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MANAGING THE ENVIRONMENT ACROSS BORDERS

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Preface

Transnational corporations (TNCs) have a special responsibility with regard to sustainable development. They operate in pollution-sensitive industries

. They also possess the technologies and managerial and organizational techniques necessary to minimize the environmental impact of their activities. Thus, responsible environmental management can yield substantial benefits in developing countries.

Responsible environmental management includes corporate decisions on company-wide environmental standards, the transfer of clean technology between headquarters and affiliates, environmental training programs for employees in developing countries, environmental outreach activities along the supply chain and marketing of products with environmental significance.

More than 30 provisions of Agenda 21 refer to corporate environmental management, including the following:

- TNCs should recognize environmental management as among the highest corporate priorities and as a key to sustainable development.
- TNCs should be encouraged to establish worldwide corporate policies on sustainable development.
- TNCs should introduce policies and commitments to adopt standards of operation at least as stringent as those in the country of origin.
- TNCs should establish environmental management systems, including environmental auditing of production or distribution sites.

- TNCs should share their environmental management experiences with local authorities, national governments and international organizations.

Now, 10 years after the Rio Conference, it is appropriate to examine how TNCs are addressing the environmental management challenges of their activities in developing countries. Between 1998 and 2000, a team of researchers from the Copenhagen Business School, in collaboration with UNCTAD, examined the environmental practices of more than 160 affiliates of European companies with operations in China, India and Malaysia. This booklet highlights the key research findings, of this project. The findings of the project is also published in its entirety as a book[1].

It is hoped that this work will contribute to an understanding of the corporate response to the challenges posed in Rio.

[1] See, Michael W, Hansen (ed), (2002) ***Managing The Environment Across Borders:*** A Study of TNC Affiliates' Environmental Practices In China, Malaysia and India. Copenhagen: Samfundslitteratur, ISBN 87-593-0985-7

CHAPTER I

ENVIRONMENTAL MANAGEMENT ACROSS BORDERS

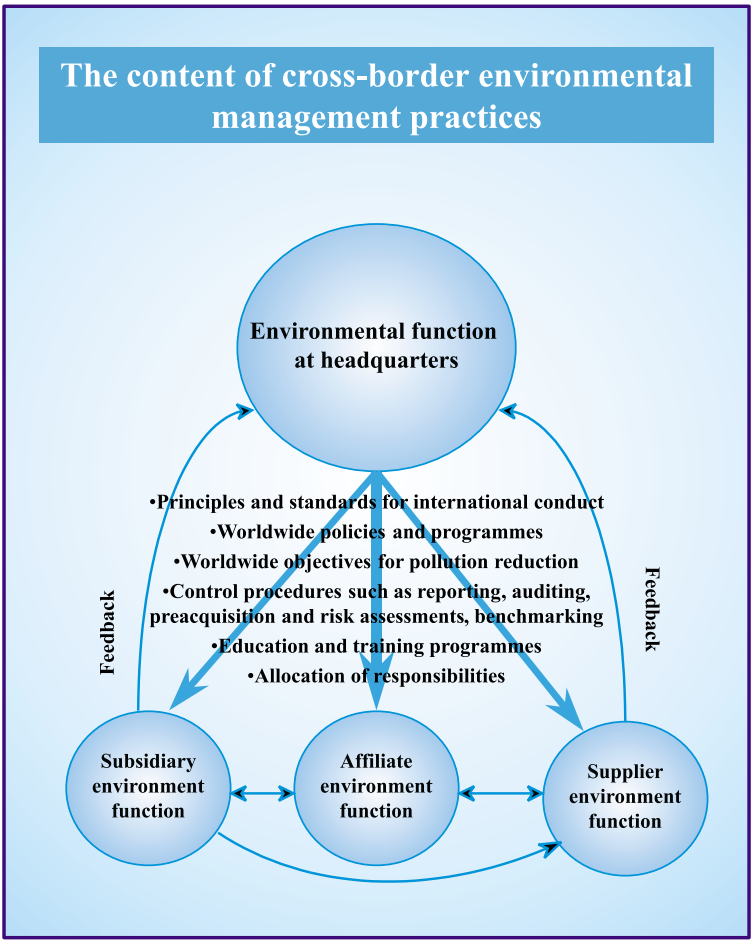
A. What Is Environmental Management?

Environmental management is broadly understood as being the objectives, standards, procedures and practices that a company establishes to manage environmental challenges.

Typically, an environmental management system consists of various objectives and standards related to environmental performance, procedures for control and enforcement, and a formal allocation of responsibilities among employees and functions. A company will sometimes prefer to have its environmental management system certified by an external party. Usually, such certification will take place according to one of the international environmental management standards (e.g. the BS 7750, the EMAS or the ISO 14000 series).

As firms internationalize through both equity and non-equity means, it becomes increasingly meaningless to confine the environmental management dimension to national boundaries. Thus, ***cross-border environmental management*** refers to that part of the environmental management system which deals with foreign operations. Such practices are the environmental bridge between headquarters and foreign affiliates.

