



# Perceived Environmental Liability Risks:

Potential Implications for the Swedish  
Environmental Insurance Market



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Miljö och hållbart företagande  
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Miljö och hållbart företagande, 20 p praktik

# **Perceived Environmental Liability Risks: Potential Implications for the Swedish Environmental Insurance Market**



by  
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**Masters Thesis 2006 (20 points), Fall Term 2006**

## **Perceived Environmental Liability Risks: Potential Implications for the Swedish Environmental Insurance Market**

### **Abstract**

The purpose of this thesis is to examine the perceived environmental liability risks of businesses which operate potentially environmental hazardous facilities in Stockholm County, Sweden. In addition, I will identify potential implications of these perceived risks for the Swedish environmental insurance market.

Businesses in Sweden are required by law to retain General Liability (GL) insurance. GL is a liability insurance which covers both first and third parties in cases where a sudden, accidental event has caused damage, including environmental damage. Environmental impairment of a gradual nature is not included in Swedish GL policies. In addition, businesses licensed to operate potentially environmentally hazardous facilities are required to contribute to the mandatory environmental damage and remediation insurance. The purpose the mandatory environmental damage insurance is to offer security to individuals who have suffered environmental damage in cases when the Polluter cannot be established or no longer exists, such in cases in which the polluting business has gone bankrupt.

The empirical study, which included interviews of businesses operating potentially environmentally damaging facilities in Stockholm County, has shown that many businesses have a poor grasp of their environmental insurance coverage. Not only do they lack knowledge of their GL policies but also of the mandatory environmental insurance; in many cases businesses have assumed that they are the insured party. This is far from the truth; to achieve full-spectrum environmental cover for both types of pollution situations, gradual or sudden, accidental, businesses must retain an additional environmental insurance (EIL). Without EIL businesses assume the risk for significant losses resulting from gradual environmental impairment.

There is little environmental law precedence and, in particular, environmental tort liability precedence in Sweden to date. The Polluter Pays Principle is in place and legally ensures that Polluters are held responsible for the damage they give rise to. In practice, however, this principle has not been fully implemented, leading to uncertainties in both how to interpret legal liability and how to manage environmental liability risks.

EIL insurance has thus far been a slow-growth market for insurers in Sweden. This study points to 1) companies' unawareness of their actual insurance protection, the 2) confusion over the mandatory environmental insurance and even the 3) scarcity of environmental tort liability rulings in the Swedish Courts as likely factors in the sluggish EIL market.

### **Keywords:**

**General liability, Insurance market, Environmental risks, Polluter Pays Principle, Mandatory environmental damage and remediation insurance, Pollution Legal Liability (PLL)**

## **Perceived Environmental Liability Risks: Potential Implications for the Swedish Environmental Insurance Market**

**Uppfattade miljöansvarsrisker** – potentiella implikationer för den svenska miljöförsäkringsmarknaden

### **Sammanfattning**

Syftet med denna uppsats är att undersöka de uppfattade miljöansvarsrisker hos företag som bedriver miljöfarliga verksamheter inom Stockholms län. Dessutom skall jag identifiera potentiella implikationer av dessa uppfattade risker för den svenska miljöförsäkringsmarknaden.

Svensk lagstiftning kräver att företag i Sverige tecknar en ansvarsförsäkring. Ansvarsförsäkringen täcker både första och tredje parts anspråk då en plötslig, oförutsedd händelse har givit upphov till skada, även miljöskador. Gradvisa miljöskador innefattas inte av den svenska ansvarsförsäkringen. Dessutom har företag som bedriver miljöfarliga verksamheter har också krav på sig att avsätta medel till den obligatoriska miljöskade- och saneringsförsäkringen. Den lagstadgade miljöskadeförsäkringen syftar till att kompensera individer som skadats men inte har möjlighet att kompenseras av föreningen, till exempel om det inte kan påvisas vilken som är ansvarig eller om den förorenande företaget gått i konkurs.

Denna empiriska studie, vilken omfattat intervjuer av företag som bedriver miljöfarliga verksamheter i Stockholms län, har visat att många företag saknar kunskap om vilket miljöförsäkringsskydd som företaget har. De har både bristfälliga insikter i ansvarsförsäkringens villkor samt i de obligatoriska miljöförsäkringarna. I många fall framgick det att företagen tog förgivet att de var den försäkrade parten. Detta är långt ifrån sanningen; för att uppnå ett heltäckande miljöförsäkringsskydd mot både plötsliga, oförutsedda och gradvisa omständigheter, krävs en tilläggförsäkring (EIL- Environmental Impairment Liability). Utan EIL tar företagen på sig en betydande risk för ekonomiska förluster i samband med gradvisa miljöskador.

Det finns få prejudikat inom miljöjuridik, och särskilt miljöansvar, i Sverige idag. Principen förorenaren betalar (PPP-Polluter Pays Principle) är en viktig del av miljölagstiftningen vilken innebär att förorenaren åläggs ansvar för de skador denne har givit upphov till. Men i praktiken har PPP inte implementerats fullt ut vilket har lett till osäkerheter i tolkningen av miljöansvarslagstiftningen samt i hur företag skall hantera miljöansvarsrisker.

EIL försäkring har till följd av detta än så länge varit en sakta ökande marknad för försäkringsbolagen i Sverige. Denna studie pekar mot flera sannolika faktorer som kan ligga bakom den tröga EIL marknaden: 1) företagens ovisshet angående sitt faktiska miljöförsäkringsskydd, 2) förvirringen kring de lagstadgade miljöförsäkringarna och till och med 3) avsaknaden av miljöansvarsprejudikat i Sverige.

#### **Nyckelord:**

**Företagsansvarsförsäkring, Försäkringsmarknad, Miljörisker, Förorenaren betalar principen, Obligatoriska miljöskade- och saneringsförsäkringar, Pollution Legal Liability (PLL)**

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## *Glossary of Terms*

Confederation of Swedish Enterprise = Svenskt Näringsliv

Cover / Coverage = teckning

Endorsement = en utökning av villkoren

Environmental Code = Miljöbalken

Environmental Court = Miljödömsstolen

Environmental due diligence = en process där miljömässig status bedöms och värderas i ett ekonomiskt perspektiv

Feasibility study = förstudie

First party = Första part; försäkringstagaren själv

General Liability Insurance = Företags ansvarsförsäkring

Impairment = försämring, skade

Installation / facility = verksamhet

Insured = försäkringstagare

Liability = Betalningsansvar

Mandatory environmental damage and remediation insurance = Lagstadgade Miljöskade- och saneringsförsäkring

Perceived risk = Uppfattad risk

Potentially environmentally damaging facility / potentially environmentally harmful installation = Miljöfarlig verksamhet

Regulatory agency = tillsynsmyndighet

Remediation = sanering

Third party = tredje part; andra som kan göra anspråk på verksamhetsutövaren

Tort liability = ersättningsansvar

# Table of Contents

<b>1</b>	<b>INTRODUCTION.....</b>	<b>1</b>
1.1	BACKGROUND.....	1
1.1.1	<i>What is Environmental Insurance?.....</i>	<i>1</i>
1.1.2	<i>Feasibility Study.....</i>	<i>1</i>
1.1.2.1	General Liability Insurance in Sweden.....	1
1.1.2.2	Environmental Insurance.....	3
1.1.2.3	The EIL Market in Sweden.....	3
1.1.2.4	The Mandatory Environmental Insurance Program.....	4
1.1.2.5	The Association for Environmental Impairment Insurance.....	6
1.1.2.6	Claims paid vs. premiums paid.....	7
1.2	SUMMARY OF FEASIBILITY STUDY FINDINGS.....	9
1.3	DEFINING THE PROBLEM.....	9
1.4	PURPOSE OF THE STUDY.....	10
1.5	LIMITS OF STUDY.....	10
<b>2</b>	<b>METHODS.....</b>	<b>11</b>
2.1	STUDY APPROACH.....	11
2.2	STUDY EXECUTION.....	11
2.3	DATA COLLECTION.....	11
2.4	COMPANY SELECTION PROCESS.....	12
2.5	PREPARATION FOR COMPANY INTERVIEWS.....	14
2.6	THE COMPANY INTERVIEWS.....	14
2.7	INTERVIEWS OF INSURANCE PROVIDERS, FINANCIAL INSTITUTIONS AND LEGAL EXPERTS.....	16
2.8	LITERATURE STUDY.....	17
2.9	HOW REPRESENTATIVE ARE THE RESPONDENTS?.....	17
<b>3</b>	<b>THEORETICAL FRAMEWORK.....</b>	<b>20</b>
3.1	THE ACTORS.....	20
3.2	RISKS, PERCEIVED RISKS AND UNCERTAINTY.....	22
3.3	RISK MANAGEMENT.....	24
3.4	WHAT IS INSURANCE?.....	25
3.5	LIABILITY INSURANCE.....	25
3.6	LEGAL FRAMEWORK.....	26
3.6.1	<i>Polluter Pays Principle (PPP).....</i>	<i>26</i>
3.6.2	<i>The Mandatory Environmental Damage and Remediation Insurance.....</i>	<i>27</i>
<b>4</b>	<b>RESULTS.....</b>	<b>29</b>
4.1	RESULTS OF BUSINESS SURVEYS.....	29
4.1.1	<i>Company Participation in the Study.....</i>	<i>29</i>
4.1.2	<i>Consistency of Responses.....</i>	<i>30</i>
4.1.3	<i>Questionnaire Part I: Hazardousness of the Businesses.....</i>	<i>30</i>
4.1.4	<i>Questionnaire Part II: Information to Companies Regarding Mandatory Insurance.....</i>	<i>30</i>
4.1.4.1	The businesses' current means of mitigating monetary environmental risks.....	32
4.1.5	<i>Questionnaire Part III: Future Environmental Liability.....</i>	<i>32</i>
4.1.5.1	Business has damaged third party.....	32
4.1.5.2	First party damaged by own operations.....	33
4.1.5.3	Factors affecting businesses' necessity of EIL.....	34
4.1.5.4	Debriefing.....	35
4.2	RESULTS OF FINANCIAL AND LEGAL EXPERT INTERVIEWS.....	35
4.2.1	<i>Environmental Credit Risks.....</i>	<i>35</i>
4.2.2	<i>Environmental Law.....</i>	<i>37</i>
4.2.2.1	Topic 1: Do you think new environmental legal precedent will alter the way society views environmental liability?.....	38

4.2.2.2	Topic 2: Do you foresee any new legislation in coming years which will have an impact on environmental liability of businesses?.....	38
4.2.2.3	Topic 3: Information flow regarding mandatory insurance to businesses .....	39
4.2.2.4	Further comments .....	39
4.3	ENVIRONMENTAL LICENSES / PERMITS IN SWEDEN.....	40
<b>5</b>	<b>ANALYSIS .....</b>	<b>41</b>
5.1	ANALYSIS OF QUESTIONNAIRE PART I .....	41
5.2	ANALYSIS QUESTIONNAIRE PART II.....	41
5.2.1	<i>Mandatory Insurance Comprehension</i> .....	42
5.2.2	<i>Constraints to Information Flow</i> .....	42
5.2.3	<i>Companies' Knowledge of Cover Provided Through General Liability Insurance</i> .....	43
5.2.4	<i>Companies with Environmental Impairment Liability Insurance</i> .....	44
5.2.5	<i>Insurance Decisions</i> .....	46
5.3	ANALYSIS QUESTIONNAIRE PART III .....	47
5.3.1	<i>Third Party Liability Situation</i> .....	47
5.3.2	<i>First Party Liability Situation</i> .....	48
5.3.3	<i>What Would Make EIL More Attractive to Businesses?</i> .....	49
5.3.4	<i>Debriefing</i> .....	50
<b>6</b>	<b>DISCUSSION .....</b>	<b>51</b>
<b>7</b>	<b>CONCLUSIONS .....</b>	<b>54</b>
<b>8</b>	<b>PROPOSITIONS .....</b>	<b>56</b>
<b>9</b>	<b>REFERENCES.....</b>	<b>58</b>
9.1	LITERATURE.....	58
9.2	PERSONAL COMMUNICATIONS .....	59
9.2.1	<i>Company Interviews</i> .....	59
9.2.2	<i>Other Personal and Telephone Communications</i> .....	59
<b>APPENDICES .....</b>		<b>61</b>
	QUESTIONNAIRE FOR BUSINESSES .....	61
	QUESTIONNAIRE FOR BANKS .....	63
	MORE FIGURES.....	65

# **1 Introduction**

## **1.1 Background**

### **1.1.1 What is Environmental Insurance?**

There are numerous forms of environmental insurance with Environmental Impairment Liability insurance (EIL) being the most typical. EIL provides the insured with cover in the event of pollution conditions that occur beyond the policy-holder's property boundaries. This cover may include investigation, testing and monitoring costs to determine the extent of the pollution, as well as restoration costs. However, cover for on-site remediation costs is commonly added by endorsement to the policy form. EIL has been a prevalent form of insurance in both the USA and England for several decades (Dybdahl, 2004). EIL is also known as Pollution Legal Liability (PLL) but in this report I will use the term EIL exclusively.

A thesis conducted at IVL (Swedish Environmental Research Institute) provides a general description of the Swedish EIL market up until 2002 (Roghed et al, 2002). The IVL report, in addition to providing a good summary of the actors in the market, also suggested numerous areas for further study. One such area, namely why Swedish insurers have been unsuccessful in the EIL market, sparked my interest. Yet, in order to develop insight into how the market works, I first conducted a feasibility study consisting of a literature review and several interviews with major insurance companies. The purpose of the feasibility study was to gain insight into what factors may play a role in the relative success of foreign insurers versus Swedish insurers in the EIL market. Accordingly, the feasibility study lays the cornerstone of the Background and of the main study.

