

Crossborder Environmental Management in Danish Transnational Corporations

A Survey of Cross Border Environmental Management Practices in 153 Danish Transnational Corporations

Hansen, Michael W.

Document Version
Final published version

Publication date:
1997

License
CC BY-NC-ND

Citation for published version (APA):
Hansen, M. W. (1997). *Crossborder Environmental Management in Danish Transnational Corporations: A Survey of Cross Border Environmental Management Practices in 153 Danish Transnational Corporations*. Department of Intercultural Communication and Management, Copenhagen Business School. Working Paper / Intercultural Communication and Management No. 24

[Link to publication in CBS Research Portal](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

If you believe that this document breaches copyright please contact us (research.lib@cbs.dk) providing details, and we will remove access to the work immediately and investigate your claim.

Download date: 26. Jan. 2022



Crossborder Environmental Management in Danish Transnational Corporations

**A survey of cross border environmental management
practices in 153 Danish transnational corporations**

By Michael W. Hansen

Copenhagen Business School

Table of contents

I. INTRODUCTION	1
A. THE IMPORTANCE OF CROSS BORDER ENVIRONMENTAL MANAGEMENT	2
B. THE STATE OF RESEARCH ON CROSS BORDER ENVIRONMENTAL MANAGEMENT	3
C. THE EMERGING ECONOMY AFFILIATE SURVEY	3
II. MOTIVES BEHIND DANISH FOREIGN DIRECT INVESTMENT IN LESS DEVELOPED COUNTRIES AND EASTERN EUROPE	4
A. THE SCOPE AND CONTENT OF DANISH INVESTMENT IN EMERGING ECONOMIES.....	4
B. THE POLLUTION PROFILE OF DANISH FOREIGN DIRECT INVESTMENT IN EMERGING ECONOMIES	5
1. <i>The political fear of industrial flight</i>	5
2. <i>Are environmental cost a motive behind Danish investment projects in emerging economies?</i>	6
C. SUMMARY	8
III. THE STATE OF CROSS BORDER ENVIRONMENTAL MANAGEMENT IN DANISH INDUSTRY	9
A. ENVIRONMENTAL STANDARDS FOR FOREIGN AFFILIATES.....	9
1. <i>Studies of internal standard setting in TNCs</i>	10
2. <i>Environmental standards for foreign affiliates set by Danish TNCs</i>	10
i. Uniform environmental standards	11
ii. Other standards than uniform standards.....	12
3. <i>Summary</i>	12
B. CROSS BORDER ENVIRONMENTAL CONTROLS	13
1. <i>Cross border environmental controls and reporting in Danish TNCs</i>	13
2. <i>On site environmental auditing and reporting procedures</i>	14
3. <i>Pre-acquisition assessments</i>	15
4. <i>Training and information exchange</i>	16
5. <i>Summary</i>	16
C. ENVIRONMENTAL SCREENING OF SUPPLIERS AND SUBCONTRACTORS	17
1. <i>Companies screening the environmental conduct of suppliers and subcontractors</i>	18
2. <i>Companies transmitting environmental standards</i>	20
3. <i>Companies subject to TNC screening</i>	21
4. <i>Summary</i>	21
IV. DRIVING AND IMPEDING FORCES OF CROSS BORDER ENVIRONMENTAL MANAGEMENT	22
A. DRIVERS OF CROSS BORDER ENVIRONMENTAL MANAGEMENT	22
1. <i>A sense of moral obligation</i>	22
2. <i>Building good relations with host country authorities</i>	23
3. <i>Anticipating future regulations</i>	23
4. <i>Technology bundling</i>	24
5. <i>Economies of scale</i>	25
6. <i>Precautionary behavior</i>	26
7. <i>Pressures from co-investors</i>	27

8. <i>Market strategy</i>	28
9. <i>Summary</i>	30
B. BARRIERS TO CROSS BORDER ENVIRONMENTAL MANAGEMENT	30
1. <i>Inadequate environmental regulations</i>	30
Eastern Europe	30
Asia	31
Africa	32
2. <i>Lack of infrastructure</i>	32
3. <i>Lack of trained personnel</i>	32
4. <i>Difficulties associated with business arrangements</i>	33
5. <i>Summary</i>	33
V. CONCLUSION	34
ANNEX I: METHODOLOGY OF THE STUDY OF CROSS BORDER ENVIRONMENTAL MANAGEMENT IN DANISH TNCS	39
ANNEX II: ENVIRONMENTAL MANAGEMENT AT DANISH PRODUCTION FACILITIES	46
ANNEX III: ANNEX TABLES	51
LITERATURE	54

Cross Border Environmental Management in Danish Transnational Corporations

A survey of cross border environmental management practices in 153 Danish transnational corporations

By Michael W. Hansen

Abstract: In a global economy, the realm of the firm increasingly reaches across borders and with that, its environmental responsibilities. Therefore, it becomes increasingly pertinent to examine how firms manage the environment across borders. This paper presents the results of the first major survey of cross border environmental management in Danish transnational corporations (TNCs). Based on interviews with executives at 153 Danish TNCs, the paper examines to what extent and how Danish companies manage environmental performance at production facilities in less developed countries and Eastern Europe. The survey suggests that cross border environmental management in Danish TNCs is rather embryonic compared to that of other OECD countries; most Danish companies have no or highly rudimentary environmental liaison with foreign affiliates, and only around 15% of Danish TNCs have begun to formalize environmental management across borders. The paper seeks to explain, why cross border environmental management in Danish industry still is in its infancy. Finally, the interviews with corporate managers provide evidence on the driving as well as impeding forces of cross border environmental management.

I. Introduction

Internationally and especially in Denmark, Denmark is considered one of the leading countries in regard to environmental protection. And there is no doubt that significant progress has been made since the first environmental laws were adopted in the early seventies, more so in regard to pollution from industrial production and municipalities, less so in regard to agricultural production (Hansen and Skou-Andersen, 1991). Danish industry pride it self of having some of the worlds leading producers of environmental products and services (Kampmann, 1991), and numerous programs to facilitate cleaner production have been executed jointly between industry and the environmental authorities¹. However,

¹ For instance programmes to facilitate the adoption of cleaner production methods and technologies, programmes to involve employees in the development of cleaner production methods; or programmes to facilitate co-operation among firms on the development of cleaner production methods.

while Danish industry may be at the forefront in regard to environmental protection at production facilities in Denmark, very little is known of the conduct of Danish companies involved in international production. It is conceivable that Danish firms are environmentally responsible at Danish production facilities, while at the same time disregarding environmental dimensions at foreign subsidiaries. This is what in the literature is referred to as environmental 'double standards'². It is even conceivable that Danish companies relocate productions that face high pollution abatement cost in Denmark to countries with more lenient environmental standards - typically the emerging economies of Eastern Europe and less developed countries (LDCs) - in order to escape those cost. This phenomena is in the literature referred to as 'industrial flight' to 'pollution havens'³.

This essay will examine how Danish companies handle the environmental aspects of international production, especially production located in the emerging economies of less developed countries and Eastern Europe. In particular, the survey will examine in detail the environmental management systems and procedures that Danish companies have established to handle environmental problems at emerging economy subsidiaries. This transnational aspect of environmental management will be labeled 'cross border environmental management'. Cross border environmental management is defined as the management procedures, organizations and practices instituted by corporate headquarters to ensure the quality of environmental work at foreign affiliates.

a. The importance of cross border environmental management

There are several reasons, why it is important to examine cross border environmental management. First, there are salient moral values at stake. Most people will intuitively find it morally inappropriate if a company apply one set of Environment, Health and Safety (EH&S) criteria at production facilities in OECD countries and another set of inferior standards at facilities in emerging economies. Such double standards will for most people imply a morally un-acceptable degradation of the value of human lives and environmental goods in emerging economies. Second, the state of the environment in emerging economies will be significantly affected by the scope and content of cross border environmental management. If TNCs generally ignore environmental conditions in emerging economies it could have serious implications for environmental conditions in sectors and regions where foreign firms play a large role. Third, as TNCs possess maybe 90% of all technology patents worldwide, including patents for technologies essential to an environmentally balanced industrialization, it is extremely important to examine forces such as cross border environmental management, that can make TNC technologies and know how available to emerging economies.

² The term 'double standard' was originally coined by the US chemist Barry Castleman in a report to the US Congress, and refers to the alleged practice of US firms of operating with high EH&S standards in the US and low EH&S standards in LDCs (Castleman, 1985).

³ This phenomena of relocation of polluting productions from countries to high pollution abatement costs to countries with low pollution abatement costs was coined 'industrial flight' to 'pollution havens' by Geoffrey Leonard (Leonard, 1988).

Finally, these three arguments for a thorough examination of cross border environmental management are accentuated by the fact that TNCs play an increasingly important role in economic development. This is indicated by the surge in foreign direct investment (FDI) by TNCs in recent years; whereas FDI to emerging economies in the 1980s consisted of around 15% of total FDI, these countries are now receiving more than 1/3 of global TNC investment equaling \$100 Billion a year (UNCTAD, 1996).

b. The state of research on cross border environmental management

Several international studies have illuminated the environmental aspects of international production. From a macro economic perspective, it has been examined whether OECD country industries are fleeing OECD countries in order to escape environmental control costs⁴, and from a micro perspective it has been examined how TNCs organize environmental controls across borders⁵. However, no Danish studies of these issues currently exist⁶. There is, in other words, a pertinent need for a closer examination of the cross border aspects of environmental management in Danish TNCs. This essay will examine these aspects by focusing on cross border environmental management practices in Danish TNCs, cross border environmental management being the principle means by which headquarters of a TNC ensures environmental quality at foreign production facilities.

c. The Emerging Economy Affiliate Survey

In order to get an impression of cross border environmental management in Danish TNCs, a survey of environmental management practices of Danish companies with affiliates in the emerging economies of LDCs and Eastern Europe was undertaken. Between April 1995 and December 1995 interviews with environmental managers or chief executives in 153 Danish TNCs with mainly manufacturing or extractives operations in non-OECD countries were conducted⁷. Each interview consisted of standardized questions as well as open ended questions. The responses to the standardized questions were coded and entered into a database containing financial information on the firms. This database is labeled the 1995 Emerging Economy Affiliate Survey (the EEAS) database. In spite of methodological problems encountered⁸, it is assessed that the EEAS provides a comprehensive and fairly accurate picture of the current state of cross border environmental

⁴ See Jaffe et al, 1995, Pearson, 1985, Knutsen, 1994, or Dean, 1992 for reviews of this research.

⁵ See UNCTAD, 1993, Rappaport et al, 1991, Deloitte-Touche, 1990, ILO, 1984, ESCAP/UNCTC, 1988 for studies of the internal organization of environmental work in TNCs across borders.

⁶ Two studies of environmental management in Danish industry are Madsen and Ulhøi's 1995 study of environmental management in 228 companies and Price Waterhouse's 1993 study of environmental management in 150 companies. Neither of these studies looked at issues related to foreign production facilities.

⁷ I am grateful to Lars Vering, Pia Nielsen and Johanne Gabel for assistance to this survey.

⁸ See Annex I for a detailed account of these problems.

management in Danish manufacturing TNCs. In the following sections, the results of the survey in regard to cross border environmental management in Danish TNCs will be presented⁹.

II. Motives behind Danish foreign direct investment in less developed countries and Eastern Europe

Before embarking on an assessment of cross border environmental management in Danish TNCs, a brief portrait of Danish investment projects in Eastern Europe and less developed countries will be provided. This portrait will discuss whether the environment is a motive behind investment projects in these regions.

a. The scope and content of Danish investment in emerging economies

One of the most significant characteristics of recent years economic development is the profound growth in international production by transnational corporations (TNCs). This development has also involved Danish industry. Since the mid eighties, Danish foreign direct investment (FDI) has virtually exploded with annual growth rates of up to 40%, and currently around Dkr. 15 billion are invested abroad each year. A 1995 survey of the international orientation of Danish industry (Hansen, 1996) found that almost 1100 Danish companies are involved in international production, having around 2800 subsidiaries abroad. Accounting for almost 50% of all investment projects, SMEs play a pivotal role in the internationalization of Danish industry.

The 1995 study further found that 350 of the 2800 Danish subsidiaries are located in the emerging economies of LDCs and Eastern Europe. With 10% of total FDI and 12% of all subsidiaries, the emerging economies play a considerably smaller role in the internationalization of Danish industry than these countries do in other OECD countries, a fact which could be linked to the relative absence very large TNCs in Danish industry. Whereas the most important emerging economy destination in the seventies and eighties was Latin America and here in particular Brazil, Danish companies now prefer to invest in Asia and Eastern Europe, Poland being the most important emerging economy host country. And whereas very large companies and companies in the food, extractives and chemical industries are relatively dominant among LDC investments, Eastern European investments are dominated by SMEs and companies in the service industry, the construction industry and in the textile and furniture industry (Hansen, 1996).

⁹ The EEAS also provided evidence on the state of environmental management at Danish production facilities. This evidence is presented in Annex II.

b. The pollution profile of Danish foreign direct investment in emerging economies

One of the major concerns associated with TNC investment has been that TNCs may relocate polluting production to emerging economies in order to escape environmental control costs incurred in OECD countries. Typically, a two tier argument is advanced in this connection, namely that regulatory pressures in OECD countries will press through an "industrial flight", and second, that the companies fleeing environmental control costs will move to "pollution havens", that is locations with low pollution control costs (Leonard, 1988). Pollution havens are typically perceived to be widespread in the emerging economies of LDCs and Eastern Europe.

1. The political fear of industrial flight

The concern for industrial flight is also evident in the Danish debate. Danish industry frequently argues that if the Government takes unilateral environmental initiatives, the result will be that individual companies and even whole industries will move production to locations, where conditions are more favorable. Mærsk McKinley Møller, owner of one of the largest Danish TNCs A.P.Møller, has sharply criticized the Danish environmental legislation as undermining competitiveness and affecting Danish production adversely so that *"Danish jobs are constantly being exported to other (countries) that are willing to more cheaply and effectively produce what we used to make. Instead of removing the stones that Danish legislation and bureaucracy has made, new are added"*¹⁰. Another example is the Danish steel mill, Stålvalseværket. In 1995, this company invested Dkr. 47,6 million to comply with Danish environmental regulations. In its 1996 annual report, this company *"do not understand why the Danish government, at the same time as it imposes a series of environmental standards on the company, not as a natural thing ensures that the company's competitors should meet the same standards"*. As a consequence of this situation, the steel mill will *"actively explore the options for establishing production abroad in order to allow for the future expansion which is prevented in Denmark because of environmental restrictions and costs"* (Stålvalseværket, 1996). The chairman of the Danish Manufactures Association Thorkill Juul Jensen commented the proposed Danish CO2 tax: *"It will certainly save energy but only because .. industries will move abroad"*. The industries which according to Juul Jensen would move abroad were oil refineries, cement, steel, chemicals, fishmeal and paper industries¹¹. It should be noted that this tone is not reserved business executives. In the Spring of 1995 the Danish Textile and Garment Union vigorously protested the proposed CO2 tax which the organization labeled as *"outright grotesque"*. They feared that among other industries, the dye industry will be affected and forced to move production to emerging economies. They furthermore feared that Danish progress in getting the authorities' recognition of the 'sewer neck and shoulder

10 Børsen, 10/5 1995.

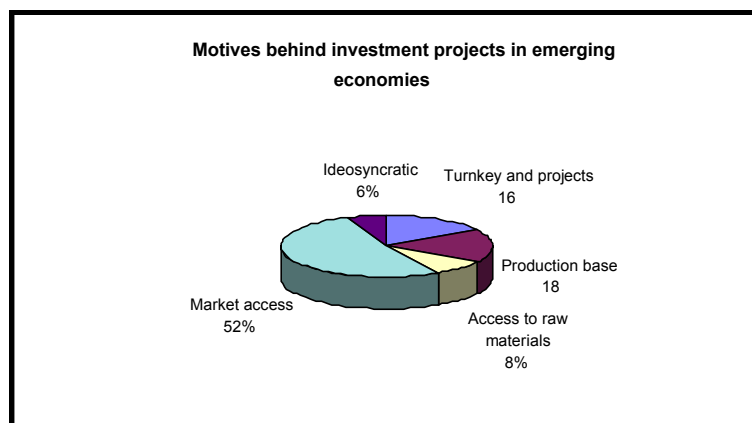
11 Financial Times, 21/2 1995.

syndrome' could be undermined by the industry's threat to move production out of the country (Nielsen, 1995).