TNCs with extensive cross-border environmental management procedures seem to be no less profitable or competitive than companies without such procedures. The top



10 companies in the "World Competitiveness" rankings all have elaborate environmental programs in place. It has also been found that TNCs adhering to high environmental standards in all economies, including emerging markets, have higher market values than their competitors.

1. Main features

Although cross-border practices are seldom standardized and formalized, the following five general features of cross-border environmental management practices have been identified.

First, such practices may include some general principles covering the environmental activities of the entire corporation. These overall principles are typically stated in the corporate mission or, as it is sometimes labeled, ***the environmental policy statement***. Such statements may set out overall targets and objectives for the conduct of foreign affiliates. The targets and objectives could, for instance, be that the company will comply with the regulations of host countries, that all affiliates will meet company standards or that the company strives to become an environmental leader in all locations.

Second, more ***specific policies and programs*** that are applicable throughout the corporation may accompany the general principles outlined in the policy statement. These policies and programs will characteristically exist in areas to which the company assigns particular importance, such as energy conservation, waste minimization or air pollution reduction.

Third, a cross-border environmental management system may consist of various procedures for ***monitoring*** and controlling whether the environmental conduct of foreign affiliates is in accordance with regulations and standards outlined by headquarters. These procedures can include pre-acquisition assessments, environmental reporting procedures or auditing procedures. In recent years, TNCs have increasingly

implemented computerized and company-wide environmental accounting and reporting databases. The databases enable headquarters to get an overview of the corporation's total impact on various types of pollution, to compare the performance of different units and to keep track – on a daily, weekly, monthly or yearly basis – of developments concerning environmental matters.

Fourth, the company may engage in ***training, education and information exchange*** programs, or activities aimed at providing environmental guidance and promoting a high level of awareness and competence at all levels of the corporation.

Fifth, a cross-border environmental management system is embedded in a formal organization, where responsibilities and functions are delineated and allocated between entities and persons.

2. Different types of management systems

Cross-border environmental management systems range from rudimentary to elaborate. Rudimentary systems include subsidiaries which are 100 per cent controlled by headquarters. More elaborate systems will include non-controlled affiliates and even suppliers and subcontractors.

TNCs manage their affiliates differently. In a ***decentralized*** system, affiliates are allowed to pursue a stand-alone strategy. There is generally an absence of cross-border environmental policies, programs and procedures. Environmental problems are seen as the responsibility of local managers and are to be solved solely at their discretion. There is often no liaison between headquarters and affiliates regarding environmental matters. However, this is an extreme position;

most TNCs have established a certain degree of cross-border environmental management.

The headquarters of most larger corporations seek to ensure that foreign affiliates comply with existing regulations and laws no matter where they operate. The management strategy behind this practice is to ***ensure international compliance***. The intent is to have all affiliates around the world take the necessary precautions to ensure that they operate in accordance with the laws and regulations of the host country. These measures will typically include pre-acquisition assessments, compliance auditing, and monitoring and reporting procedures. Since one of the main problems of environmental protection in many host countries is the lack of effective enforcement rather than the lack of environmental rules and regulations, a TNC's commitment to comply with all rules and regulations of the host country is important.

Some corporations strive for a perfect alignment of environmental policies, programs and procedures throughout the corporation. Typically, the environmental management system in the home country is used as the basis for the management framework of the entire corporation, and company standards and procedures are implemented regardless of local requirements. This type of set-up is ***centralized***. Evidently, these companies' internal standards must meet or exceed the standards of all major locations that the company operates in. Centralizing the environmental management function makes it possible to minimize risks, obtain economies –of scale and avoid costly retrofitting in case of changes in host country regulation. The environmental focal point for local management becomes the environment function at headquarters rather than the local regulatory authorities. In an environmental sense, the local

affiliate insulates itself from local regulatory demands and becomes a replica of home country operations.

A fourth way of organizing cross-border environmental management can be termed ***globally integrated***. Where the environmental governance system, in the case of a centralized organization, is highly hierarchical in that environmental management of affiliates is integrated vertically, the environmental governance system of TNCs pursuing a globally integrated strategy is integrated horizontally. Initiatives relating to new measures can come from any facility in the corporate network. Individual units are allowed a high level of discretion in adapting to local conditions; however, this must be done within the boundaries set by the principles and strategy of the corporation. While there are many examples of TNCs operating with integrated and harmonized global environmental strategies, this is not the typical TNC approach.

The cross border environmental organization can be classified on a continuum spanning from total independence to total integration of the affiliate in the headquarters' environmental management policies as shown in box 1.

3. Managing other entities

Environmental management procedures and practices can also relate to non-controlled partners and collaborators abroad. A distinction can be made between backward-oriented (supply chain management) and forward-oriented (product stewardship) management procedures.