### **1.1.2 Feasibility Study**

#### **1.1.2.1 General Liability Insurance in Sweden**

In order to reach a full understanding of the EIL market, it is central to take into consideration one insurance form which businesses in Sweden are required by law to retain, namely General Liability (GL) insurance. GL grants first and third party coverage in the event of sudden, accidental incidents, including environmental incidents. (Personal

communication: Frithioff, A and Appelbom, L). This can be compared with General Liability insurance policies in the United States, in which all environmental incidents are presently excluded from GL cover. Therefore, in the US, companies often retain environmental insurance which covers both sudden, accidental environmental damage as well as gradual pollution occurrences (Dybdahl, 2004). The dissimilarities in GL coverage lead to impediments in making broad comparisons of the two countries' EIL markets. Such comparisons would be complex and may be misleading.

Companies in Sweden are protected against large financial losses resulting from sudden, accidental pollution events by means of the protection offered by their GL policies, provided they have not broken any laws or contributed to the pollution event through negligence. However, in order to minimize economic losses resulting from gradual pollution, companies would need to acquire additional cover. Table 1.1 shows some examples of sudden, accidental, as well as gradual pollution claims.

*Table 1.1: Some examples of environmental claims (Dybdahl, 2004).*

<b>Examples of sudden, accidental environmental claims (Covered by Swedish GL policy)</b>		<b>Examples of gradual pollution claims (Not covered by Swedish GL policy)</b>	
<i>First party</i>	<i>Third party</i>	<i>First party</i>	<i>Third party</i>
Chemical fire on premises causes structural damage and business interruption.	Chemical / smoke plum migrates to neighboring property leading to evacuation / business interruption.	Leaking underground storage tank (UST) causes soil and groundwater pollution on premises. Long-term monitoring and remediation costs.	Leaking UST contents migrate and cause soil and groundwater pollution on neighbor's property. Long-term monitoring and remediation costs; civil claims.
Hose ruptures while filling storage tank resulting in oil polluting soil on premises. Investigation and remediation costs.	Hose ruptures, oil flows downhill to neighbor's property leading to soil pollution. Investigation and remediation costs.	Long-term use of solvents in workshop pollutes soil under building. Long-term monitoring and remediation costs.	Solvents migrate to groundwater and pollute drinking water wells 0.5 km from workshop. Long-term monitoring and remediation costs; civil claims.

### 1.1.2.2 Environmental Insurance

There are a number of forms of environmental insurance (Dybdahl, 2004), but for the sake of simplicity, this study will focus solely on EIL insurance as it is the most common type of environmental insurance. EIL is a sort of extra insurance which companies may chose to retain; EIL insurance in Sweden protects insureds against monetary losses resulting from gradual pollution sources. Therefore, adding an EIL insurance policy form to a company's suite of insurance forms, gives a full-spectrum protection from losses stemming from environmental damage. See Figure 1.1 below.

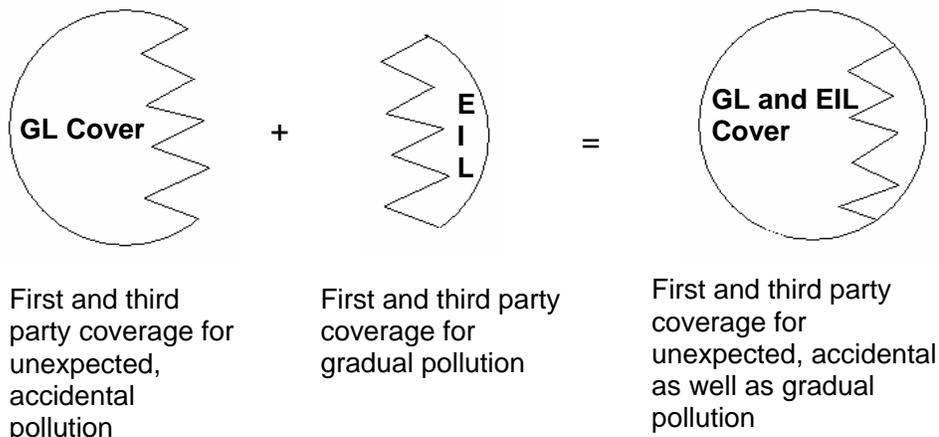


Figure 1.1: Cover provided by GL and EIL policies

### 1.1.2.3 The EIL Market in Sweden

Swedish insurance companies have not been successful in securing themselves a place in the EIL market (Roghed, et al, 2002) and (Personal communications: Frithioff, A, Appelbom, L, Pettersson, S, Hahn, G, Höglund, G, and Bäckström, P). Foreign-owned, international insurance providers have, on the other hand, made a small niche for themselves in the slowly-growing Swedish EIL market. Environmental civil claims cases in Sweden are rare and historical claims paid have been moderate in size. As a result foreign insurers offering EIL cover in Sweden have found the market to be quite profitable to this date. (Personal communication: Pettersson, S).

There are several underlying causes for Swedish insurance providers' marginal EIL market share. One major factor is that most Swedish insurers have found the EIL market

an unsure one, a sort of “unchartered ground”. As a result Swedish insurance providers do not actively market but do offer EIL cover to customers who request it. Frequently, the company requesting environmental cover requires premium quotes from a number of providers. But since Swedish providers are less experienced in this type of insurance and the corresponding risk analyses involved, they have difficulties competing with foreign providers who can offer lower rates (Personal communications: Frithioff, A, Appelbom, L, Pettersson, S, Hahn, G, Höglund, G, and Bäckström, P).

Another contributing factor to Swedish insurers’ lack of competitiveness in the market is that, at present, they do not conduct environmental site assessments in conjunction with the establishment of EIL premiums. As a result companies pay similar premiums irrespective of the actual environmental risks. Rates may in this manner not be gauged according to important factors such as the business’s historical environmental record, site placement in relation to environmentally sensitive areas or previously contaminated sites, or even whether or not the business works actively to prevent releases. Foreign insurance providers, on the other hand, conduct environmental risk assessments and set premiums accordingly (Personal communications: Frithioff, A, Appelbom, L, and Pettersson, S).

The feasibility study has brought to light yet another possible obstacle for both domestic and international providers. While foreign providers have thus far been more successful than Swedish providers, they have also struggled to reach out to businesses operating in Sweden. Foreign-owned businesses have been more receptive to EIL marketing and make-up a large share of EIL policy-holders. Insurance companies contribute this difference to foreign companies’ heightened awareness of litigation risks, stemming from a sort of “law suit culture” in some other countries, such as the USA. (Personal communication: Frithioff, A, Appelbom, L, Pettersson, S).

#### **1.1.2.4 The Mandatory Environmental Insurance Program**

In addition to the other factors affecting the environmental insurance market, two major insurance providers, one international and one Swedish (Personal communication: Frithioff, A, Appelbom, L, Pettersson, S) refer to a seemingly widespread misunderstanding among the business community of the mandatory environmental

damage and remediation insurance<sup>1</sup>. The Swedish Environmental Code requires all installations with potentially harmful effects on the environment and human health to contribute an annual premium. The premium level is based on the regulatory agency's review fee. This premium, which in reality functions as an extra tax, is based upon the types of operations performed at the facility and therein, also the license type. The Swedish regulatory agencies provide the insurer with a list of the companies required to contribute. The premiums are paid directly by the license holder to the insurer, which today is Zurich Insurance Ireland Limited, Filial Sweden. Administration and information is managed by Marsh AB, an insurance broker (Personal communication: Lagerholm, P).

The cover provided by the obligatory insurance is paid out to claimants in the event the responsible party(ies) cannot be found or cannot pay damages, such as in the case of bankruptcy of the responsible party (Environmental Code); refer to Chapter 3. However, the insurance providers interviewed have found that many business owners have misinterpreted the mandated insurance in that they have assumed that their business is the insured party. This is far from the truth; the mandated environmental damage and remediation insurance does not provide the business with any monetary risk mitigation. The purpose of the mandated insurance is to compensate third parties which have suffered environmental damage but cannot be compensated by other means (Lundgren, 2005).

The environmental impairment and remediation insurance system has been strongly criticized by businesses, local and state regulatory agencies, and other interests, primarily because the insurance has not had the broad application originally intended and because the system precludes that premiums be accumulated in a fund. As a result of this criticism, the (Swedish) National Environmental Protection Agency (*Naturvårdsverket*) recommended to the Ministry of Sustainable Development (*Miljödepartementet*) to investigate alternative systems and solutions which can be implemented in order to reach the original objectives of the insurance program. A committee known as the

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<sup>1</sup> The mandatory environmental damage and remediation insurance is actually two insurances: environmental damage insurance and environmental remediation insurance. In this study, they are referred to as one and the same unless otherwise specified.

Environmental Liability Investigation Committee (my own translation of: *Miljöansvarsutredning kommitté*) has been appointed. The Committee's main purpose is to investigate the need for modifications in Swedish environmental legislation required to meet the new EU directive 2004/35/CE on environmental liability with regard to the prevention and remedying of environmental damage. The final report, which was due out on April 20, 2006 and then extended to November 30, 2006, is to include any recommendations for possible changes in the environmental damage and remediation insurance program as well. This final report was not made available upon the completion of this study; however, a partial report which was recently published has been referenced (SOU 2006:39).

#### **1.1.2.5 The Association for Environmental Impairment Insurance**

The partial legal referral work, SOU 2006:39 mentions the "Association for Environmental Impairment Insurance" (my own translation of: *Föreningen för miljöskadeförsäkring*). The report states that the secretariat for the Association is housed at the Confederation of Swedish Enterprise (*Svenskt Näringsliv*).<sup>2</sup> In an attempt to learn more about the Association, I conducted a search of the Confederation's website. No mention of the Association was found and a search for the "Association for Environmental Impairment Insurance" on the website led only to a reference of a paper about the Environmental Code; no contact person or telephone number was found. I also attempted to find the Association by contacting reception at the Confederation but they had no record of the Association. The name of the representative for the Association, Nicklas Skår, was later found in an article in *Miljöaktuellt*, a monthly publication distributed by the National Environmental Protection Agency.

According to SOU 2006:39, the purpose of the Association for Environmental Impairment Insurance is to represent the interests of the contributors to the mandatory

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<sup>2</sup> The Confederation of Swedish Enterprise represents approximately 55,000 Small, Medium and Large businesses. These businesses are organized into 51 trade and employer unions and the unions comprise the Confederation's members. The goal of the Confederation is to increase the awareness of businesses' state of affairs and to work to ensure the best possible conditions for all businesses in Sweden to be able to thrive ([http://www.svensktnaringsliv.se/om\\_oss/](http://www.svensktnaringsliv.se/om_oss/)).

environmental insurance. However, according to Nicklas Skår (Personal communication), their purpose is to hold down the costs of the insurance in conjunction with the annual insurance procurement negotiations. The Association, according to Skår, compiles and submits annual recommendations regarding insurance procurement to the Ministry of Sustainable Development. The Association does not communicate directly with the contributors to the mandatory insurance, but indirectly by means of each respective trade organization<sup>3</sup>; see Figure 1.2. The Association does not communicate with non-business contributors.

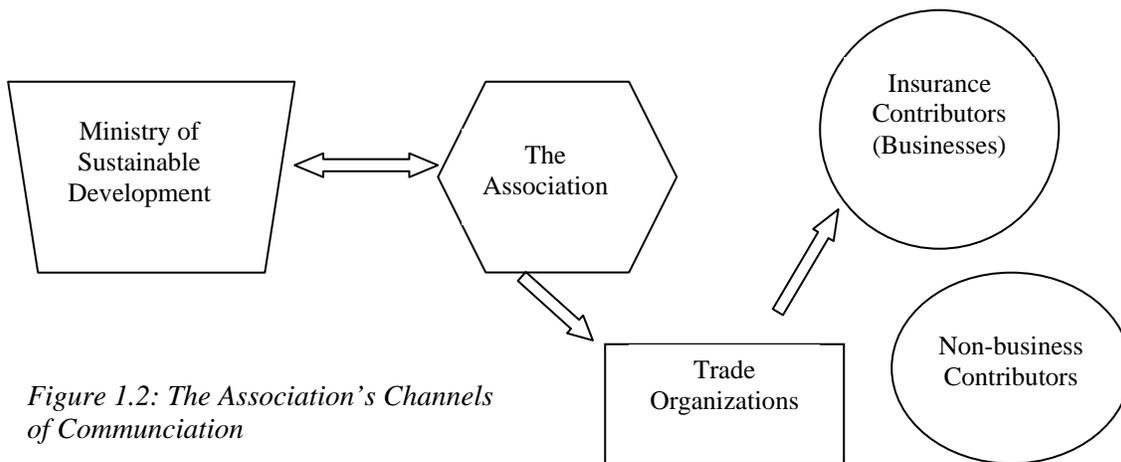


Figure 1.2: The Association's Channels of Communication

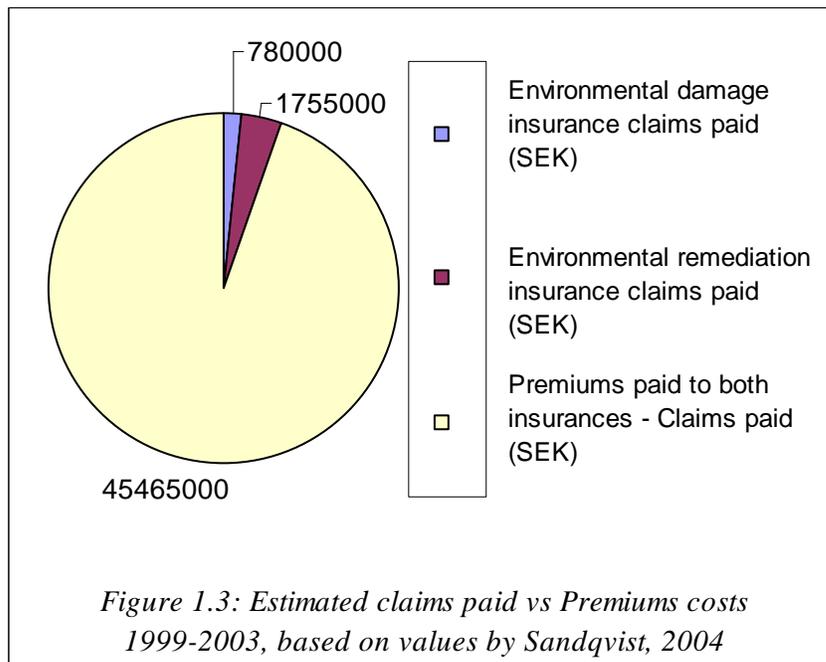
### 1.1.2.6 Claims paid vs. premiums paid

The Association keeps records of the insurance contributors and premium amounts but is unwilling to reveal exact statistics related to the obligatory environmental insurances (SCB - *Statistiska Central Byrån*, Statistics Sweden, 2005). Nicklar Skår claims that such revelations may put the Association at a disadvantage in future insurance procurement negotiations (Sandqvist, 2004). According to SCB and Sandqvist's article (2004) published in *Miljöaktuellt*, annual contributions to the State-mandated environmental damage and remediation insurance total approximately 12 million Swedish kronor (SEK). Only one percent of the 300 million SEK in premiums paid between 1989 and 2001 were actually utilized in environmental projects. And up until 2004, only about 6 million SEK have been paid out in claims since the insurance program began in 1989 (Sandqvist,

<sup>3</sup> The goal of the trade organizations is to protect the interest of its member businesses, for example by keeping them abreast of trade restrictions and legislative changes (Personal communication: Skår, N).