The question is, how much these statements are political manifestations and how much they are based on actual evidence of Danish companies moving production because of rising environmental control costs. One way to analyze the effects of environmental regulation on industrial location patterns is to examine the pollution profile of Danish FDI¹².

2. Are environmental cost a motive behind Danish investment projects in emerging economies?

While it is extremely difficult to examine the pollution profile of Danish FDI¹³, the EEAS can give some preliminary insights into this question. The 153, mainly manufacturing companies responding to the EEAS were asked, what motivated their investment in emerging economies, including whether environmental factors had influenced the investment decision¹⁴. 52% cited market access and 18% cited production cost advantages of the host country as the main motivating factor¹⁵. The implication of this finding is that if industrial flight takes place, it only concerns the less than 1/5th of all manufacturing investment which are cost induced. Moreover, of the 18%



Figur 1. Based on the EEAS, n=153

citing cost conditions as the primary motivating factor behind investment, almost all cited wage levels as the cost factor that they wanted to exploit in the emerging economy. Not one single respondent cited the environment as a decisive factor in their investment decision¹⁶.

¹² It should be stressed that analyzing the environmental profile of FDI is only one way to examine industrial flight to pollution havens. It might well be the case that the migration of polluting industry takes place through the out-sourcing of polluting production rather than through FDI (Knutson, 1995).

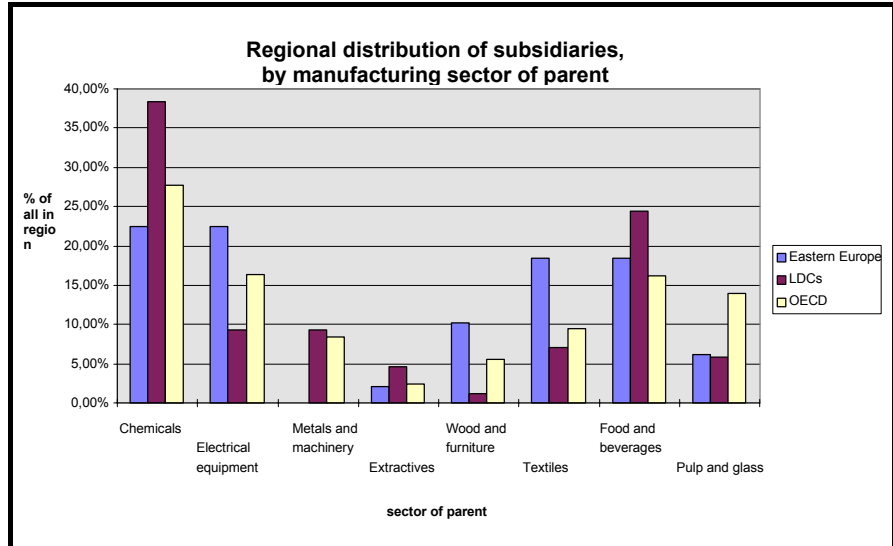
¹³ See Annex I for a detailed account of the problems associated with testing the industrial flight hypothesis in a Danish context.

¹⁴ See Hansen, 1996, 22ff for a detailed analysis of the various investment motives of Danish TNCs.

¹⁵ The remaining companies cited factors such as access to raw materials (8%), participation in turnkey project (16%) or ideosyncratic motives (6%). Pedersen et al, 1993 reaches similar conclusions in their analysis of the motives behind Danish foreign direct investment.

¹⁶ Other studies of investment motives in TNCs reaches similar conclusions, see in particular Knoedgen, 1979, Levenstein/Eller, 1985 or Stafford, 1983.

Another way of approaching the industrial flight issue is by comparing the profile of investment in emerging economies with the profile of investment in OECD countries. According to Hansen (1996), Danish companies currently have 2800 foreign subsidiaries. 40% of these subsidiaries have manufacturing or extractives parents. Looking at the regional distribution of these 40%, there are notable regional variations. Thus, there is a strong over-representation of environmentally significant sectors among the companies investing in LDCs. In particular, it is remarkable that 38% of LDC subsidiaries have parents in the chemical industry¹⁷, but only 28% of all. This indicates that a disproportionate share of the already significant surge in Danish chemical investment¹⁸ has been directed toward LDCs.



Figur 2. From Hansen, 1996;14

Is this significant over representation of chemical companies an indication of industrial flight? Probably not! First, more than 70% of the chemical companies report that their investment in emerging economies is motivated by market access, an even higher proportion than the 52% of all reporting that market access motivated emerging economies investment (Hansen, 1996; 25). Second, breaking Danish chemical investment down to individual companies, it seems that the apparent evidence of industrial flight evaporates; the

Chemical companies investing in LDCs	
	# of subsidiaries
J. C. Hempel's	9
Novo Nordic A/S	7
Chr. Hansens Laboratorium A/S	5
Lego A/S	5
Pharma Plast International A/S	1
Sadolin & Holmblad	2
Bantex A/S	2
H. Lundbeck A/S	1
Dumex	1
Source: EEAS	

¹⁷ The chemical industry includes chemical producers, producers of plastic products and producers of pharmaceutical products.

¹⁸ The chemical industry is relatively important in Danish FDI and increasingly so. This industry has experienced a rapid growth within the last 10 years: In 1984 chemical investments consisted of only 9% of total manufacturing FDI, by 1994 it had risen to 49% thereby making the chemical industry the largest Danish foreign direct investor (Hansen, 1996).

companies in the list of chemical companies include some of the environmental leaders in Danish industry, e.g. Novo and Lego, hardly candidates for industrial flight. Third, the strong representation of chemical companies is to a large extent explained by the strong presence in LDCs of the paint company Hempel and the pharmaceutical company Chr.Hansen, both of which for particular historical reasons have a strong presence in LDCs. In any case, it is highly premature to suggest that the over-representation of Danish chemical producers among LDC investments is an indication of industrial flight.

c. Summary

This brief examination of Danish industry's involvement in international production made two observations. The first was that the internationalization of Danish industry differed from that of other OECD countries. SMEs play a relatively central role in the internationalization of Danish industry and emerging economies are relatively less important to Danish investors than is the case to investors from other OECD countries. The second observation was that there is no indication of a wholesale exodus of polluting industries to emerging economies as sometimes suggested. Most Danish investment are undertaken in order to get access to the emerging economy markets and only 1/5th of all investment are motivated with more favorable cost conditions in emerging economies. Of those, labor costs are decisive, and not one single company cited environmental factors. Moreover, it was demonstrated that while the polluting chemical industry is disproportionately represented among firms investing in LDCs, a closer look at the individual firms accounting for this bias suggests that environmental factors probably not played a role in their investment decision. While there are numerous methodological problems connected to this simple test and much more work needs to be done on this issue, it suggests that the fear of industrial flight to pollution havens is somewhat exaggerated.

But while there may be no indication of industrial flight, Danish investment in emerging economies could still produce significant adverse environmental impacts. It could well be the case that Danish companies, while investing in emerging economies in order to get market access or exploit cheap labor costs, apply environmental standards inferior to those applied at Danish production facilities thereby affecting the environment, communities and workers in emerging economies adversely. Therefor, the subsequent sections will examine to what extend Danish TNCs set standards for and control environmental performance at their emerging economy affiliates.

III. The state of cross border environmental management in Danish Industry

Especially since the 1984 Bhopal catastrophe at a subsidiary of the US chemical giant Union Carbide, TNCs have been concerned with the international aspects of environmental management. For many TNCs, the Bhopal catastrophe demonstrated that if an accident happens at a foreign affiliate, it can have serious repercussions for the entire corporation. Therefore TNCs have increasingly engaged in cross border environmental management. Initially, they have acquired more information on environmental conditions at their foreign operations. Subsequently, they have developed control systems and practices that can prevent disasters and serious accidents. Eventually, some companies have integrated environmental management systems worldwide. By the early nineties, most large TNCs seem to have established cross border environmental management systems, especially TNCs within highly polluting sectors such as the chemical industry, very large TNCs and US based TNCs (see UNCTAD, 1993, Rappaport, 1991). The question is to what extent also Danish TNCs have engaged in such cross border environmental management practices. This part will, based on the EEAS data base, examine the state of cross border environmental management in Danish TNCs with affiliates in the emerging economies of Eastern Europe and LDCs. In particular, it will be examined whether Danish companies set specific environmental standards for their foreign operations and what kind of procedures and practices Danish companies have established to monitor and control environmental dimensions at emerging economy affiliates.

a. Environmental standards for foreign affiliates

The question to be examined in this section is whether Danish TNCs set internal environmental standards for their affiliates in emerging economies beyond those imposed by the host country. The reason, why it is particularly interesting to examine this question is that environmental regulations in emerging economies typically are weak; while statutory requirements may exist they are frequently badly enforced, if at all. Thus, Danish TNCs to a greater or lesser extent operate in a regulatory vacuum and there is a strong incentive for these companies to de-couple pollution control equipment and scrap environmental management procedures, what in the literature is referred to as environmental double standards (Castleman, 1985).

1. Studies of internal standard setting in TNCs

A 1993 UNCTAD study indicated that most large TNCs have elaborate internal codes of conduct for their foreign affiliates in a broad array of areas of environmental concern, especially US based TNCs, chemical TNCs, and very large TNCs (UNCTAD, 1993). A 1991 study of US TNCs suggested that around 20% of large TNCs have adopted explicit policies of implementing the same environmental standards regardless of location (Rappaport et al, 1991)¹⁹. The question to be examined in this section is whether Danish companies with operations in emerging economies have devised such internal standards for operations in countries where regulatory requirements typically are weak or non-existent²⁰.

2. Environmental standards for foreign affiliates set by Danish TNCs

The respondents to the EEAS were requested to report on specific environmental standards set for foreign affiliates. It was found that only 12% of the responding companies have a policy, formal or informal, of implementing Danish environmental standards regardless of location, that is uniform environmental standards. An additional 33% of the respondents reported that they set standards other than uniform standards for their foreign affiliates.

An analysis of the environmental policy statements supplemented by the responding companies revealed little reference to foreign activities and the impression was that they mainly were intended for a Danish audience. Where standards for international operations were existed, they typically stated that the company should

References to international operations in TNC environmental policy statements

NKT: "The environmental policy applies to all companies owned by NKT holding, Danish as well as foreign. The environmental burden is to be minimized in accordance with the standards of our time. As a minimum requirement, national regulations should be observed".

DANISCO: "The environmental charter (The Business Charter for Sustainable Development) is international which means that DANISCO has also signed on behalf of its subsidiaries outside Denmark. Each DANISCO company must of course observe legislative requirement in its own country as well as establishing its own environmental objectives to make continued production viable in the future"

Nordic Wavin: "Wavin makes sure that all relevant national legal requirements are met. Where Wavin internal environmental, health and safety rules exceed the national regulations, the internal rules of Wavin will prevail".

Stora: "Establish as a goal that we exceed the demands contained in the various environmental laws and regulations, while also working to ensure that laws and norms in the environment area are harmonized at the international level".

¹⁹ To appeal for TNCs to operate with the same standards regardless of location is quite common. For instance the 1992 Rio conference's Agenda 21 stated that TNCs should establish world-wide environmental policies, and that they should observe home country standards in foreign operations, in particular in the case of hazardous production. In a similar way, the 1991 ICC Business Charter on Sustainable Development states that TNCs should apply equivalent criteria world wide. Also the Global Environment Charter issued by the Japanese industry association Keidanren states that Japanese firms should apply at least Japanese standards world-wide (UNCTAD, 1996).

²⁰ It should be noted that there are no binding provisions in Danish law requiring Danish corporations to meet certain environmental minimum standards in foreign investment projects. Nor are there examples of Danish companies being held liable for (mis-) conduct abroad at Danish courts. There are two exceptions though where Danish environmental standards have international applicability. The first is that a recently proposed ammendment to the Danish Environmental Protection Act requires highly polluting companies, in accordance with the provisions of the Basel Convention, to inform the recipient country of production equipment of permits and restrictions issued by Danish authorities. The second exception is that in cases where state sponsored investment funds IFU and IØ are involved in an emerging economy investment project, the company will have to meet certain environmental and ethical standards in order to be eligible for funding.

“observe local standards wherever it operates” and/ or that the company's environmental policy is applicable for all subsidiaries domestic as well as foreign. No explicit pledges to observe uniform standards were identified in the policy statements. However, 10 companies had signed the ICC Business Charter for Sustainable Development²¹. This Charter encourages companies to “apply the same set of criteria regardless of location”.

i. Uniform environmental standards

Among the 12% responding that they have a policy, formal or informal, of using Danish environmental standards regardless of location there were notable variations in the interpretation of what this implied. Some respondents reported that their company interpreted uniformity as having an environmental philosophy or policy applying to all subsidiaries and affiliates, at home and abroad. For instance, a company providing industrial services reported that it was in the process of consolidating the environmental activities so as to operate with the same policies throughout the corporation, but with standards dependent on the technologies at a given facility. Another company interpreted uniformity as to the largest extent possible implementing Danish effluent standards in emerging economy operations. Some respondents interpreted uniformity as having the same environmental management system throughout the corporation. In line with this, three of the companies having adopted BS 7750 at Danish production facilities worked on obtaining similar certifications of foreign subsidiaries.

Firm A and uniform standards

Firm A has signed the ICC's Business Charter for Sustainable Development and uses it as the company's environmental policy. In a memo, headquarters interprets the charter's requirement “to apply the same environmental criteria internationally”. It is argued that “the same criteria” means that once policies/guidelines have been established, they should be observed throughout the group. On the other hand, the height of chimneys or noise limitation requirements may vary from country to country, depending on legislation. The first step is to determine which requirements are needed to ensure satisfactory protection of Firm A employees, using current know-how. If the national standards are sufficient they “are good enough”. If sufficient protection is not ensured locally, Firm A requirements must be observed as a minimum.

Most companies didn't implement uniform standards. Some explained why. A firm involved in waste treatment services in Eastern Europe stated that “a double standard can in some cases and some regions be a substantial improvement compared to existing practice. If we required uniform standards in Eastern Europe, the project might not get off the ground” as it would become too expensive. Therefore, an insistence on uniform standards would in some cases leave the environment in the emerging economy worse off. Another company with diversified activities in China argued that double standards could not be such a bad thing after all; “What is the big deal if a hand is cut off now and then, when a society is struggling with poverty and hunger”.