Supply chain management is a typical tool employed by some of the largest TNCs to screen suppliers by asking them

Box 1. A typology of TNC cross-border environmental organization

	Decentralized environmental management	International compliance	Centralized environmental management	Globally integrated environmental management
Environmental management focus	Local adaptation	Host country legislation	Home country legislation/ company standards	Company standards/ international standards
Typical policy statement	None	"Meet and comply with all standards nationally and internationally."	"Employ the same standards and criteria worldwide."	"Strive to become global environmental leaders"; "acknowledges responsibilities for the global environment."
Worldwide environmental policies and programmes	None	None	Pollution prevention; waste minimization; energy conservation; safety zones in LDCs; toxic education programmes	Green R&D; climate change policies; biodiversity programmes; dialogue with external stakeholders
Cross-border environmental control procedures	None	Procedures to ensure compliance with regulations home and abroad: pre-acquisition assessments, regulatory compliance auditing, monitoring procedures	Procedures to ensure vertical integration: auditing according to company internal standards, reporting, green accounting, training programmes	Procedures and activities to ensure horizontal integration: information exchange, life cycle analysis, third-party auditing
Sectors	Industries with minor environmental risk; SME TNCs	Chemicals (pre-Bhopal); large, diversified companies	Chemicals (post-Bhopal)	Pharmaceuticals

to fill out a questionnaire in which they report on various environmental dimensions. In some instances on-site audits can take place, although these will rarely have the same intensity as auditing of subsidiaries. Subcontractors may also be screened, in particular if they offer environmentally sensitive services such as waste management. TNCs may set environmental standards for suppliers apart from those concerning product quality. TNCs may offer technical assistance with regarding environmental problems to affiliated companies in the network.

Product stewardship is tool that TNCs use to educate consumers and other users. In the case of transfer of hazardous products and technologies to developing host countries, there could be procedures for prior informed consent (PIC). Another possibility could be training and education programs to promote appropriate use of the product, such as training programs for the use of pesticides. Appropriate labelling may also be an essential element in TNC product steward programs, especially with regard to the handling of chemicals.

4. Determinants of environmental management practice

The drivers of TNC environmental management practices can be consolidated into four categories: regulatory forces, market forces, industry forces and company-specific forces.

Regulatory forces are the characteristics of a TNC's regulatory context – for instance, at the levels of host country, home country and international economic and environmental regulation. Survey results show that environmental management is driven primarily by regulation. In countries with a litigious climate, the risks of huge fines and penalties appear to encourage

corporate self-policing. However, it is unclear to what extent cross-border environmental management practices are also influenced by regulation. There are no or very few international and extraterritorial binding regulations requiring particular conduct of TNCs in host countries. While developing host country environmental standards may be approaching those of most developed home countries, deficiencies in enforcement and infrastructure in many developing countries may provide an incentive for businesses to ease environmental standards. In the longer run, however, foresighted companies will anticipate more stringent regulation and enforcement and implement state-of-the-art environmental systems to avoid costly retrofitting at a later stage.

Market forces are those characteristics of the market in which the TNC operates – for instance, the strength of green opinions among consumers, investors or customers – that may affect corporate environmental conduct. From a conventional economic perspective, one would expect market forces to encourage an environmental "race to the bottom" in the sense that the firms capable of operating with the lowest environmental costs would gain increasing market shares. But markets may also encourage environmental responsiveness in firms. While consumers may sometimes encourage environmental responsiveness in international operations, pressures from financial markets and markets controlled by major customers appear to be even more important. Moreover, the quality orientation of the market may encourage improved environmental performance because high environmental performance may be a vital ingredient in any market with a strong focus on quality and just-in-time delivery.

Industry forces are those characteristics of an industry

– such as the level of concentration, collaboration and competition in the industry – that may affect cross-border environmental practices. In concentrated industries, firms will be better positioned to offset environmental costs. Recent years have seen notable TNC involvement in the establishment of environmental industry associations and in the development of guidelines, codes of conduct and standards. This collaboration has, among other things, resulted in various initiatives aimed at improving TNC cross-border environmental management and performance.

Company-specific forces are those firm-specific characteristics – such as the firm's resources or history – that may influence how it manages the environment. A TNC will tend to follow familiar paths in foreign locations – for instance, by devising environmental management systems similar to those of its home country. The size of the TNC may influence cross-border environmental practice; however, a company's level of internationalization may be even more important (e.g. it may be difficult for a TNC to externalize environmental protection measures that are already internalized in the production process). The level of formal control over a given affiliate is likely to be a central factor affecting cross-border environmental practices; minority ownership will in most cases make such practices difficult to establish and implement.

B. Specific Survey Findings

To get an impression of the environmental management practices at TNC affiliates in Asia and to shed light on the relative importance of the key determinants, a survey of TNC environmental management practices was conducted in Malaysia, China and India between 1998 and 2000. The survey

included 163 TNC affiliates in those countries and was based on a questionnaire consisting of approximately 50 questions which was mailed to more than 750 TNC affiliates. The respondents were mainly affiliates of European TNCs, affiliates of very large TNCs and affiliates in industries with potential environmental problems, mostly the chemical industry. Responses were obtained partly by mail, partly through phone interviews and partly through on-site interviews. Although generalizations based mainly on corporate self-reporting require great caution, the survey nevertheless provides a preliminary impression of the environmental management practices of TNCs in developing countries. Following are three major sets of findings.

