises in the chemical sector came to the conclusion that most of the surveyed enterprises did not satisfy national environmental standards. Furthermore, there was no equipment for monitoring and alerting the factory to the quality of industrial water, except for one instance in a subsidiary company (JICA and MOI, 2000).

3.1.1.2. Food processing industry

Given Vietnam's favourable climate and fertile soil for agricultural development, as well as a geography conducive to marine production, the food processing industry has great potential. The main food products of Vietnam are sugar and sugar products, seafood products, meat products, instant noodles, soy sauce, beer, soft drinks, cigarettes, milk and milk products, refined oil, canned fruits and food, with many of these exported. During the last couple of years, the industry has attained annual growth of 8-10% and has attracted a significant amount of FDI (221 projects with an invested capital of nearly USD 3 billion, or 7.9% of total FDI capital). However, the share of FDI in total production output has been moderate and ranges from 10 to 20% among the different kinds of food products.

Currently, Vietnam has thousands of food processing factories, of which 60-70% are small-scale. Most of them are allocated in urban and industrial areas and in many cases, they are found in inner populated areas. Another feature is that they were established a long time ago, when environmental considerations were almost neglected. Except for some new foreign invested food processing factories that have relatively modern technology with environmental protection measures, most industries of this sector have poor technology and equipment. This can be seen as the main reason for the serious environmental impact of this sector on water quality. According to a survey conducted by the Ministry of Industry in 1999, of 105 food processing industries, only 10% have wastewater treatment equipment that ensures wastewater quality at acceptable standards (figure 3.1).

Figure 3.1: Environmental Impact of Food Processing Industries: Survey Result



Source: Ministry of Industry, 2000

3.1.1.3. Textile industry

The textile industry (especially, the dyeing process) is considered to be potentially one of the most polluting industries, largely through risk to water quality. In Vietnam, the textile industry has very poor equipment and machinery. It was estimated that in the textile printing process, only 35% of equipment is operating effectively, 30% needs to be modernised, and 35% has been in use for more than thirty-five years and needs to be shut down. Presently, there are hundreds of textile factories operating in Vietnam, mainly concentrated in the large industrial centres like Hanoi, Ho Chi Minh City and Danang. As a result of obsolete technology, this industry revealed high material input and water consumption. This is the main reason for the sector's low competitiveness in both the domestic and international markets.

According to a report on industrial pollution in the textile industry made by the Ministry of Industry in 2000, 50% of the thirty-three visited textile factories in Hanoi and Ho Chi Minh City were included in the "black list" of the most polluting factories that are required to undertake the necessary measures for reducing their damage to the environment or be removed from the cities. All of these factories are either state-owned or small-scale domestic private enterprises with very poor environmental treatment and management conditions. Table 3.3 illustrates the average index of pollutant concentration in wastewater discharged by textile and garment factories belonging to the Ministry of Industry (2000), which indicates that, on average, wastewater pollution of this industry is 2-5 times higher than the allowable limit in terms of COD concentration and 3-8 times higher than the allowable limit in terms of BOD concentration.

Table 3.3: Average Pollutant Concentration of Wastewater in the Textile and Garment Industries

Pollutant	Textile	Dyeing	Garment
<i>COD (mg/l) :</i>			
Average level	200-300	400-500	200-300
Permitted standard (TCVN 5945-1995)	100 <i>(Category B)</i>		
<i>BOD (mg/l):</i>			
Average level	300-400	200-300	150-250
Permitted standard (TCVN 5945-1995)	50 <i>(Category B)</i>		

Source: Ministry of Industry, 2000

3.1.1.4. The pulp and paper products industry:

The pulp and paper products industry in Vietnam has recently been growing at a rapid pace at an average rate of 23% annually during the period 1991-2000. At present, Vietnam has 216 pulp and paper mills of which the majority are small-scale (90%). State sector enterprises contribute towards the largest proportion of total sales (57%). The private sector produces 28.1% of total sales while the foreign sector accounts for a modest share of 14.9% of total sales with only 3 FDI projects. The biggest problem of the pulp and paper industry is that it is currently protected by the government and has very low competitiveness and high production costs. In 2001, production costs of this industry were 25% higher than that in Indonesia - a major competitor in Asia - which led to a substantial amount of final paper products being stockpiled.

Pulp and paper production, in principle, puts significant pressure on air and water quality. From a technological point of view, the production processes which have the largest negative environmental impact are pulp making and whitening. Equipment used by Vietnamese paper mills in these two production processes are generally obsolete and on average 15-20 years older than the worldwide norm. As a result, pulp and paper mills in Vietnam have recorded a poor environmental performance. In addition, most of the existing pulp and paper factories do not have waste treatment equipment and do not take the necessary measures to treat wastewater before it is discharged. There has been, for example, evidence of environmental damage caused by this industry when untreated wastewater from Hoang Van Thu pulp mill in Thai Nguyen province was directly discharged into the river leading to heavy pollution in the surrounding area.

3.1.1.5. Construction material production industry

Hand in hand with the rapid urbanisation and industrialisation of Vietnam, this industry has experienced a dramatic development path. However, the expansion of construction

material (e.g. cement, bricks, ceramics) production using outdated technology and polluting material inputs during the last decade has led to significant air pollution in the areas surrounding factories. For example, in 1997, in order to produce 8,019,000 tonnes of cement, the factories consumed 705,640 tonnes of coal and 4,080 tonnes of oil. Dust and hazardous gas emissions from the construction material production, such as CO₂, NO₂, and SO₂, are the main sources of harm to workers and public health.

In summary, the above analysis on the industrial pollution by enterprises in the five most polluting industries in Vietnam illustrates that there is a considerable negative impact on environmental quality in populated cities and surrounding areas by enterprises with the level of pollution varying among industries and factories. The main reasons for this are: (i) most of the polluting firms have obsolete equipment and machinery with only a few firms (mainly foreign) having invested in modern technology; (ii) lack of environmental pollution control systems at the factories; (iii) location of industries in densely populated areas; (iv) poor enforcement of environmental regulations; and (v) limited incentives for factories to undertake measures to minimise their environmental impact.

3.2. Foreign Direct Investment and Environment in Vietnam

Before examining the environmental impact of FDI in Vietnam, it is worthwhile reviewing the current debate in the international literature on FDI concerning the "polluter haven" or "race to the bottom" hypothesis. The hypothesis states that foreign companies have traditionally relied on natural resource use and extraction, particularly for agriculture, mineral and fuel production (GATT, 1992; Zarsky, 1999). In addition, the foreign companies will move their operations to developing countries in order to take advantage of less stringent environmental regulations. More importantly, in an effort to secure FDI, governments of developing countries are "stuck in the mud" or reluctant to raise environmental standards for fear that they will lose investors. Either way this leads to excessive levels of pollution and environmental degradation (Mabey and McNally, 1999). However, statistical studies to date show that this effect cannot be clearly identified at the aggregate investment level. This is because the environmental impact of FDI, both positive and negative, may be significant in some countries, but not in others, and the net environmental effect is unclear (OECD, 1999).

In Vietnam, there have been a number of studies trying to analyse the links between economic activities (including foreign invested) and the environment in Vietnam which have come up with a mixed picture. Some articles published in Vietnam recently illustrated some bad practices by FDI firms with regards to importing outdated technology and waste equipment into Vietnam. In contrast, other studies and information have shown that given their more advanced technology and management, FDI firms were better environmental performers than those of the domestic sector¹⁶. In this section, the different arguments will be reviewed regarding both the positive and negative impact of foreign firms on the environment.

¹⁶ See for example Tonje (1998) and UNDP (1995) for more details.

3.2.1. Positive Impact of MNCs on the Environment

Before 1994 and the promulgation of the Law on Environmental Protection, Vietnam did not pay much attention to the protection of the environment. Foreign investors were reluctant to take the necessary measures for environmental pollution control and some "bad environmental performance" practices by FDI projects were observed in the early 1990s¹⁷. After the Law was issued and national environmental management institutions were established, foreign investors' behaviour regarding environmental protection improved substantially (Tonje, 1998).

Although FDI flows into potentially polluting industries have increased from 36% of total investment approvals in 1992 to 56% by 2001, which could suggest that the environmental impact of FDI during the period 1992-2001 has increased, this does not take into account the fact that the "late coming" foreign investors are more environmental friendly.

Several studies and investigations on the pollutant load in different industries (for example, MOI (2000), Ho Chi Minh City People's Committee (2002), JICA and MOI (2000)) reported that in most cases, the serious polluters were domestic enterprises rather than FDI firms. Among a list produced by MOSTE of enterprises causing serious environmental pollution in Vietnam none were from FDI projects¹⁸. Similar results were found after looking at pollutant concentration in selected enterprises in Hanoi, Ho Chi Minh City and Danang. Moreover, an empirical analysis by Nguyen and Nurul (2000) of the environmental impact of MNCs in Hanoi, concluded that, in any case, MNCs were not concentrated in potentially polluting industries.

It is now commonly agreed that multinationals are better than domestic firms (including both state and private domestic firms) with respect to complying with national environmental standards of Vietnam. Generally, MNCs are relatively large-scale, with higher technology and more advanced management compared to domestic firms and therefore the technology utilised is less polluting and consumes fewer resources (OECD, 1999). Many foreign companies have also invested in environmental protection projects in order to ensure that their production activity does not violate national regulations on environmental standards, or have trained their workers in environmental protection. For example, the results from a survey conducted by the Ministry of Industry (MOI) indicated that more than 80 percent of surveyed FDI enterprises organized at least one training course on environmental issues for their employees. These courses were mostly on how to deal with waste, how to keep working spaces clean, and how to use environmentally friendly equipment/machinery for reducing pollution (Nguyen and Nurul, 2000). Such training courses are hardly ever organised by domestic enterprises due to several reasons, of which the most frequently mentioned is the lack of financial resources.

There is also a belief in Vietnam that together with the benefits of technology transfer, FDI can create positive spillovers to the domestic firms through imitation, employment

¹⁷ The Taiwanese Vedan factory can be seen as a good example of a foreign polluter which invested in Vietnam in 1991 (see next section).