2004). There are no publicly-accessible statistics concerning the mandated environmental insurances (SCB, 2005). However, according to the Association, there were approximately 20 claims made to the mandatory environmental damage insurance and about 50 claims to the remediation insurance between 1999 and 2003 (Skår in Sandqvist, 2004).

The claims paid in the years 1999-2003 resulted in reimbursements in the range of 20,000 - 150,000 SEK each. Today's average remediation costs are in the range of 3-4 million SEK (Sandqvist, 2004). The graph in Figure 1.3 illustrates the large difference between claims paid and premiums. As exact figures are wanting, it is important to keep in mind that Figure 1.3 is based upon approximations supplied by the Association and a mean claim paid of 65,000 SEK (average of 20,000 and 150,000). 39 claims compensated in the years 1999-2003 results in a rough estimate of 2,535,000 SEK total paid in claims in those four years, or about 5% of premiums paid.



A considerably more cautious estimate of reimbursement amounts can be constructed as well. If the range is kept the same but only one claim was as low as 20,000 SEK and the remaining 38 claims paid led to reimbursements of 150,000 SEK, then the claims paid would be approximately 5,720,000 SEK. Such a conservative estimation would only

result in less than 12% of the premiums paid. The reverse can also be calculated. If all reimbursements were in the amount of 20,000 SEK save one of 150,000 SEK, then reimbursements would be less than 2% of premiums paid.

## **1.2 Summary of Feasibility Study Findings**

The feasibility study not only shed light on a number of interesting facets regarding the EIL market but has also aroused my interest in other areas of study.

- Foreign insurers have been more successful than Swedish in the EIL market.
- Swedish insurers do not conduct environmental due diligence studies on potential clients in order to more precisely assess environmental risks.
- In order to guard against risks, Swedish providers often set EIL premiums higher than their foreign competitors.
- Insurers witness a possible misunderstanding concerning the mandatory environmental insurances among businesses operating in Sweden.
- A committee has been appointed to, among other tasks, investigate the need for, and the feasibility of changes to the environmental damage and remediation insurance program.
- An association whose purpose is to protect the interests of the contributors to the mandatory environmental insurance exists but does not communicate directly with premium contributors. The Association communicates indirectly with its business constituents through respective trade unions. The existence of the Association is not generally known to contributors.
- The mandatory environmental insurance program has been highly criticized, for among other things, not living up to its purpose and for its restrictiveness leading to large profits margins for the insurance provider.

## **1.3 Defining the Problem**

The feasibility study has suggested that there is a need for an examination into the possible factors contributing to the slow growth of the Environmental Impairment Liability insurance (EIL) market in Sweden. The intention of the following empirical study is to investigate how companies perceive their monetary environmental risks and how this may or may not impact the EIL market in Sweden. In addition, I will also

attempt to shed light on which factors may be most influential in the target businesses' perceived environmental liability risks.

This empirical study will attempt to answer the following questions:

- I. Are businesses which operate potentially environmentally hazardous operations in Sweden aware of their environmental liability risks?
- II. Are businesses which operate potentially environmentally hazardous operations in Sweden aware of their environmental insurance coverage?
- III. What possible implications have the businesses' awareness of their liability risks and insurance coverage had on the Swedish EIL market?

### **1.4 Purpose of the Study**

*This study will seek to describe, compare and analyze the perceived environmental liability risks among different types of businesses which operate potentially environmentally hazardous operations in the County of Stockholm. These findings will be used to identify possible implications for the EIL market.*

### **1.5 Limits of Study**

The following study limitations have been identified:

- This study does not take into account the perceptions of all of the possible policy / decision makers within each given company. One person from each company was chosen to share his / her knowledge and perceptions.
- This report focuses only on Environmental Impairment Liability Insurance (EIL) which does not include cover for product liability. Other forms of environmental insurance are less common than EIL and have been excluded from this study.
- This study only takes into account companies which operate A, B or C (see Section 3.6.2) potentially environmentally damaging operations located within the County of Stockholm which is one of Sweden's 21 counties. As there are more than 23,000 licensed facilities in Sweden, I selected Stockholm County as it has a relatively large number of licensed facilities.

## **2 Methods**

### **2.1 Study Approach**

According to Lekvall and Wahlbin (2001), there are three categories of purposes behind study projects: exploratory, descriptive and explanatory. The primary focus of this report is to describe, rather than explain, perceived risks; therefore this study is largely of a descriptive nature.

In a study such as this in which one aspires to report and interpret subjective views (e.g. perceived risks) among several respondents responding in a similar way, one can make certain deductions. The aim is not to define a new law such as “if A exists so does B” but state that “the existence of A gives high probability of B.”

However, the problem then can evolve into: how often does a phenomenon have to present itself in order to be probable? This thesis does not aim to calculate probabilities but to shed light on regularities or tendencies. In simpler words, what types of businesses tend to be most / least aware?

### **2.2 Study Execution**

I was fortunate to have the opportunity to conduct this study with the *Industry and Real Estate* section of SWECO VIAK in Stockholm. I was given free-hands in selecting the topic and focus of the study. Not only was SWECO generous in offering me office space, a computer as well as free telephone service, but also in providing me with valuable feedback and support. The team’s specialization in due diligence and environmental risk identification proved an indispensable asset.

### **2.3 Data Collection**

Telephone interviews of businesses operating potentially environmentally damaging installations in Stockholm County, Sweden were the main channel of data collection for this study. In addition interviews have been conducted with insurance providers, top Swedish financial institutions and experts in Swedish environmental law. A limited literature study was conducted including a review of the legal framework behind the

mandatory environmental insurance and the Polluter Pays Principle was also conducted. See also Section 2.7.

## **2.4 Company Selection Process**

The selection of companies to be included in the study comprised of several steps. For the sake of comparison among businesses operating under different environmental licensing levels, companies were selected on the basis of their hazard levels, A, B or C; refer to Section 3.6.2. Firstly, the County of Stockholm was contacted for a list of the facilities which currently hold A and B licences for operating potentially environmentally damaging installations. As this study focuses on *businesses* which operate potentially environmentally hazardous installations, all other potentially environmentally hazardous installations which are not operated by companies were by definition excluded. For example, installations operated by private individuals or those directly owned by the Swedish State were eliminated from the target group. On the other hand, State-owned *businesses* were included as they meet the pre-requisite in that they operate under a corporate structure. State-owned operations were excluded on the basis that they have the capital of the entire State to fall back on in cases of large liability. Their views of environmental liability risks would therefore be expected to be dissimilar to a businesses' as the latter operate on a more limited capital base. Businesses would on the other hand be expected to have a greater need to spread their risks, such as in the form of insurance. Refer to Section 3.5, theory of insurance.

Secondly, a number of companies operating B installations were randomly selected in that every seventh B facility was controlled to see if it was operated by a business or not. Those operated by businesses were then sorted as either Large, Medium or Small companies. As there were so few A facilities operated by businesses, all were selected and then categorized by company size. As there is no standard for how Swedish companies are defined by size (Jonsson, 1998), the companies were grouped based on their sales for the previous year:

Small business	<100 MSEK
Medium business	100 – 1,000 MSEK
Large business	>1,000 – 12,000 MSEK

Very large businesses have been defined in this study as those with sales of greater than 12,000 MSEK (modified from Jonsson, 1998). Very large businesses have been excluded from the study as they are so few in number and often have a complex ownership structure leading to difficulties in comparing company sizes and domestic vs. Swedish ownership. In order to group companies which had borderline sales figures, consideration was also taken to the number of employees the company employs in Sweden.

The selection of target C installations was achieved in a similar way; however, C installations are reported to and inspected by each respective municipality and not by the County. There are 26 municipalities within the County of Stockholm. For the sake of simplicity, the municipality of Norrtälje in the northernmost area of the County and Haninge Municipality from the southernmost area of the County were designated harvest municipalities for C installation businesses. Similar to the selection of A/B installations, lists of the installations which currently hold C status were reviewed and installations which were privately-owned or directly State-owned were excluded from the study. Thereafter, businesses were randomly selected and categorized into Small, Medium and Large businesses in the same manner as the A/B installation businesses.

In order to compare and analyze factors such as business size and license type, it was important to interview a relatively large number of companies. The goal of the study was to compare 3 companies which were A installations and were also Large (hereafter referred to as AL businesses), 3 companies which were B installations and were also Large (BL), so on, covering all of the size and license/reporting combinations in order to facilitate a group-comparison study. In other words the target was to gather data from 3 companies of the same size and installation rating, resulting in 27 companies altogether. In order to reach the goal of 27 interviews, 38 companies were actually selected, therein allowing a margin for companies who may refuse to participate.

One obstacle in achieving the ideal “3, 3, 3” company selection resulted from the low number of A installations within the County operated by businesses. The vast majority were operated by the Swedish Military, Very Large energy companies and by the

Swedish State. This led to a “selection” of all companies operating A installations in the County, Small, Medium and Large size alike.

## ***2.5 Preparation for Company Interviews***

Data collection from the potentially environmentally hazardous installations was conducted in the form of interviews. In order to be able to conduct such a large number of interviews in the time allotted for the study, the interviews were conducted via telephone. Interviews were conducted with the person within the company who was denoted having the primary environmental management responsibilities of the company. The job titles of the persons interviewed vary; some examples of job titles are: Environmental Manager, Environment, Health and Safety Manager (EHS), Environmental Coordinator, Corporate Executive Officer (CEO), and Vice CEO. As it is most common among Small businesses that the job responsibilities of the CEO or Vice CEO include environmental management, the persons interviewed from Small businesses were almost entirely CEOs or Vice CEOs. The majority of Medium to Large sized companies had a person who was delegated environmental management responsibilities. However, it was not uncommon that the Environmental Manager had other job responsibilities as well; these include: quality assurance, health and safety, and production management.

Preceding each company interview, a letter was sent to the interviewee to inform him/her about the purpose of the study. They were informed that the length of the interview was estimated to be 20 minutes. Respondents were invited to book interview times in order to increase willingness and opportunity to participate. Businesses participated on a voluntary basis.

## ***2.6 The Company Interviews***

All interviews were conducted by the same interviewer contributing to continuity of interview technique. An interview is an interaction between two or more persons and requires active listening (Kvale, 1996). A major disadvantage of telephone interviews versus personal interviews is that it can be difficult to clearly hear respondents. Responses of interviewees were not tape recorded as was the initial intention. Sufficient sound quality was not achievable via telephone so all responses were recorded by hand.

Every effort was made to predict all possible responses and include them on the interviewer's questionnaire in order to facilitate speedy and accurate recording of question responses and other comments. Another disadvantage of the telephone interview is the loss of subtleties. The interviewer must rely more heavily on tone of voice, pauses and the like, rather than body language and facial expressions (Kvale, 1996).

All business correspondences were held in Swedish in order to allow participants to express themselves in their native language. The intent of this was to ensure that interviewees were unhindered both in their comprehension of the introduction letter/questionnaire and in their own responses, contributing to the survey's validity and reliability (Aday, 1996).

Each interviewee was asked to supply information of his/her job responsibilities in order to get an indication of whether or not combined job responsibilities on the part of environmental managers may be a factor in the company's perceived environmental risks. In addition, interviewees were also asked to supply information regarding their environmental work experience in years as well as their educational background. The questionnaire used in the telephone interview process (see Appendix) consists of three parts and was read aloud to each respondent. The questionnaire consists of both open-ended and yes/no questions; there were no multiple choice questions. Part One of the survey was made up of general questions about the company and the respondent's role within the company. The aim of Part One was to verify company size and licensing, but just as importantly, to establish a relaxed interview atmosphere with the interviewee. Parts Two and Three of the questionnaire comprised of "control questions" aimed at gauging the respondents' environmental liability knowledge levels and checking previous responses for consistency, as well as probing questions. Another purpose of control questions was to allow the respondent an opportunity to elaborate on his/her responses. The function of the probing questions was to establish the companies' level of protection against monetary losses associated with environmental liability. The questionnaire concludes with a sort of "debriefing." The question which reads: "Is there anything regarding environmental insurance which you would like to add or that you have a

question about?” allows the subject an opportunity to comment on issues which he or she has been wondering about during the interview (Kvale, 1996).