C. Environmental Management by Affiliates

More than 70 per cent of affiliates included in the survey reported that they had an environmental policy statements indicating a commitment to environmental protection. Furthermore, many affiliates set objectives in the areas of conservation of energy, water, wastewater disposal, air pollution and compliance with local regulations. In some cases, a plan of action is stipulated. In most cases, affiliates reported having appointed officers responsible for environment, health and safety (EH&S), established environmental procedures and instituted environmental training programmes for employees.

The ISO 14000 series of environmental management standards is increasingly functioning as a benchmark for corporate improvement. According to the survey, only very few TNC affiliates (15 per cent) had actually been certified at the time of the survey. This number is low considering that it was probably the best-performing affiliates that responded to the

questionnaire. However, approximately half of the TNCs are considering ISO 14000 certification, an indication that a surge in certification may be underway in Asia.

Supply chain management and outreach activities to local communities are important because a corporation with linkages can determine whether an affiliate is just an isolated "island of environmental excellence" or contributes to the building of domestic environmental management capabilities. TNCs could assist in building environmental capacity in developing countries in at least four ways;

- By collaborating with local suppliers and subcontractors on environmental upgrading;
- By contributing to the formulation of industry- and technology-specific environmental standards;
- By building environmental infrastructures; and
- By supporting local environmental NGOs.

In the three countries examined, environmental supply chain management and outreach activities to local communities appear to be in the infant stage. Only a few examples of affiliates providing technical assistance to suppliers, vendors and subcontractors in the environmental field were identified, and the general impression from all three countries is that outreach to local communities is limited. Fewer than 10 per cent of the respondents reported that they supported local authorities in setting standards and developing infrastructure in support of local NGOs.

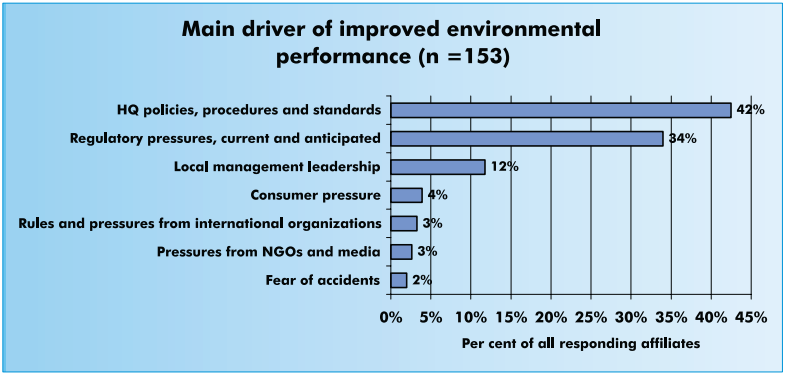
Institutional factors, such as the local regulatory regime or the internal corporate governance system, appear to exert a much stronger influence on affiliate environmental practice than

do factors associated with local and global markets or NGO and media pressures. In fact, 42 per cent of respondents cited headquarters involvement as the primary motivating factor behind environmental improvements, followed by regulation (34 per cent), market pressures (4 per cent) and civil society, including NGOs and media (3 per cent).

The influence of headquarters

It thus appears that headquarters plays a pivotal role in shaping the environmental management activities of the surveyed Asian affiliates. It was observed that corporate management systems in the home country frequently formed the basis for the management framework of the entire corporation. In these cases, headquarters aligns the environmental management systems with its corporate priorities, inter alia through cross-border standard and target setting or by devising extensive cross-border monitoring and control procedures.

In some TNCs a uniform standard (corporate standard, international standard or home country standard) is applied in all subsidiaries regardless of the location and the local



environmental regulations, and a centralized environmental management strategy or global integrated strategy is adopted. However, most of the surveyed TNCs adopted a different strategy focusing more on local standards. Thus, in most affiliates, environmental management systems are adapted to local conditions. Many TNCs regularly audit the environmental performance of affiliates. This way local managers are reminded of the status of their company's performance compared to specific corporate standards. Managers can also compare the performance of their unit with other units in the corporate network. Around 40 per cent of the responding TNCs reported such auditing procedures.

In general, the enforcement of headquarters environmental policies depends on elements such as ownership, product features and local environmental infrastructure.

Consistent with the reported importance of headquarters, it was found that the main impetus for companies to acquire environmental certification came from headquarters policies, procedures and practices. In several cases, headquarters asked their affiliates to follow European standards and encouraged them to become ISO14001 certified.

However, while in many instances affiliate practices appeared to be a function of headquarters influences, some environmental management systems and technologies at affiliates were found to be highly advanced and in fact were being used as benchmarks throughout the corporation. It seems, therefore, that the environmental management relationship between headquarters and affiliates is not necessarily one-way. Evolution is facilitated by information and communication technology which may be undermining hierarchical management

systems and encouraging local initiative. In this way environmental innovation and initiative can emerge from any part of the corporate network.

D. Regulatory Pressure

Previously, lax regulation and enforcement may have pulled affiliate environmental management in the direction of laxity. However, it seems that currently, additional and new environmental regulation is converging with internal corporate policies and programmes in support of improved-environmental management and performance in many TNC affiliates. Thus, a third of the respondents reported regulatory pressures – current and anticipated – as the main motivating factor behind environmental improvements.