¹⁸ 3,214 enterprises were included in the list, of which 15.7% were state enterprises and 84.3% were private domestic enterprises, MOSTE (1999).

turnover and by supply chain requirements. FDI projects tend to become examples of best practice environmental management. Currently, of the twenty-seven enterprises granted ISO 14001 certificates in Vietnam twenty-four are multinationals. Similarly, twelve out of the total of twenty-one enterprises included in the "Green Book" of Ho Chi Minh City during the period 2001-2002 were foreign invested companies¹⁹. With regards to the spillover effect amongst supplier industries, multinationals can help upstream industries improve their environmental management by demanding particular quality standards, and providing the technical assistance needed to meet environmental standards.

3.2.2. Negative Environmental Impact of MNCs

There has been very limited information or systematic analysis about the negative environmental impact of foreign companies in Vietnam beyond that found in published articles and opinions. There have been some cases of "technological dumping" where equipment that has been banned for its poor environmental performance in other countries was sent to Vietnam. For example, in cooperation with a Chinese metallurgy company in 1996, the Vietnamese Thai Nguyen Steel Company imported a second-hand technological process which was no longer used in China. This made some officials believe that Vietnam could become a dumping ground for second-hand and outdated machinery. The situation was expected to improve after the government issued in late 1997 a regulation on the technical requirements for imported second-hand equipment and machinery, which stated that the importation of equipment retaining less than 80% of its original value was prohibited. However, Tonje (1998) has argued that there is a doubt about the efficiency of this regulation. Firstly, there is a lack of qualified personnel to assess and review the imported technology. Secondly, widespread corruption would make it difficult to ensure the effective implementation of the regulation in practice.

With respect to foreign polluters in Vietnam, the best-known case was the Taiwanese Vedan factory. This is a 100% foreign company located in Ho Chi Minh City that produces monosodium glutamate and other food flavourings. When establishing production in 1991, Vedan did submit an environmental management plan, but it was later discovered that the plan has not been followed. As a result, emissions discharged from this factory reached up to six times the allowed limit, destroying local shrimp fishing operations in the neighbouring Thi Vai River. The factory later had to pay USD 1.36 million in compensation to shrimp farmers and to invest in a waste treatment system that cost in the order of USD 1 million.

It is important to note that national environmental regulation and enforcement is an important policy tool to ensure environmental protection compliance by industries. However, inadequate environmental monitoring and management, lack of political will, and insufficient resources for environmental protection, are the main factors which could impede the proper environmental performance of MNCs and domestic enterprises.

¹⁹ The "Green Book" was an initiative of Ho Chi Minh City's DOSTE aiming at illustrating the examples of the best environmental standard performers in the city. The first publication of this book was made in early 2002 in which the twenty-one best environmental performing enterprises were listed.

3.2.3. Conclusion

In summary, it is clear from the above discussion that foreign direct investment has had both a positive and negative impact on the environment. In general, as compared to domestic enterprises, foreign companies usually have more advanced technology, greater ability in investing in environmental protection measures, and therefore, they have relatively "good" environmental protection practices in Vietnam.

However, experience has shown that the environmental benefit of MNCs to the host country do not happen automatically. It depends largely on various factors which are the responsibility of both the MNCs and the host country. An OECD literature review on the environmental benefits of foreign direct investment (2001) indicates that the factors influencing the decision-making of MNCs with regard to environmental protection efforts in the host country include, the size of the plant, market forces (including customer preferences), environmental policy of the parent company, the availability and effectiveness of national environmental regulation, and local community pressure. Another study by the OECD adds that local government decision making and regulations may also be a factor (OECD, 2002: 15).

To date, there is no evidence which supports a general conclusion about the determinants of MNCs' attitude towards environmental protection issues in Vietnam. The following section will provide empirical evidence about this issue based on a survey of twenty MNCs in Vietnam.

Chapter 4

MNCs and the Environment: An Empirical Analysis

4.1. Description of the Survey

4.1.1. Objectives of the Survey and Hypotheses regarding the Environmental Impact and Attitude of MNCs

The survey aims to assess the impact on the environment in Vietnam of MNCs and to determine the attitude of MNCs towards the environment. It was hypothesised that the environmental impact of MNCs, as characterised by pollutant/emission concentration and loads, would depend on several factors: the production size of the MNCs; the existence and operation of environmental management units (EMUs); technology utilised; and the environmental-related investment of firms. In general, other factors constant, the larger the MNC the higher the pollutant load. The more effort the MNCs put into dealing with the environment through establishing and operating EMUs and investing in environmental related purposes, the smaller the impact on the environment. Higher technology utilisation would also lessen the negative impact.

Regarding the attitude of MNCs towards environmental protection, it was hypothesised that their behaviour would be affected by internal factors such as the firm's size, foreign parent origin, market forces like consumer pressure or market share; institutional factors such as, regulation and its enforcement, environmental management policy instruments; and external factors such as community pressure.

The above hypotheses were tested by undertaking a survey of twenty MNCs from the manufacturing sector currently invested in Vietnam. The MNCs are operating in what are considered to be the most polluting industries in the country.

In this survey, an MNC is understood to be a firm that owns and manages economic units in two or more countries. In practice, this usually means a large corporation with headquarters in an advanced industrialised country (the home country) and subsidiary or production sites in other countries, particularly developing countries. In terms of legal form, foreign invested projects in Vietnam are classified into three categories: business corporation, joint-venture, and foreign-owned company. The MNCs for this survey are from the second and third categories since the majority of MNCs in Vietnam are of this type. The survey will assess the environmental impact of MNCs through various parameters: pollutant concentration and loads, the environmental management system of MNCs, and the investment in environmental protection and technologies. In addition, other parameters will be explored by asking open-ended questions in the survey²⁰.

²⁰ See questions 4.7 and 4.11 in Appendix 2.

4.1.2. Scope and Methodology of the Survey

The survey was conducted through direct interviews based on a questionnaire containing the following four sections²¹:

- (i) section I for general information on MNCs and their business;
- (ii) section II to collect information on environmental management systems;
- (iii) section III to examine environmental performance; and
- (iv) section IV to determine the overall assessment by MNCs of Vietnam's environmental regulations and list their recommendations.

The sections were designed and ordered in such a way to make it easy for MNCs to answer the questions and not be overwhelmed by analytical issues.

Table 4.1: Comparison of Total Number and Surveyed MNCs by Industry

Industries	MNCs in Vietnam	Surveyed MNCs
<i>Pulp and paper</i>	3	1
<i>Food processing</i>	149	6
<i>Beverage</i>	74	2
<i>Textile</i>	125	3
<i>Chemical</i>	197	8

Twenty MNCs were chosen in the five most (potentially) polluting industries, i.e. chemical, food processing, textile, paper, and beverage. The MNCs are located in three cities/province, Ho Chi Minh City, Hanoi, and Dong Nai, which are the leading areas for attracting FDI, having absorbed more than 80% of total FDI registered capital to date. In order to ensure relative balance, the number of MNCs to be selected for each industry was closely aligned to the total number of MNCs operating in that industry (with the except of the pulp and paper industry) (see Table 4.1).

Six interviewers were carefully selected and trained to thoroughly understand the survey objectives and contents of the questionnaire. The questionnaire was sent in advance to MNCs together with the request for interview. The interviews were conducted with managers or personnel responsible for environmental issues at the offices of the MNCs.

The reliability of information was ensured in three ways: First, after the return of all the filled-in questionnaires from the twenty MNCs, five MNCs were randomly selected for in-depth interviewing by the research team to check the reliability of the information provided in the questionnaire and to further clarify the MNCs' attitude toward the

²¹ The survey questionnaire is in Appendix 2.

environment. Second, the research team had meetings with state environmental agencies to double-check the reliability of the information collected from the survey. Third, to confirm the accuracy of the environmental quality indicators provided, the MNCs were asked to provide inspection results either conducted by state agencies or by professional organisations.

4.2. Survey Results

In this section, the survey results are analysed and the key issues and findings are discussed. General information about the surveyed MNCs as well as the survey results in detail can be found in the appendices of this report.

4.2.1. Environmental Impact of MNCs

4.2.1.1- Pollutant/Emission Concentration and Loads

Wastewater

Water pollutant concentrations are inspected regularly by the state environmental agency once or twice a year. Among the surveyed MNCs, 77% met environmental standards requirements, and of these 41% had concentration levels of BOD, COD, and TSS well under the permitted level²². Three of the MNCs recorded levels of BOD, COD, or TSS concentration above the permitted environmental norms (two of them quite significantly). In the worst case, pollutant concentration was about eight times higher than Vietnam's permitted standard for BOD, five and a half times higher for COD, and five times higher for TSS. All of the firms violating environmental standard are in the food processing industry and their parent companies are Asian. These firms were subsequently requested by the state environmental agencies to improve their environmental performance by installing waste treatment equipment (see Figure 4.1).

²² According to TCVN 5945-1995, a permitted standard for BOD is less than 50mg/l (B) and less than 100mg/l (C); for COD it is less than 100 mg/l (B) and less than 400 mg/l (C); for TSS it is less than 100 mg/l (B) and less than 200 mg/l (C).

good environmental performances in terms of pollutant concentration but still caused a significant impact on the environment of Vietnam (see Table 4.2).