One company specialized in the planning and construction of turnkey factories in Eastern Europe had actively decided not to adopt an internationally applicable environmental policy as “the

²¹ By 1996, 73 Danish companies have according to the ICC Denmark signed the Business Charter for Sustainable Development.

environment do not sell in Eastern Europe, in fact they don't give a damn". Finally, some companies found Danish standards too restrictive to take abroad. One company argued that it observes Danish environmental standards wherever it operates *"except in cases where Danish environmental regulation has lost touch with reality"*. Phrasing the same point more bluntly, another company stated that *"green taxes and mandatory green accounting is inventions of the Labor government. Those, we have no interest in implementing abroad"*.

ii. Other standards than uniform standards

In addition to the companies pledging to employ uniform standards through out the corporation, 33% of the respondents reported that they set environmental standards for affiliates in emerging economies in specific areas of concern. Some reported that they generally require affiliates to observe local standards, but in cases where no local standards exist, for instance for emissions of certain air pollutants, Danish standards were implemented. Especially among companies in the food and beverages industry it seems paramount that Danish/ EU hygiene and product standards are meticulously observed in emerging economy operation. One food producing company with a subsidiary in Pakistan reported that *"all machines are Danish, and we strive to keep the facility as clean and neat as a Danish factory. We cannot make compromises when it concerns the quality of our product"*. A company in the construction industry reported that although it as a point of departure implement Danish EH&S standards world wide, it hardly makes sense to focus too much on Danish standards as 80% of this company's turnover was outside Denmark. Instead the company focused on EU and US environmental standards.

A large group of companies require their subsidiaries to observe certain sectoral guidelines. The guidelines observed were in particular the WHO Pharmaceutical Industry Principles for Good Manufacturing Practice and the chemical industry's Responsible Care Program. Other international guidelines observed by Danish companies were the International Tropical Timber Foundation Guidelines for the Trade in Tropical Timber or the International Maritime Organizations guidelines for the transportation of chemicals.

3 . Summary

This examination of cross border standards adopted by Danish TNCs, found that 12% of the Danish TNCs with operations in emerging economies have an explicit policy of using uniform EH&S standards world wide. Also other types of internal codes of conduct for emerging economy operations were identified, for instance that the company will meticulously observe local environmental standards wherever it operates. The examination furthermore indicated that the notion of uniform standards by no means is straight forward; numerous respondents questioned the merits of employing uniform standards and many interpretations of uniform standards were offered.

In order to implement environmental standards across borders in a credible manner, some level of control of the emerging economy operations is required. The extend and content of cross border environmental controls in Danish TNCs will be the topic of the following section.

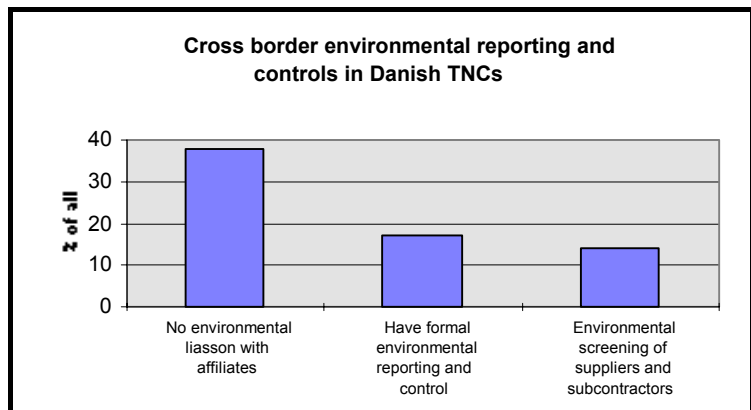
b. Cross border environmental controls

Several Danish TNCs reported that they operate with high environmental standards in their emerging economy affiliates. Some even argued that they have a policy, formal or informal, of using Danish standards regardless of location. However, to implement such standards in a credible manner would require elaborate control procedures, enabling headquarters to ensure compliance with internal company standards. Such control procedures could be standardized reporting between headquarters and the affiliate, on-site assessments, auditing, or formalized allocation of responsibilities for environmental matters between headquarters and the affiliate.

International studies of cross border environmental controls in TNCs have indicated that most TNCs have quite elaborate procedures for controlling environmental conditions at foreign affiliates. A study by the United Nations of cross border environmental management in 169 of the world’s largest TNCs found that 2/3 of all TNCs conduct environmental audits of foreign affiliates, that around 50% of the respondents have environmental monitoring procedures in place in relation to LDC affiliates, and that 45% have a formal allocation of environmental responsibilities with foreign affiliates (UNCTAD, 1993).

1. Cross border environmental controls and reporting in Danish TNCs

Compared to this, Danish industry’s organization of cross border environmental controls seem rather embryonic; in fact only 17% of all reported that they have formalized procedures for reporting and/or control of environmental conditions in emerging economy affiliates or were in



Figur 3, Based on the EEAS, n=112

the process of establishing such procedures. 5 more companies reported that they consider to establish such procedures. 38% of the respondents directly reported that they had no environmental controls or liaison with emerging economy affiliates what so ever. Environmental management was in these companies considered entirely a local management responsibility. These numbers suggest that the formalization of cross border environmental management controls in Danish companies still is highly rudimentary. Looking more closely at the types of environmental controls employed, mainly two

types were identified through the EEAS namely on-site environmental auditing and standardized reporting procedures:

2. On site environmental auditing and reporting procedures

Only few companies - mainly very large companies - frequently conducted environmental audits at emerging economy production sites. These audits were typically conducted in order to ensure compliance with local standards; in one case however, the audit also implied assessments of compliance with internal company environmental standards. Typically, these audits were conducted by the headquarters environment function, but one respondent reported that the audit was conducted by a Danish consultant firm. A pharmaceutical company reported that it was in the process of auditing environmental conditions at its affiliates. This was done by collecting data on the environmental problems, on the measures undertaken to address environmental problems, on the kinds of approvals existing, etc. In the future this process would be extended to include 2-4 audits of foreign affiliates where environmental dimensions would be assessed and discussed with local management. A large producer of metal products reported that it had become exceedingly difficult to keep control with environmental dimensions at all foreign subsidiaries: *"We are not in a position to integrate international operations fully yet; it is too expensive and exhausting and would create capacity problems at corporate headquarters"*.

Whereas a separate environmental audit was rare, several companies included environmental dimensions in their quality audits. Typically the quality manager or production technicians were sent to the foreign affiliate to assess the site. A producer of metal products reported that its quality staff conducted on site inspections several times a year. Occasionally the environmental performance of the foreign affiliate had been criticized in connection with these quality audits.

<p>Cross border Environmental Controls and Reporting at Novo Nordic</p>
<p>Around 200 corporations worldwide publish international environmental reports. The Danish pharmaceutical company Novo Nordic has both in 1993 and 1994 issued such an environmental report. In the 1994 report, the company announces a series of goals for the entire corporation. For instance Novo plans to get a 5% improvement in water and energy efficiency and to reduce emissions of nitrites and phosphor with 5% from the 1993 level. The report was verified by the British SustainAbility. Although largely positive SustainAbility pointed out that it is important that Novo in the future involve all foreign affiliates in the reporting. To this Novo responded that it aims at creating comparable standards for the entire corporation and to encourage the diffusion of Novo standards to suppliers and subcontractors. It has already devised a network of marketing and facility managers which 4 times a year reports on the implementation of Novo Nordic environmental objectives. Moreover, comprehensive audits of environmental conditions at Novo Nordic laboratories have been conducted. In the future, Novo will establish a system for the collection and comparison of data from foreign affiliates on workers health and safety issues. It will furthermore make an assessment of environmental training activities world wide.</p> <p><u>Source: Novo Nordic, 1994</u></p>

More common than auditing was formalized procedures for reporting on environmental performance. A major metal product producer requires each affiliate to submit an environmental report once a year. Another company in the metals industry has recently started up a process of writing to all

affiliates asking for environmental information; “*We use more than 1000 types of chemicals and need to know what happens to them*”. At this company the co-ordination of and information exchange on environmental activities is a regular item on the agenda when managers from around the world gather at their annual meeting.

A major producer of food stuffs reports that it already have a comprehensive environmental information and reporting system in place. This system had proven to be a major advantage as the company is preparing for mandatory green accounting in the future. A pharmaceutical company established formal procedures for reporting between one foreign affiliate and headquarters after the affiliate had experienced serious accidents. First, this company gathered information on the environmental status of the affiliate. The next step was to develop a reporting system, where environmental information regularly was submitted to headquarters. Another pharmaceutical company reported that it planned to devise a company-wide reporting system in connection with the planned BS 7750 certification. A producer of paints reported that informal environmental reporting currently takes place in connection with the monthly economic report. But because environmental costs and investments are becoming “*very large*”, the company plans to separate and formalize environmental reporting. As a beginning, all affiliates will be requested to submit workers health and safety information at least once a year.

3. Pre-acquisition assessments

While formalized control and reporting between headquarters and affiliates involved only 17% of the companies, numerous respondents reported that they carefully assess environmental dimensions before acquisition. The information gained through such assessments is not only important in order to avoid liabilities, it also provides the foundation for future environmental controls. Such assessments are typically conducted by the headquarters environment function, but sometimes the assessment is made by a locally based or Danish consultant firm. At headquarters, this assessment is evaluated by the legal council and the officer responsible for the environment. Especially among companies investing in Eastern Europe, pre-acquisition assessments seem widespread, in particular when the company plans to take over an existing production site. Contrary to most LDCs, Eastern Europe already has been through an industrialization and therefor there is a real danger that the foreign investor ends up paying for the clean up of past sins; in the words of one respondent, “*the big scares in Eastern Europe lies in the soil*”. For the same reasons, two respondents reported that they had been advised by Danish embassies in Eastern Europe to lease rather than buy production sites. However, also LDC investments sometimes demanded pre-acquisition assessments. For instance, a

Firm B acquisition questionnaire

Before embarking on an acquisition of an existing site as part of a joint venture project, potential partners to Firm B are asked to respond to an elaborate 7 page environmental questionnaire. This questionnaire request them to submit information on the nature of environmental, health and safety problems, the potential liabilities of the production site, the environmental investments undertaken in order to mitigate environmental problems, a list of accidents and spills at the plant, and the environmental organization established to address environmental problems.

small company in the process of expanding its African mining operations conducted a thorough assessment of the potential environmental problems of that operation. This assessment provided the basis for the establishment of an environmental management system at the site. A company involved in plastics production had Norske Veritas inspect a new plant in India in order to be able to document to its Danish joint venture partner that EH&S standards were carefully observed.

4. Training and information exchange

A final practice which also could be seen as part of headquarters control efforts is training and information exchange. Through training and information exchange the corporate standards and culture in relation to environmental protection is conveyed to employees throughout the corporation. Thereby, environmental management at affiliates may become more aligned with headquarters objectives.

Obviously, information exchange was the most wide spread practice. Many companies had made internal and external leaflets dealing with the environment and environmental issues were frequently treated in annual reports and company newsletters. Moreover, numerous companies reported that extensive guidance of the emerging economy affiliate on EH&S matters took place on a more informal basis. A company producing PVC pipes in Poland argued that it was wrong to phrase the relationship to the affiliate on environmental dimensions in terms of command and control; instead the *“affiliate should see our involvement as one of guidance and advice”*. A company producing food ingredients reported that it ran company wide education and information campaigns aimed at securing compliance with corporate environmental standards.

The EEAS revealed that employees from emerging economy affiliates frequently came to the Danish parent as trainees or to participate in seminars, conferences, business meetings etc. Sometimes visits directly or indirectly focused on environmental management components. Especially the training of production managers and quality managers etc. were reported to involve environmental aspects. Some of the companies specialized in building turnkey projects included training programs as part of the turn key package. In this package environmental aspects, and in particular hygiene aspects, were an integral part.

But only very few examples of environmental training programs proper with the participation of emerging economy employees were identified through the EEAS: A producer in the packaging industry organized 5 days environmental training and education seminars for foreign license holders. A company reported that Russian law requires companies to designate a person responsible for workers health and safety. Consequently, this company designed a training program for this person.

5. Summary

Only around 17% of the Danish manufacturing companies with activities in emerging economies have formalized procedures and practices for controlling and reporting on environmental conditions at emerging economy affiliates. Why is Danish industry seemingly trailing behind industries

of other countries in this regard? One reason could be that Danish industry became involved in international production relatively late (Hansen, 1996, Pedersen et al, 1993), and that it therefor has less experience with organizing international operations. Another factor could be that Danish companies have no long standing experience with formalized selfregulation as do e.g. US companies. A third factor could be that Danish companies are less visible than are TNCs from large OECD countries and therefor less subject to public scrutiny in host countries. Fourth, and probably most importantly, the embryonic state of cross border environmental management in Danish companies can be explained by the relative dominance of SMEs among Danish TNCs. If one controls for size and in particular the international orientation of the company, the apparent weak development of cross border controls in Danish companies largely vanishes (see Annex table V and VI).

c. Environmental screening of suppliers and subcontractors

Hitherto, the analysis of cross border environmental management has focused on environmental practices within the corporation. However, the environmental aspects of international production cannot adequately be characterized by focusing solely on fully controlled affiliates. Increasingly, companies extend production internationally through various non-equity arrangements such as licensing, franchising and subcontracting. This broadening of the realm of the TNC have a series of implications for the analysis of international production; for many researchers, the unit of analysis should be extended to the *integrated production networks* (UNCTAD, 1993c) that are organized by the TNC. This broadening of perspective also have implications for the analysis of cross border environmental management. It becomes increasingly pertinent to examine, how TNCs organize environmental work within the entire network of production and service facilities, controlled as well as non-controlled. One dimension to analyze in this regard is the extend to which TNCs control environmental performance of suppliers and subcontractors:

The importance of cross border environmental controls of license holders, subcontractors and suppliers is in the process of being recognized by the business community. More and more companies realize that the environmental realm of a company does not stop at the factory gate. In many ways, control and cooperation of suppliers and subcontractors is the new frontier of environmental management; as argued by one respondent to the EEAS, the relationship to subcontractors is the area where the sincerity of a company's environmental policy "*will be tested*". If the environmental responsibility of the corporation stopped at the factory gate, there would, in principle be nothing preventing the company from out-sourcing polluting and hazardous activities while remaining an environmental paragon within the factory gate. Therefor, it is increasingly recognized that companies should engage in environmental co-operation with and control of sub-contractors and suppliers. The EEAS examined the degree to which Danish TNCs are involved in such environmental cooperation and control.

All companies are receiving raw materials and intermediate products and services from other companies. Obviously, all companies must screen suppliers and subcontractors in some way or another to ensure the quality of products and services purchased. This screening can sometimes have environmental components, in particular hygiene standards or safety standards. Some companies goes further and explicitly screen environmental performance at subcontractors and suppliers. Based on the EEAS, Danish TNCs can be divided into three groups in regard to screening and cooperation with subcontractors and suppliers: Those setting standards for suppliers and subcontractors; those transmitting standards from other companies to their suppliers and subcontractors; and finally, those being suppliers and subcontractors to companies setting environmental standards.

1. Companies screening the environmental conduct of suppliers and subcontractors

The EEAS identified a group of mainly very large TNCs involved in a formalized environmental screening of suppliers and subcontractors. These companies had a size and market dominance that essentially enabled them to undertake such activities. All in all 17% of all reported that they exercised control with environmental conditions at suppliers and subcontractors²². These companies require the subcontractors to document that they make progress in the environmental field. They send out questionnaires to all suppliers and subcontractors asking them to indicate performance on certain

Environmental screening of suppliers at Firm C

Firm C's standard clause in framework agreements: The purchaser expects that the seller currently optimizes exiting environmental management systems, and that he points out any possible important environmental effects, and confirms improvements of the environmental effects each year at the renewal of the Framework Agreement.