## ***2.7 Interviews of Insurance Providers, Financial Institutions and Legal Experts***

All interviews (feasibility study and main study) of insurance providers, bank representatives and legal experts were preceded by an explanation of the purpose of the study. Environmental insurance experts from Sweden’s largest insurance companies as well as one international provider were interviewed. The primary focus of these interviews was to gather information about what types of environmental cover the providers offer, what types of companies are most interested in environmental cover and how the providers perceive the EIL market today and in coming years.

The three largest banks in Sweden provided information regarding how they take into consideration environmental liability risks during the credit evaluation process. In addition, the banks were asked to specify to what extent they communicate to their customers their interest in environmental liability risks when establishing credit terms. The questionnaire used in the bank representative interviews is included in the Appendix.

Environmental legal experts in Sweden also contributed to the study through three personal topic discussions and one telephone interview. The main purpose of the discussions was to gain insight into how coming environmental legislation and/or environmental precedence may affect perceived environmental liability risks in the near future. Another area of significance was to establish where (i.e. regulatory agencies, insurance provider, etc) the responsibility of informing businesses about the mandatory environmental insurance lies. The attorneys had various backgrounds; two were environmental attorneys in private practice and one acted as a legal expert with the Department of Finance. Yet another lawyer, with the Stockholm County Environmental Permitting Office, was interviewed; this telephone interview aimed to establish what information permit / licence-seekers receive upon approval of their applications.

## **2.8 Literature Study**

In addition to the IVL thesis written in 2002, I have reviewed the chapters of the Environmental Code of Sweden involving liability and the mandatory environmental damage and remediation insurance (Chapters 9, 21, 22, 32, and 33). Database searches of *Google Scholar*, *ScienceDirect Elsevier* and *Juridik Idag* were conducted using such search words as: environmental insurance, EIL, environmental liability, mandatory environmental damage and remediation insurance, environmental risks, perceived risks as well as their Swedish equivalents. Additionally, current legal referral works such as SOU 2006:39 and official documents regarding the obligatory environmental damage and remediation insurance were utilized in the study.

## **2.9 How Representative Are the Respondents?**

As illustrated in Table 3.1, the Environmental Code necessitates the authorization and inspection of each licence category by each delegated regulatory agency. As a result, potentially environmentally hazardous operations in Sweden falling under the same license category can be expected to undergo similar licensing procedures and follow standard requirements, regardless of geographic location. In addition to licensing procedures, other conditions amongst A, B, and C as well as Large, Medium and Small businesses can be presumed to be comparable across the country; such as requirements for insurance and the extent of impact of external pressures on companies by credit institutions, insurance providers and the media. Significant differences in internal attributes of businesses which operate within the same country such as their corporate culture, organization and the effectiveness of internal communication are not foreseen.

Of the 21 businesses operating potentially environmentally hazardous operations participating in the study, eight held A licenses. The A sample group consists of nearly the entire lot of A businesses within the County of Stockholm, with the exception of the few which were not prepared to contribute. With that in mind, one could say that the A sample group is a good representation of A businesses in the County. Further, as Sweden is a relatively small country and Stockholm County has a large number of A facilities, one could even say that the participating A businesses are a relatively good sample of Swedish businesses which operate A facilities.

There are approximately 460 B facilities in the County of Stockholm. Of these about half are operated by businesses. The eight participating B facilities make up a relatively small proportion of the total number of B facilities operated by businesses in the County and therefore may not be fully representative of other B businesses in the County or in the country. However, the B sample group is more representative of the County's B companies than the C sample group.

The C businesses which participated in the survey represent a very small portion of the total number of C businesses in the County, and likewise in the country. While there are no statistics to show how many C facilities are run by businesses in the County, it is the dominant license / permit category. As a result, the C sample group of five businesses may not be representative of C businesses in Sweden on the whole.

The sample of four Small businesses was small in comparison to the number of Small businesses operating potentially environmentally hazardous operations in Stockholm County. In addition, as shown in the Table 4.1 (Results), it is important to keep in mind that there were no Small businesses within the County which operated A facilities. Therefore, the surveyed Small businesses may not be representative of Small businesses in Sweden. In contrast, a relatively large group of Large businesses participated, a total of ten. As there are far fewer Large businesses than Medium or Small, the Large sample group of Stockholm County may be ascertained as representative of Swedish Large businesses operating potentially environmentally hazardous facilities in other parts of Sweden. Due to the relatively small sample group of seven Medium companies compared with the considerable number of Medium sized companies in the County and Sweden overall, the sample group may be an insufficient representation of such businesses on the whole.

In addition to the previous factors affecting the reliability of the study data, it may be reasonable to assume that companies which were less aware of their environmental liability risks would also be those who declined to participate in the study. Conversely, those companies which agreed to be interviewed may show a higher degree of

environmental liability awareness than those who declined. Additionally, interviewees were selected based upon their role within the company, namely environmental managerial. I either contacted respondents directly or I was referred to the respondent by someone from within the target company. No verification of the respondents' role within the company was made. Small business respondents were, on the most part, CEOs or Vice CEOs, while Medium and Large respondents mainly held positions of Environmental Manager.

### 3 Theoretical framework

This chapter will attempt to explain how different factors influence a company's perceived environmental risks and will lay the groundwork for an understanding of the Polluter Pays Principle and the law prescribing the mandated environmental insurance.

#### 3.1 The Actors

The actors involved and the extent of their influence in the perceived environmental liability risks can vary from one company to another. Environmental policies result partly from the risk perceptions and opportunities identified within the organization. An illustration of the interaction between actors can therefore be useful to appreciate how they affect risk perceptions. Figure 3.1 is a systems approach which illustrates how various actors affect a company's perceived environmental liability risks and to what extent companies can influence these entities.

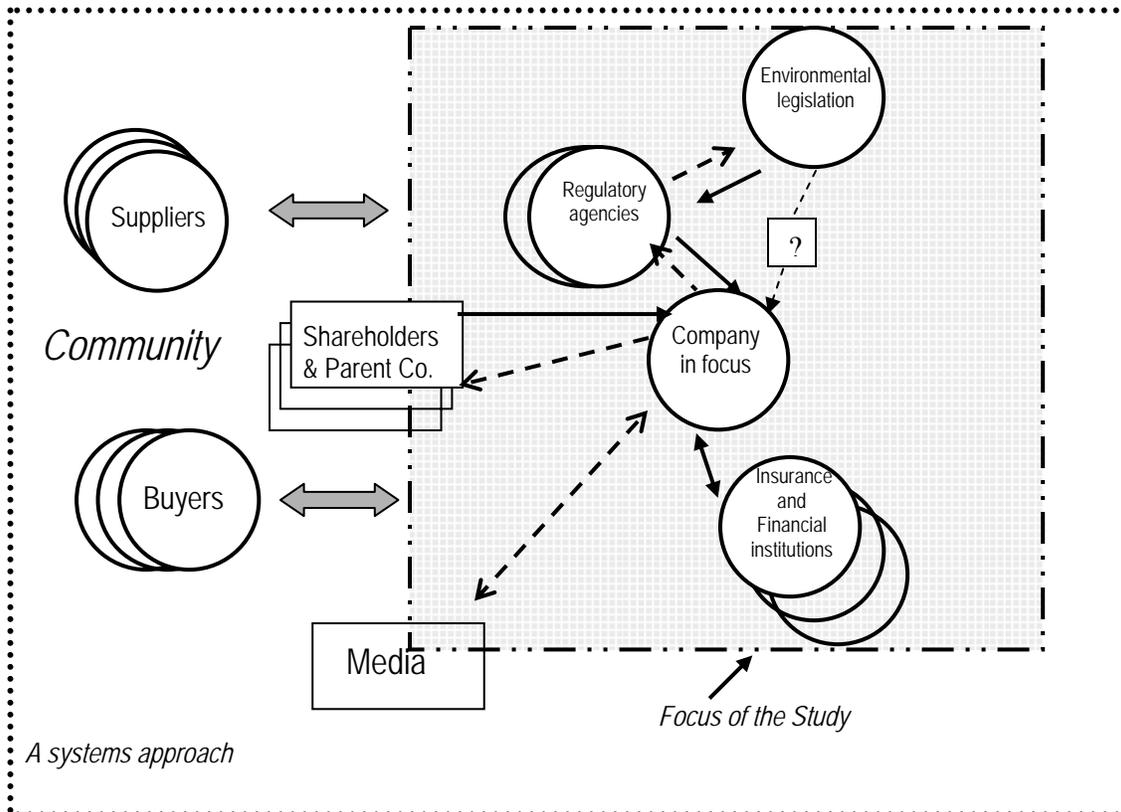


Figure 3.1: Actors affecting a company's perceived environmental liability risks

A systems approach is a method of explaining a complex organization and how its various components interact. The systems approach sees the whole and illustrates how its parts interact and may result in synergy effects (Jonsson, 2005).

As there is no direct, established theory regarding which actors affect companies' perceived environmental liability risks, the objective of this systems approach is to illustrate how the entities relate. As this systems approach illustrates, I have defined the main actors in a company's perceived environmental liability risks as: regulatory agencies, insurance companies, financial institutions and the environmental legislation of the country in which the company operates. Solid line arrows represent a relatively strong interaction between actors, whereas dotted line arrows show a lesser degree of interaction / communication.

Companies are expected to stay abreast of and follow environmental laws which affect their operations. Regulatory agencies are a sort of link between the law and the company in that they issue licenses, conduct inspections, and provide information to the company about license compliance. Businesses can also seek information from regulatory agencies regarding environmental regulations and compliance issues.

Insurance providers can affect a company's view of environmental liability through information about / marketing of insurance products which companies may then chose to retain. Insurers can also influence a company's environmental policies (and perceived risks) by communicating their risk assessment / premium setting methods to the corporate customer. In their role as investors, insurance providers today also take an interest in environmental and social issues (OECD Global Forum on International Investment, 2002).

Financial institutions can similarly play an important role in a company's view of its risks by communicating how they weigh-in environmental risks and base loan conditions accordingly. Surveys of private financial institutions made in 1998 showed that many have environmental policies and procedures for corporate credit and project finance. Of

the institutions responding in the survey, 60% had taken steps to integrate environmental risk into credit decision-making (OECD Global Forum on International Investment, 2002). Further, banks can make demands of businesses to guard themselves against environmental liability losses through such means as environmental insurance or by setting aside money in a special fund (known as a captive fund) for possible future environmental liability claims. Such risk mitigation provides both the business and its creditors with a financial safety-net. In addition, investments in operations leading to worsening of social and / or environmental conditions can hurt a bank's reputation, ultimately leading to financial losses (OECD Global Forum on International Investment, 2002).

Other actors which likely influence companies' perceived environmental liability risks are the media and each respective company's shareholders. Media can be an important actor in this context by bringing to light environmental concerns and court cases in which companies have been found liable for damages. Media coverage of changes in environmental legislation and their impact on liability can also be a source of environmental information for companies, leading to alterations in companies' perceived risks.

Depending on their degree of general knowledge, and experience of environmental liability, shareholders can also make demands of the company to take measures to mitigate environmental liability risks. Shareholders' influence depends highly upon their inclination to participate in company policy in general. In the context of this study, and for the sake of simplicity, I have included parent companies in the same realm as shareholders as they act as owners of companies but can have widely variable degrees of influence.

### ***3.2 Risks, Perceived Risks and Uncertainty***

The term risk is used in a variety of ways. In science the meaning of the word risk is most commonly a combination of two factors: probability and consequences (benefit). In other words risk is the likelihood that an event will occur and the consequences of the event (The Presidential/Congressional Commission on Risk Assessment and Risk Management, 1997).

It is important to keep in mind that the factors such as probability and consequences only comprise a fraction of the aspects which are important when it comes to assessing and managing risks. The mechanisms which contribute to how we perceive risks are just as important. What we define as a risk is greatly dependent upon our understanding of its harmful effects and our view of and knowledge of those effects. One major hinder is that many of the risks which humans are exposed to today are unknown or not prioritized by individuals and/or society. Perceived risks are therefore greatly affected by repetition of information, not least of all through the media in all of its forms. Two other factors adding to the intricacy of our perception of risks are the complexity of today's world (what we observe and master constitutes only a fraction) and human traits (such as egocentrism) (Ammenberg, 2004). This complexity is illustrated in the large degree of specializations our society has cultivated. Society has both become dependent upon but also limited by the specializations required by technological advances.

Rational organisations strive to minimize their uncertainty (Thompson 1967 in Jonsson, 1998). Uncertainty is not knowing whether or not an event will occur and/or the probability of the event occurring. Some of the major sources of uncertainty today are technological and environmental factors. When looking at an organization, such as a business, we can differentiate between two planes of uncertainty, external and internal. External uncertainty primarily stems from a lack of knowledge of cause and effect, but also from unpredictability. Lack of experience leads to greater uncertainty (Lecture: Hansson, 2006-09-04) and is a form of external uncertainty. Internal uncertainty, on the other hand, has its root in the dependence of components within the organization (Jonsson, 1998).

**External Uncertainty + information  $\Rightarrow$  Low External Uncertainty**

**Internal Uncertainty + effective communication within organization  $\Rightarrow$   
Low Internal Uncertainty**

This, according to Thompson, means that if you eliminate the external uncertainty, then the organization will be in a better position to plan. Reduction of internal uncertainty

through the cooperation and communication between the organization's different components, improves the ability to plan effectively. High uncertainty can lead to ineffective identification and quantification of the organization's actual risks.