Table 4.2: Ranking of the 13 Surveyed MNCs on Environmental Performance by Pollutant Concentration and Loads(*)

BOD				COD				TSS			
Ranked by pollutant concentration		Ranked by total pollutant load		Ranked by pollutant concentration		Ranked by total pollutant load		Ranked by pollutant concentration		Ranked by total pollutant load	
<i>Rank</i>	<i>Concent.</i>	<i>Rank</i>	<i>Load</i>	<i>Rank</i>	<i>Concent.</i>	<i>Rank</i>	<i>Load</i>	<i>Rank</i>	<i>Concent.</i>	<i>Rank</i>	<i>Load</i>
1	0	1	0	1	21	3	425	1	0	1	100
2	8	2	192	2	21	2	600	2	9	2	336
3	12	3	234	3	25	8	4960	3	11	7	2250
4	15	10	2500	4	46	10	5000	4	14	8	3200
5	18	8	3200	5	50	9	8240	5	20	9	3820
6	28	9	4140	6	50	7	17000	6	32	10	5000
7	31	7	7750	7	68	1	50000	7	38	3	9620
8	32	6	33600	8	72	6	55200	8	51	13	18700
9	41	5	36000	9	82	13	57000	9	56	6	24000
10	50	13	42000	10	100	4	105000	10	100	11	55000
11	50	4	75000	11	100	5	144000	11	152	5	112000
12	125	12	125000	12	200	12	200000	12	187	12	152000
13	420	11	250000	13	570	11	500000	13	481	4	255000

Note: Concent. = pollutant concentration measured in mg/l;

(*) Thirteen out of the twenty surveyed MNCs provided information on wastewater pollutant concentration and loads. The remainder informed that they were unable to because the environmental inspectors had not provided them with their specific results after they had successfully met the required standards.²³

In Vietnam, the production output of MNCs represents a significant part of the total gross output of several industries. For example, the production output of foreign invested firms accounted for nearly 29% of total output in the food processing industry, about 29% in the chemical industry, and 27.8% in the textile industry in 2001²⁴. As a result, even when the wastewater pollutant concentration of MNCs was well under the permitted standard, the load of pollutant in wastewater discharged by MNCs would be significant and may create a large environmental impact. This raises the very important point that managing environmental quality through only environmental standards may not be enough for the

²³ Based on additional information such as environmental management, technology utilised, which will be analysed later in this section, it is understood that these seven MNCs complied in full with Vietnam's environmental standards.

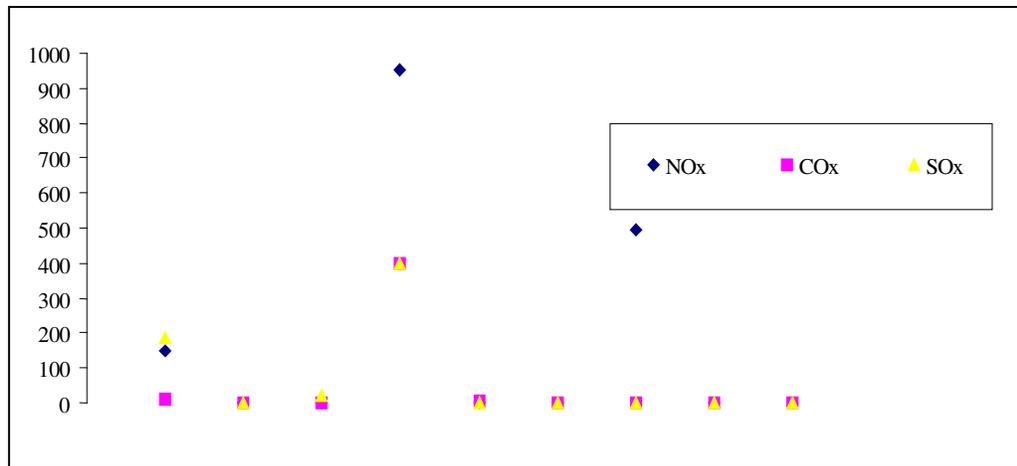
²⁴ GSO, 2002.

long-term sustainable development of Vietnam. Besides regulatory standards, the government should think of introducing economic policy instruments in order to encourage more environmentally friendly behaviour by firms (such as pollution fees/taxes, pollution quotas, tradable pollution permits). International experience in applying economic instruments in environmental management has witnessed many positive outcomes in overcoming constraints similar to those found in the environmental regulations of Vietnam. This issue will be discussed further in section 4.2.2 of this chapter.

Air pollution

MNCs performed quite well in terms of air emission concentration. None of the interviewed MNCs recorded concentration of NO_x, CO_x and SO_x, exceeding the environmental standards of Vietnam²⁵. Furthermore, almost all MNCs recorded emission levels of less than 200mg/m³, which was much lower than the permitted standards (see Figure 4.3).

Figure 4.3: Air Emission Concentration (*) (mg/ m³)



Note: (*) Only thirteen out of twenty surveyed MNCs provided information on air emission concentration.

Solid waste

Solid waste load in MNCs ranged from 4 to 700 kg per day depending on the industry and on the size of production. The MNCs handled solid waste by using either the public waste treatment service or by selling it to other private companies for re-use/cycling. Only five MNCs have a solid waste treatment system at the firm site while the other twelve MNCs did not have capacity to treat waste²⁶. The challenge of how to deal with hazardous solid waste as mentioned in Chapter 3 was also raised by many of the surveyed

²⁵ According to TCVN (1995), permitted standard for NO_x is less than 1000mg/m³, for CO_x and SO_x it is less than 500mg/m³.

²⁶ 3 MNCs said that it was unnecessary to install solid waste treatment system.

MNCs, especially, when the survey team visited MNCs for in-depth interviews. In particular, MNCs in the chemical sector complained about the difficulties in treating hazardous waste such as chloro benzene. (See Appendix 3, Table 6 for more information).

No serious environmental damage caused by the interviewed MNCs

In all of the 20 MNCs, there was no case of poor environmental performance to the extent that it resulted in serious environmental damage. The survey results show that none of the surveyed MNCs had to pay costs to compensate for environmental damage (i.e. for environmental damage recovery, administrative fines due to environmental standard violation, or resolving environmental accidents) (see Table 4.6). This probably explains the fact that MNCs have improved their environmental performance over time. Indeed, 70% of the interviewed MNCs said that their environmental performance had improved over the last few years.

4.2.1.2- Environmental Management System and Operation

Environmental management systems were established and operating in the majority of the surveyed MNCs. This demonstrates that MNCs had paid specific attention to dealing with environmental issues at the firm level. This was achieved in the following ways:

First, almost all MNCs have staff that work on environment issues, either full-time or part-time. 35% of the MNCs have a separate environmental management unit (EMU). Most of the units were established two years after the companies went into operation with only one company establishing its EMU directly after setting up. The number of staff in the EMUs varied from one to three persons working full-time. The number of staff did not depend on the size of the company and had no correlation with other factors. Of the remaining MNCs, all but one have a person who works part-time on environmental issues. These people spend an average of 23% of their working time on environmental management work (individual time ranged from 5% to 55%). At twelve of the MNCs, the person spends less than 20% of their time on the environment. The one MNC without any staff in charge of environmental issues was in the chemical sector and the reason given was the small size of the company. However, this company acknowledged that this could create difficulties for improving the environmental performance of the firm (Table 4.3).

Second, the concern of the MNCs for the environment was apparent by the fact that many MNCs have designed and formulated their own environmental policies that regulate environmental protection through environmental management systems. These policies are largely tailored towards the environmental regulations of Vietnam and the particular conditions of the respective firms (see Box. 4.1 for an example). The survey results showed that 65% of the interviewed MNCs have their own environmental policies. It is interesting to note that the majority (69%) of those having environmental policies are 100% foreign-owned firms and that these policies were approved by their parent companies rather than by the firms themselves.

Table 4.3: EMU and Personnel for Environmental Issues
(as % of total interviewed MNCs)

	<i>Total</i>	By industry				
		Chemical	Food processing	Textile	Paper	Beverage
EMU	35%	50%	14%	50%	0%	50%
Person working part-time	60%	50%	71%	50%	100%	50%
<i>% of working time</i>	25	20	32	15	20	30
No personnel	5%	0%	14%	0%	0%	0%

Third, ISO14001 certification of the management system, takes into account environmental factors in business management. Applying this system or the equivalent may help firms increase their environmental performance. The survey showed an encouraging result from this perspective. 75% of the surveyed MNCs are interested in obtaining ISO14001 certification of which 20% of MNCs have already applied or are going to apply for ISO14001 or equivalent. Those firms which have already applied for ISO14001 are all large-scale with total registered capital ranging from USD 50 to 75 million (compared to the average registered capital of USD 35 million). Several other large MNCs have applied systems equivalent to ISO14001. These systems were designed by the parent company and applied in all branches of the MNC worldwide. The other 55% of the interviewed MNCs are committed to obtaining the ISO14001 certification in the future.

Fourth, the concerned attitude of MNCs toward the environment is also indicated by the fact that fourteen of the MNCs carried out environmental monitoring by themselves with seven of these companies measuring environmental quality indicators twice per year. The rest undertake environmental monitoring annually. Ten of the companies sent the results of their environmental monitoring to the state environmental agencies.

It is interesting to note that there is a close interrelationship between the environmental performance of the MNCs and the establishment as well as the operation of EMU at the firm. The survey results showed that two of the three MNCs which violated environmental standards in terms of BOD, COD and TSS concentration in wastewater (mentioned in the earlier part of this report) declared that they did not have a separate EMU while the third did have an EMU but did not operate it properly.

Box 4.1.

Environmental Policy Initiated by Unilever Vietnam - A Case Study

1. Corporate commitment to environmental protection

Unilever has the following worldwide business commitment: "Unilever is committed to running its business in an environmentally sound and sustainable manner. Accordingly its aim is to ensure that its processes and products have the minimum environmental impact on the community it operates in".

Unilever has operated its business in Vietnam since 1995 and the above commitment has been clearly communicated to each of Unilever Vietnam employees. The company's operation has been compliant with Unilever's Health, Safety and Environment Standards and, more specifically, all factories embark on the philosophy of "zero wastewater into the environment".

2. Management commitment for the environmental protection

- Unilever Vietnam is committed to comply with the local laws and requirements and the Unilever high standards on Safety, Health and Environment.
- Unilever Vietnam is committed to produce only the products which are safe for use to the consumers and conduct environment friendly operations.
- Unilever Vietnam is committed to continuously improve and minimize all the hazardous working conditions which can affect human health and safety and environmental pollution.