According to the responses of managers of local affiliates, regulatory pressures varied significantly in the three countries: while regulation appeared to place the strongest pressure on investors in China, this was less the case in India and Malaysia.

Half of the affiliates felt that, being foreign, they were subject to stricter enforcement than comparable local companies. One explanation is that host countries are adopting stricter regulations or beginning to implement their regulatory requirements with regard to TNCs and foreign direct investment (FDI). China, for example, has stated that it cannot afford to continue with the "pollute first and control later" approach and has drawn up specific

The survey suggests that the main environmental protection problem in many host countries is a lack of environmental infrastructures and effective enforcement rather than a lack of environmental rules and regulations.

administrative procedures to screen and monitor the environmental and health impacts of FDI. Another possible explanation is that because TNCs are large businesses, they are automatically and therefore disproportionately affected by environmental impact assessment procedures and public disclosure requirements.

It is frequently debated whether perceived lax environmental regulation in developing countries may lure TNCs to invest there. While the issue was not explicitly addressed in the survey, the results shed some light on the issue: Overall, the dominant motives behind investment varied significantly between the three countries. Whereas more than 50 per cent of the affiliates in Malaysia were efficiency-seeking, citing cost advantages such as low labor costs or tax and other financial incentives as the primary motive to invest, this was true of just 10 per cent of those operating in India and China. The overwhelming majority of investors in China and India are market seeking.

Only one company reported being influenced by environmental cost savings in its choice of location within one of the host countries. This observation raises the question of whether state or regional authorities engage in a contest to attract multinational companies and boost economic development. This assumption is not vindicated by actual inflows of FDI to various states and jurisdictions in India and China. In fact, the states and regions with the best track records of environmental management and enforcement of legislation attract the highest levels of FDI.

States with the best track records of environmental management and enforcement of legislation attract the highest levels of FDI.

The costs of environmental mitigation do not

significantly affect corporate investment strategies because other factors are more important, such as:

- Market size;
- Labour and infrastructure costs; and
- The costs of retroffiting when regulation is strengthened.

E. Market Forces

In the three surveyed countries, green consumerism is still very weak, particularly in the household market segment, and very few household customers are actually prepared to pay an environmental premium. Thus, the general impression is that the local market as such does not appear to be a dynamic factor in promoting and strengthening environmental management among TNC affiliates. This is supported by the fact that only 6 per cent of respondents cited consumer pressure as the main driving force behind environmental improvements.

With regard to global consumer preferences, previous research has shown that to access the European market, where environmental consciousness is relatively strong, firms must comply with European product standards and that this has prompted the introduction of better environmental practices by TNCs. However, when the local market and export-oriented affiliates were compared, there was little evidence to indicate that global market pressures were a strong factor influencing affiliates' environmental management practices; in fact, market-seeking affiliates reported more environmental management practices than did efficiency-seeking investors. Moreover, market-seeking investors also reported better performance than did resource- and efficiency-seeking investors.

One of the more interesting findings with regard to market

The three main drivers of environmental management are internal company factors, home and host country regulation, and market and industry factors.

orientation is that environmental performance and quality orientation are related. Among those TNCs having formalized environmental management systems in place, most had already made equivalent efforts in terms of quality management, such as BS 5550 or ISO 9000 certification. It thus appears that a culture of quality trickles down into environmental awareness. There are indications that the culture of quality was driven basically by product orientation, as this rather directly affected market performance.

pared to acquisitions of existing facilities, as the most modern and, there-

CHAPTER II

COUNTRY CASE STUDIES

A. Malaysia

The findings in Malaysia are grouped according to the drivers of TNC environmental management practices in the following order: environmental management practice, specifically the presence of an environmental policy; environmental standards; regulatory factors; the influence of headquarters and market and industry factors.

The survey of 59 TNC affiliates targeted the electrical and electronics, textiles and chemical industries. Half of the companies use Malaysia as an export platform. Many were established as greenfield investments, and most have 100 per cent foreign ownership. Interviews were carried out with employees of selected TNCs both in home and host countries.

Fifty-six per cent of the affiliates surveyed have an environmental policy. Twenty-four out of the 59 companies had their environmental policy formulated by headquarters. Despite the centralization of overall policy-making, the environmental policy is adapted to Malaysian legal requirements and to plant- and site-specific needs. This variance in the influence of headquarters on policy formulation reflects a degree of affiliate autonomy.

All companies in the survey reported that they at least met the local minimum legislative compliance requirements. Forty per cent maintained that their environmental performance was above the average local standards, and 15 per cent claimed that their performance was similar to parent-country standards. Managers

in the chemical industry were significantly more inclined to report performance equal to home-country standards than were managers in other industries.

Thirty per cent of respondents cited current and future regulatory pressure was cited as the primary motivating factor behind environmental improvements.

Seventy-five per cent of the Malaysian affiliates subscribe to a quality standard suggesting that the ISO 9001 and ISO 9002 series have gained a great deal of popularity in Malaysia. Exporters and suppliers to TNCs consider having one or the other of these standards a necessity in order to be seen as a quality-conscious and quality-minded producer. According to figures from SIRIM (the standard board of Malaysia), 17,000 Malaysian companies have one of these certificates.