**High External Uncertainty + High Internal Uncertainty  $\Rightarrow$  PR  $\neq$  AR**

*or*

**Low External Uncertainty + Low Internal Uncertainty  $\Rightarrow$  PR  $\cong$  AR**

*PR = Perceived Risks*

*AR = Actual Risks*

### **3.3 Risk Management**

The way in which businesses act upon and prioritize matters, is in large part decided by the CEO. Of course the Board of Directors' opinions and shareholders' wishes, and other actors are often taken into account when decisions are made. If a company is part of a group, the policies and decisions of the group may play a significant role as well (Ammenberg, 2004). In a great majority of companies, economy is the most important factor. According to the Swedish Companies Act (1975:1385), companies are required by law to strive to achieve maximum economic profit. As a result many business executives focus on economic risks/opportunities (Ammenberg, 2004). As environmental liability can lead to large economic losses, it is an area of risk which can have a significant impact on the survival of a company. Adapting this context to the study in focus, one could say that companies which reduce or eliminate external uncertainties, for example by increasing knowledge of their environmental liability risks and how to mitigate them, are better adapted to weighing their environmental liability risks. Communication by and involvement of environmental managers within a company in the risk management process further reduces uncertainty, namely the organization's internal uncertainty. Reductions of the uncertainties within the company lay the foundation for rational decision-making (i.e. effective risk management) by better aligning the company's perceived risks with its actual risks.

**PR  $\neq$  AR organization lacks means to manage risks effectively**

**PR  $\cong$  AR organization has means to effectively manage risks**

### **3.4 What is Insurance?**

For much of the Twentieth Century, industrialized nations addressed social problems, such as workers' compensation benefits and social welfare programs, in terms of spreading risks (Baker and Simon, 2002). Today private citizens and businesses can insure a wide variety of risks. Insurance is a form of risk-dispersion. One form of insurance with which most people are familiar is automobile insurance. A relatively small premium each year is held by the insurer from each insured driver. Only a small percentage of drivers will make a claim; each claim is paid out using the premiums received from a large number of drivers, so the financial losses are distributed over a larger group. Even insurance providers are able to insure themselves through re-insurance, which further distributes the risks which the initial insurer has taken on (Bengtsson, 1999). Large catastrophes, such as floods are often re-insured so that a single insurer is not left with substantial losses as a result of a single event.

A fundamental principle of insurance technique is that the premiums should be correlated to the risk which is insured, with the addition of an amount including the administrative costs and reserves for losses in excess of predicted losses (Bengtsson, 1999).

### **3.5 Liability Insurance**

Liability insurance is a form of cover for civil claims made against the insured party. There are a number of forms of liability insurance such as: General Liability (GL), collision insurance and of course Environmental Impairment Liability (EIL) insurance. Liability insurance risk is composed of three parts: the risk that the accident which is insured will occur, known as the *accident risk*; the risk that the insured will be held financially responsible, known as the *liability risk*; and the risk that the insurance provider will incur costs connected with the insurance but are not related to either the accident risk or the liability risk due to an increased likelihood that unfounded claims will be filed, which is known as the *cost risk* (Bengtsson, 1999). Environmental liability insurance premiums, thus, should be based on calculations of all three elements of risk which the insured company gives rise to.

The fairness of environmental liability insurance will not be analyzed in this study. It depends to a large degree upon the value which is attached to the compensatory function of the tort liability rules and the advantages of risk-spreading. The importance of liability insurance in issues of civil cases is nowadays generally recognized, although rather reluctantly by many legal scholars. In the case of environmental tort, it upsets the revered theory that the Polluter is liable to pay for compensation himself (refer to Section 3.6.1). In Sweden as well as other Scandinavian countries, the close affinity between liability insurance and tort law has had a great influence on the legal framework during a large part of the 20<sup>th</sup> Century. In the overwhelming majority of civil law suits against businesses, claims are in reality directed against an insurance company that will then pay the compensation awarded (Bengtsson, 1999).

## **3.6 Legal Framework**

### **3.6.1 Polluter Pays Principle (PPP)**

The legal framework of a society reflects the norms and values of that society. The Polluter Pays Principle (PPP) is one of the most important principles in the Environmental Code of Sweden. PPP is based on strict liability. In theory this means that the person(s) risking or causing environmental damage is/are responsible for the costs related to the remediation of the damage incurred. It is not necessary to prove that the Polluter has wilfully or through an act of negligence caused environmental damage, only that the Polluter has caused the damage; the Polluter is liable for damages regardless. This principle was first introduced by the Organization for Economic Cooperation and Development (OECD) more than three decades ago, in 1972 (OECD, 2002). The liability risk portion of the liability insurance risk is greatly influenced by PPP; see Section 3.5.

One of the objectives of PPP is that the Polluter is held responsible for environmental degradation and not the tax-payers. Environmental liability has an important reparative as well as a preventative function. In the context of reparative function, the party which has suffered damage as a result of an environmental disturbance can be economically compensated. In terms of preventative function, operators of environmentally damaging facilities are provided an incentive to reduce risks for environmental damage which may lead to possible third party suits (Lundgren, 2005). The existence of liability insurance

will not exclude this incentive as the insurance provider will raise premiums subsequent to new claims or, by particular clauses in the policy, exclude claims resulting from neglecting safety measures and similar conduct (Bengtsson, 1999).

According to Chapter 32 of the Environmental Code of Sweden, Polluters can be faced with an obligation to pay for damages resulting from: pollution of water areas, pollution of groundwater, changes in the groundwater level, air pollution, land pollution, noise, vibration, or similar disturbance.

### 3.6.2 The Mandatory Environmental Damage and Remediation Insurance

Since 1989 all operators of potentially environmentally damaging facilities have been required to contribute to the mandatory environmental damage insurance. There are three license types for potentially environmental harmful installations in Sweden. Operations are ranked as A, B or C, where A installations pose the greatest risk to the environment and human health, and C pose the least risk; see Table 3.1.

*Table 3.1: Operations are categorized into three hazard levels: A, B, and C.*

Operation	Description
A	Those operations with greatest potential for causing environmental damage; Environmental Court issues licence but County conducts inspections/reviews.
B	Those operations having a lesser potential for causing environmental damage; local County issues licence and conducts inspections/reviews.
C	Those operations having the least potential for causing environmental damage; required to report to local Municipality.

*Source: Environmental Code, Chapter 9 (1999)*

Before the Environmental Code of Sweden came into force in 1999, the obligatory insurance program was operated by a consortium of Swedish insurance providers. Upon the coming into force of the Environmental Code in 1999, the insurance was expanded to include coverage for remediation costs in certain instances. Up until January 1, 2006, the American insurance company AIG was the insurance provider; most recently, this contract was awarded to Zurich, also a foreign provider (Personal communications: Larsson, M, Frithioff, A, Appelbom, L). As of January 1, 2006 facilities operating under a C licence are exempt from the mandatory environmental insurance contribution requirement (Personal communication Larsson, M).

Payment requirements for the insurance are outlined in Ordinance (1998:1473) Regarding Environmental Damage and Remediation Insurance (*Förordning (1998:1473) om miljöskadeförsäkring och saneringsförsäkring*). Most operators are required to contribute seven percent of the regulatory fee which they are required to pay to the County or Municipality, depending on license type, directly to Zurich. The lowest possible contribution is, however, 400 Swedish Kronor per year. Chapter 33, Section 4 establishes the right of the regulatory agency to penalize the facility for failure to pay its yearly contribution to the insurance provider.

The primary purpose of the environmental damage and remediation insurance is to protect the environmental interests of individuals. The environmental damage [note: not remediation] insurance offers a means for those suffering personal injury and / or property damage to seek monetary compensation in cases where the Polluter can not be identified or no longer exists. Below is an excerpt from Chapter 33, Section 2 of the Environmental Code outlining the conditions in which the insurance shall compensate those suffering from an environmental disturbance.

*Compensation shall be paid out of the environmental damage insurance in accordance with the relevant terms and conditions to claimants for bodily injury and material damage referred to in chapter 32, where:*

- 1. the claimant is entitled to compensation pursuant to chapter 32 but cannot obtain payment or the right to demand compensation has lapsed; or*
- 2. it cannot be established who is liable for the injury or damage.*

The purpose of the addition of the mandatory remediation insurance in 1999 was to minimize the State's costs for remediation (prop. 1997/98:45, p 568). Under specific situations, the remediation insurance supplies funds for necessary interventions to eliminate imminent risks to the general public. This insurance covers costs when the responsible party(ies) are not able to pay and only following a request of remediation intervention ordered by a regulatory agency. Remediation costs are covered only when they are a result of an "urgent" intervention (SOU 2006:39).

## 4 Results

### 4.1 Results of Business Surveys

#### 4.1.1 Company Participation in the Study

In order to facilitate the optimal involvement of 27 businesses of differing size and license / permit grades, 38 companies were requested to participate. Ten businesses declined the opportunity to contribute, and seven were “unavailable”<sup>4</sup>, leaving a total of 21 company representatives interviewed. Unfortunately, three of the ten companies which declined were in the Small business category, and six were in the C category. As shown in Table 4.1 below, this led to an under-representation of Small businesses and C facilities in the study.

Table 4.1: Numbers of companies participating in study by size and license / permit type

Company size	Environmental License / permit			Total
	A	B	C	
Large	5	3	2	10
Medium	3	3	1	7
Small	0	2	2	4
<b>Total</b>	<b>8</b>	<b>8</b>	<b>5</b>	<b>21</b>

The most common reason given for not participating in the study was a lack of time; this was especially true of Small businesses. One Small business manager cited the reason for declining to be that he had recently completed environmental licensing for his company and had found the process frustrating; he was unwilling to discuss environmental risks further. One Medium size business owner responded simply that it was not possible for him to participate, but he did not specify why.

Three respondents [2A and Medium (2AM) and 1B and Medium (1BM)] were initially willing to participate but did not complete the entire questionnaire stating that they were not competent enough in the area of insurance coverage of the business to continue.

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<sup>4</sup> “Unavailable” means that the contact person did not decline to be interviewed but nevertheless did not contribute to the study despite my repeated attempts to make contact by telephone and email.

### 4.1.2 Consistency of Responses

Companies operating C facilities were most inclined to be consistent with their answers through-out the interview regarding the comprehension of the mandatory environmental insurance. One interesting observation I made was the increase in the time required by respondents to answer questions toward the conclusion of Part Two of the questionnaire. There were marked longer pauses and A and B respondents were more apt to answer “I don’t know” or “It depends” for the control questions compared with the primary questions at the start of interview. A and B business responses were unmistakably more definitive at the commencement compared with toward the conclusion of the interview.

### 4.1.3 Questionnaire Part I: Hazardousness of the Businesses

Figure 4.1 below show the replies to Question I.3 in which I attempted to verify the license levels held by each respective participating business.

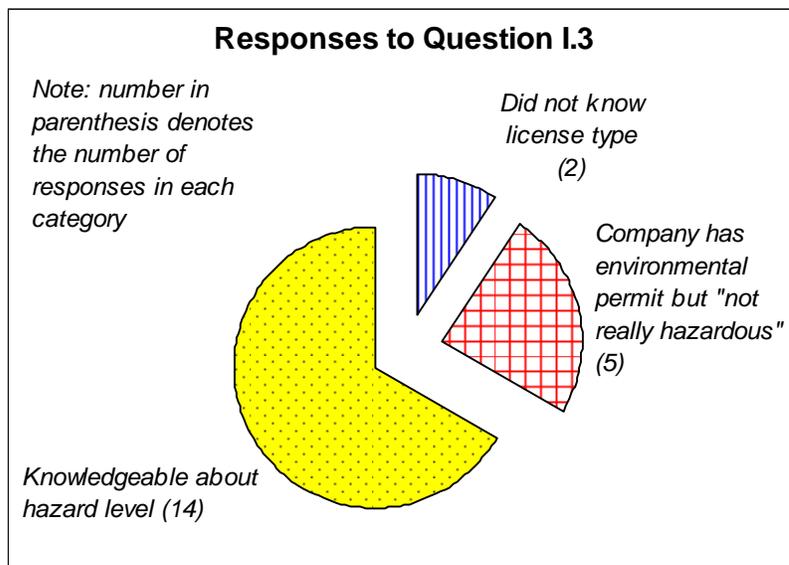


Figure 4.1: “Are the business’ operations defined as potentially environmentally hazardous? If yes, what license level is held?”

One-third of respondents either did not consider their operations to be hazardous or they did not know what license type was held by the company.

### 4.1.4 Questionnaire Part II: Information to Companies Regarding Mandatory Insurance

In Question II.1 respondents were asked whether or not their company contributes to the mandatory environmental insurance. Respondents were also asked to state the

approximate annual premium amount paid. Less than 25% of the businesses both knew that they contribute and also knew the approximate premium amount. Four of the respondents said that they did not pay (note: not C businesses) or responded that they were unsure whether or not they contributed.

When asked about the information which the business had received regarding the mandatory environmental insurance (Questions II.A-C), only two respondents replied that they remembered receiving information. Less than one-third of those who had found the information lacking had sought out information on their own accord.

Figure 4.2 below illustrates that there is a great deal of uncertainty among respondents about the limitations of the mandatory insurance. Most were uncertain whether or not their company was protected by the insurance. Just as many businesses thought they were the insured party as were aware that they were not the insured party. This uncertainty is further magnified in the results of Part III of the questionnaire.