3. System established and standards to comply with

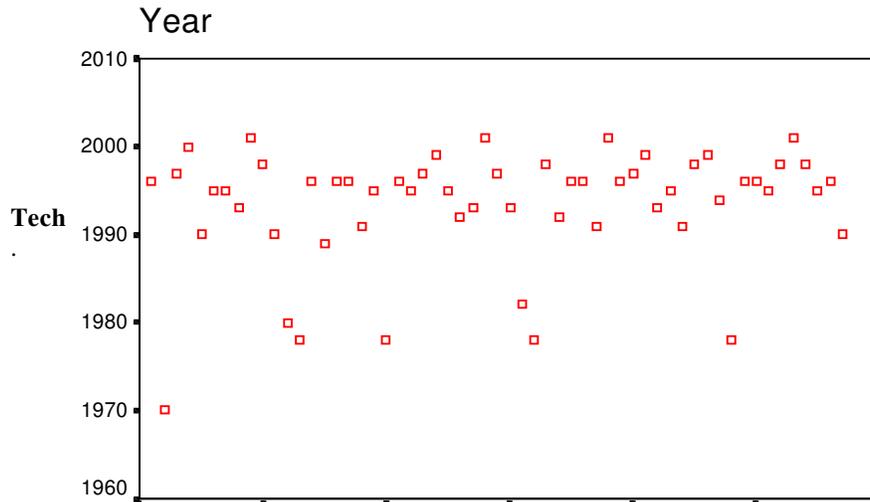
- Vietnam's environment standards.
- Toxic gas and dust level in working place (Ministry of Health, Decision No.505/QD).
- ISO9002 management system.
- ISO14001 management system.
- Safety and health management system.

(Extract from the presentation of Unilever-Vietnam, Conference on "Business and Environmental Protection in Vietnam", Hanoi, November 27, 2001)

4.2.1.3. Technologies of MNCs

As discussed in chapter 3, there is a concern that foreign investors may bring outdated technologies to Vietnam that could potentially lead to high material consumption and serious pollution. In contrast to this argument, the survey results present a generally bright picture on the technologies used by the surveyed MNCs. 81% of the technology and equipment used by MNCs are relatively new with 50% manufactured after 1996 and 31% during the period 1991-1995 (see Figure 4.4 and Table 4.4). About half of the technology and equipment originated from high-technology (advanced) industrialised countries such as Japan, UK, and the US.

Figure 4.4: Age of technology



However, as illustrated in table 4.4, 19% of the technology used by MNCs were from the period 1970-1990, of which 11% was made during 1970-1980 and 8% in 1981-1990. More importantly, all of the relatively "old" technology belongs to firms established before 1995 in Vietnam. This would suggest that before that time, MNCs coming to Vietnam did not feel it necessary to bring the most advanced technology into Vietnam.

Table 4.4: Technologies in Surveyed MNCs
(number of technologies used *)

	Total		Originated from			
			High-tech countries ³		Others ⁴	
	General ¹	Environmental related ²	General	Environmental related	General	Environmental related
1970-1980	6 (11)	3 (15)	5 (21)	2 (25)	1(3.3)	1(8)
1981-1990	4 (8)	2 (10)	3 (12)	1 (12.5)	1(3.3)	1(8)
1991-1995	17 (31)	7 (35)	7 (29)	2 (25)	10 (33.3)	5 (42)
1996-2001	27 (50)	8 (40)	9 (38)	3 (37.5)	18 (60)	5 (42)
Total	54 (100)	20 (100)	24 (100)	8 (100)	30 (100)	12 (100)

Note: * Numbers in brackets are % of the total.

- 1: All kinds of technologies and equipment in MNCs.
- 2: Technologies that have an influence on the environmental outcome of firms.
- 3: Industrialized countries.
- 4: Newly industrialized and others.

When examining the technology which directly affect the environmental performance of MNCs, the survey results indicate, generally, that the technology utilised has not negatively affected the environment. This is largely because 75% of the MNCs' environmental related technologies were made after 1990 and 40% from 1996 (Table 4.4). This partly explains the more positive picture of the environmental performance by MNCs, compared to that by domestic companies, whose technologies are significantly behind international technology levels.

4.2.1.4- Environmental expenditure by Firms

In this survey, environmental expenditure by MNCs is defined to be the firm's expenditure in pollution reduction, or measures to prevent and mitigate possible environmental damage caused by pollution. Expenditure by MNCs for these purposes can be in the form of fixed investment in waste treatment equipment/systems, and expenditure to implement environmental protection measures and maintain the operation of waste treatment equipment.

Investment in waste treatment systems

Thirteen of the MNCs in this survey had installed waste treatment equipment (WTE) where necessary. Six of the MNCs had installed air treatment equipment, and nine had invested in noise mitigation equipment (see Table 4.5). Although most of the WTE was not modern, and of average quality, this result, however, is still much better than that for domestic firms. This is largely because MNCs have more financial capacity to invest in WTE and manage their environmental outcomes according to the host country's requirements for waste treatment. This argument is reinforced since it was found that almost all of these systems were regularly operated.

Expenditure to implement measures to save fuel/raw material consumption

When investing in a developing country, MNCs could have an adverse impact on the environment by consuming natural resources of the host country in such a way that risks natural resource exhaustion. However, this occurrence was not revealed in the survey. Indeed, fifteen out of the twenty interviewed MNCs have introduced measures to ensure the rational use of material inputs, such as, applying appropriate production rearrangements, introducing a relevant management system (e.g. ISO 9000), technology and equipment upgrading, reuse of raw materials, and raising the awareness of the workers on environmental protection. For example, a surveyed MNC in the food processing sector has established a tunnel carrying fuels and materials directly to the manufacturing sites so that no fuel and materials would be wasted. According to the assessment of MNCs, 24% said that they consumed fewer raw materials than their counterparts in the same industry in Vietnam.

Table 4.5: Number of MNCs having WTE by kind of Waste/Disposal

<i>Type of waste/disposal</i>	<i>Already installed</i>		<i>Shall install in the future</i>	<i>Shall not install because</i>	
	<i>Modern equipment</i>	<i>Medium-level equipment</i>		<i>Unaffordable</i>	<i>Unnecessary</i>
1- Solid waste	2	3	0	12	3
Regularly operated	2	3			
Irregularly operated	0	0			
Number of workers operating the equipment on average	3	5			
2- Waste liquid	7	6	2	1	4
Regularly operated	7	5			
Irregularly operated	0	1			
Number of workers operating the equipment on average	3	1			
3- Air disposal	1	5	0	2	12
Regularly operated	1	5			
Irregularly operated	0	0			
Number of workers operating the equipment on average	0	0.6			
4- Noise	1	8	1	1	9
Regularly operated	1	8			
Irregularly operated	0	0			
Number of workers operating the equipment on average	0	0			

Note: Blank areas mean not applicable.

Current expenditure on the environment

It is expected that in order to maintain a good environmental performance, the company must carry out environmental works on a regular basis. The survey result showed that MNCs did provide funding for operating environmental management and pollution control systems at the firm level. Current expenditure by MNCs for environment related purposes can be broken down into a number of items, including, current expenditure for maintaining waste treatment systems, environmental monitoring, maintaining ISO 14000, cleaning, payment of natural resource-use tax, environmental fees/compensation etc.

Table 4.6: Environmental Costs of the twenty surveyed MNCs

	1999	2000	2001
<i>Total amount in VND million</i>	26351	22079	47780
Technical & equipment upgrading to improve environment performance	21910	17970	42743
Waste treatment	1402	1211	2111
Recovery from environmental damage	0	0	0
Administrative fine due to environmental standards violation	0	0	0
Environmental monitoring	54	86	100
Resolving environmental accident	0	0	0
Tax for natural resources use	2955	2781	2781
Environmental tax/fee	0.5	0.5	0.5
ISO14000 and cleaning	30	30	45
<i>As percentage of gross output</i>			
Total expenditure	0.07	0.05	0.10
Technical & equipment upgrading cost	0.06	0.04	0.09
Current expenditure	0.01	0.01	0.01

Table 4.6 summarises the total environmental expenditure of the surveyed MNCs, which covers all the categories of expenditure mentioned above. This table shows that total environmental costs paid by the twenty surveyed MNCs increased sharply from VND 26.4 billion in 1999 to VND 47.8 billion in 2001 (from 0.07 to 0.1 percent of total gross output). The substantial increase was mainly due to the fact that in the year 2001, a large amount of investment was carried out by MNCs into upgrading technology and equipment in order to mitigate waste or to improve environmental performance. Expenditure for this purpose (which are the first two items in Table 4.6) already accounts for about 90% of total environmental expenditure of the MNCs. In terms of its share in total gross output, this fixed expenditure was recorded at 0.06% in 1999, 0.04% in 2000 and up to 0.09% in 2001. Meanwhile, current expenditure for environmental purpose stayed constant at only 0.01% of the firm's total gross output during the same period. This illustrates that to invest in "end-pipe" pollution mitigation measures requires much more funds than if the firm puts efforts into preventing pollution "up-pipe" in the production process. Unfortunately, among the twenty interviewed MNCs, only three indicated that they did apply measures to prevent "up-pipe" pollution.

4.2.1.5. Conclusion

The results of the survey show that MNCs in Vietnam have an insignificant negative impact on the environment. Pollutant/emission concentration at the selected MNCs were within Vietnam's standards with the exception of a small number of cases. Given that the MNCs have invested in relatively new technology and were able to invest in either waste

treatment facilities or in implementing measures to mitigate damage to the environment, their environmental performance would be expected to be good. The survey results also demonstrate the MNCs' concern for the environment through their establishment of EMUs, undertaking of regular monitoring to control pollutant/emission concentration, applying of ISO 14001 or equivalent systems, and training of workers in environmental protection issues. More importantly, in the context where the majority of domestic counterparts do not record good environmental performances, the above results indicate that, apart from the direct positive effects, MNCs in Vietnam may also bring about positive environmental spillover effects in the following ways:

- (i) Best-practice MNC environmental performers will act as good examples for their domestic suppliers, competitors, and affiliates. In many cases, the MNCs can even pass on advice from their experience on how to deal with environmental issues. For example, one MNC in the chemical industry supported their suppliers and affiliated firms in improving their environmental performance by providing them with experience, advice and guidance.
- (ii) As 40% of the interviewed MNCs are operating in joint-ventures between domestic and foreign companies, the good MNC environmental performers would improve the environmental performance of their domestic counterparts. An in-depth interview with one MNC in Ho Chi Minh City indicated that the domestic counterpart had seriously violated environmental standards prior to the establishment of the joint-venture. Since then, its environmental performance has improved over time to the point where the joint-venture has become one of the best environmental performers in the survey. This joint-venture even expressed willingness to support and share experience with the domestic parent company in this field.
- (iii) The good environmental performance of MNCs will be a counterbalance to the poor domestic environmental performers. This will put pressure on state environmental agencies to undertake strong and decisive measures to deal with the environmental standard violation practices of the domestic firms. One MNC stated that after their firm was listed in the widely distributed Green Book, published by the Ho Chi Minh City DOSTE, that this would create pressure on the poor environmental performers to undertake appropriate measures.
- (iv) With their strong financial capacity and rich experiences, the MNCs are quite advanced in taking into account the environmental issues of their business. For instance, one interviewed MNC was a pioneer in introducing the ISO14001 into Vietnam. By doing so, they inspired environmentally friendly behaviour and, to some extent, put pressure on their domestic competitors to take into account environmental issues.