Thirty-one per cent of the respondent companies stated that their company group followed an explicit policy of adopting the same standards regardless of location (i.e. having uniform environmental standards). Companies may adopt uniform standards that are independent of, and often go beyond, local regulatory standards because this may contribute to furthering economic and organizational efficiency for the TNC group of companies as a whole.

Thirty-two per cent of the affiliates reported setting environmental minimum standards for their suppliers. Again, interviews suggested that these requirements are predominantly related to securing product quality rather than to processes. However, there are exceptions. Sony Electronics, a large Japanese audio electronics manufacturer, has developed a pilot program for ISO 14001 certification of small and medium-sized enterprise (SME) suppliers and subcontractors. The pilot

program is designed to involve suppliers and subcontractors in environmental management.

Many companies point to their affiliation with a parent company or their position in a TNC as the main determinant of environmental performance. Forty-four per cent say that headquarters policies, procedures and standards are the main factor motivating them to improve their environmental performance.

Twenty-seven per cent of the affiliates stated that their headquarters set targets for environmental improvement in such areas as solid waste reduction, energy consumption, effluents and occupational safety (e.g. reduction in the occurrence of industrial accidents and lost time because of injuries and fire).

Leadership at the local management level is crucial for achieving environmental improvements.

Fewer than 10 per cent of the affiliates reported that consumer pressures were the primary motivating factor behind environmental improvements at the affiliate. There is little to suggest that the export-oriented TNCs have better environmental management practices than companies oriented towards the domestic market. Thus, it appears that pressure from international consumers is not a strong factor for affiliates, although markets may of course exert a strong influence through headquarters environmental policies and programmes.

The only significant exception to the overall conclusion that market factors are not among the primary motivating factors behind environmental improvements is with regard to ISO 14000 certification, with a relatively large proportion of participants reporting that pressures from industrial customers had motivated certification.

The practice of environmental screening of subcontractors' and suppliers' products is more common (26 per cent) than the practice of screening their processes (19 per cent). From interviews, it appears that screening is undertaken mainly to ensure the quality of suppliers' products.

Fifty-one per cent of respondents reported subcontracting of waste handling. The outsourcing of waste management is to some degree a matter of letting others outside the organization handle one's environmental problems. The interviews gave the impression that the TNCs did not always know how their waste was handled. The foreign subsidiaries were typically content with knowing that the waste management companies were certified to handle industrial waste.

There are, however, companies where waste management is considered critical to the public image. A large electronics manufacturer reported that it had reserved a special place within the plant for initial recycling of waste. Companies are subcontracted to work on the premises.

Other driving forces behind the program are the cost-effectiveness of improved waste management, materials handling, reduced energy use and better transport management. The program suggests that the potential role of big foreign TNCs as environmental mentors is far from exhausted in Malaysia.

FDI plays an important role in Malaysia. In the 1970s and 1980s the Government aggressively and successfully sought to attract investment in manufacturing to create jobs and stimulate growth. Environmental standards were not enforced in the pro-capital environment. However, the consequent rapid growth placed great stress on the environment, and regulation improved in the 1990s.

Interviews with central environment agencies, organizations and resource persons in Malaysia suggest that TNCs are not the major cause of environmental problems in Malaysia. According to CETEC (an important environmental NGO), "TNCs generally enjoy a good reputation." Rather, it is the large number of domestic SMEs that are the prime concern, many of them backyard industries that operate in the so-called informal sector and try to avoid government regulation.

B. India

The findings in India are grouped in the following order of topics: the presence of an environmental policy; environmental standards; regulatory factors; headquarters influence and market and industry factors; the supply chain; outreach activities and ownership.

The survey focused on FDI projects in New Delhi and particularly Maharashtra, as these states remain the major recipients of FDI. Between August 1991 and January 1997, a total of 458 approvals with a value representing 17.1 per cent of total approved FDI were located in New Delhi. The state of Maharashtra is the largest receiver of manufacturing FDI projects in India. A significant number of FDI projects are also located in Karnataka (computer firms like IBM), Tamil Nadu (automobile manufactures like Ford) and Gujarat (chemicals firms). Concerning the latter, almost all the projects located in Gujarat are co-ordinated from national headquarters in Mumbai, the capital of Maharashtra, and most of these TNCs still operate older chemical plants in Maharashtra.

In terms of size, the majority (53 per cent) of the TNCs studied are large firms with more than 500 employees. Only 18

per cent of the benchmarked TNCs have fewer than 250 employees.

Most of the surveyed TNCs have established environmental policies; 83 per cent of all affiliates have an environmental policy. Thirty-eight affiliates reported that headquarters formulated their environmental policy. However, there is still work to be done when it comes to publicizing such statements. One managing director said, "We have been complying with the same policy objectives for many years, but it has been done in an informal manner." During 1997, explicit efforts were made to set out both the environmental policy and objectives to achieve better and more predictable environmental compliance. Interestingly, the abovementioned managing director did not refer to these efforts as instrumental in improving local environmental performance; rather, these efforts were carried out to meet benchmarking and monitoring targets.