Firm C's Supplier Survey Form: The Firm C SSF has two parts: The first part deals with quality management. The second part deals with environmental management. In this part, the company are asked the following questions: Does the company have a certified environmental system. If yes, please enclose a copy of the certificate. If no: Does the company have an environmental policy; Does the company have a plan for environmental improving. If yes, please include a plan including which actions have been decided to improve the environment; Does the company evaluate his suppliers regarding environmental issues and objectives .

environmental dimensions, the major environmental liabilities, and what kind of environmental management system is in place. This questionnaire is typically made and analyzed in cooperation with the procurement department. A major producer of plastic products carefully evaluates all aspects of a new supplier, including the environmental aspects; *"We expect our suppliers to live up to our standards, also in the environmental field"*. In a major company producing metalproducts, the environment is included in the standard framework

²² In setting such environmental standards, the Danish companies follows in the foot steps of large international companies. A 1990 survey by McKenziey found that 22% of 900 companies set environmental standards for their suppliers (McKenze, 1991:8). And companies such as Levy Strauss, Rebok or Nike is screening their suppliers not only for environmental conduct but also for performance on broader social dimensions. For instance, in 1993 Levy Strauss fired 5% of its 600 suppliers and exacted changes from another 25%. Among the countries with which the company severed links on human rights grounds was Burma and China. In the latter country a \$40 million contract was given up (The Economist, 3/5 1995).

agreement with contractors as well as in the standard delivery agreement with suppliers. Another company in the same industry has made a small leaflet called 'How to sell to....', in which the environmental responsibilities of contractors are outlined.

Normally, the results of an environmental screening will not cause the Danish company to find another supplier or subcontractor. Most respondents emphasize that the screening of contractors and suppliers is a matter of "co-operation not cohesion" and that the purpose is to provide services and guidance not to "cut off suppliers". "When we detect problems, we offer co-operation and advice, in contrast to e.g.. Nike which simply withdraw". Nevertheless there are companies reporting that they have fired subcontractors in emerging economies because of poor environmental performance. One producer of shoes thus reported that it had excluded an Indian supplier because it did not meet company standards for the handling and use of chemicals. However, it was not only environmental concerns that prompted the company to discontinue this supplier; rather the messy conditions in the handling of chemicals indicated "messy conditions on other dimensions".

The respondents to the EEAS offered several reasons, why subcontractors and suppliers are screened. First, some of the companies were applying life-cycle perspectives on their environmental impacts and environmental co-operation with subcontractors and suppliers is an integral part of such perspectives. Second, various commitments made by companies require them to screen environmental conditions at suppliers and subcontractors. For instance the Business Charter for Sustainable Development encourages subscribers to co-operate with suppliers on improving environmental conditions²³ and companies adopting the European environmental management standard EMAS commit themselves to survey environmental conditions at suppliers and subcontractors. Third, several companies feared that an environmentally dubious record of a supplier or subcontractor could reflect badly on the company. This reason was emphasized by a large TNC with infrastructure operations. This company requires that contractors handling its waste products have an environmental management system in place. The long term goal is that only suppliers and subcontractors with a certified environmental management system will be hired. When this company emphasizes supplier and subcontractor environmental co-operation it is because "we had bad experiences with a company that burned our scrap on a field. This reflected badly on us" and if a similar thing happens again "someone will get fired".

While some of the very largest respondents monitored supplier environmental performance, it was also clear that environmental screening of subcontractors and suppliers is a relatively recent exercise within Danish industry, and that many problems remain to be solved. One very large producer of metal products pointed out the difficulties associated with controlling the environmental conduct of 5000+ suppliers. Another respondent would ideally like to check the environmental

²³ Of the companies having supplier and subcontractor procedures, 4 were signatories to the ICCs Business Charter for Sustainable Development, which encourages signatories to control environmental conditions at suppliers and subcontractors and/or assist them in improving those conditions.

performance at its contractors, *“but it would be too expensive if I had to go to Singapore or Hong Kong to check them”*. Respondents from three very large companies with screening procedures reported major problems getting acceptance of such initiatives within the company. Especially the economy, procurement and marketing departments were cited as obstructive to such initiatives. Another problem pointed out by a pharmaceutical company was that *“we often only have one supplier. Therefor we have to consider whether we can afford to lose this supplier by making environmental demands”*.

Two companies questioned that they had any responsibilities for the environmental conduct of suppliers and subcontractors. One was a producer of intermediate chemicals. This company found it meaningless to screen suppliers and subcontractors because it would never be possible to control the information received. Furthermore, if environmental screening of suppliers became more widespread, this company argued, the consequence would be that *“the buck would be passed on to the next level and then the next level”*. This respondent gave an example: Plastic waste, collected in Germany, is exported to Holland, then to Belgium, then to the Philippines, finally ending in China, where it is

dumped on the ground without any kind of monitoring or control. This cycle cannot possibly be controlled by the company at the top of the supplier chain, this respondent argued.

Novotex environmental cooperation with suppliers

This producer of apparel argues that its environmental policy is formulated with the point of departure in the Bruntland Commission's definition of sustainable development: Recognizing the Earth's natural eco and socio systems, Novotex will maintain its position as an innovative industrial producer of environmentally friendly textiles and promote sustainable production for among other things Green Cotton products. Novotex will continuously transform these objectives to practical action. The exploitation of natural resources will be based on the principle of minimizing resource consumption, limit pollution to a minimum and achieve the highest possible level of human well-being.

Moreover, the company reports that this policy is not only applicable inside the Novotex framework, but applies to the product from cradle to grave. In selecting suppliers, environmental factors will be decisive. The evaluation of suppliers will focuses on the environmental quality of the product as well as each suppliers management of its environmental impacts. Novotex has won several awards for its Green Cotton concept, including awards for its work with Third World cotton farmers changing to ecological cotton production.

Source: Promotional material from Novotex

2. Companies transmitting environmental standards

The second group of firms were companies that, because of their market position as producers of intermediate products, were caught up between some of their large customers and their own contractors. In many cases, these typically SMEs worked as mediators and transmitters of environmental demands. Especially companies in the wood and furniture industry had experienced environmental demands from the large retail chains and felt forced to transmit these standards to their suppliers,

including suppliers in emerging economies. In general, the environmental standards transmitted by companies in the wood and furniture industry were related to the use of tropical wood - many customers demanded that the wood should come from plantations - or they were related to packaging. A furniture producer transmitted demands from customers, *“but apart from that we don't care about*

environmental conditions at suppliers". A large wood trading company reported that customers, in particular in the UK, increasingly inquired where the wood came from and which forestry practices were employed. These inquiries forced the company to devote large resources to inform its customers. Consequently, conveying environmental demands from consumers to suppliers had become "*the central purpose and task of our environmental policy*".

3. Companies subject to TNC screening

Finally, a group of respondents reported that they were subject to environmental screening by larger firms. In many cases, this were companies delivering goods and services to large scale infrastructure or construction projects. As suppliers to such projects, they were frequently required to have an environmental action plan in place and in some cases to have adopted a certified environmental management system. Also the apparel industry seems frequently subject to environmental screening. Several of the companies in this industry were rather frustrated with the growing number of environmental demands that they had to comply with; a textile producer reported that it had seven customers making environmental requirements. This had forced the company to employ a full time environmental officer. Even one of the larger Danish TNCs participating in the survey reported that its environmental policy largely had been adopted in response to pressure from an even larger TNC.

4. Summary

The literature on the environmental impacts of TNCs tend to focus on equity arrangements. However, it is now generally acknowledged that the responsibilities of TNCs cannot be confined to within the TNC proper. Thus, environmental conditions at subcontractors and suppliers pose a series of challenges to TNC environmental management both in terms of accountability, liability and in terms of propriety technology. The first step in the establishment of environmental co-operation with suppliers and sub-contractors is to screen their environmental performance for instance by sending out questionnaires. Only 17% of Danish companies reported that they conduct such environmental screening. The impression from the interviews was that a pecking order is evolving in regard to subcontractor and supplier requirements. Large corporations are setting environmental standards; intermediate producers reluctantly transmit these standards on to their suppliers, and the SMEs at the bottom of this pecking order seem increasingly frustrated being subject to environmental demands from companies upstream as well as downstream.

IV. Driving and impeding forces of cross border environmental management

Having characterized the current state of cross border environmental management, this part moves on to identify the various forces encouraging and limiting cross border environmental management based on interviews with managers in Danish TNCs. While several surveys of cross border environmental management exists, this aspect is virtually unexplored in these surveys. Therefore, the respondents to the EEAS were explicitly asked for information on these questions.

a. Drivers of cross border environmental management

Typically surveys of corporate environmental management ask, what motivated the institution of an environmental management system. Without exception such surveys find that the main factor is regulation²⁴. However, in the case of cross border environmental management this line of questioning is of little relevance as very few binding international regulations of cross border environmental behavior exists. Consequently, the motives for adopting cross border environmental management can be expected to be substantially different from the motives behind home country environmental management. In order to identify the driving forces behind cross border environmental management, the respondents to the EEAS were asked what motivated them to adopt cross border environmental policies and practices and operate with high standards in relation to emerging economy affiliates. The answers can be consolidated into eight categories:

1. A sense of moral obligation

From a moral perspective it could be argued that there should be no substantial difference between the way a company manage EH&S matters at an emerging economy affiliate and at an OECD production site. Several respondents to the EEAS echoed this line of moral reasoning. For instance, a dairy producer with activities in West Africa argued that it would have been *"immoral and improper to pollute with the kind of knowledge of the consequences of the pollution that we at the parent posses"*. Similarly, a textile producer argued that the company was morally committed to the environment and that *"we must not be placed in a situation where we could have done something to solve a problem, but didn't"*. A producer of meat products with activities in Hungary argued that it implemented high EH&S standards in this country because hazardous health and safety conditions *"is as bad for a Hungarian worker as it is for a Danish worker"*. Finally, a shoe manufacturer with activities in Poland reported that *"it is our opinion that people in Poland should be treated no differently from*

²⁴ See e.g. UNCTAD, 1993, Madsen/Uihøi, 1995, Rappaport, 1991.

people in Denmark". But while moral sentiments could be a factor behind cross border environmental management in Danish TNCs, more mundane factors seemed more common. Let us examine those:

2. Building good relations with host country authorities

Several respondents reported that they implement high environmental standards in order to maintain good relations with authorities in the host country. One company has even made its Polish affiliate an environmental demonstration project, involving the municipality of the affiliate in Poland and the municipality of the parent in Denmark. In partnership with the Danish municipality, this company has assisted the Polish municipality in building environmental infrastructures, such as sewage pipes and waste water treatment plants. This state-of-the-art project has been beneficial to the company in two ways. First, the project could position the company to play a leading role in the negotiations of future regulations. Second, it may position the company to capture new markets for environmental goods and services, as it bought the company a lot of goodwill. Similarly, a company producing foodstuff in Pakistan reported that the implementation of state-of-the-art EH&S standards had given the company a lot of *"attention and goodwill"* in the local setting. One company argued that its environmental management system and program had been an advantage in China because it gave the company *"prestige"*; the Chinese joint venture partner wanted to be involved with a western company meeting western business standards, also western environmental standards. Finally, a dairy producer with activities in Africa reported that by implementing high EH&S standards in this location *"it was much harder for the local authorities to put pressure on us and place us in a dependency relationship"*.

3. Anticipating future regulations

It is a common perception in Denmark, that Danish environmental regulations are among the toughest in the world and that most emerging economies are trailing far behind, especially in terms of enforcement. This perception is probably not unfounded. However, as some of the respondents pointed out, regulatory demands in several emerging economies will in due course approach Danish and/or EU standards. In particular, some of the South East Asian economies (for instance Malaysia) were reported to enforce environmental regulations in an increasingly vigorous manner, especially air emission standards. Also the East European countries candidating to become EU members within a the next few years - Poland, the Czech Republic and Hungary - were reported to implement environmental regulations rather stringently, especially toward foreign corporations. This had forced some companies to invest substantial resources to *"keep local authorities abreast"*. In these countries, the respondents argued, it is advisable to observe high environmental standards in order to stay abreast of increasingly tough regulations. It is highly probable that regulatory standards in the most advanced emerging economies will change within the life cycle of the technology used in the production and therefor it will typically be cheaper to anticipate these standards now by using new technology and Danish standards rather than retrofitting the entire production process later.

4. Technology bundling

A pivotal factor explaining high EH&S standards worldwide, is that the company simply cannot do otherwise. The cleanness of the production cannot be separated from the leanness of the production. As stated by one respondent, *“one thing is what is done intentionally; something else is standard operating procedures. We cannot do things in a different way, this is the way we are good at. If you know how to walk, you cannot start crawling again”*. Several versions of this 'inability to decouple cleanness' argument were identified through the EEAS. One version is that the company's production technology cannot be separated from the pollution abatement technology. Often, the emerging economy plant is designed and run according to Danish blueprints. In such cases, foreign productions will be designed according to the blue prints of Danish facilities. These companies employ clean technology simply because it doesn't pay to retrofit part of the production process to meet lower EH&S demands in the emerging economy. One company directly argued that it would be impossible to un-bundle the clean technology even if it wanted to.

Another 'bundling' factor was that the environmental management component could not be separated from the production technology. As many companies transferred Danish production technologies to their emerging economy affiliates, environmental management practices in these countries often become similar to the practices at the Danish plant. In the start up phase, local management will be equipped with the manuals including recipes, raw-material specifications, lists of suppliers, procedures for labeling and procedures for production that enables them to operate the technology in the same manner as is the case at the Danish plant. In line with this, a company

Clean technology transfer by Danish TNCs

Kolos took over a slaughter house in Hungary creating 375 jobs. As part of a major 15 month refurbishment program aimed at bringing the facility up to EU and US standards, the company has introduced new environment friendly technology at the Hungarian production facility. This technology will secure biological treatment of waste water, the filtration of smoke emissions, and recycling of waste products²⁵.

The Danish producer of cone belts Roulund, entered a joint venture in India with Hilton Rubbers, one of the largest producers of cone belts in India. The deal included enlargement and modernization of the Indian plant and rationalization of the production process. This modernization process included the implementation of waste minimization programs and technologies²⁶.

The medium-sized Danish producer of refrigeration Derby A/S engaged in a joint venture with a Zimbabwean company building a new factory believed to be the first on the African continent to produce CFC-free fridges/freezers. Thereby, the Danish company provides a practical example of private sector initiatives to implement the provisions of the Montreal Protocol on the phasing out of CFC products²⁷.

The producer of turnkey projects Niro has developed a process of producing white paper without water and chlorine. This technology gave the company a major competitive advantage, and it was used in turnkey projects in Taiwan and Argentina.²⁸

25 IØ, 1993.

26 See Kristiansen, 1993;6.

27 IFU, 1993.

28 More on Niro, see Kristiansen, 1993;6.

involved in Poland argued that "we have to use Danish standards as the production equipment we use in Poland is so advanced that no precise regulations covers them".

A special case was the numerous Danish companies delivering turnkey projects to emerging economies²⁹, firms such as Emidan, F.L. Schmidth, Danbrew or Globe Meat Technology. Typically, these firms declared that the factories they constructed here were made according to the same blueprints as factories build in OECD countries simply because these engineering firms no more possess know-how of an older and simpler technology.

It should be noted however, that not all Danish companies transfer state-of-the-art technology to emerging economy affiliates. Several respondents directly reported that the production equipment transferred to emerging economies is inferior to that used at Danish production facilities. A producer of dairy products reported that it had transferred old Danish dairy technology to West Africa. A producer of textiles reported that it had bought old (weaving) machinery in Italy and shipped it to a production facility in India. Companies specialized in turnkey projects reported that they sometimes devise old production technologies for emerging economy customers in order to maximize development objectives such as job creation or durability. This was especially the case when donor agencies were involved in the project. But also purely commercial projects could be based on old technology; a very large producer of turnkey plants argued that "*the customer gets what he wants. Our production facilities are adjusted to his demands and we are not the ones to take initiatives to environmental assessments etc.*"³⁰.