It is notable that the positive spillover effect will not automatically take place. It depends on various factors, especially the pressure on domestic firms and their willingness to

respond to this effect. In this context, the government should facilitate the spillover, as much as possible, in order to support the environmental quality of Vietnam.

4.2.2. Attitude of MNCs in Vietnam Towards the Environment: A Behavioral Model

The survey results indicate that apart from advanced technology, the attitude of MNCs towards the environment is also an important factor behind environmental standards compliance and good environmental performance of MNCs in Vietnam. Whether MNCs are concerned about environmental issues depends on various factors which will be examined in this section based on information collected from the survey. The attitude of MNCs towards the environment is defined here as their efforts in the establishment and operation of an EMU or equivalent environmental management system, and their expenditure (both current expenditure and investment) on environment protection.

4.2.2.1. Determinants of Environmental Friendly Behavior of MNCs.

Regulations

It was expected that regulations (both of the recipient country and of the MNCs' headquarters) prevent foreign firms from having a poor attitude towards the environment. Through regulations, firms are forced to operate in a way that does not adversely affect the environment beyond a certain level.

The survey results show that national regulations were one of the most influential factors affecting the attitude of MNCs towards the environment in Vietnam. All of the interviewed MNCs responded that the environmental regulations of Vietnam were the most important factor behind a firm's decision to introduce environmental policies (see Table 3 in Appendix 3). In addition, national regulations of the recipient country also influence the foreign investors' decision-making in choosing more advanced technology in the FDI project. In order to comply with national regulations, all the surveyed MNCs tried to get updated information about national environmental regulations through various channels, for instance, through the public media or service agencies, and by contacting state agencies. It was found from the survey that MNCs tend to be quite active in obtaining legal documents rather than wait for legal documents to be sent by state environmental agencies.

In general, in order to enable firms to comply with environmental regulations in practice, it is important that the regulation itself is clear and relevant to Vietnamese conditions. The survey, however, indicates that the existing environmental regulations of Vietnam are not sufficiently clear and detailed and therefore it is not easy for firms to comply. Moreover, the feasibility and relevance of some environmental standards should be re-examined. According to MNCs, Vietnam's standards for lubricant pollutant, for example, are difficult to meet and they are higher compared to neighbouring countries. In Malaysia, the permitted concentration of lubricant is less than 5mg/l while in Vietnam it is less than 1mg/l. Further rationalisation of national standards would facilitate business

activity and make the investment environment of Vietnam more competitive within the region.

It should be noted that national environmental regulations are necessary, but not sufficient for the environmental friendly attitude of MNCs in Vietnam. The survey showed that the environmental related regulations / rules of MNCs' headquarters also affect the environmental attitude of their affiliates in developing countries. For example, in the in-depth interviews, several MNCs said that their environmental policies were based on the environmental policy imposed by the head office. This helped the MNCs to have a unique corporate image in the countries where they invested and hence, enabled MNCs to gain public confidence in their environmental performance.

Regulation enforcement

The expected effect of regulations on the attitude of MNCs is supported through regulation enforcement. In Vietnam, regulations were enforced mainly through environmental inspection and monitored actions taken by the environmental violators. The environmental inspection agencies had visited seventeen out of the twenty interviewed MNCs. Three MNCs violators were discovered and asked to install waste treatment systems and subsequently their environmental performance improved. Nevertheless, during the process of exercising the environmental regulations, some unexpected effects on the environmental attitude of MNCs were found:

- (i) *Diversion-effect:* Regulation enforcement had unexpected consequences because of the unequal treatment of state agencies in this matter. Three MNCs said that environmental regulations were not applied to firms equally (see Appendix 3, Table 10). Interviewed MNCs complained that many domestic firms performed badly on the environment but the environmental agencies did not take strict actions on them because they were SOEs. One firm in an industrial zone said that they had installed a wastewater treatment system as regulated, while the treatment system for the whole industrial zone had not been completed. All of this is not good for Vietnam's environment for two reasons. First, the unequal treatment discourages MNCs from having a friendly attitude to the environment. Why should MNCs improve their environmental performance while others do not? Second, the bad environmental performers, especially SOEs, will not improve their performance over time. This also limits the positive spillover effect of MNCs on the environment as mentioned earlier.
- (ii) *Side-effect:* The inconsistent regulation enforcement by different state agencies created unnecessary trouble for some firms. This was due to duplication in the environmental inspections carried out by the Department of Science, Technology and Environment and the Department of Health. According to MNCs, both agencies have responsibility for environmental inspection but the division between the two is not clear. There was an instance where the two agencies came to different conclusions as to the environmental performance of the MNC. As a result, the MNC did not know to which agency they should comply with.

- (iii) *Scale-effect*: Due to inappropriate regulation enforcement, the positive effect of the regulation on the attitude of firms is not maximized. The survey results showed that there is room for the state environmental agencies to carry out their responsibilities better. First, the state agencies should send MNCs all the necessary legal documents, so that they can get a better grasp of the law. Second, local authorities should provide the MNCs with detailed guidance on the implementation of the environmental laws. Some MNCs even expressed the view that the authorities should cooperate with MNCs to find solutions for improving the quality of the environment in the locality.

Other policy instruments and facilities

Apart from environmental regulations, there are other policy instruments which affect the behaviour of firms towards the environment by creating incentives. This differs from regulations, which affect the attitude of firms largely by obligation. As mentioned in chapter 3, together with environmental regulations, the application of various economic instruments could lead to more friendly behaviour by firms towards the environment. These economic instruments include subsidies, pollution fees, pollution quotas, and tradable pollution emissions. In addition, there are policy instruments which are a mix of different types of instruments. For example, environmental fines are considered to be a mixture of regulation and economic incentives, while information disclosure can be seen as utilising both self-regulation and economic instruments²⁷.

In Vietnam, information disclosure on environmental performance by enterprises was introduced only very recently but this policy instrument has already had a progressive effect²⁸. Three of the surveyed MNCs said that they had greatly benefited from being included in the "Green Book" published by Ho Chi Minh City's DOSTE in terms of reputation and market expansion in Vietnam. Several MNCs expressed the intention of trying to get their name in subsequent versions of the book and 55% of the interviewed MNCs said they would apply a system of environmental management according to ISO 14001 in the future.

However, generally speaking, the application of other economic instruments was not strongly revealed in the survey results. The majority of MNCs seem to be forced to comply with environmental regulations rather than being encouraged through incentives to be a friend of the environment. This reflects the reality that economic policy instruments are not yet widely used in Vietnam with only one MNC having paid a form of natural resource tax. If pollution charges/fees had been in place then the high pollutant loads of some of the surveyed MNCs may have been reduced. The lack of economic instruments limits the capacity of the state to encourage firms to have a good attitude towards the environment.

It was also found from the survey that inadequate environmental services (for example, waste treatment plants, waste delivery services, etc.) were another factor that constrained the MNCs' environmental performance. In Vietnam, these services are usually provided

²⁷ See Vu (2001) for more details about policy instrument for environmental management.

²⁸ Examples of information disclosure include the list of the most polluting enterprises in Vietnam in 1999 and the publication of the "green book" in Ho Chi Minh City in 2002.

by state companies with little involvement from the private sector. Although the existing public waste treatment system has limited capacity and is inconvenient for firms, most of the surveyed MNCs used the public system rather than establish their own system. This is logical because it is not economical for an individual company to install a solid waste treatment system. However, several of the interviewed MNCs complained about the difficulty in finding places to process waste and the high waste delivery costs. Consequently, this situation may discourage firms from treating waste properly which has harmful implications for the environment.

Firm's size

A firm's expenditure on the environment can be seen as reflecting the environmental attitude of the firm. It was also expected that larger firms would have a friendlier attitude to the environment because they have a greater financial capacity to protect the environment. Therefore the establishment of the necessary measures for environmental protection are based on two conditions: i) a certain level of awareness about the importance of environmental protection and ii) the necessary financial resources.

In this survey, the firm's size was measured by registered capital. Compared to the average size of a firm within a particular industry in Vietnam, the surveyed MNCs were of medium to large in size. Through statistical testing it was found that there was a significant positive correlation between the firm's size and its environmental expenditure among the surveyed MNCs²⁹. On average, the surveyed MNCs devoted about 0.1% of their gross output to environmental related activities in 2001. However, the test results showed no relationship between the firm's size and pollutant concentration implying that larger MNCs do not necessarily have lower pollutant concentration levels. This suggests that once the MNCs have complied with the environmental regulations of Vietnam, they tend to do no more with respect to environmental protection. Finally, it was found that a firm's size has a significant positive correlation with pollutant loads. This result is consistent with an earlier finding that larger firms produce greater outputs and therefore, discharged greater amounts of pollutant into the environment.

Foreign parent origin

It was anticipated that MNCs whose parent company origin is an industrialized country may have a friendlier attitude with the environment. The reason is that these countries may have standardised environmental management regulations which are also imposed on their firms located overseas. The survey has strongly supported this hypothesis. Among the surveyed MNCs only five originated from developed countries and of these, three had applied ISO 14001 or equivalent environmental system. This accounted for 75% of the total number of MNCs with ISO certificates in the survey. Similarly, in terms of environmental expenditure, these five MNCs tend to spend much more than the other MNCs. The five MNCs put aside approximately 0.5% of their output value into environment related issues as compared with the average of 0.1%. There was, however,

²⁹ See Appendix 3, Table 12 for results.

found to be no significant correlation between the foreign parent origin and both pollutant concentration and pollutant load³⁰. In other words, the origin of the foreign parent company does not reveal much about the environmental performance of MNCs in this survey.