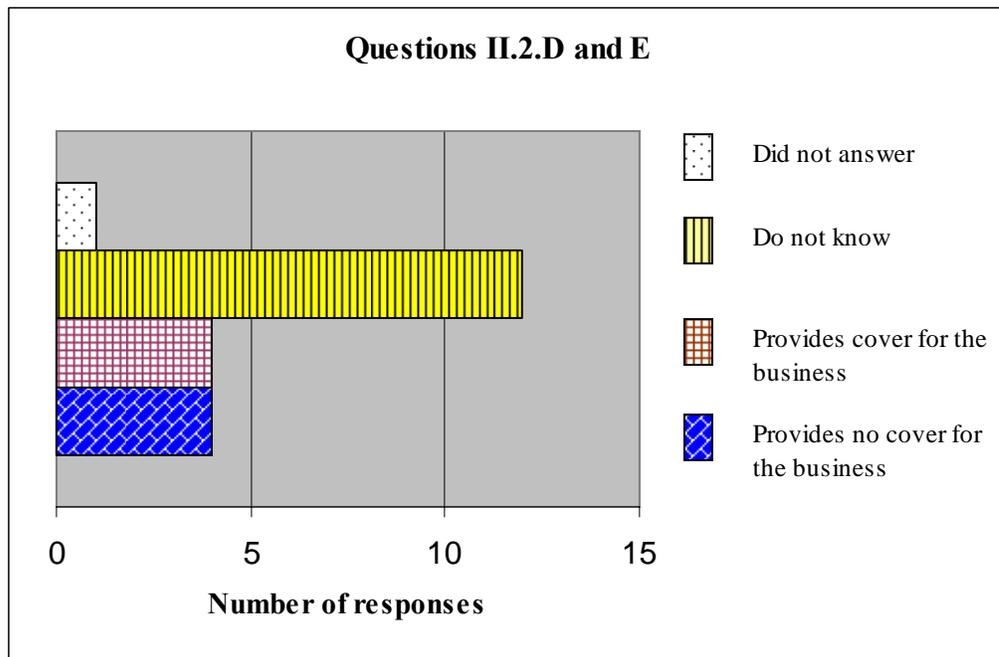


Figure 4.2: “What protection does the mandatory environmental insurance give the company?”

#### **4.1.4.1 The businesses' current means of mitigating monetary environmental risks**

I examined how well respondents were aware of what type of environmental pollution cover their company's GL policy provides (Questions II.5 and 6). Only one-third of respondents were knowledgeable of the fact that their GL policy offers both first and third party cover for sudden, accidental damage. Only three businesses correctly stated that their GL policy excludes environmental pollution resulting from gradual sources. While most were unsure, four mistakenly thought that their GL policy covers gradual pollution.

Only two of the businesses participating in the study have put aside money in a captive fund for future environmental damage (Question II.3) and only three of the 21 participants stated that their company has retained EIL cover (Question II.7). In addition, nearly half of participants stated that they did not know if their company had retained EIL or not.

Most respondents stated that they were unknowledgeable about their company's insurance coverage. Of the 12 responding to Question II.7.A.5, half stated that insurance decisions were made at the group level (n=3) or exclusively by the Financial Manager (n=3). Another one-fourth of respondents gave that the insurance decisions were made exclusively by the CEO or by the owners of the company. Two respondents stated that insurance decisions are made at the Executive Committee level; one gave that the Executive Committee includes the Environmental Manager while the other stated that the Environmental Manager does not participate in the Executive Committee.

#### **4.1.5 Questionnaire Part III: Future Environmental Liability**

In Questions III.1 and 2, respondents were asked to assume a set of circumstances and answer according with the proposed situation.

##### **4.1.5.1 Business has damaged third party**

In Question III.1 respondents are to suppose that tomorrow their company was shown to have caused environmental damage to a third party. The respondent is then asked to identify which party(ies) would be monetarily responsible for remediation and other third

party costs under certain circumstances. Participants were asked (Question III.1.A) who would be responsible if the pollution were of a gradual nature. Only two respondents incorrectly stated that the mandatory environmental insurance would finance the claims in such a case while three stated that it would depend on the circumstances. Over half of respondents (correctly) stated that their EIL provider and/or the company would be responsible for the costs.

Participants were then asked (Question III.1.B) who would be responsible for costs if the pollution had resulted from a sudden, accidental incident. None of the respondents gave that their GL policy would cover for such environmental costs while thirteen said that the company would then be required to pay the ensuing environmental costs. Again, two respondents stated that the mandatory environmental insurance would cover costs.

The responses changed, however, when participants were specifically told to assume that their company had contributed to the mandatory environmental insurance (Question II.1.D). In such a situation, half of the businesses thought the mandatory environmental insurance would provide the company with protection from environmental costs while the number stating that the company itself would be left with costs dropped to three. In contrast, if the company had not contributed to the mandatory insurance (Question II.1.E), more than half of participants stated that their company would then be responsible for the costs.

In another situation, participants were asked to give who would be responsible for environmental costs if the pollution was shown to not have resulted from negligence by their company (Question III.1.F). In this situation, five stated that they thought the mandatory environmental insurance would cover the costs, while another five stated that they did not know who would be held financially responsible. Only five stated that the company would be liable for costs in this situation.

#### **4.1.5.2 First party damaged by own operations**

In Question III.2 interviewees were asked to suppose that the business' own property (first party) was found to be environmentally damaged as a result of its own operations.

The respondents were then asked to state who they thought would be monetarily responsible for remediation costs and possible business interruption costs under certain defined circumstances. More than one-third of respondents thought that the mandatory environmental insurance would cover costs as long as they had paid the required premium and less than one-third thought that the business would be liable for costs. When asked if the company had not paid its premium, a full two-thirds felt that the company would then be liable to pay.

#### 4.1.5.3 Factors affecting businesses' necessity of EIL

In Question III.3 the surveyed businesses were asked what factors may affect their decision to retain EIL insurance in the near future. Respondents were asked to rate the importance of the following factors: the cost of the insurance, an increase in the number of companies held liable for environmental damage, fewer exclusions in EIL policies, and implementation of stricter environmental legislation. Respondents rated their answers between 1 and 5, where 5 denotes “quite important” and 1 “of little importance.” Figure 4.3 below shows the average weight of these factors among the 18 businesses responding.

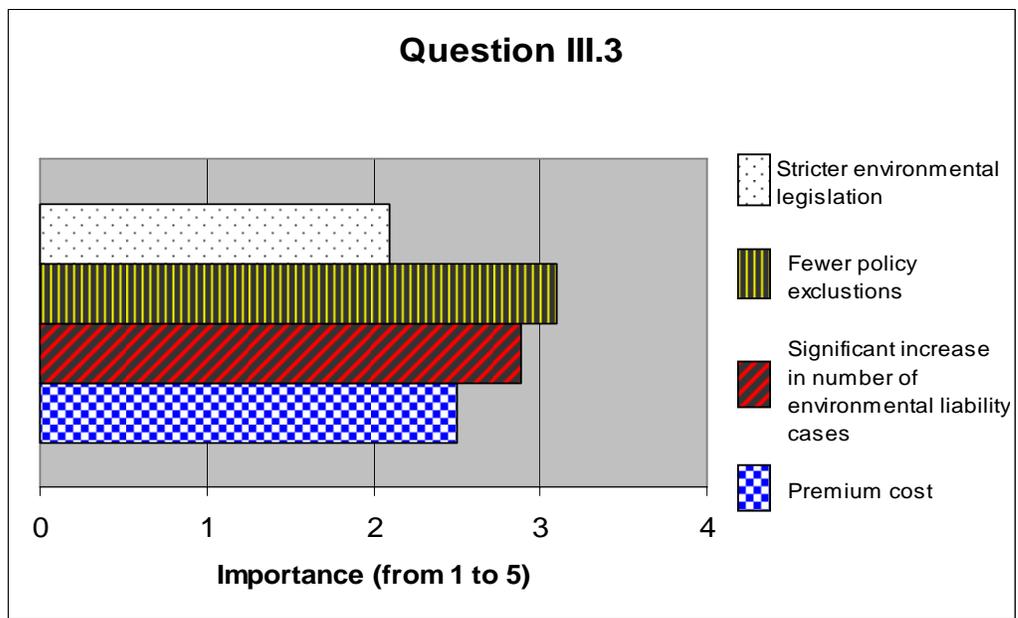


Figure 4.3: Weight of factors affecting EIL retention decision.

Respondents were then asked (Question III.3) what other factors may influence their decision to retain EIL in the near future. Examples of responses include 1) changes in

operations requiring additional environmental cover, and 2) if business were to learn the hard way (i.e. been found liable for damages).

#### 4.1.5.4 Debriefing

Lastly, respondents were asked if they had anything to add or if they had any questions regarding environmental insurance (Question III.4). Figure 4.4 shows the responses.

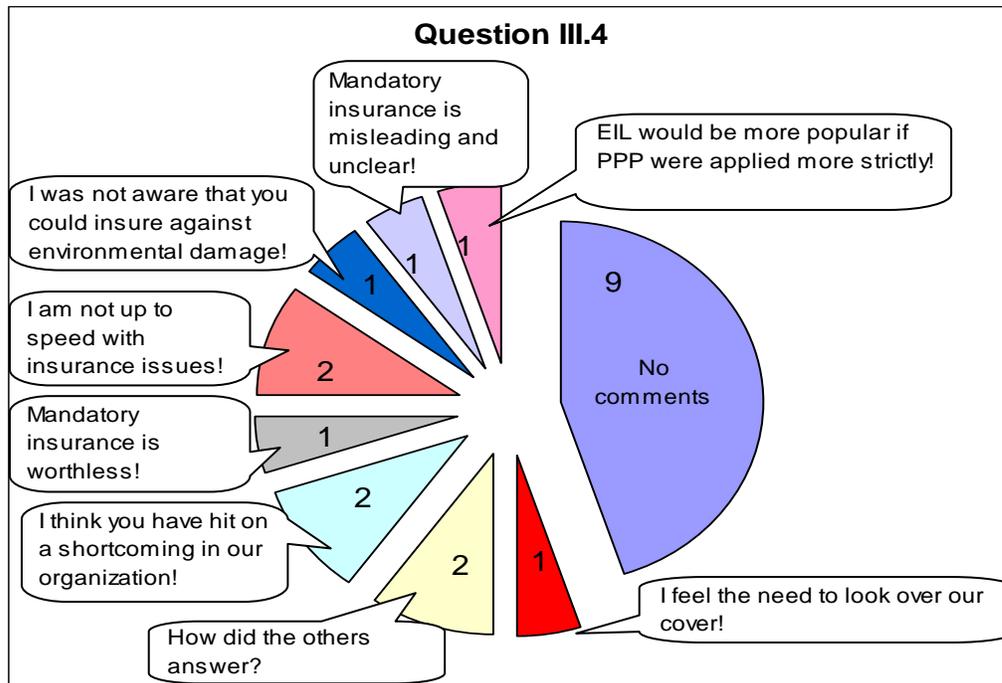


Figure 4.4: Comments given at the conclusion of the interview.

All of the surveyed businesses stated that they were interested in receiving a copy of the final report.

## 4.2 Results of Financial and Legal Expert Interviews

This section acts to complement the company survey results and allows a more in-depth understanding of how companies' perceived environmental liability are influenced by credit givers, environmental agencies, and environmental liability cases in the media.

### 4.2.1 Environmental Credit Risks

Three of Sweden's largest financial institutions (Banks A, B, and C) contributed to the study by means of telephone interviews. Two of the participating banks have established Corporate Social Responsibility (CSR) policies, which is reflected in what types of corporate customers the banks will or will not invest in. The bank representatives were

asked to describe the methodologies used to mitigate their risks associated with potential environmental losses and to what extent they communicate their methods to their corporate customers. A copy of the questionnaire, which was read aloud by the interviewer, is included in the Appendix. Responses are summarized in Table 4.2.

While all three respondents held a general awareness of environmental risk impacts on credit collateral for business, there were some dissimilarities among responses. One common factor for all three banks was that each respective bank employs credit analysts who assess the corporate customer's credit risks, including potential environmental risks. Credit analysts are trained to identify and quantify risks, but the strategies for training analysts to identify and quantify environmental risks differed among the banks. Two of the banks (referred to as Banks B and C) replied that environmental risk assessments are an important part of their bank's credit analyst internal training program. Bank A answered that credit analysts are expected to follow "general guidelines" set by the bank and to use their own judgement in matters of environmental risk assessments, but that no formal environmental risk assessment training was provided. Bank A also replied that it is unusual for their bank to hire in environmental competence in the form of outside consultants in order to assess risks. The other two banks (B and C) regularly make use of environmental due diligence in assessing credit risks.

Common for all three of the banks was that they value highly dialogue with their corporate customers. The corporate customer is encouraged to share with the credit analyst the environmental risks associated with the company's operations and how the business works to reduce these risks. Based on discussions with their customers, the banks sometimes demand that they take measures to reduce their environmental risks. All three banks strive to reach an agreement with corporate customers regarding risk mitigation, rather than denying a high-risk business credit. Depending upon the loan amounts and the extent of environmental risks identified, banks base their loan conditions partly on a review of the customer's insurance. By banks defining the corporate customer's risks precisely, they can minimize their own risks and offer customers the best possible loan conditions (OECD Global Forum on International Investment, 2002). Two of the respondents (Banks B and C) require certain companies, which they deem high-

risk, to take out environmental insurance in order to mitigate the company’s financial risks and, thereby also the banks’. The decision about whether or not Banks B and C require extra insurance of a company is made on a case-by-case basis and is based upon the findings of the due diligence investigation. In other words, environmental insurance is not a requisite of the banks dependent solely upon the hazardousness of the operations, but as a result of a combination of factors, including dialogue with the customer.

Regarding the question about whether or not the bank takes into consideration if a company sets aside money in a captive fund, two of the banks (Banks A and B) replied that they consider captive funds a better alternative for the corporate customer compared with environmental insurance. The rationale is that funds which are put in a captive fund are not calculated into a company’s profit. In this way, the company acts as its own insurer paying itself yearly “premiums.” Captives can be a cost-saving alternative for companies as administrative costs and profits paid to insurers are eliminated. Bank C was unsure whether or not a captive fund would change the bank’s credit risk analysis for a high-risk corporate customer.