A total of 19 areas where TNCs had set specific standards were identified. All these initiatives reflect a pattern of co-ordination which can be considered an environmental management system. This system consists of policy, standards, procedures, control, communication and reporting systems ensuring that actual practice is promoted in accordance with policy and standards.

The survey examined to what extent the environmental management system had been verified by a certification agency. Of the 53 TNCs, 19 per cent had their environmental management system certified in accordance with the ISO 14000 series. Thirty-six per cent of the firms are considering applying for certification.

Another category of mandatory TNC standards set by headquarters is related to environmental impact assessments (EIA). At one particular plant, specific environmental assessments must take into account, but need not be limited to, solid, liquid and gaseous wastes produced. Measures for their disposal are specified in the waste management guidelines. Further, assessments must also take into account any land contamination issues and/or any unplanned releases of materials or energy.

Thirty-eight per cent of respondents cited lack of enforcement of environmental rules, weak or non-existent regulation or absent infrastructures as the primary barrier to improved environmental performance, which means that local environmental administration affects affiliate performance.

Historically, Indian authorities have imposed strict regulatory requirements on TNC ownership, preventing many industries from holding majority ownership. Nevertheless, only 12 per cent of the benchmarked TNCs currently hold minority equity shares in the affiliated Indian units. This phenomenon is directly related to radical changes in economic policies that took place in the early 1990s. TNCs responded quickly, not only by increasing FDI inflows to India but also by increasing ownership shares in existing projects. Currently, half of the TNCs have a slight majority share of 50–60 per cent. Still, only 22 per cent have equity shares of 60–99 per cent. Only 16 per cent have wholly owned subsidiaries; however, 50 per cent of those established after 1993 do.

Around 50 per cent of the affiliates report that headquarters sets specific environmental standards for the affiliate. According to specified guidelines developed by one

of the TNCs, all units must have arrangements for proper management and disposal of wastes and for the maintenance of records of all solid, liquid and gaseous wastes. To comply with this requirement, more specific guidelines are developed. It is acceptable for the unit to comply with the standards by other means; however, in cases of local deviations below mandatory corporate standards, guidelines become compulsory.

Seventy-four per cent of affiliates have systems where corporate headquarters perform environmental auditing of Indian affiliated units on a regular basis. A similar number have formalized environmental reporting systems between headquarters and affiliates.

The dominant motive driving the benchmarked TNCs to locate FDI projects in India is the perceived commercial opportunities of potential and actual Indian markets; 88 per cent cited this as the primary investment motive. None of the firms said it had chosen to locate in India to get access to raw materials, and only 12 per cent reported that the essential investment motive was to reduce costs and increase efficiency. However, it should also be noted that such efficiency-seeking investment has risen sharply in recent years.

Some affiliates stated that weak patent protection was an impediment to transferring cleaner technologies. In India, intellectual property issues had deterred several foreign investors from transferring their top-of-the-line, and presumably cleaner, technologies. However, India has embarked on ambitious plans to liberalize its market (as, incidentally, has China). Many restrictions on FDI have been removed and import restrictions on machinery, materials and intermediate inputs have been gradually abolished.

In one case, a TNC operated with two completely different environmental auditing procedures depending on whether the Indian activities were organized under regional or global business units. The regional activities were subject to audits co-ordinated by local corporate headquarters located in New Delhi, while the regional office in Singapore audited those activities organized by the global business group. When the environmental manager was asked how this functioned in practice, he admitted that he felt "informed" about rather than "involved" in those activities controlled by the global business divisions. His primary orientation was toward the regional activities.

Environmental control of suppliers appeared to be more developed, especially for suppliers providing raw materials, equipment and services. Thirty-eight per cent of affiliates reported efforts to screen the environmental performance of suppliers or subcontractors. According to specified guidelines developed by one TNC, these externally oriented activities must be monitored to ensure that environmental requirements set in the corporate standards are met. However, only rarely did TNCs take the effort to conduct on-site inspections of suppliers.

The survey found that a designated environmental, safety and health (ES&H) officer was appointed in 74 per cent of the affiliates. Seventy-seven per cent of the TNCs have publicized policy statements indicating a commitment to promote environmental protection and natural resource conservation.

A quarter of the TNCs reported having continuous dialogue with local state pollution control boards, mainly to set standards, and 13 per cent reported that they were assisting local authorities in environmental infrastructure development. The relatively limited extent of involvement in local environmental

affairs is also evident with respect to civic groups and non-governmental organizations (NGOs).

Only 17 per cent of participants stated that they co-operate actively with local environmental NGOs. Even among these, the collaboration was often limited to areas such as financial support of local welfare projects, help with safety measures, technical help to a local fire brigade and provision of general information on environmental issues to adjacent communities. Very few appeared to establish any active dialogue with local or national environmental NGOs.

All the TNCs acknowledge that there is limited dialogue with environmental NGOs, and that the general dialogue with civil society is mostly related to community groups and other stakeholders living in the vicinity of the plant. Issues of concern are less related to the environment than to financial support of primary education and vocational training, fire safety measures, and health information.