Market forces

It was expected that market forces will make MNCs friendlier towards the environment. Market forces are determined by consumer pressure. There has been an international trend for consumers to become more concerned about environmental issues. This can affect their consumption behavior and therefore the behaviour of producers. At present, the exporting firm often has to satisfy a number of environmental related requirements imposed by the importing country in order to access its market e.g. EMU, ISO 14000, and ISO 9000. For this reason, it was expected that the international market share of the MNCs would have a positive relationship with the firm's environmental attitude.

However, the survey found that market forces have an insignificant impact on the environmental attitude of MNCs. This result may be explained by the fact that the export market share of the surveyed MNCs is quite small at only 36%³¹. In addition, most of the export markets were Asian countries, where environmental requirements imposed on imported commodities have not been very significant. In the domestic Vietnamese market, people are not yet concerned with environmental requirements for consumer goods. This situation was clearly revealed in question 2.5 of the survey, where only 15% of MNCs considered marketing as a component of the environmental management system.

However, in response to question 4.2, 85% of MNCs responded that an improvement in environmental performance would help to reduce production costs, 80% said it would improve the image of the company, and 70% said it would expand the market for their products. This means, to some extent, that market forces may play a role in directing firms to undertake measures to improve their environmental performance, but this role is still not significant.

Although the impact of market forces on the firm's attitude to the environment was not obvious in the survey result, it is expected to become more significant as Vietnam accelerates its international integration. In the near future, MNCs in Vietnam will have to pay greater effort in order to satisfy environmental related requirements imposed by foreign countries if they want to access to the international market. In addition, domestic consumers will become more aware about the environment and may change their pattern of consumption towards environmentally friendly goods.

³⁰ See appendix 3, Table 12.

³¹ See appendix 3, Table 1.

Community pressure

It was expected that the public community would put pressure on firms with respect to the environment. The community in areas surrounding the MNCs would force the MNCs to have a good environmental performance, otherwise the MNCs would be reported to the authorities and be required to compensate for environmental damage.

The survey results showed that the community did play a certain role in formulating the attitude of MNCs towards the environment in Vietnam. Three MNCs were faced with complaints from the surrounding community and state agencies came to inspect their environmental performance. As a result, the environmental performance of these three MNCs improved.

4.2.2.2. General Model of the Attitude of MNCs Towards the Environment

As analysed above, there are seven determinants that could affect the MNCs' attitude towards the environment in Vietnam to varying degrees. They comprise of environmental regulations, legal enforcement, other environmental management policy instruments, firm's size, foreign parent origin, market forces, and community pressure.

Table 4.7.: General Model of the Attitude of the Surveyed MNCs Towards the Environment in Vietnam

Determinants	Environmental attitude of the firm		Environmental performance of the firm	
	<i>Current impact*</i>	<i>Expected impact</i>	<i>Current impact*</i>	<i>Expected impact</i>
Regulations	λ	$\lambda\lambda$	λ	$\lambda\lambda$
Regulation enforcement	λ	$\lambda\lambda$	λ	$\lambda\lambda$
Environmental management policy instruments	μ	$\lambda\lambda$	μ	$\lambda\lambda$
Size of firm	λ	λ	μ	λ
Foreign parent origin	λ	λ	μ	λ
Market forces	μ	$\lambda\lambda$	μ	λ
Community pressure	λ	λ	λ	λ

Note: * impact as determined from survey results.

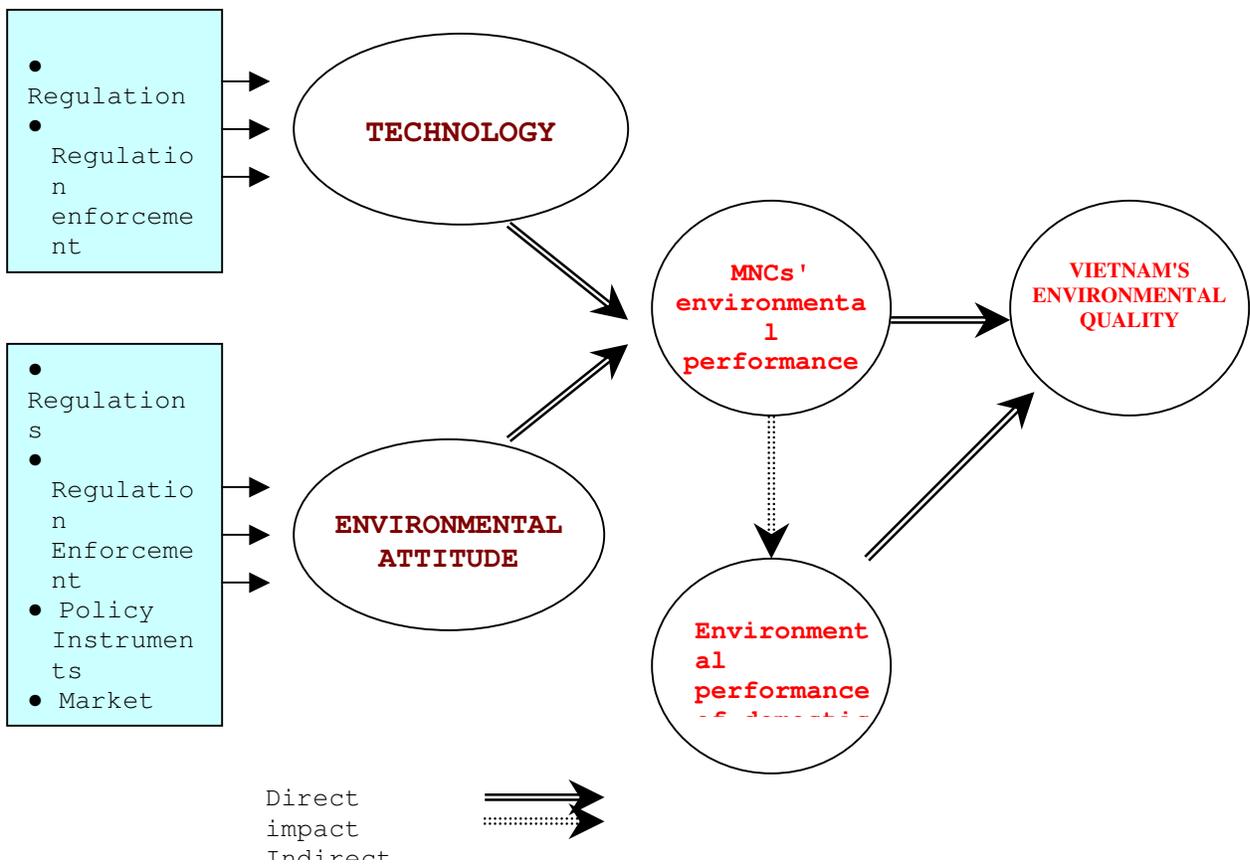
To provide a clearer understanding of the importance of each determinant, three categories have been created, namely, insignificant impact μ ; significant impact λ and very significant $\lambda\lambda$. A general model of the attitude of MNCs towards the environment in Vietnam can now be presented in table 4.7. In this table, the determinants are listed against their direct impact on the environmental attitude and performance of the MNCs, together with their expected impact. The table shows that there is a considerable room for

further improvements in the MNCs' attitude and performance with respect to the environment in Vietnam.

4.3. A Framework of MNCs' Environmental Impact in Vietnam

According to the survey results, the direct impact of MNCs on the environment, as defined by their compliance of Vietnam's environmental standards and their environmental performance, depends on two major factors, the technology MNCs used in the production process and their attitude towards the environment. These two factors are interactive and ultimately will define the actual environmental performance of the firm. In addition, each factor is affected by a group of sub-factors. This general framework for the environmental impact of MNCs in Vietnam is set out in Chart 4.1.

Chart 4.1: A Framework on the Environmental Impact of the Surveyed MNCs



Chapter 5:

Policy Implications and Concluding Remarks

5.1. Policy Implications

This study suggests that there is plenty of room for Vietnam to direct MNCs towards an environmental friendlier attitude. In this regard, the following policy implications can be considered:

Institutional improvement is needed. It is clear from this study that apart from the need for further improvement of current environmental management regulations, the main problem is the enforcement of laws and regulations. Factors such as the inadequate monitoring of equipment, insufficient information transparency concerning regulations, lack of an efficient public environmental management system, and the unequal treatment between foreign and domestic firms by local environmental agencies, all combine to undermine the foreign firms' efficient implementation of Vietnam's environmental laws and regulations.

Given the important role of foreign investment in the industrialisation process of Vietnam, it is vital to ensure that foreign companies are sufficiently concerned about the environment. By and large, MNCs possess more capital, better technology and knowledge than their local counterparts, and so are in a good position to invest in environmental protection. This study suggests that with the correct institutional and regulatory framework in place, MNCs can set a constructive example for sustainable development in Vietnam.

More economic policy instruments should be introduced. This study showed that the application of economic incentives in improving environmental quality and management were very limited in Vietnam despite their demonstrated successful use internationally. The absence of suitable policy instruments minimises innovation and proactive behaviour towards the environment by MNCs. With the greater use of economic instruments, MNCs would be able to focus more on the production process and resource productivity rather than simply on the treatment of waste which is currently the situation.

International integration and competitiveness may create pressure on foreign firms. In the context of globalisation, it will be increasingly difficult to isolate the factors affecting that FDI-environment relationship, i.e. firm's size, technology, regulatory effects, without considering the impact of international integration on the behaviour of MNCs. This study found that market forces and global environmental regulations will potentially influence the environmental behaviour of firms (including MNCs). Understanding these linkages will become increasingly important to relevant policy makers.