*Table 4.2: Summary of banks’ responses*

<b>Banks interviewed</b>	<b>A</b>	<b>B</b>	<b>C</b>
CSR policy		X	X
Internal environmental risk assessment training for credit analysts		X	X
Regularly takes environmental consultants into service		X	X
Negotiates with customers about risk mitigation methods	X	X	X
Requires environmental insurance in certain cases		X	X
Regards captive fund investments in risk assessment procedures	X	X	?

#### **4.2.2 Environmental Law**

The results of the discussions with the environmental legal experts follow.

#### **4.2.2.1 Topic 1: Do you think new environmental legal precedent will alter the way society views environmental liability?**

There is little environmental liability precedent in Sweden to date. Tort liability is yet undefined and another 10-12 years is needed to amass sufficient praxis. Thus far, environmental precedent is still in its first stage, meaning that it has been established that the Polluter is required to pay testing and remediation costs; yet no precedence has been set for who is responsible for, for example, consulting and long-term monitoring costs (Personal communication: Lundholm, M, Hägglöf, M).

The Environmental Court (Miljödomstolen) has merely imposed nominal liability sums as their expertise does not lie in tort law (Personal communication: Larsson, M). This leads to great uncertainty on the part of the Lower Courts, attorneys, and Polluters as to how the law should be and will be interpreted in the future. Extensive amendments to the Environmental Code (Miljöbalken) are necessitated in order to concretely define guidelines for remediation levels, responsibility for remediation costs such as testing, analysis, monitoring and the actual remediation work itself. Guidelines for damage amounts are also wanting. The Counties are put in the middle as they must attempt to interpret vague legal requirements while simultaneously taking into consideration the Swedish Environmental Goals. One such goal, “Non-toxic environment”, is unattainable in a literal sense. Acceptable toxin limits are not defined nor has it been mandated which toxins are to be prioritized by regulatory agencies (Personal communication: Lundholm, M, Hägglöf, M).

#### **4.2.2.2 Topic 2: Do you foresee any new legislation in coming years which will have an impact on environmental liability of businesses?**

The only expected change to our current environmental legislation affecting liability is the new EU directive (Directive 2004/35/CE) concerning biodiversity preservation. The new laws stemming from the directive, which will come into affect on April 1, 2007, are anticipated to concentrate on catastrophic biodiversity disturbances. The new legislation is not expected to be retroactive (Personal communication: Lundholm, M, Hägglöf, M).

### **4.2.2.3 Topic 3: Information flow regarding mandatory insurance to businesses**

When companies in the County of Stockholm are granted an environmental permit, they are provided an information package. This package includes a wide range of facts, such as the company's obligation to conduct self-monitoring, but it excludes information about the mandatory environmental insurance program (Personal communication: Israelsson, A). Businesses are required by law to keep themselves abreast applicable legislation, not excluding the mandatory environmental insurance. Although one might say that the terms used such as "insurance" and "premiums" are misleading, this does not reduce the businesses' ultimate responsibility. If a business, for example, were under-insured as a result of a miscomprehension of the security offered by the mandatory insurance, they would not have a strong case if they decided to file suit against a regulatory agency for not providing them with adequate information (Personal communication: Lundholm, M, Hägglöf, M). In addition, the insurance providers only inform contributors as much as is absolutely necessary. The Environmental Court and the National Environmental Protection Agency (*Naturvårdsverket*) do not want to take responsibility for informing contributors. This would be time-consuming, costly and may be legally precarious (Personal communication: Larsson, M). An amendment to Sweden's Damage Liability Law (*SkL- Skadeståndslagen*) Chapter 3:3, aimed at clarifying the damage liability of State and local agencies, is difficult to interpret and may (or may not) expose agencies to liabilities resulting from erroneous information or recommendations (Bengtsson, 1999). However, if the contributors to the insurance do not have an understanding of the purpose and scope of the insurance, then they are not afforded the legal security they are entitled to (Personal communication: Larsson, M).

### **4.2.2.4 Further comments**

There is a general dissatisfaction today concerning the mandatory environmental insurance system (Personal communication: Lundholm, M, Hägglöf, M). According to Malou Larsson, Ph.D, member of the Environmental Liability Investigation Committee, many have been critical of the former insurer, AIG, leading to AIG's eventual decision to decline the lucrative contract. The disapproval aimed at AIG was, however, misdirected according Larsson; in her opinion the criticism should be directed at the law and not the

insurance provider. The current structure of the law which requires license-holders to pay the environmental insurance does not impart the intended level of protection to the public. Reimbursement payments funding remediation efforts and compensating individuals have been too few (Personal communication: Lundholm, M, Hägglöf, M, Larsson, M). Today’s insurance laws forbid insurance providers to save excess premiums in funds. If the insurance program was eliminated and a fund was launched in its place, there would be more room for flexibility resulting in a broadening of the areas of application thereby increasing the protection to the public (Personal communication: Larsson, M).

### **4.3 Environmental Licenses / Permits in Sweden**

Statistics covering the numbers of *businesses* operating potentially environmentally hazardous facilities do not exist. However, Table 4.3 below shows the proportions of A, B, and C facilities in Sweden. The numbers are a compilation of companies as well as privately-owned, State-operated and comparable facilities which are not managed by businesses. Table 4.3 is therefore only useful in comparing relative numbers of license types and does not denote the numbers of licensed businesses. As shown, there are far fewer A facilities in Sweden than C facilities.

*Table 4.3 Numbers of facilities within Sweden holding environmental licences / permits*

Licence / permit type	Number of facilities
A	500
B	5,500
C	17,500

**Note:** Figures represent all licensed facilities; numbers do not merely reflect businesses but include private facilities, state facilities, etc.

Source: SCB (Statistics Sweden) 2005

## **5 Analysis**

### **5.1 Analysis of Questionnaire Part I**

Figure 4.1 shows that an alarming one-fourth of respondents, including one A and one B facility, answered that the company held an environmental license / permit, but that their operations “were not actually environmentally hazardous.” Three of four Small businesses did not think that their business posed an environmental hazard. Two B respondents (one BL and one BM) did not recall which license type their business held. This finding was unexpected as the respondents were employed as Environmental Managers and would be expected to be familiar with the licensing status of their respective business. A and Large businesses were overall most aware of their license level and did not tend to minimize the level of hazard associated with their licenses. The educational level or work experience of the respondent were not noticeable factors in how respondents replied. However, those respondents who held several job responsibilities beyond that of Environmental Manager were less likely to appreciate the hazardousness of their operations; 80% of those who stated that they did not pose a hazard were responsible for three or more job duties over-and-above their environmental duties.

### **5.2 Analysis Questionnaire Part II**

A large majority of businesses surveyed were either unaware that their company pays or were uncertain of the approximate yearly contributions made to the mandatory environmental insurance. In addition, none of the C businesses were aware that they are now exempt from payment. All-in-all, less than one in ten of the respondents remembered receiving information about the insurance from a regulatory agency, trade organization or from the insurance provider. Analyses of the responses to Question II.2 indicate that C businesses were the least informed group participating in the survey in regards to mandatory insurance contributions; this may indicate that they have not concerned themselves with keeping abreast the mandatory insurance. A lack of information about the mandatory environmental insurance leads to a heightened external uncertainty for companies.

### **5.2.1 Mandatory Insurance Comprehension**

The overwhelming majority of businesses interviewed have not comprehended the intention of and the cover provided by the obligatory environmental insurance which they contribute to (or have contributed to) annually; see Figure 4.2. Refer to Figures A.1 and A.2 in the Appendix for a breakdown of responses by company size and license categories. Large companies were no more aware than their smaller counterparts; company size showed no obvious bearing on the comprehension of the mandatory insurance. Large businesses have a higher tendency to seek legal counsel and have the highest prevalence of personnel with dedicated environmental managerial job duties. Despite significant resource advantages, Large companies have not shown a superior awareness.

Even more surprising, and in fact most alarming, was the level of misunderstanding of the mandatory insurance program among A businesses. This was surprising due to the fact that A facilities undergo extensive and often time-consuming licensing procedures (Environmental Impact Assessments- *Miljökonsekvensbeskrivningar [MKB]*), which could be thought to bring about a heightened consciousness of environmental risks and their ensuing liability risks. A facilities being those with the most capability to cause serious environmental damage, are also those with the most need to mitigate their environmental liability risks.

### **5.2.2 Constraints to Information Flow**

Regulatory agencies are not required to educate operators of potentially environmentally hazardous facilities of the purpose of the mandatory environmental insurance; nor do regulatory agencies voluntarily provide such information in conjunction with licensing. Figure 5.1 is a portion of the systems approach introduced in Section 3.1 which I have modified to show that the ability of regulatory agencies to affect a company's perceived risks are altered by hinders in communication. The solid line arrow of Figure 3.1 has been replaced by a dotted line arrow.

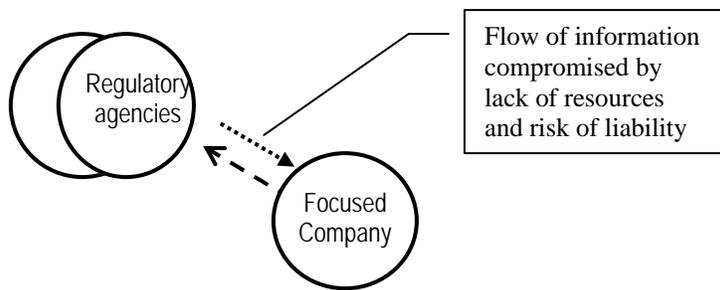


Figure 5.1: Excerpt from Systems approach

The Association for Environmental Impairment Insurance was established to protect the interests of contributors. The Association’s representative reported that the Association does not communicate directly with contributors. The Association’s indirect means of representing the contributors has seemingly not been conducive to raising the awareness among businesses of the purpose of the insurance. None of the participating businesses mentioned the Association during the interviews. The systems approach (Figure 3.1) does not include the Association as it has had little if any impact on the perceived environmental liability risks among businesses.

### 5.2.3 Companies’ Knowledge of Cover Provided Through General Liability Insurance

Most of the Large and all of the Small respondents were correct in saying that their GL policy provides cover for sudden, accidental environmental losses. Most of the Medium companies who responded were uncertain if their GL would cover such costs. However, few respondents were aware that their GL policies offer cover for both first and third party losses. There were no noteworthy variations among different company sizes; refer to Figures A.3 and A.5. However, nearly all of the respondents, Large, Medium and Small alike, were unaware that their GL policy excludes cover for damages stemming from gradual pollution sources!

Figures A.4 and A.6 show the results by license type of businesses’ comprehension of their GL policies. All of the B and C respondents correctly responded that GL insurance covers for sudden, accidental pollution incidents, but only about half knew that this cover includes both first and third party coverage. Only half of the A respondents knew that

their GL policy offers financial security in cases of sudden, accidental pollution incidents. Merely one A and two B and C businesses were conscience of the fact that GL provides no compensation for gradual pollution losses.

These results indicate that businesses in general have a poor knowledge of the limitations of environmental cover of their GL policies. Many of the Medium and Large respondents commented that they are not up to date regarding their company's insurance coverage. They were neither involved in insurance decisions nor were they kept informed of changes made, indicating possible weaknesses in their organizations' internal communication and cooperation. Poor internal communication leads to higher internal uncertainty. The lack of familiarity with the distinction of accidental and gradual sources of pollution in regards to GL cover among Small businesses may be a symptom of a general lack of concern that any damage will be incurred (75% did not see their operations as a potential threat to the environment).

#### **5.2.4 Companies with Environmental Impairment Liability Insurance**

Only three businesses stated that their company had retained an Environmental Impairment Liability (EIL) policy. The reasons given for why the EIL-insured businesses had retained EIL cover varied. One respondent (AM) said that legal advice had led to the decision to retain EIL; another (BS) responded that their trade organization and insurance broker had recommended cover and that their property owner (they leased business premises) required them to retain EIL; yet another (BM) said that the decision was solely an internal decision (i.e. self-awareness). The latter was also the only business interviewed which responded that the designated Environmental Manager was a part of the Executive Committee and thereby was part of the decision-making process regarding what forms of insurance the company required.

None of the surveyed Large companies had retained EIL but one (CL) responded that they put aside money in a captive fund; an additional three Large businesses had special, State-mandated captives earmarked for possible future remediation costs associated with one or more of their landfill sites. One other business (AM) had prepared for eventual environmental costs by saving in a captive. Respondents were not asked to reveal the

amounts saved. In summary, most companies had not voluntarily put aside money to cover future costs related to environmental damage. In fact most respondents had never heard of the term captive and required further explanation of the concept.

*Table 5.1: Summary of environmental liability mitigation methods used by surveyed businesses*

Saves in captive or retains EIL	A	B	C
Large			F
Medium	SS	S	
Small		S	

F="more foreign"  
S="more Swedish"

As shown in Table 5.1 above, there were little or no differences in size or license types among surveyed businesses in how well-prepared they were for environmental losses resulting from gradual pollution sources. The only exception was Medium sized businesses; three of seven either saved in a captive or held EIL insurance.