The sale of a Danish chlorine factory to Pakistan

In 1993, the diversified Danish TNC DS industries announced that it would sell the production equipment from a chlorine factory in Copenhagen that had been closed down by the authorities because this extremely dangerous production was located in a densely populated area. The buyer of the equipment was a Pakistani consortium. The deal stirred a row in Denmark as well as in Pakistan because the production equipment sold was outdated and highly dangerous. It only fueled the controversy that the Danish minister for the environment during that period was lobbying for a total ban on the export of waste to developing countries under the Basel Convention. Eventually, the deal was canceled, mainly because the Pakistani buyer withdrew. The row prompted an amendment to the Danish Environmental Protection Act requiring the most polluting Danish companies to notify countries receiving used production equipment of the permits and restrictions issued by Danish environmental authorities.

5. Economies of scale

A large TNC may have to adapt to environmental regulations in 10, maybe 20 or 30 locations. This of course can easily put enormous strain on the environment function at headquarters, and cause legal departments great concern. Consequently, there is a strong incentive for larger TNCs operating

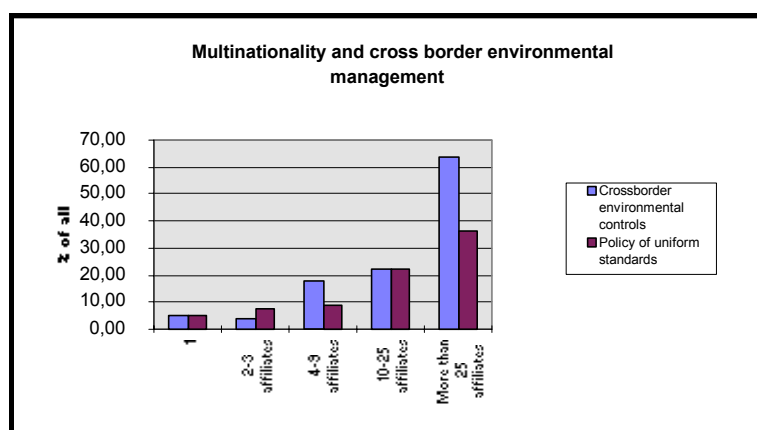
²⁹ Essentially, a turnkey project simply implies the export of a production facility. However, many turnkey projects are registered as investments because the projecting company invest a small sum in order to ensure the credibility of the project and because the company often will have to manage the production facility for a brief transition period. This type of investment projects is extremely important among Danish companies operating in emerging economies and more than 10% of all Danish investment projects in emerging economies are turnkey projects; in Africa it is 1/4 of all projects (Hansen, 1996).

³⁰ It cannot a priori be inferred that the transfer of old technology is bad for the environment or workers health and safety. For instance, a company in the food and beverages industry operating in Estonia argued that "*they haven't received the latest technology as the level of training is too low in these countries. It would be dangerous to workers health and safety if you placed a plant with new technology there, and it wouldn't be profitable*".

in numerous locations, to seek a higher degree of coherence in the rules and regulations applying to the company world-wide. This is typically done by internalizing environmental controls and adopting company wide standards.

Previous studies of cross border environmental management has clearly indicated that the scope and content of cross border environmental management is a function of the size of the company (UNCTAD, 1993, Rappaport et al, 1991). Large TNCs have the financial, technological and managerial resources to organize environmental management internationally and they might experience significant scale advantages from operating with a unified system worldwide. In line with this, the EEAS suggested that uniform standards clearly was a function of the size of the company; whereas 11% of the companies with less than 50 employees pledged to operate with uniform standards, the number was 23% for companies with more than 1500 employees (Annex table III).

However, the EEAS suggested that this correlation in fact may be spurious and that the underlying explanatory factor is the degree of multinationality of the TNC. Thus, EEAS found that there is a very strong correlation between the degree of multinationality of a company - measured by the number of foreign affiliates it holds - and its propensity to adopt uniform standards and to have instituted



Figur 4. Based on the EEAS, n=109

cross border environmental control procedures: 36% of the companies with more than 25 foreign affiliates pursued policies of uniform standards but only 5% of the companies with one foreign affiliate. The correlation was even stronger in the case of cross border environmental controls; only 5% of the companies with one foreign affiliate had environmental control and reporting procedures of foreign affiliates in place, but more than 60% of the companies having more than 25 foreign affiliates. These findings suggest that integrating environmental management across borders is a means for companies operating in numerous locations to reduce the complexity deriving from disjunctured national environmental policies. In line with this, two of the largest Danish TNCs directly reported that their cross border environmental management systems were motivated with the need for a uniform system of environmental management that essentially could cover all locations in which they operate.

6. Precautionary behavior

Especially among chemical and pharmaceutical TNCs, fear of accidents at the foreign affiliate was cited as the main motivating factor behind cross border environmental management. One company reported that it had devised cross border environmental management procedures more than

10 years ago in the wake of the Bhopal catastrophe, a catastrophe which “*shocked the industry*”. These companies feared that accidents on emerging economy affiliates could reflect badly at the entire corporation. This is also the reason, why a company licensing paint production in numerous LDCs controlled environmental conditions at these production facilities: “*When the front gate has our brand name, we have to ensure that they live up to our policies*”. “*International scandals can harm us even if we are not responsible*”. In a similar way, several companies in the extractives industry reported that their environmental programs were motivated with the fact that they cannot live with a bad reputation in the environmental field. One such company argued that a firm that lives from natural resources cannot afford, in the longer run, to exhaust the resources that it prospers from. And a company involved in trade with tropical wood argued that its entire turn-over depends on the existence of the rain forest; “*if its gone, we are gone*”. Therefore, this company had started up extensive demonstration projects in LDCs for the preservation and sustainable harvesting of rain forests.

7. Pressures from co-investors

In some cases, cross border environmental management was motivated with external pressures from institutional co-investors. In particular two institutional investors are important to Danish companies investing in emerging economies. This is the state sponsored investment banks the Industrialization Fund for Developing Countries (IFU) and the Investment Fund for Eastern Europe (IØ). It is estimated that as much as 40% of all investment projects in LDCs and almost 30% of all projects in Eastern Europe have the participation of these funds (Hansen, 1996;18). These funds have now, like most international finance and donor agencies, adopted environmental guidelines and standards for the projects they are involved in. Thus, IFU/IØ refers partners in investment projects to its environmental guidelines. These guidelines, among other things, request potential partners to meet Danish standards in investment projects, and in cases of deviation from Danish standards, to observe World Bank standards. The aim of these measures is to ensure that Danish companies do not participate in the dumping of polluting productions in emerging economies.

The EEAS examined to what extent IFU and IØ environmental standards had been a factor in the investment projects that these two funds participated in. 14 companies reported that IFU/ IØ standards had been a factor in the adoption and design of environmental management at the emerging economy facility. A producer in India, reported that IFU demands had played a “*pivotal role*” especially because the authorities in India “*didn’t care at all for the environment*”. This company further reported that it wanted to make sure that it could not be accused of operating with workers health and safety double-standards Therefor, it had provided IFU with a certificate from Norsk Veritas that no corners in relation to workers health and safety were cut at the Indian production facility. Another company argued that IØ guidelines had made it check EH&S aspects of the Eastern European production site, something that it otherwise wouldn’t have done. Finally, a company reported that IØ prompted it to formulate an environmental action plan jointly with the Polish partner. In

general the respondents seemed rather anxious to report that they observe the IFU/IØ standards; clearly they wouldn't risk to jeopardize the relationship with the investment funds; *"we might want to have them as a partner in future projects"*.

However, the importance of IFU/ IØ guidelines should not be exaggerated. Some of the 14 companies argued that the IFU/IØ demands largely were *"a formality"* and that they were merely *"declarations of intend"*. One company with a large operation in Asia criticized IFU/IØ demands; *"It is not realistic to copy Danish standards in the Indian project. We have presented the IFU standards to our joint venture partner, and they have indicated that they will do whatever they can. But it is not realistic; out there we start from scratch"*.

Apart from the Danish investment promotion agencies, donor agencies such as the IBRD, the World Bank, the IFC or the European Investment Bank played a role in the adoption of cross border environmental activities in Danish companies. One company extensively involved in turnkey projects with Danish and international donor agencies, reported that it had considered to adopt an environmental policy in response to the growing concern for this aspect among the donor agencies. A company delivering cement plants reported that it had been forced to change the combustion process in a new plant in India due to World Bank requirements³¹. A machine factory with an investment project in Zimbabwe reported that the Danish aid agency DANIDA's Sustainable Development Guidelines and its environmental training programs as part of the Private Sector Program played a pivotal role in the development of that particular investment project.

8. Market strategy

In the above examples, cross border environmental standards were rather defensive and reactive. But in some cases, cross border environmental management was intended to strengthen the competitive position of the company. Environmental leadership in international operations were for some companies a way of gaining competitive advantages, getting ahead of competitors and increase profits. Thus, previous studies have indicated that 25% of Danish firms believe that environmental excellence increases a company's profitability (Madsen/Ulhøj, 1995; 19). This belief is illustrated by the pharmaceutical company Novo Nordic. Interviewed about its Environment Report, costing Dkr. 10-15 million and involving 50 experts, the director of Novo Nordic, Mads Øvlisen stated: *"We didn't do it because of pressures from the outside. The purpose is clearly business related; we thrive when we have the confidence of the public and our neighbors"*. In a similar way a large TNC argued that *"as our products are related to water, people often associate us with the environment"*. In this situation it is essential for the company to have comprehensive environmental policies and programs in place.

³¹ The World Bank had among other things required to change the combustion process into a two step process to bring emissions under 600 mg NO₂/Nm³ (Kristiansen, 1993;6).

Environmental programs has therefor become “*an integral part of our marketing toward the public and consumers*”.

Using the environmental profile as a means to get market access is obviously important for companies that sell environment related products and services in emerging economies. These companies are extremely focused on their environmental profile; one provider of waste treatment services in Eastern Europe argued that “*we cannot afford a bad reputation in the environmental field as we live from our environment profile; we have to be in the front in the field of waste treatment*”. But also companies not normally associated with the environment industry reported that high environmental performance was an integral part of the emerging economy investment strategy. For instance, a company, possessing a technology to produce asbest free building materials reported that the reason it had been invited to invest in an Eastern European country to assist local state run companies in the transition to asbest free production methods. As the phasing out of asbest production in the view of this company had been too slow, it had actively lobbied the local government to speed up its phasing out in order to improve the competitive position of asbest alternatives.

Also other industries produced environmentally sensitive products that demanded tough environmental controls, for instance the furniture industry and the textile industry. Both industries have felt growing demands from consumers and customers for more environmentally sound products and practices. However, the industry probably most sensitive to environmental demands was the food stuff industry. Here, the quality of the product and environmental management are connected in a very direct manner: “*Our customers should not have any doubt of the quality of the product no matter where it is produced*”. Therefor, this respondent continued, “*factories in the Third World are constructed according to exactly the same blueprint as Danish factories, and they use the same packaging, production equipment and quality standards*”. A producer of beverages further argued in this industry “*we cannot afford a bad environmental reputation as there is an intimate relationship between quality and production methods*”. In line with this, two producers of meat products with affiliates in Eastern Europe had realized that without state-of-the-art hygiene and environmental controls and procedures, meat products from their Eastern European facilities would never be granted access to the EU market. For companies working as subcontractors, the presence of environmental management systems were increasingly a precondition for getting contracts in emerging economies. A company delivering turnkey projects to South East Asia implemented tough environmental programs world-wide because it often executed projects for large TNCs that have “*an environmental policy as part of their marketing strategy*”. Similarly, a company involved in telecommunication infrastructure projects in Eastern Europe reported that if it didn't adopt company wide environmental management procedures, it could lose contracts in Eastern Europe. In this region, environmental management systems were increasingly required as part contracts; a leading competitor had allegedly already been awarded contracts, partly due to its extensive environmental management system. “*Our budget people ridicule us, but only up until the day where we lose a contract because we haven't got a certified environmental management system in place*”.

9. Summary

The respondents to the EEAS provided a host of reasons, why they prefer to operate with standards beyond regulatory demands in emerging economies and integrate environmental management across borders. The main reasons seemed to be reactive, for instance that the respondents fear accidents, that they are more or less pressed by co-investors to adopt high standards, or that the cleanness of production is build into the production technology used at the emerging economy plant and therefor cannot be de-coupled. Fewer companies had more proactive motives for implementing high standards in emerging economies affiliates for instance that this could improve the company's market position and relations to regulatory authorities in the host country. Finally, high environmental standards in emerging economy operations seemed driven by a sense of moral responsibility in a handful of mainly SMEs.

While many respondents provided reasons for adopting high standards in emerging economies, even more companies provided reasons for not adopting high standards in emerging economy operations. These reasons could be called barriers to cross border environmental management. In the following section we will turn to the barriers for cross border environmental management identified through the EEAS.

b. Barriers to cross border environmental management

In theory, a cross border environmental management system is a fairly straight forward exercise and probably works smoothly in relation to affiliates located in OECD countries. However, judging from the EEAS, a host of specific problems appears, when a TNC implements environmental management at affiliates located in emerging economies. The EEAS interviews reviled a host of such barriers. The barriers cited can be consolidated into 4 categories:

1. Inadequate environmental regulations

Many respondents cited the poor state of environmental regulation in emerging economies as the main barrier to sound environmental management. However, the responses also indicated that it is haphazard to generalize about the state of environmental regulations in emerging economies; the responding companies had widely differing experiences with the quality of emerging economy regulations and regulators depending on the country or region of operation:

Eastern Europe

In general, the state of environmental regulation in Poland, the Czech Republic and Hungary was described as approaching EU standards. Obviously, in view of the pending application for EU membership, these countries are trying hard to meet EU EH&S standards. Hence, the evaluation of Polish environmental authorities and regulations was generally positive, and although authorities sometimes were tough on foreign operations they were also "*fair*". There were exceptions to this

positive evaluation though: A company with operations in Czeckia was particularly concerned with the local environmental authorities: *“They are extremely bureaucratic, using hundreds of different rules placing an enormous burden of documentation on us, and they never follow up on the documentation received”*. Another company found the Polish authorities overzealous; *“protection of workers health and safety is Alfa and omega in Poland”*, and the authorities vigorously pursue foreign companies with fines; *“they are running around on our production site all the time in a way we have never experienced in Denmark. This seems to be a leftover from the Communist past”*. A third company, airing similar concerns about the health and safety authorities in Poland, had hired a local consultant company to make detailed work-descriptions in accordance with local regulations in order to *“shot the mouth on the authorities”*.

The experiences with operations in Russia were less positive. One producer reported that the environmental conditions in Russia were characterized by *“a total neglectence”* and another company argued that *“anything goes in Russia”*. Also the state of environmental regulations in the Baltic countries were reported to be highly inadequate.

Asia

Malaysia and Singapore are described as countries with sophisticated environmental regulations, where regulators seem accustomed to deal with foreign investors; in some cases it was even reported that environmental regulation, especially air emission standards went beyond Danish standards. In contrast, China seems to be an environmental 'klondyke' where the authorities take little or no interest in the environment and where environmental infrastructures are more or less absent. Numerous companies reviled quite shocking examples of environmental conditions in this country; *“they don’t give a damn as long as the refuse pipe is big enough”*. One company producing electronic equipment in China pointed out that there are very large environmental problems associated with some of the foreign investors in the ‘special economic zone’ where this company operates. 80% of all foreign investments in this zone are made by Taiwanese TNCs, and many of these TNCs *“undertake investment based on a 18 month pay back calculus”*. In this situation, this respondent assessed, *“there is obviously no room for environmental considerations”*. Consequently, environmental conditions in this zone are appalling. However, the same company also reported that Chinese authorities recently had started cracking down on polluters in the special economic zones; *“otherwise these zones will soon become poisonous swamps”*.