5.2. Concluding Remarks

FDI has made a significant contribution to the economic development of Vietnam since the *doi moi* process began in 1986. In addition, MNCs have supported environmental protection in Vietnam through the direct impact of their environmental performance and the indirect spillover effect of pushing domestic industries to show more concern towards environmental protection. Through a survey of twenty MNCs in the most pollution intensive industries this study has illustrated the impact of MNCs on the environment in Vietnam and allowed the following conclusion to be made:

- a) In general, the surveyed MNCs generate positive effects for the environment and they can be seen as better environmental performers than domestic industries. The FDI of MNCs is likely to result in some "best practice" standardisation, which would also provide positive spillover effects to domestic companies.
- b) The environmental performance of firms is a function of the use of clean technology within an efficient environmental management framework. However, it is clear that there are a lot of factors influencing the MNCs' decision-making regarding technology and the type of environmental management framework utilised.
- c) Differences between foreign affiliates and domestic firms were found in the areas of environmental management. MNCs are more likely to have a formal environmental policy, to have designated a specific individual/unit to take responsibility for environmental matters, and to train relevant staff properly on environmental protection. MNCs are also more likely to have pursued or be pursuing international management certification, which will ensure an incremental improvement in environmental performance.
- d) Factors explaining the MNCs' environmental friendly attitude include, environmental regulation/standards and its enforcement, policy incentives, market forces, community pressure. However, it cannot be quantified to what extent each factor contributes to the firm's overall attitude. In order to give a more comprehensive assessment it would be necessary to conduct a survey with a larger sized sample.
- e) The study does not allow a comprehensive quantitative assessment of the FDI impact on the environment in Vietnam to be obtained. The reason is that the sample of MNCs is relatively small compared with the total number of FDI projects operating in Vietnam.
- f) In summary, this study adds additional information to the existing national and international literature on this subject. The study is a useful practical reference point for environmental management policy-makers in Vietnam or elsewhere who want to promote the positive effects of foreign direct investment on the environment.

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APPENDICES

Appendix 1:

List of surveyed MNCs

NO.	NAME OF MNC	ADDRESS
1	KAO Vietnam	A12 Amata Industrial Zone, Bien Hoa, Dong Nai, Vietnam (Tel: 84-61-891190)
2	Unilever-Vietnam	672-673 Kien Thiet Compound, Distric No.9-Ho Chi Minh City, Vietnam (Tel: 84-8-8961945).
3	Painting TF-1 Vietnam Company	3 Binh Chieu Industrial Zone, Thu Duc District, Ho Chi Minh City, Vietnam (84-8-89771189)
4	Castrol Vietnam	4 Floor, 115 Nguyen Hue Str. District 1, Ho Chi Minh City, Vietnam (Tel: 84-8-8976184).
5	Cosmetics Joint-venture (SUNPAC VINACO)	28A Mac Cuu, Ward 13, District 5, Ho Chi Minh City, Vietnam (Tel: 84-8-8553165)
6	Fourseason Ltd. Co.	6/38 Tan Ky, Tan Quy-Binh Chanh, Ho Chi Minh City, Vietnam (Tel: 84-8-7500373).
7	ORSAN -Vietnam	Tan Thoi Hiep ward, District 12, Ho Chi Minh City, Vietnam (Tel:84-8-7171579).
8	URAI PHANICH Ltd. (Vietnam)	No.2, Road 2A, Bien Hoa Industrial Zone, Dong Nai Province, Vietnam (Tel: 84-4-61 836618)
9	Shell Vietnam	Floor 16, Hanoi Tower, 49 Hai Ba Trung Str., Hanoi, Vietnam (Tel: 84-4-9342150)
10	TN Cosmetic Ltd. Co.	170 La Thanh Str., Dong Da District, Hanoi (Tel:84-4-8516402)
11	SAIGON VEWONG Co.Ltd	1707, Road 1A, District 12, Ho Chi Minh City, Vietnam (Tel:84-8-7195550).
12	CHIA MEEI Food Industrial Corporation	45 Tran Xuan Soan Str., District 7, Ho Chi Minh City, Vietnam (Tel:84-8-8729298)
13	Interfood Processing Industry Ltd.	No. 9, Road 5, Tan Tien Sub-district, Bien Hoa City, Dong Nai Province, Vietnam (Tel:04-84 61 822073)
14	KEN KEN Viet Nam FOOD MFG Co. Ltd.	208/8 Hang Sao, Dong Hung Thuan, District 12, Ho Chi Minh, Vietnam (Tel:84-8-8917506).
15	Tongkook Vietnam Spinning Co. Ltd.	Nhon Trach I Industrial Zone- Dong Nai Province, Vietnam (Tel:84-61-848710).
16	Choongnam Viet Nam Textile Co., Ltd.	Thanh Tuy Ha Industrial Zone, Nhon Trach District, Dong Nai Province, Vietnam (Tel:84-61-848538).
17	Hualon Corporation Viet Nam	Nhon Trach Industrial Zone II-Dong Nai Province, Vietnam (Tel:84-61-848608).
18	VITAICO Joint-venture Co.	Cat Lai Ward, District 2, Ho Chi Minh City, Vietnam (Tel:84-8-8976185).
19	Viet Nam Brewery Ltd.	Thoi An Ward, District 12, Ho Chi Minh City, Vietnam (Tel:84-8-7173411)
20	PESPI-IBC	Floor 5, Sun-Wah Building, 115 Nguyen Hue Str., District 1, Ho Chi Minh City, Vietnam (Tel:84-8-8219437).

Appendix 2:

Questionnaire Sample

ENVIRONMENTAL PERFORMANCE AND ENVIRONMENTAL MANAGEMENT OF MNCs IN VIETNAM

Interviewer's name:.....

Interviewee's name:.....

Title:.....

Date:/...../.....

I - GENERAL INFORMATION.

1.1- Name of company:.....

1.2- Address:.....
Tel:.....Fax:.....Email:.....

1.3- Investment license no. and year issued:

1.4- Total registered capital:(million USD)

1.5- No. of permanent employees:(persons)

1.6- Company's ownership ?
Joint-venture 100% foreign owned

1.7- Name of foreign parent company (ies) and the country (ies) of origin:
.....
.....

1.8 - Gross output value and output value of main products:

(Million VND/year)

	1999	2000	2001
- Gross output value			
Of which, list below output value of main products			
1-.....			
2-.....			
3-.....			
4-.....			

1.9- Market share of the company's product(s):

+ Domestic market (%)
+ International market (%)

Total = 100%

II- INFORMATION ABOUT THE COMPANY'S ENVIRONMENTAL MANAGEMENT SYSTEM.

2.1- Does your company have an environmental management unit (EMU)?

Yes No

If Yes, - How many people are there in the EMU? (persons); and
- Year of the EMU's establishment?

If No, are there people working part-time on environmental management?

Yes ; and percentage of his/her time engaged in this work:..... % No

2.2- Does the company have its own environmental policies?

Yes No

If Yes, please answer the following sections (a) and (b); *If No*, please go to question 2.3.

a- Which of the following factors served as the basis for the environmental policies of the company ? (Pls. rank the factors according to your consideration of importance, e.g. most important = 1, ... ,least important = 6)

- + National environmental regulations
- + Local environmental regulations
- + Long-term development strategy of the company
- + Development strategy of the parent company(ies)
- + Public (community) pressure
- + Consumer pressure
- + Others (pls.specify).....

b- The company's environmental policies are approved by:

- + Foreign parent company
- + Domestic parent company (if any)
- + The company's directors
- + Others (pls. specify).....

2.3- Pls. provide the list of your company's environmental management documents.
(Pls. provide copies of the main sections of these documents)

.....
.....
.....

2.4- Has the company introduced ISO 14001? (Pls. tick where appropriate)

- + Has received ISO14001 certificate
- + On going process for ISO 14001, not yet received certificate
- + Shall introduce ISO 14001 in the near future

+ Shall not introduce ISO 14001

If "Shall not introduce", pls. give reason(s) why:.....

2.5- Which of the following production processes is under your company's environmental management supervision? (Pls. provide us, if possible, a diagram of your environmental management system, if any).

- + Product design and research:
 - + Technology and equipment procurement:
 - + Production operation:
 - + Marketing and promotion:
 - + Other (s) (pls. specify):.....
-

2.6- Does the company undertake environmental monitoring?

Yes No

If Yes, how often: time/year.

(Pls. provide the latest results of environmental monitoring in your company)

If No, pls. give reason (s) why:

2.7- Does the company send the results of the environmental monitoring to the environmental state management agencies?

Yes No

If Yes, how often?time/year.

If No, pls. give reason (s)why:.....

2.8- Does the environmental inspector visit your company?

Yes No

If Yes, - How often?time/year

- Reasons for the environmental inspector's visit: (Tick x where appropriate)

- + Complaints of the local community:
- + Environmental accident:
- + Other (pls. specify).....

Pls. provide us a summary of comments made by the environmental inspector at his/her latest visit to your company:

.....
.....

2.9- Does the company keep updated environmental legal documents?

Yes No

If Yes, through which of the following ways (Tick x where appropriate):

- + Mass media

- + Sent by state agencies
- + Sent by governmental management organization(s) only after the company made contact
- + Other (pls. specify).....

If No, pls. give reason why.....

III- THE COMPANY'S ENVIRONMENTAL PERFORMANCE.

3.1- Pls. list below the main equipment/machines in your company's production process:

	<i>Name of machine/machine(s)</i>	<i>Year produced</i>	<i>Country made</i>
o,			
1			
2			
3			
4			

(If possible, pls. provide us a technological diagram of the company's production process)

3.2- Has your company installed a waste treatment system? (Tick where appropriate)

<i>Type of waste/disposal</i>	<i>Already installed</i>		<i>Shall install in the future</i>	<i>Shall not install</i>	
	<i>Modern equipment</i>	<i>Medium-level equipment</i>		<i>Because not affordable</i>	<i>Because no need</i>
- Solid waste					
- Liquid waste					
- Air disposal					
- Noise					

How often is the equipment operated?(Pls. tick where appropriate)

<i>Type of waste/disposal</i>	<i>Status of the equipment's operation in the company</i>		
	<i>Regularly</i>	<i>Irregularly</i>	<i>Number of workers operating the equip.</i>
- Solid waste			
- Liquid waste			
- Air disposal			
- Noise			

3.3- Does the company carry out the following cleaner production measures? (Pls. tick x and write where appropriate)

<i>Measures</i>	<i>No</i>	<i>Yes</i>	<i>If Yes, pls. give specific details of the measures applied</i>
+ Waste recycling			
+ Pollution prevention			
+ Reduction of raw materials used in production			

3.4- Pls. provide the information about the waste disposal of the company.