Another factor influencing environmental management procedures is ownership control vis-à-vis Indian partners. Even if almost all TNCs included in the survey are majority-controlled foreign entities, there are still 12 per cent having a minority equity share. For those, environmental procedures appear not to be integrated on a cross-border scale to the same extent as in TNCs having majority interests.

C. China

The findings in China are grouped under the topics of environmental standards; regulatory factors; the influence of headquarters and market and industry factors (or company-specific factors); the supply chain and ownership.

34 per cent of the companies are in the chemical industry and 12 per cent in the pharmaceutical industry. These companies are frequently involved in the manufacturing or handling of hazardous chemical compounds such as alkali, acids and inorganic pigments representing significant environmental hazards if released untreated. For the other manufacturing firms in the sample, the electroplating, incision, heating and washing processes may have harmful environmental impacts.

80 per cent of the TNC affiliates have a designated EH&S officer and 74 per cent have a health and safety committee, which indicates that some institutional steps have been taken to manage the environment. 18 per cent have taken the further step of having their environmental management system certified according to an environmental management standard. ISO 14001 is increasingly functioning as a benchmark for corporate collaboration. Two-thirds of the 51 affiliates in China had are considering becoming certified according to an environmental management standard.

None of the sample firms cited differences in environmental controls or standards between China and European countries as a factor motivating investment. Only a paint factory indicated that it had originally considered locating its plant in one region but chose another region instead because of the stricter environmental regulation. This implies that environmental control may influence the choice of investment location within China.

29 per cent of firms cited current environmental regulation as the primary motivating factor behind environmental improvements, and 20 per cent cited anticipated future regulation. In one case, it was reported that the company

was forced to upgrade its environmental performance to meet European standards. Namely, in the near future a European standard will be adopted in some Chinese cities to measure automobile polution. To maintain market access, the company plans to adjust its production process and inputs to conform to future standards.

Often the standards and targets are further reinforced by more specific guidelines formulated by headquarters. For example, an inventory of hazardous materials must be compiled, emissions must be measured and the results of the measurements must be documented. The emissions must be ecologically and toxicologically analyzed, and, if necessary, programs for improvement must be designed and applied.

The survey suggests that headquarters environmental management systems have a significant impact on subsidiaries in China. First, the affiliates' environmental policy is usually duplicated from headquarters's environmental policy statement. Of the surveyed firms, 84 per cent have their own environmental policy. Of those, 70 per cent reported that headquarters formulated the environmental policy.

Headquarters pressures followed by regulatory requirements are the most significant drivers of environmental improvements at affiliates. However, in China, current and anticipated government regulation are more frequently cited than the influence of headquarters. The relatively strong influence of regulatory pressures reflects China's significant strengthening of environmental regulation and its enforcement in recent years. Two-thirds of the Chinese affiliates, compared to 50 per cent of all respondents, reported that they were subject to significantly greater scrutiny by local environmental authorities than were comparable local firms.

In one case, headquarters has established an environmental network that sets out overall principles and environmental objectives for affiliates in China. The targets are the same for every affiliate and are used as indicators to evaluate affiliates' environmental performance. The purpose of the evaluation is to encourage managers to improve environmental performance, rather than to perform a policing function. The evaluation system and the environmental network are not meant to force employees to attain objectives, but rather to encourage employees to improve their performance.

Twenty-two per cent of the headquarters set specific environmental standards for their affiliates in China. According to one firm, 15 corporate EH&S standards were defined. In addition, 30 per cent set certain environmental targets for their affiliates, mainly in the areas of waste water reduction and resources conservation. For example, one company was required to reduce its wastewater by 8 per cent (relative to 1998) in 1999.

By far the majority of those questioned (84 per cent) cited market access as the primary investment motive. More than 10 per cent reported efficiency seeking, and three firms (6 per cent) reported access to raw materials (resource seeking) as the primary investment motive. The decision to invest is usually based on more than one motive. Thus, 68 per cent cited more than one motive. However, efficiency seeking was mentioned by 51 per cent.

Long-lasting relationships between affiliates and local suppliers are established through various forms of supply-chain quality management. 50 per cent of the affiliates reported conducting environmental screening of suppliers' products or processes. 57 per cent set environmental minimum requirements

for their suppliers and contractors. A fifth of the affiliates implied that they were providing environmental technical assistance to the suppliers/subcontractors.

Two-thirds of the affiliates were greenfield investments. All projects with 100 per cent foreign equity were greenfield projects. From an environmental perspective, it is probable that greenfield investment will face relatively minor environmental challenges compared to acquisitions of existing facilities, as the most modern and, therefore, environmentally friendly production technology is likely to be (but not necessarily) transferred to such plants. In comparison, acquisitions of existing facilities may entail a long and arduous process of bringing the facility up to acceptable environmental standards through training, investment in pollution abatement equipment, and retrofitting of the production process.

85 per cent of the affiliates surveyed are majority owned, and 29 per cent are wholly foreign-owned firms. The ownership configuration of the affiliate may also have implications for environmental management practice. TNCs tend to increase their equity shares when the market is promising, and there is a tendency suggesting that foreign equity increases over time.