A producer of textiles in India described the state of environmental protection in this country *“as a completely different world”*: *“Politicians are corrupt, there is no monitoring, no infrastructure and there is no enforcement from authorities”*. This company also gave an impression of the immensity of the environmental and ethical challenges that face a company intending to implement Danish standards in emerging economies. Although this company accepted the merits of using Danish standards as a long term goal, the actual starting point for its operation in India had been to ban child labor and create conditions with breathable air at the local facility. In this situation any notion of

implementing Danish environmental standards was deemed “*totally unrealistic*”. Pakistan also seems to have a long way to go before effective pollution controls are established. Thus, the Danish production manager of a Pakistani food plant reported that environmental conditions are appalling in the region where the plant is located; “*I do not dare walk outside as I have no idea what it is I breathe*”.

Africa

One respondent working for a company with operations in Africa was under the impression that countries like Zambia, Zimbabwe and Swaziland took environmental problems seriously, whereas a country like Nigeria “*entirely ignores the environment*”. A company specialized in dairy production in West Africa reported that many African countries have adopted environmental action plans and guidelines, but that “*there was no follow up on these plans*”. A producer of textiles in Tanzania reported that “*we could throw all the chemicals in the back yard if we wanted to, no one would care. All that matters here is cool cash*”. Finally, another textile producer reported that corruption is a big problem in Africa and that it “*is a good idea to have the right connections*” also when dealing with environmental problems.

2. Lack of infrastructure

Another oft cited barriers to cross border environmental management was that the necessary infrastructure in many instances was non-existent or deficient. One company producing plastic products in India argued that it observes Danish standards for ventilation, masks and waste treatment, but that the lack of waste treatment facilities in the area had forced the company to burn toxic waste materials on a field. In general, the lack of waste treatment facilities seems to be a widespread problem in emerging economies. A producer of paints complained that there was no equivalent to the Danish waste treatment facility Kommune Kemi in Africa and a pharmaceutical company with operations in Estonia had decided that waste should be deposited at a controlled site until the Estonian authorities had established infrastructures and regulations for the treatment of such waste. Another infrastructure problem mentioned by the respondents was the lack of sewage systems, which often forced the companies to release untreated waste water directly into rivers.

3. Lack of trained personnel

A major barrier to cross border environmental management had to do with the lack of trained and motivated labor in the host countries. A textile producer with a major affiliate in India gave an impression of the immense difficulties associated with an environmental awareness and capacity building among employees in the poorest LDCs. This company has a plant with several thousand employees, mainly women. The problem of this operation was that the flow of workers was enormous; the employees preferred not to be permanently employed but to shift among jobs in the numerous textile industries located in that area according to where salaries were best; “*they are for sale to the highest bid*”. Even foremen regularly disappeared after they had been trained. In a situation with such

a transient workforce it is impossible to implement EH&S standards and procedures, even if one wanted to, this respondent argued. Moreover, it doesn't always suffice to train people other respondents argued. Culture can still remain a major barrier. Thus, the problems with environmental awareness was by some respondents related to cultural differences between Danish employees and employees in emerging economies: A company with telecommunication activities in Eastern Europe reported that *"we make masks and protective equipment available, but they don't use it; they laugh of us when we try to implement our safety procedures"*. Similarly, a producer of paints with production in Asia reported that *"there is a strange kind of pride associated with not using protective devices"*. Finally, a producer of cement products reported that the employees at their plant in Poland lacked any notion of 'good house keeping'; no one were interested in keeping the place tidy and no one wanted to use the protective devices made available by the Danish parent company.

Two companies toned down the importance of cultural barriers. A large company in the waste treatment industry argued that the cultural barriers could be circumvented through thorough specifications in production manuals, the hiring of qualified personnel, and a specification in contracts of the tasks each employee should fulfill. Another company argued that the problems faced in emerging economies essentially were the same that the company had encountered in Denmark; that people in production only focus on productivity and quality and that it is extremely difficult to make them accept environmental measures.

4. Difficulties associated with business arrangements

A final barrier to cross border environmental management is the kind of business arrangement involved in the investment project. Numerous companies argued that minority participation in projects freed them from responsibilities in EH&S matters. In some cases, the respondents argued that it was not possible for them to insist on environmental standards because the joint venture partner was less concerned with environmental conditions. Being minority partners seemed to place Danish TNCs in rather passive roles in regard to the environment, informing their partners of the possibilities of improving environmental conditions, but without insisting. Even where the Danish company is a majority partner, problems concerning the allocation of environmental responsibilities and decision making procedures were reported. For instance, a company in the electronics industry with an investment project in India reported that *"the operational level we do not get too involved in. We concentrate on the strategic decisions by virtue of our seat at the board"*. In no cases it has been suggested that a company had been willing to forego a partnership on the basis of differing opinions over EH&S matters.

5. Summary

The EEAS identified a host of barriers to cross border environmental management in emerging economies. These barriers were mainly associated with environmental regulations and infrastructures.

Thus, regulatory authorities did not sufficiently reward environmentally responsible behavior, and lack of environmental infrastructures such as waste treatment facilities or sewage plants made it difficult to maintain high environmental performance. Also culture was mentioned as a major barriers to cross border environmental management; often there was little understanding of the importance of observing high standards. Finally, several respondents reported that they had not been able to convince their emerging economy joint venture partners that it was important to implement high environmental standards in emerging economies. The overall impression was that it primarily was SMEs that cited barriers to cross border environmental management, whereas the larger TNCs seemed better positioned to insulate themselves from those barriers.

V. Conclusion

This essay presented the results of a major survey of cross border environmental management in Danish industry. The survey, the Emerging Economy Affiliate Survey, included 153 Danish manufacturing companies and focused on motives behind investment in emerging economies and the cross border environmental management practices applied in regard to these operations. The findings of the EEAS questions some of the observations made by the existing literature. For instance, it has been concluded that TNCs generally have established extensive cross border environmental management standards and procedures. However, focusing on a small country which, like Denmark, is dominated by SMEs, the picture seems more bleak. Thus, the main finding of the EEAS is that cross border environmental management in Danish industry is rather embryonic. Only around 17% of the companies have formalized control and reporting procedures on environmental performance at emerging economy affiliates and only around 12% pledge to use the same EH&S standards regardless of location. In fact, almost 40% of the Danish TNCs explicitly reported that they have no environmental liaison with emerging economy affiliates. These observations imply that the majority of Danish TNCs do not consider cross border environmental management an issue of concern.

The essay suggested that the main explanation for the lack of formalization of cross border environmental management has to do with the strong presence of SMEs among Danish TNCs investing abroad. Especially in Eastern Europe, the internationalization of Danish industry seems to be carried by SMEs to a comparatively large extend. Such companies typically have little or no previous experience with international operations including experience with organizing environmental management across borders. This explanation is supported by the fact that controlling for the size of the company, and even more importantly, controlling for the international orientation of the company

measured in terms of number of foreign affiliates, the difference between Danish and foreign companies in terms of cross border environmental management virtually evaporates.

In addition to this explanation, the EEAS identified a large number of barriers to the effective implementation of cross border environmental management in the emerging economy host countries. These barriers, which incidentally seemed more of a concern to SMEs, included lack of environmental infrastructures, lack of interest or outright incompetence among local authorities, lack of trained personnel, cultural barriers and problems related to business arrangements. It seemed that while the largest TNCs by internalizing environmental controls had been largely capable of insulating themselves from these barriers, they affected in a very direct manner the environmental conduct of SMEs.

While the majority of Danish companies investing in emerging economies downplays environmental dimensions, there is no evidence that Danish companies are actively transferring polluting productions to these countries. It was suggested that it is highly unlikely that Danish companies relocate polluting productions to emerging economies in order to escape environmental control costs in Denmark. Typically, investment in emerging economies are undertaken in order to get access to markets or access to raw materials and only 18% of all investment are made to take advantage of favorable cost conditions in emerging economies. In these cases, the environment might be a factor, but none of the companies surveyed conceded to that. Instead, virtually all cost induced investment projects were motivated by cheap labor.

Finally, the EEAS examined why, after all, a proportion of Danish TNCs manage the environment across borders and seek to encourage high EH&S performance in emerging economy affiliates. One very important factor identified was related to economies of scale. To operate with numerous management systems and technologies is simply too costly in terms of resource consumption. Therefore especially companies with multiple international operations tend to *integrate environmental controls and standardize their environmental management systems across borders*. A second motivating factor identified through the EEAS was that management and technology is closely related in an investment project. As most companies investing on commercial terms know of no better way of organizing production than the one that proved successful in Denmark, they will typically copy the Danish production equipment and management systems in emerging economy operations. The result is that the emerging economy operation often is fairly similar to the Danish operation in terms of environmental management. A third factor prompting cross border environmental management is that markets are increasingly rewarding companies that behave in a responsible manner. A fourth factor especially important in a country like Denmark is that a large share of Danish FDI to emerging economies is undertaken in partnership with state sponsored investment corporations which often will encourage or even require environmentally responsible behavior.

This brief survey of environmental management practices in Danish TNCs indicates that environmental management still remains to be extended to emerging economy operations. In the

future there is a great challenge of educating Danish companies on the importance of adopting cross border environmental management. This not only in relation to controlled subsidiaries, but also in relation to joint venture partners, suppliers and contractors. Especially SME TNCs seem less aware that there is a moral as well as environmental issue at stake when investing in emerging economies. The investment corporations IFU and IØ, together with industry associations can play a pivotal role in facilitating an awareness in the Danish business community on cross border environmental management.

Annexes

Annexes

ANNEX I: Methodology of the study of cross border environmental management in Danish TNCs

The survey of cross border environmental management in Danish TNCs builds almost exclusively on primary data. This methodological section will give a detailed account of the data collection process. Moreover, it will describe the methodological problems encountered, and assess to what extent these problems invalidate the conclusions of the survey.

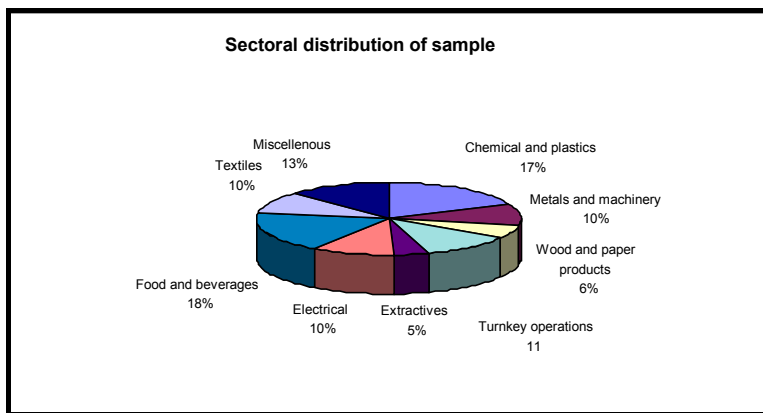
I. The data collection process

The data on which the survey of cross border environmental management in Danish TNCs is based was collected in 1995. The data was consolidated in the Emerging Economies Affiliate Survey (EEAS) database. The database consists of two types of data; firm-specific data and responses to interviews. The firm specific data is for instance information on annual sales, industry, number of employees, number and location of foreign affiliates etc.. These data was collected from official sources, in particular the Danish Erhvervs og Selskabsstyrelsen register of foreign investment projects. These data was supplemented with data from annual reports from the Industrialization Fund for Developing countries (IFU) and the Investmentfund for Eastern Europe (IØ) and annual reports from individual companies. For a more detailed account of the identification of emerging economy investment projects and the collection of financial data on the companies investing in these countries, see Hansen 1996 (33 ff.)

Of the 389 Danish companies with 858 investment projects (minority as well as majority owned) in emerging economies consolidated in th EEAS 190 mainly manufacturing and extractive companies with activities in LDCs or Eastern Europe were a priori selected for further analysis. The companies excluded were mainly firms in the service and finance industry, firms with only sales offices in emerging economies and firms with very few employees. The reason that the EEAS chose to exclude these types of companies was that the environmental problems associated with the foreign operations of such companies could be expected to be negligible. Of the 190 mainly manufacturing and extractives companies chosen for further analysis, interviews were completed with 153. The 37 companies originally targeted but not responding was typically companies, where the phone number and address could not be made available, companies that didn't exist any more or companies where repeated contacts could not³⁹ produce a person to be interviewed. Only in

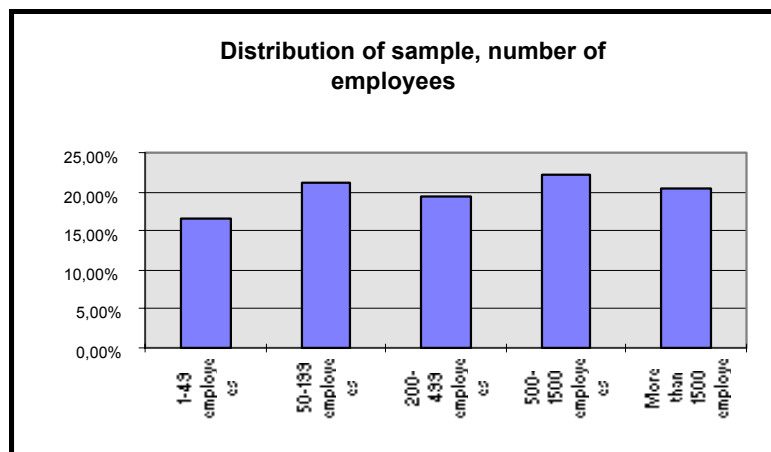
six cases, did the companies explicitly refuse to participate, either because they could not give away, what was considered to be sensitive information or because they didn't have time.

The interviews took place either by telephone or through on site interviews with officers responsible for environmental affairs or if such a person could not be identified, managers with knowledge of the foreign affiliates. The interviews took on average 15 minutes, some were much longer. Most respondents requested anonymity. The interviews followed an interview guide consisting of nine questions. These were: 1. What were the motives behind investment in the emerging economy?; 2. Does the company have an environmental policy?; 3. Is or considers the company to become certified according to one of the environmental management standards?; 4. Which



Figur 5. Based on the EEAS, n=112

environmental standards, other than local, are observed in emerging economy operations?; 5. Does the company have an explicit policy of operating with Danish environmental standards in emerging economy operations?; 6. How does the company organize environmental liaison and controls with emerging economy affiliates?; 7. Does the company conduct environmental screening of suppliers and subcontractors?; 8. What are the major drivers of high EH&S performance in emerging economy operations?; 9. What are the major barriers to high EH&S



Figur 6. Based on the EEAS, n=112

performance in emerging economy operations? Respondents were requested to expand on each of the questions. At the end of each interview, the respondent were requested to provide written material, e.g. written environmental policies, environmental reports, etc.

The 153 companies provided as a minimum information on motives behind their investment projects in

emerging economies, *inter alia* whether environmental costs had been a factor in the investment decision. Most of the 153 companies provided additional information on their environmental management system. However, 41 records were eliminated in the further analysis of cross border

environmental management in Danish TNCs. In some cases, the emerging economy activity was too small, too new or too environmentally insignificant to reasonably expect cross border environmental activities. In other cases, information on cross border environmental management was obtained, but this information did not concern affiliates in emerging economies but affiliates in OECD countries. Finally, it was in some instances impossible to identify a person with a credible knowledge of environmental dimensions of the foreign affiliates. Thus, the analysis of cross border environmental management practices in Danish TNCs is eventually based on 112 interviews. This means that close to 60% of the 190 TNCs originally targeted provided full information. The actual response rate though is in fact significantly higher as most of the companies excluded from statistical analysis were irrelevant, either because the companies didn't exist or because their potential environmental impacts were negligible.