	<i>Pollutants</i>	<i>Concentration (if any)</i>	<i>Download flow(per day)</i>	<i>% treated disposal</i>
Liquid waste	1- BOD			
	2-COD			
	3- TSS			
Air waste	1- NOx			
	2- COx			
	3- SOx			
Solid waste				
Noise				

3.5- Pls. give below information about your company's expenditure on environmental protection activities:

(Unit: million VND/year)

<i>Expenditure item</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>
Waste treatment			
Technological upgrading			
Recovering for environmental damage			
Administrative fine due to environmental standards violation			
Environmental monitoring			
Resolving environmental accident			
Tax for natural resources use			
Environmental tax/fee (if any)			
Other (pls. specify)			

IV- THE COMPANY'S ASSESSMENT AND RECOMMENDATIONS

4.1- Pls. assess the current environmental performance of your company since its establishment?

Much better Better The same Worse

4.2- Do you think that your company's environmental performance would help:

- + Improve the image of the company: Yes No
- + Widen market share: Yes No
- + Reduce production costs: Yes No
- + Other (Pls. specify)

.....

4.3- How do you assess your company's compliance of Vietnamese environmental regulations?

- Excellent Very good Good Bad

4.4- Pls. compare the environmental performance of your company with other companies' in the same industry?

- Much better Better The same Worse

4.5- Pls. compare the raw material use of the company with that of other companies in the same industry?

- Much less Less The same More

If NOT the same, pls. give reason (s)

why:.....
.....

4.6- Which of the following measures can improve the environmental performance of the company? (Pls. tick x where appropriate)

- + Upgrading the technology:
- + Reorganizing production:
- + Investing more for waste treatment:
- + Staff specifically for environmental management:
- + Increase workers' awareness of environmental issues:
- + Other (pls. specify).....

4.7- Pls. list the three greatest difficulties in improving the environmental performance of the company?

.....
.....
.....

4.8- Pls. assess the following aspects of the national environmental regulations of Vietnam? (Pls. mark: Very good = 1; Good = 2; Bad = 3; Very bad = 4)

- + Clearness of the regulations:
- + Non-discrimination between firms:
- + Effectiveness of the regulations:
- + Real effect of the regulations on environmental protection:

4.9- Pls. assess the local environmental regulations?

Relevant Not relevant

If Not relevant, pls. give reason (s) why:

.....
.....
.....

4.10- Does the company support the introduction of the following policy instruments for environmental protection?

- | | | |
|---|------------------------------|-----------------------------|
| + Environmental fee/charge | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| + Environmental fund | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| + Administrative fine for environmental standards violation | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| + Publicly disclosing the list of most polluted firms | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

4.11- The company's recommendations regarding environmental policies in Vietnam:

+ For central state agencies:

.....
.....
.....
.....

+ For local state agencies:

.....
.....
.....
.....

THANK YOU VERY MUCH FOR YOUR COOPERATION !

Appendix 3:

Survey's results

1- General information of surveyed MNCs

Table 1- Description of surveyed MNCs

		Mean	Median	Minimum	Maximum
Capital (USD)	Total	35,221,834	11,288,500	200,000	250,000,000
	Chemical	34,496,094	39,500,000	200,000	75,000,000
	Food processing	9,293,203	3,935,467	1,200,000	27,850,000
	Textile	115,333,333	58,000,000	38,000,000	250,000,000
	Paper	2,000,000	2,000,000	2,000,000	2,000,000
	Beverage	59,750,000	59,750,000	9,500,000	70,000,000
Labour (person)	Total	494	185	16	2,000
	Chemical	361	170	16	1,200
	Food processing	335	150	65	800
	Textile	1,459	1,278	1,100	2,000
	Paper	128	99	80	235
	Beverage	586	586	200	972
Market share					
Domestic market (%)	Total	65	69	0	100
	Chemical	81	98	40	100
	Food processing	54	60	1	100
	Textile	43	40	40	50
	Paper	58	65	0	100
	Beverage	100	100	100	100
Foreign market (%)	Total	36	31	0	100
	Chemical	19	2	0	60
	Food processing	46	40	0	99
	Textile	57	60	50	60
	Paper	43	35	0	100
	Beverage	0	0	0	0

**Table 2- Ownership form and parent foreign origin of surveyed MNCs,
number of responses**

Ownership form		General		Industry			
		Chemical	Food processing	Textile	Paper	Beverage	
Joint-venture 100 % foreign owned		8	3	1	0	2	2
		12	2	5	3	4	0
Parent origin	Developed country	5	4	0	0	0	1
	Developing country	15	1	6	3	4	1

2- Environmental management of interviewed MNCs

**Table 3- Role of various factors in formulating the MNCs' environmental policies,
% of answered MNCs**

	1	2	3	4	5	6
National environmental regulations	100	0	0	0	0	0
Local environmental regulations	40	40	20	0	0	0
Long-term development strategy of the company	40	30	10	10	10	0
Development strategy of the parent company(ies)	30	10	0	30	10	20
Public (community) pressure	0	10	20	10	20	40
Consumers' pressure	0	0	10	20	20	50

Note: 1 = Most important ... 6 = least important.

**Table 4: Application of ISO 14001 or equivalent system in interviewed MNCs,
number of responses**

	Total	Chemical	Food processing	Textile	Paper	Beverage
Has received ISO14001	3	3	0	0	0	0
On-going process to introduce ISO14001	1	0	0	0	0	1
Shall introduce ISO 14001	11	4	4	2	0	1
Shall not introduce ISO 14001	5	1	3	0	1	0
Total		8	7	2	1	2

Table 5: Production stages under the environmental management of MNCs

	No. of responses	% of interviewed MNCs
Product design and research	9	45
Technology and equipment procurement	15	75
Production operation	17	85
Marketing and promotion	3	15

Table 6- Difficulties of MNCs to improve their environmental performance

Difficulties	Number of responses
1. No. personnel for environmental management	1
2. Amount of space to treat wastewater	3
3. Financial constraints	3
4. High inspection costs	1
5. High environmental standards	1
6. Difficulty in treating noxious pollutant such as chloral benzen	1
7. Surrounding households and companies discharge into MNCs sewage system	3
8. High costs of industrial waste treatment	2
9. Poor awareness of workers on environmental protection	3

3- Technologies used in MNCs**Table 7- Technologies used in MNCs by country origin**

Country origin	Number of responses
High-tech countries	
Germany	3
France	1
UK	2
Holland	1
Italy	1
America	3
Japan	13
Others	
Korea	2
Malaysia	4

Singapore	2
Vietnam	7
Taiwan	11
Thailand	4

4- Environmental expenditures of interviewed MNCs

Table 8- Structure of environmental costs, %

	Structure of total expenditure ¹			Structure of current expenditure ²		
	1999	2000	2001	1999	2000	2001
Tech. and equip. upgrading	83	81	90			
Waste treatment	5	6	4	32	30	42
Environmental monitoring	0.2	0.4	0.2	1	2	2
Tax for natural resources use	11	12.6	6	67	68	55
Environmental tax/fee	0.002	0.002	0.001	0.01	0.01	0.01
ISO14000 and cleaning	0.1	0.1	0.1	0.7	0.7	0.9

Note: - 1: % of total environmental costs of twenty surveyed MNCs.

- 2: % of total current environmental expenditure, excluding tech. & equip. upgrading costs.

Table 9: Structure of environmental costs by industry, average over three years

	<i>By industry</i>					
	Overall	Chemical	Food processing	Textile	Paper	Beverage
<i>As percentage of total environmental costs</i>						
Tech. and equip. upgrading	86	98	93	72	0	99
Waste treatment	5	2	6	7	0	1
Environmental monitoring	0.2	0.4	0.3	0.1	86	0.1
Tax for natural resources use	9	0	1	21	0	0
Environmental tax/fee	0.002	0	0	0	14	0
ISO14000 and cleaning	0.1	0.5	0	0	0	0
<i>As percentage of current environmental costs</i>						
Waste treatment	35	63	78	24	0	90
Environmental monitoring	2	17	4	0.3	86	10
Tax for natural resources use	63	0	18	76	0	0
Environmental tax/fee	0.01	0	0	0	14	0

ISO14000 and cleaning	1	20	0	0	0	0
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As percentage of total gross output

Current environmental costs	0.01	0.04	0.003	0.03	0.01	0.004
Tech. & equip. upgrading	0.07	1.5	0.03	0.08	0	0.3

5- Assessment of MNCs on Vietnam's environmental regulations and recommendations

Table 10- Assessment of MNCs on Vietnam's environmental regulations

Assessment indicators	Number of responses			Percentage		
	Very good	Good	Bad	Very good	Good	Bad
Clearness	6	13	1	30	65	5
Non-discrimination between firms	5	12	3	25	60	15
Effectiveness	4	12	4	20	60	20
Real impact on the environmental protection in Vietnam	9	8	3	45	40	15

Table 11- Recommendations of MNCs for state environmental management

Recommendations	Number of responses
<i>For central authorities</i>	
• Provide detailed guidance to implement the environmental law and regulations	2
• Send all legal documents to MNCs	2
• Design more feasible and relevant environmental standards	2
• Improve the enforcement of environmental laws by stricter environmental inspection and supervision	2
• Strengthen the capacity of environmental consultancy (state agencies) to give advice to firms on environmental improvement	2
• Provide incentives to firms to apply ISO14001 and comply with the state regulations	1
• Define uniform industrial waste treatment fees nation-wide	1
• Increase awareness of people on environmental protection in a professional manner	1
<i>For local authorities</i>	

- Local authorities should have a person, specialised in environment issues, to provide guidance to people and firms to implement the environmental law 2
- Carry out strict inspection and close supervision but avoid matters of duplication and irrelevance 3
- Discuss with firms to find measures to improve the environmental quality 2
- Regulate unified and relevant industrial waste treatment fees; improve solid waste collection systems 1
- Equal treatment among firms 3

6- Correlation between determinants and the environmental attitude of interviewed MNCs

Table 12: Correlation coefficients between some determinants and pollutant concentration & loads

Determinants	Environmental expenditure		Pollutant concentration		Pollutant loads	
Firm's size (registered capital)	+	+0.526	-	-0.179	+	+0.699
Foreign parent origin	+	-0.223	-	-0.211	?	-0.367
Market forces (foreign market share)	+	+0.182	-	+0.663	?	+0.460

Note: Significant Pearson correlation at the 0.01 level (2-tailed) is marked in bold; shaded areas show the hypothesised relationship, of which expected positive and negative correlation is marked with a plus and minus sign respectively, unknown correlation is marked with a question mark.