As illustrated with the above Figure 5, the sample represented a broad variety of industries (defined in terms of the main activity of the parent company). Chemical and food companies were the most strongly represented industries, reflecting these industries' strong position in the internationalization of Danish industry (Hansen, 1996). As illustrated in Figure 6, the sample had a fairly even representation of different sizes of companies measured in terms of number of employees.

II. Methodology problems

This section will present the main methodological problems of the survey and discuss, whether these problems may invalidate the findings of the survey. The section will make a distinction between problems associated with the reliability of the data and problems associated with the validity of the survey design.

a. Reliability problems

One reliability problem of the data gathered through the interviews is that respondents typically will be reluctant to talk about environmentally sensitive issues. Obviously, negative stories such as the export of outdated and polluting technology are sensitive, but also positive stories can be sensitive because they make the company subject to increased public scrutiny; a company claiming to have state-of-the-art environmental programs better be right; otherwise this program may in fact back fire in terms of lost credibility and consumer confidence. Even though the respondents were promised anonymity, it is likely that they will tend to downplay negative stories and emphasize positive stories. This propensity can have biased the EEAS to overestimate the scope and content of cross border environmental management in Danish industry.

A second reliability problem is that the EEAS gives no guarantee that the reported cross border environmental management practices in fact are implemented at the emerging economy

affiliates. It could well be the case that cross border environmental management systems are established at headquarters in order to satisfy the demands and preferences of stakeholders and consumers in Denmark, but that these systems are never implemented in any serious and consistent manner in emerging economies.

A third reliability problem was associated with the fact that the interviews were not taped but stenographed by the interviewer. This could introduce a small margin of error. Another and related source of error was that the comments made by the respondents were translated from Danish to English in the report of the survey.

A fourth reliability problem was related to the use of environmental management lingo. It was the impression that there are major differences in the use of language between environment officers of large corporations, who often have close contacts to the international business community and who often subscribes to specialized environmental management journals, and managers of SMEs, who have environmental responsibilities as one among many tasks and who typically address environmental problems in an ad hoc and piecemeal manner. This could bias the survey toward concluding that large TNCs have more elaborate cross border environmental management procedures. However, the main reason why interviews rather than mailed questionnaires were employed to gather the data was exactly to eliminate this bias. An early pilot study had thus indicated that there would be major reliability problems associated with mailed questionnaires as many respondents, especially those of SME TNCs, would have problems understanding the questions³². By conducting interviews, it was possible for the interviewer to elaborate and explain the questions in more detail.

A fifth problem associated with the data - not exactly a reliability problem - was that data in some cases simply were not available. For instance, the study had originally intended to conduct a thorough test of the industrial flight hypothesis. The plan was to examine, whether Danish FDI to emerging economies over time has moved toward a growing pollution intensity. The model for this study should have been Leonard's 1988 study of industrial flight in the US industry (Leonard, 1988). However, this hypothesis proved extremely difficult to test in a Danish context due to the mediocre state of official statistics on this issue in Denmark: First, in contrast to the US, there exists no Danish statistics on the pollution abatement costs of various industries. Second, the Danish National Bank do not make publicly available data on investment by individual sectors and industries in individual countries. This obviously prevents researchers from examining whether there is a pollution bias of investment in certain countries. As a consequence of the lack of statistical data it was not possible to make a study similar to Leonard's in a Danish context. Instead, a primitive test of the industrial flight hypothesis was made through a static analysis based on the EEAS comparing the sectoral

³² It is probable that mailed questionnaires as part of major environmental management surveys generally commit overkill by using too sophisticated environmental management lingo and that the reliability of answers to such surveys therefor often will be rather low.

composition of OECD investment and emerging economy investment, and through asking responding companies what motivated them to invest in emerging economies.

b. Validity problems

While the above observations may question the reliability of the data obtained, it might well be the case that the data are reliable but that the validity of the conclusions drawn from these data is low. One such validity problem is that the sample was highly diversified. Thus, the sample range from very large multinational companies with 40-50 foreign operations to small companies with one or two foreign operations. It could be questioned whether it makes sense to draw conclusions regarding cross border environmental management based on companies that differ. Moreover, the kind of investment projects the companies are involved in are of a highly differing nature. In some cases, the foreign affiliates registered by the EEAS are merely acquisitions of existing operations, where a minimum transfer of technology from the Danish parent to the affiliate had taken place. In other cases, the investment project was a green field investment, where a complete Danish blueprint was supplanted to the emerging economy host country. Obviously, the environmental management challenges of these types of projects are highly different and it can be questioned whether it makes sense to lump such projects together. And, in some cases the operations identified through the EEAS were joint ventures, either with local companies, with government bodies or with the Danish investment promoting agencies. In other cases the investment projects were largely turnkey projects, where the Danish company invested a small sum in order to assure credibility of the project. These variations in the nature of the business arrangement further question whether it makes sense to search for commonalities in environmental management.

Finally, and probably most importantly, the emerging economy is treated as more or less a black box by the EEAS. But it is obvious that the conditions of production, including the conditions of implementing cross border environmental management, vary enormously across regions and countries. Some countries, such as several of the East Asian and Eastern European countries, are rapidly approaching OECD income levels and are establishing environmental regulations fairly similar to those already in existence in OECD countries. Many of these countries have environmental regulations and environmental infrastructures in place that make it both necessary and possible to implement cross border environmental management. In contrast, some countries, especially on the African continent, have not yet established anything but a highly rudimentary industrial infrastructure, let alone environmental regulations and infrastructures. Implementing cross border environmental management under these conditions demands much more from the parent company than is the case in advanced South East Asian and Eastern European countries. Yet, the EEAS treats all these countries and regions as were they alike.

c. An assessment of the methodology problems

Thus, the methodological problems of the EEAS seems to be legion. But are they seriously enough to invalidate the conclusions of the survey? Probably not!

First, the reliability problems described above are probably not more serious than those of similar surveys of environmental management. It is possible that respondents do exaggerate the extend of their cross border environmental management. While this may or may not be the case, the EEAS still found that the level of cross border environmental management is significantly below that detected by previous studies in other countries (see e.g. UNCTAD, 1993 or Rappaport et al, 1991). As for the contention that some respondents may have difficulties understanding the questions, the use of interviews probably gave the EEAS a higher reliability than surveys relying on mailed surveys. As for the contention that reported cross border environmental management may not be implemented this could very well be the case. But this problem exists in all management surveys relying on corporate reporting. To eliminate this problem would require a completely different survey design, where case studies and on site visits at emerging economy affiliates were made.

As for the contention that it might not make sense to lump together investment projects of such a differing nature and examine their cross border environmental management practices, it is assessed that, although the projects are wildly differing, they have a series of commonalties that makes it plausible to lump them together. First, all investment projects are made by companies with headquarters in Denmark. Second, they are all involved in international production in emerging economies. Third, the kind of investment projects they are involved in is mainly of a commercial nature and they all involve foreign direct investment. Finally, even if the investment projects differ, essentially the moral challenge involved is the same, regardless small or large TNCs, chemical or electronic TNCs, or TNCs operating in Eastern Europe or in LDCs. The moral challenge is whether, and to what extend we can treat people and the environment in LDCs in a way differently from the way we treat people and the environment in OECD countries. Thus, differences apart, these factors make it reasonable to apply a common yardstick to all these companies.

As for the argument that emerging economies are too different to treat them as a unified category, it is assessed that it still makes sense to ignore differences in these countries. It is conceded that the EEAS clearly views the problem area top down, from the perspective of headquarters in Denmark and that emerging economies are treated as a black box. The bottom line however is that environmental regulations and standards and in particular the enforcement of these regulations and standards in emerging economies generally are less developed than in Denmark. Therefor there is an incentive for Danish companies to loosen environmental controls in these countries and to operate with environmental double standards. This moral as well as environmental problem is essentially the same whether one talks about a least developed country in Africa or one speaks of a proto-industrialized country in South East Asia.

IV. Conclusion

In conclusion, it would have been preferable if the statements received from environmental managers at Danish production facilities had been double checked through on site visits at emerging economy production facilities. However, what would have been gained in detail from such a survey design would have been lost in terms of generality. The EEAS has provided a comprehensive overview of cross border environmental management seen top down from the perspective of headquarters in Denmark. This is an important aspect of TNC conduct in relation to emerging economies. The next phase will be to examine how these cross border management systems are implemented at production facilities in LDCs.

Annex II: Environmental Management at Danish Production facilities

The EAAS focused mainly on the cross border aspects of environmental management. However, the survey also casted light on the state of environmental management at Danish production facilities. In the following we will present the main findings of the EEAS in regard to environmental management at Danish production facilities.

I. Danish environmental regulation

Denmark established its first environmental law - The Environmental Protection Act - in 1972. The main objective of this legislation was to deal with problems related to industrial pollution and was designed as a frame-legislation with broad competencies delegated to the environment administration at the state, regional and local level. Since its inception, the legislation has evolved in several ways. First, the initial focus on end-of-pipe solutions and environmental infrastructure development has been replaced by a focus on pollution prevention and clean technology. Second, the original focus on concentrated and often highly dangerous pollution has been replaced by a focus on diffuse and transborder environmental problems. Finally, while the initial focus were on industrial pollution, recent amendments to the legislation has become more focused on the environmental problems of households and agricultural production.

In general, the implementation and development of Danish environmental regulation in regard to industry has been rather co-operative and resilient, except for a few highly publicized accidents and pollution in the late seventies and early eighties. Industry has been consulted before new legislation was adopted and has agreed to most of the amendments to the Environmental Protection Act. Also at the implementation level, the regulatory mode has been rather cooperative. Typically, industry has perceived the environmental authorities more as consultants than as controllers, and industry is represented in the administrative courts deciding environmental disputes.

While this corporatistic and consensus oriented regulatory climate may render the Danish environmental regulation smooth and flexible, it is an open question whether it encourages Danish companies to develop and adopt self regulatory measures such as environmental management systems to the same extend as companies coming from countries with more adversarial and litigious regulatory climates, such as the US. This question ⁴⁶ will be illuminated in the following sections by examining the scope and content of environmental management systems

implemented at headquarters of the responding Danish manufacturing TNCs. Each of the companies were asked briefly to describe the nature of their environmental management system in Denmark. The interviews focused on three questions in regard to environmental management at Danish production facilities: Does the company have a designated environment officer; has the company adopted an environmental policy; and has the company implemented any of the international environmental management standards currently available?

II. Environment officers

Studies of environmental management in large US based TNCs have concluded that environmental management is included as a line function in more than 50% of all US companies (see Gladwin, 1987 and Rappaport, 1991). Typically this function provides advice, consolidates information and designs training programs. In this regard establishing environmental functions, Danish companies seems to be trailing significantly behind US companies. Thus only 44 of the 153 respondents or 29% had a designated person for environmental affairs³³. Moreover, there appears to be no standardized way of embedding environmental management at Danish companies. In larger corporations the respondent was typically head of the environment office, but in most cases there was only one person to deal with environmental affairs. Moreover, in most cases, the person responsible for the environment was also quality manager or had other management functions. In a few cases, especially in the very small companies, responsibilities for environmental affairs were placed with top management.

III. Environmental policies

a. Written policy statements

An indication of the environmental commitment of a company is whether it has an environmental policy stating the principles and objectives of the company's environmental activities. The adoption of environmental policy statements is an exercise that originates from North-America. International figures from the early nineties indicate that the publication of policy statements still to a large extent is an American exercise: A 1993 UN study of environmental management in 200 of the

³³ Madsen/ Uihøi's 1995 survey of 228 Danish companies, all small and medium sized, found that only 6% of the responding companies had established an independent environmental function. The difference between this study and the EEAS is probably related to the fact that in many cases the person allocated environmental responsibilities according to the EEAS was simultaneously responsible for quality management or other management functions. Another explanation on the discrepancy is that Madsen/Uihøi concentrated their study on small and medium sized corporations.

world largest TNCs found that 43% of the TNCs had adopted an environmental policy statement; 69% of all US based companies had a statement whereas only 41% in Europe and 18% in Japan had environmental policy statements (UNCTAD, 1993).

In Denmark, the environmental policies seem even less common than in the rest of Europe; according to the EEAS, 31% reported that they have a written environmental policy in place or have it under preparation³⁴. There is a strong correlation between the size of the company and its propensity to have a written policy statement. Thus, 2/3 of the companies with more than 1500 employees had a written statement, and none of the companies with less than 50 employees had a written environmental policy in place (Annex table I).

b. The content of the environmental policies

Perusing through the policy statements of Danish companies the impression is that their content is relatively general and uncommittal. Typically they state that the company should minimize its environmental impacts, train and educate employees to deal with environmental problems, and maintain good relations with the public through reporting and communication. In a few cases the policy in fairly precise terms sets objectives for performance on various environmental dimensions, for instance to cut water emissions with 20% within one year, or reduce energy consumption with 10% each year for the next 5 years. Some companies reported that a guideline issued by an international industry association, in particular the ICC Business Charter for Sustainable Development, worked as their environmental policy.

In addition to the companies reporting that they have a written environmental policy in place, many companies, especially small and medium sized companies (SMEs), argued that they adhere to certain environmental 'principles' or 'philosophies', but that these were informal and un-written. One respondent reported that it is the policy of the company to behave in an environmentally responsible manner even if it could save money doing

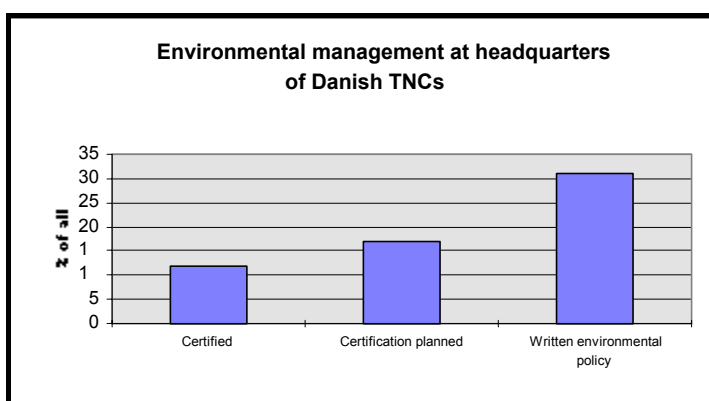


Figure 7. Based on the EEAS, n=112

³⁴ This number is lower than previous Danish studies. Thus, a 1993 study by Price Waterhouse found that around 50% of Danish companies have an environmental policy and that around 15% planned to formulate one (Price Waterhouse, 1993:4). And Madsen/Ulhøi found that 34% of Danish companies have an environmental policy. Methodological differences can largely account for these variations. First, whereas the EEAS had a response rate significantly higher than the studies by Price Waterhouse and Madsen/Ulhøi. Therefore these two latter studies could be expected to be biased toward companies with positive environmental records. Second, the two latter studies did not make a distinction between written and unwritten environmental policies, a factor that may further bias these studies to over-estimate the extend of policy statements.

otherwise; *“We must behave in a manner so that we can look our selves in the mirror”*. Other companies argued that the environmentally responsible behavior was implicit in the corporate culture; *“To excel in business also implies to excel in the environmental field in terms of production and products”*. Some of the large diversified companies reported that while they have no environmental policies, they have adopted more general 'codes of business ethics' and that these codes also implied a commitment to behave in an environmentally responsible manner.

IV. Certified Environmental Management Systems

Companies having polluting activities must necessarily have environmental management procedures in place, explicit or informal. The question is to what extent these systems have been formalized into an environmental management system proper where procedures are described and responsibilities formally allocated. A proxy measure of the formalization of an environmental management system is whether it has been certified according to one of the international environmental management standards. Currently numerous such standards are available to a company, e.g. the BS 7750, the ISO 14000 series or the EMAS. Being certified according to such standards is increasingly important for companies: It is a signal to the public, to customers and to authorities that the company have established a formal system for addressing environmental concerns. Furthermore, certification is increasingly becoming mandatory if a company will participate in large infrastructure projects as contractors or suppliers:

12% of the respondents reported that they have a certified environmental management system in place. An additional 17% reported that they were planning to have their environmental management

system certified in due course, either according to the BS 7750, the ISO 14001 or the EMAS³⁵. As were the case with the adoption of environmental policies, there is a very strong correlation between

Novo Nordic Environmental Policy

“Novo Nordic believes that everyone must care for the environment and our natural resources. Novo Nordic is committed to constantly improving our environmental performance as part of our ambition to be a good corporate citizen. Novo Nordic has signed the International Chamber of Commerce's Business Charter for Sustainable Development. In carrying out our business goals we will:

- 1) seek to minimize the impact of our operations on the environment by developing more environmentally sound processes and minimizing emissions, consumption of raw materials and energy;
- 2) strive to set high standards of environmental performance;
- 3) educate and motivate our employees to comply with this policy;
- 4) seek cooperation of all our suppliers and contractors to ensure that the goods and services they provide are environmentally sound;
- 5) communicate openly - both internally and externally - about environmental responsibilities and report on our environmental performance annually” (1993 Environmental Report).

³⁵ A survey by Price Water House found that 20% of Danish companies have a “documented environmental management system” and that 30% plan to establish one. The discrepancy between this study and the 1995 EEAS could be related to the fact that Price Water House only received responses from 180 or 500 targeted companies, probably the environmentally leading companies. Moreover, it is not clear what is meant by a “documented environmental management system” in the Price Water House study.

certification of environmental management systems and the size and sector of the company. For instance, none of the companies with less than 50 employees were certified or planned so, whereas almost 2/3 of the companies with more than 1500 employees were, or planned to be certified (Annex table II).

While only around 30% of the respondents had or considered to adopt an international environmental management standard, most respondent reported that they implement environmental management procedures as part of normal ways of doing business. For instance it was reported that quality management systems often establish criteria for waste treatment, ventilation, personnel protection and other environmentally significant dimensions. One respondent even argued that 70% of all quality management is environmental management. Sometimes, environmental concerns were actively integrated into the quality management system because *“having too many systems would cost a fortune”*. Thus, one company had devised a *“three string system”* where environmental management together with workers health and safety management was integrated into the ISO 9001 quality system.

In several cases the respondents argued that they needed no certified environmental management system as their production had been approved according to the procedures of the Danish Environmental Protection Law Chapter 5 for Highly Polluting Industries. This approval procedure had prompted them to establish various monitoring and control procedures thereby allegedly removing the need for a separate environmental management system. Finally, a company with previous serious pollution problems, a chemical company, argued that it had found certification unwarranted as a certified environmental management system was designed solely for *“companies that could not manage the task by them selves”*.

V. Conclusion

This annex briefly analyzed the state of environmental management at Danish production facilities. The 1995 EEAS indicates that environmental management still is in an upstart phase in Danish industry. Only around 30% of the respondents have a formal written environmental policy in place and only 12% have been certified according to international environmental management standards (although an additional 17% considered to become so). Instead of formalizing environmental management, Danish companies apparently prefer to integrate their environmental management system into the general quality management system or rely on the statutory approval procedures of the Danish Environmental Protection Law. Thus, environmental management at Danish production facilities seems rather informal.

Annex III: Annex tables

Annex table I

	Has environmental policy				
	False	true	Total	n	
1-49 employees	100,00%	0,00%	100,00%	18	
50-199 employees	86,96%	13,04%	100,00%	23	
200-499 employees	76,19%	23,81%	100,00%	21	
500-1500 employees	58,33%	41,67%	100,00%	24	
More than 1500 employees	31,82%	68,18%	100,00%	22	
Total	69,44%	30,56%	100,00%	108	

Annex table II

	Has or considers certification				
	True	False	Total	n	
1-49 employees	0,00%	100,00%	100,00%	18	
50-199 employees	13,04%	86,96%	100,00%	23	
200-499 employees	33,33%	66,67%	100,00%	21	
500-1500 employees	29,17%	70,83%	100,00%	24	
More than 1500 employees	63,64%	36,36%	100,00%	22	
Total	28,70%	71,30%	100,00%	108	

Annex table III

	Danish standards regardless of location				
	True	False	Total	n	
1-49 employees	11,11%	88,89%	100,00%	18	
50-199 employees	0,00%	100,00%	100,00%	23	
200-499 employees	9,52%	90,48%	100,00%	21	
500-1500 employees	20,83%	79,17%	100,00%	24	
More than 1500 employees	22,73%	77,27%	100,00%	22	

Annexes

Total	12,96%	87,04%	100,00%	108
--------------	--------	--------	---------	-----

Annex table IV

Count of Firmanavn # of affiliates ²	Danish standards regardless of location		Total	n
	True	False		
1	5,00%	95,00%	100,00%	20
2-3 affiliates	7,69%	92,31%	100,00%	26
4-9 affiliates	8,82%	91,18%	100,00%	34
10-25 affiliates	22,22%	77,78%	100,00%	18
More than 25 affiliates	36,36%	63,64%	100,00%	11
Hovedtotal	12,84%	87,16%	100,00%	109

Annex table V

	Has formalized control and reporting procedures		Total	n
	True	False		
1-49 employees	0,00%	100,00%	100,00%	18
50-199 employees	0,00%	100,00%	100,00%	23
200-499 employees	9,52%	90,48%	100,00%	21
500-1500 employees	29,17%	70,83%	100,00%	24
More than 1500 employees	40,91%	59,09%	100,00%	22
Total	16,67%	83,33%	100,00%	108

Annex Table VI

# of affiliates ²	Has formalized control and reporting procedures		Total	n
	True	False		
1	5,00%	95,00%	100,00%	20
2-3 affiliates	3,85%	96,15%	100,00%	26
4-9 affiliates	17,65%	82,35%	100,00%	34
10-25 affiliates	22,22%	77,78%	100,00%	18
More than 25 affiliates	63,64%	36,36%	100,00%	11
True	17,43%	82,57%	100,00%	109

Annex tables

Literature

- Arthur D. Little. Environmental Health and Safety Policies: Current Practices and Future Trends. Cambridge, Massachusetts: Arthur D. Little, 1988.
- BCSD (The Business Council for Sustainable Development). Changing Course. A Global Business Perspective on Development and the Environment. MIT Press. Mass, 1992.
- Booz-Allen & Hamilton, Corporate Environmental Management: And Executive Survey. USA: 1991
- Brown, H. et al., Corporate Environmentalism in a Global Economy: Societal values in international technology transfer. Conn.: Quorum Books, 1993.
- Castleman, B.I. "How We Export Dangerous Industries, Business and Society Review, Fall, pp. 7-14, 1978.
- Castleman, B.I., "The Double Standard in Industrial Hazards", in Jane Ives (ed), The Export of Hazard: Transnational Corporations and Environmental Control Issues, Boston:Routledge and Kegan Paul, 1985.
- Chemical Manufactures Association. An Industry Survey of Chemical Company Activities to Reduce Unreasonable Risk. Washington DC:CMA, February 1983.
- Clark,G.,"Global Competition and the Environmental Performance of Australian Mineral Companies. Is the "Race to the Bottom" inevitable?" International Environmental Affairs no.3, pp. 147 -172, 1993.
- Dean, J.M., "Trade and the Environment: A Survey of the Literature", Low, P., International Trade and the Environment, Washington: World Bank Discussion Papers, 1992.
- Deloitte & Touche. The Environmental Transformation of US industry: A Survey of US Multinationalæ Corporations Environmental Strategies, Management Policies and Perceptions.Stanford: Stanford University Graduate School of Business Public Management Program, 1990.
- Dillon/ Fisher.Environmental Management in Corporations: Methods and Motivations. Massachusetts: The Center for Environmental Management,1992.
- ESCAP (Economic and Social Commission for Asia and the Pacific) and UNCTC (United Nations Centre on TNCs), Transnational corporations and environmental management in selected Asian and Pacific developing countries. Bangkok:United Nations, 1988.
- Friedman, F.B. Practical Guide to Environmental Management. Washington. D.C.: Environmental Law Institute, 1988.
- Georg, S., Når løsningen bliver problemet. København:Samfundsliteratur, 1993.
- Gladwin, T. "Environment and Development and Multinational Enterprises", in C. Pearson, ed., Multinational Corporations, Environment and the Third World, Duke University Press, 1987.
- Goldschmidt, L., Internationalt standardiseringsarbejde: En udfordring for miljøadministrationen, in Lubcke,P., Miljøet, Markedet og Velfærdsstaten, København:Fremad, 1995.
- Hadlock, C.R., Multinational Corporations and the Transfer of Environmental Technology to Developing Countries, in International Environmental Affairs, Vol 6, no 2, 1994.
- Hansen, M.W., Danish Foreign Direct Investment in Less Developed Countries and Eastern Europe: A Survey of the International Operations of Danish Companies, 54 Working Paper, Copenhagen:CBS, 1996.

Literature

- Hansen, M.W. and Gleckman, H., "Environmental Management in Transnational Corporations", in Kolluru, K., Environmental Strategies Handbook, New York: MacGraw Hill, 1993.
- Hansen, M & A.Ruud. Transnational Corporate Environmental Management Strategy. A portrayal. Working Paper, Centre for Development and the Environment. University of Oslo, 1995.
- Hansen, M.W., A.Ruud, "Managing the environment across borders", Paper presented to the American Academy of Management Annual Meeting in Cincinnati, November, 1996.
- Hansen, M.W., and Skou Andersen, M., Vandmiljøplanen: Fra Forhandling til Symbol, Århus: Niche, 1991.
- Hesselberg et al. . Industrial Pollution and the South. F-I-L- Working paper, no. 6 University of Oslo, 1995.
- Hesselberg, J., Knutsen, H., Location of pollution intensive industry in a North/South perspective: Review of the literature, F.I.L. Working paper No1, Oslo: University of Oslo, 1994.
- International Labor Organization (ILO), Safety and Health Practices of Multinational Enterprises, Geneva:ILO, 1984.
- IFU (Industrialiseringsfonden for udviklingslande), Annual Reports 1993 and 1994.
- ISO (International Standards Organization), Guide to environmental management principles, systems and reporting techniques, Comitee Draft, ISO/TC207/SC1/WG2/September 23, 1994.
- IØ (Investingsfonden for Østeuropa), Annual Reports 1993 and 1994.
- Ives, J.H. ed., The Export of Hazard. Transnational Corporations and Environmental Control Issues. London: Routledge and Kegan Paul, 1985.
- Jaffe et al, "Environmental Regulation and the Competitiveness of U.S. Manufacturing: What does the Evidence Tell Us?", Journal of Economic Literature, Vol XXXIII, pp 132-163, 1995.
- Kampmann, J., Metal om miljø. Kbhv:Metalarbejderforbundet, 1991.
- Kasperson, J. and R. Kasperson, 'Corpoate culture and the transfer of technology', in H.Brown, P. Derr, O. Renn, and A. White, Corporate Environmentalism in a Global Economy: Societal values in technology Transfer, Westport: Quorum Books, 1993.
- Knutsen, Hege, International location of polluting industries: review of the literature, Occasional Papers no 3. Oslo: Samfundsgeografi, 1991.
- Knutsen, H.M., "International Location of Polluting Industries:Review of the Literature" in Hesselberg and Knutsen, Location of Pollution Intensive Industry in a North South Perspective: Review of the Literature, Oslo: F.I.L Working Papers no 1, 1994.
- Kristiansen, Kristian, Cleaner industrial production in developing countries. Paper presented to OECD workshop on Development Assistance and Technology Cooperation for Cleaner Industrial Production in Developing Countries, 1993.
- Leonard, H.J., Pollution and the Struggle for World Product: Multinational Corporations, Environment and International Comparative Advantage, Cambridge: Cambridge University Press, 1988.
- Levenstein and Eller, "Exporting hazardous industries: For example is not proof", in Ives, J.H ed.. The Export of Hazard. Transnational Corporations and Environmental Control Issues. Routledge and Kegan Paul, London, 1985.
- Levy, David L., 'The environmental practices and performance of transnational corporations', in Transnational Corporations, vol 4, no 1, 1995.
- Lorenzen, B., Medarbejdernes og fagbevægelsens rolle i den forebyggende miljøindsats, in Lubcke,P., Miljøet, Markedet og Velfærdsstaten, København:Fremad, 1995.

Literature

- Lübcke, Poul, Miljøet, markedet og velfærdsstaten, København:Fremad, 1995.
- Lundqvist, Lennart, The Hare and the Tortoise: Clean Air Policies in the United States and Sweden. Ann Arbor: University of Michigan Press, 1980.
- Madsen, H. and Ulhøi, J.P., Sustainable Corporate Management in Denmark, Overview of results from a survey of the present greening situation in Danish industry, DEMS Working Paper No 3, Århus: IFI, 1995.
- McKinsey & Company. The corporate response to the environmental challenge. Amsterdam: McKinsey & Company, 1991.
- Møller, H., S. Andersen, "Teknologi til ulanden", Teknologi og ulande, nr.17, 1995.
- Nielsen, Jesper, Export af farligt arbejde: Et studie i flytning af arbejdsmiljø-og miljøproblemer indenfor EU og globalt, Køge:SID, 1995.
- Novo Nordic Environment Report, 1994-95
- Pearson, C. ed. , Multinational Corporations, Environment and the Third World , Duke:Duke University Press, 1987.
- Pedersen, J., "Etik og handel med ulande", Teknologi og Ulande, nr 17, 1995.
- Pedersen, T., et al, Danske virksomheders etableringer i udlandet: Hovedresultater fra en empirisk undersøgelse. Kobenhavn: Handelshøjskolens Forlag, 1993.
- Porter, Michael , "Americas Green Strategy", Scientific American (April 1991), p 168, 1991.
- Price Water House, Miljøaktiviteter i danske virksomheder, Kbhv:Price Waterhouse, 1993.
- Rappaport A. et al, Multinational Corporations and the Environment: A Survey of Global Practices. MA: The Center for Environmental Management, 1991.
- Ruud A. . Transnational Corporations and Environmental Considerations in Developing Countries. Working paper, Centre for Development and the Environment, University of Oslo, 1992.
- Schmidheiny, S. & The Business Council for Sustainable Development (BCSD). Changing Course. A Global Business Perspective on Development and the Environment. MIT Press. Mass, 1992.
- Stafford, H., The effects of Environmental Regulation on Industrial Location, Report on National Science Foundation grant no.SES-8024562, Cincinnati, June 1983
- Stålvalseværket, Beretning of Regnskab 1995, Frederiksværk:Stålvalseværket, 1996.
- UNCED (United Nations Conference on Environment and Development). Agenda for the 21st Century. A/CONF.151/26 (Vol I-III). New York: United Nations, 1992.
- UNCTAD (United Nations Conference on Trade and Development), Environmental Management in Transnational Corporations, N.Y: United Nations, 1993.
- UNCTAD, International Environmental Law:Emerging Trends and implications for transnational corporations. New York: United Nations, 1993b.
- UNCTAD, Selfregulation of environmental management: An analysis of guidelines set by world industry associations for their member firms, Geneva:UNCTAD, 1996.
- Wheeler and Martin, "Prices, Policies and the International Diffusion of Clean Technology: The case of Wood Pulp Production", in Low, P., International Trade and the Environment, Washington: World Bank, 1992.
- Willums, J.O. & U, Golüke/International Chamber of Commerce From Ideas to Action. Business and Sustainable Development. The Greening of Enterprise, Oslo:Ad Notam, 1992.