A comparison of the companies' degree of "Swedishness" in this regard did not show any clear differences either. I have grouped companies as "more foreign" (F) or "more Swedish" (S). I have defined "more foreign" to mean companies which are more than half-owned by foreign investors or foreign enterprises. Four of the surveyed businesses were either listed on the Stock Exchange (i.e. uncertain extent of foreign ownership) or were "more foreign". The four "more foreign" make up a very small sample group therefore, the results from this group may not be representative of other foreign-owned corporations operating in Stockholm County or Sweden on the whole. All of the EIL-holding companies which participated in the study were "more Swedish" (See Question 1.2). Of the two businesses which saved in captives, one was 100% Swedish-owned and the other was listed on the Stock Exchange. The low frequency (25%) of foreign businesses mitigating environmental losses through captives or EIL was unexpected; the insurance providers which contributed to the feasibility study were all in agreement that foreign-owned companies are generally more aware of their vulnerability to environmental law suits and their resulting costs and make up the majority of their EIL customers. Strikingly, none of the surveyed businesses mentioned that the decision to

acquire additional insurance or to save in a captive had been influenced by a loan institution.

The CSR policies of two of the three Swedish banks participating in the study stipulate, among other things, an assessment of environmental risks as a part of credit risk evaluations. It is not possible to draw conclusions as to how far-reaching the banks' communication of their CSR policies in respect to corporate financing is in reality. A sample group of 21 businesses in the context of corporate financing for banks is a very small group. The degree to which banks affect corporate customers' willingness to mitigate environmental risks requires further study.

There was a strong correlation among EIL-retaining companies in both their comprehension of the mandatory environmental insurance system and the limits of their GL policies. This, however, was not surprising, as it would be expected that those businesses who invest in EIL cover do so as a result of an appreciation of their coverage gaps without EIL.

### **5.2.5 Insurance Decisions**

Ten of the eighteen companies without EIL responded to Question II.7.B. They were asked why they did not retain EIL; half of the respondents were uncertain if their operations warranted EIL cover or not. Reasons given for not retaining EIL cover were that "they had adequate capital reserves [note: not captive] to guard them from financial impairment;" EIL is completely unnecessary as the mandatory environmental insurance offers complete environmental coverage ("Why should we be double-insured?"); and that "we don't have any environmental risks to insure against."

Only one respondent (Question II.7.A.5) asserted that the designated Environmental Manager was involved in the decision making process concerning environmental insurance coverage. Another interesting result was that among one-fourth of the responding companies, the Financial Manager was solely responsible for deciding what insurance cover the business requires. Another one-sixth said that the CEO is solely responsible for determining what coverage is needed. These findings may be an

indication that environmental work, and particularly environmental risk assessment is not fully integrated in the business. It also indicates possible roadblocks in the internal communication pathways of these companies leading to increased internal uncertainty.

There are significant differences between Small and Large companies and even different types of operations, leading to differences in how different companies handle risks. Larger companies generally have more systematic work procedures often involving delegating responsibilities and associated risks among various departments. As the number of core areas increase in a business, so does the demand for integration. The exclusion of Environmental Managers from insurance risk discussions can be an indication of a poor integration of environmental operations in the business mechanisms.

### ***5.3 Analysis Questionnaire Part III***

#### **5.3.1 Third Party Liability Situation**

Responses to Questions III.1 and 2 show a lack of understanding of the differences between gradual vs. sudden accidental pollution scenarios. Insurance companies, on-the-other hand, differentiate between the two causes of pollution in terms of insurance reimbursement! About half of the respondents correctly concluded that the company would be responsible for remediation costs associated with the gradual pollution situation. The results of Question III.1.A have been dissected into A, B, C and Large, Medium and Small businesses in Figures A.7 and A.8. A breakdown by company size reflects large distinctions. Most Large companies responded that they would be monetarily responsible while none of the Small businesses and less than half of Medium businesses asserted the same.

A breakdown of the results from Question III.1.B is made in Figures A.9 and A.10. Noteworthy was that none of the respondents asserted that their GL insurance provider would provide compensation in the case of a sudden, accidental release of pollutants. This is inconsistent with the answers to Question II.5. Once again, the fact that business managers are unaware of what risks are insured against and which are not suggests that businesses operate under a high degree of uncertainty.

Interestingly, the responses change significantly when respondents are asked specifically what affect the mandatory environmental insurance plays on the outcome of which party would be monetarily responsible for clean-up costs. The inconsistency of the responses also suggests that businesses are confused about the mandatory insurance and its applications. Only four respondents (Fig. 4.2) in the beginning of the survey thought the mandatory insurance offered the company protection while nearly half believed that the insurance would provide compensation if their operations were to damage a third party. When respondents were asked what affect not paying the insurance would have in the outcome, the situation became more black-and-white for respondents resulting in a much higher frequency of respondents answering that that the company would be responsible. Figures A: 11 - A:14 are a disaggregation into license type and company size; no great differences between categories was noticed.

It is also noteworthy to compare the responses in which the question was modified to read that the pollution had not been a result of the company's negligence; respondents were more apt to think that the mandatory environmental insurance would reimburse for damages. This finding suggests a poor understanding among businesses, in particular Large and A businesses, of the legal framework of Sweden, particularly the Polluter Pays Principle. See Figures A.15 and A.16. Environmental Managers of Large and A businesses, seemingly have a weak understanding of the strict liability allied with the PPP.

### **5.3.2 First Party Liability Situation**

Respondents were asked who would be financially responsible in a situation in which their own property incurred environmental damage stemming from their own operations. The results replicate the apparent misunderstanding of the mandatory insurance's purpose and application indicated in the previous scenario. Nearly half of those responding thought that they would be compensated for such expenses by the mandatory environmental insurance as long as they had contributed their requisite annual premium! Figures A.17 - A.20 demonstrate again that company size plays little role in how the businesses have interpreted the security provided by the mandatory insurance while license type was a more important factor among surveyed businesses. Most C companies

assumed the mandatory insurance to cover costs if their own business premises were to be environmentally impaired. Bearing in mind the small sample of group of C businesses, it cannot be concluded that C businesses have a poorer comprehension of the insurance program. Alarming, however is the fact that about one-third of the A businesses also believed the mandatory insurance to offer protection in such a situation; as the A sample group is relatively large, it indicates a poor understanding among A businesses of the limitations of the insurance.

### **5.3.3 What Would Make EIL More Attractive to Businesses?**

Another aspect to consider when analyzing a company's perceived environmental liability risks is to investigate to what extent they would be willing to protect themselves financially from liability through insurance. Basing their answers on today's EIL policies, I asked respondents to rank the importance of factors in their decision to retain EIL in the near future or not. Figure 4.3 demonstrates that respondents felt that a reduction in EIL policy exclusions was the most important factor. The second most important factor was if there were a significant number of environmental liability cases exposed in the media. The third most important factor among respondents was a reduction in policy costs. The least important factor among respondents was the implementation of more rigorous environmental legislation. It is impossible to say how much weight these results should be given as a great many of the respondents are not involved in insurance retention decisions within their respective organizations. Additionally, as previously established, a great many had deemed their companies to be fully covered for environmental damage through their GL policies and / or the mandatory environmental insurance; these misunderstandings could weigh heavily upon respondents' views of EIL as an attractive form or risk mitigation.

I found it particularly interesting that so many respondents felt that a reduction of policy exclusions was so important. I included exclusions as a factor based solely on my own experience that people are in general dubious of insurance companies' readiness to pay; providers have a reputation of finding every means to avoid reimbursing their customers' losses. I had expected the insurance premium levels and media attention to environmental liability cases factors to be the foremost factors.

Another unexpected result was that two respondents stated that it would take an environmental lawsuit against them to convince the business that they need extra coverage.

#### **5.3.4 Debriefing**

Figure 4.4 is a summary of how interviewees responded to the debriefing question. A full 35% of respondents, acknowledged in one way or another that they were not up to speed with how well their business is protected from monetary losses of an environmental nature. Several respondents stated that the interview had been an eye-opener for them and that they felt a need to assess their possible coverage gaps. All of the surveyed were keen on receiving a copy of the complete study, reflecting a clear interest in the subject.

## 6 Discussion

The nature of operations which require environmental permitting / licensing involve a certain level of environmental risks. One of the purposes of licensing is to raise operators' awareness of and responsibility for the ensuing risks. The lack of recognition on the part of businesses of the innate risks coupled with their environmentally hazardous operations may be a symptom of a larger dilemma. Business leaders who do not see a direct link between environmental risk mitigation and economic gain may not give environmental risk mitigation due attention. This is reflected in various ways, such as excluding Environmental Managers from key corporate strategies such as marketing and the mitigation of corporate risks. But it is also reflected in the way many companies "bake-in" environmental managerial duties with other more evident "business functions," such as quality assurance and production management. Not only does this increase the likelihood that environmental duties are seen as a second hand, but also lessens the status of environmental work within the company. This study indicates that the resources applied to environmental work within the company can be a major factor in the company's perceived environmental liability risks.

Businesses which are not aware of their insurance protection are at risk of being over- or underinsured. Neither situation is conducive to a competitiveness and economic security. It is essential that those managing economic risks of the business also take heed of environmental risks which could result in economic losses. A poor understanding of insurance coverage limits the company's ability to manage and plan for its risks.

The misunderstandings surrounding the mandatory environmental insurance program and even the strict liability associated with the Polluter Pays Principle also reduce businesses' ability to effectively manage environmental risks. A number of businesses operate under a false sense of security as a result of the mandatory insurance program, possibly directly resulting in the businesses being underinsured. An association was established to protect the interests of contributors to the mandatory insurance. But by merely focusing on keeping premiums amounts in check, the Association and the Confederation of Swedish Enterprises have possibly missed their most vital role. As representatives of contributors,

they have an obligation to inform businesses to allow them to facilitate the most rational risk evaluations possible. Currently, the Association “communicates” with contributing businesses through trade unions. Trade unions have thus been given a role which was originally assigned the Association. Trade unions have seemingly had little impact in businesses’ comprehension of the purpose of the mandatory environmental insurance. The Swedish government has in a way abandoned contributors in two ways: Firstly by shifting the responsibility of protecting contributors’ interests to a seemingly redundant Association; and secondly by not requiring regulatory agencies to inform facilities of the mandatory insurance upon environmental license issuance. One question that I continuously reflected over is whether or not the Government has ever evaluated the effectiveness of the Association.

In addition to the mandated insurance acting as an element of confusion, the insurance has not had the effect originally intended. The remediation insurance’s purpose was to keep remediation sites off long lists of sites which tax-payers eventually finance. The restrictive nature of the insurance has led to the exclusion of the majority of sites from the prospect of compensation; most sites do not qualify, necessitating funding by local and state governments, contrary to the intention of the insurance and also contrary to the PPP. Likewise, the mandatory environmental damage insurance has resulted in only in a few, small reimbursements. Premium amounts have thus far dwarfed reimbursements, contradicting the theory of insurance in which risks should be aligned with premiums. The insurance providers have historically made huge profits as a result of a poorly-designed, albeit well-intended, environmental law. The State has mandated an extra tax and has allowed a private insurance company to manage the money; a concoction born to create confusion!

Businesses’ poor comprehension of the environmental laws imparting strict liability has many left feeling that if they follow their licensing conditions then they are somehow exempt from environmental liability. The question of license compliance is of the essence in criminal cases or when establishing punitive damages, but does not impact the right of third parties to seek damages. And who is to say that the Government will not order the

remediation of a site which has been damaged as a result of a license-holding, complying party? The PPP includes no clause exempting law-abiding license-holders from their requirement to remediate; the Polluter is responsible regardless.

This leads us to another hinder in businesses' awareness of their liability risks. The scarcity of environmental liability court rulings to date may also be a contributing factor in businesses' poor grasp of the PPP and ultimately in their sometimes incorrect illusion that they do not need environmental insurance. The actual risk that a business would be required to pay a large liability ruling is less in Sweden than in many other Western countries. This is not due to differences in legislation as much as differences in cultures; Sweden is not a "suing country." Changes in legislation however, such as the new laws aimed at preserving biodiversity, as well as a broader precedence in coming years increase the vulnerability of businesses to environmental law suits and ensuing economic losses. Businesses require comprehensive information regarding strict liability and their environmental insurance coverage in order to make informed, rational decisions.

The factors concerning businesses' perceived environmental liability risks outlined above have undoubtedly had some degree of influence on the EIL market in Sweden to date. Those few companies showing a sound understanding of their GL coverage and of the mandatory insurance program are also those which have chosen to protect themselves through insurance. Information proliferation regarding liability risks by loaning institutions, insurance providers and regulatory agencies may have not only a positive affect on businesses' ability to manage their liability risks but may also increase the demand for environmental insurance solutions in coming years. Both banks and insurance providers stand to benefit by informing their corporate customers. Banks reduce their financial risks and at the same time improve their image in an increasingly environmentally aware world. Many bank investors as well as a growing number of private customers see favourably upon banks which invest in environmentally sound investments. Insurance providers stand to increase the demand for environmental insurance products simply by bringing to light their corporate customers' coverage gaps.

## 7 Conclusions

This empirical study suggests that most businesses operating potentially environmentally hazardous operations in Stockholm County, Sweden, in particular Large and A businesses, are not familiar with their environmental insurance coverage. The majority of businesses can not differentiate between what types of environmental risks they are and are not insured against. Those denoted having the environmental managerial duties within the businesses seldom have an influential role in the company's environmental insurance decisions.

It is also indicated that most companies, and in particular Large and A companies, are not aware of their vulnerability to monetary environmental risks or the ways they can manage these risks. Therefore, they are not in a position to take precautions to guard against large economic losses resulting from environmental impairment costs. The study indicates that A facilities are, as a result, highly vulnerable to significant environmental losses due to the nature of their operations in conjunction with apparent misconceptions of the mandatory environmental insurance.

Thus far environmental liability suits in Sweden resulting in large compensation awards have failed to materialize. There is little precedence in the area of environmental law and in particular environmental tort liability. The legal framework is in place to allow for rulings for significant damages but the lack of precedence leaves many actors in a state of uncertainty. Insurance providers and business owners alike are neither able to assess nor manage their monetary risks whilst environmental tort law is still in its infancy. Future environmental liability cases will not only build praxis in the area, but may also incite businesses to insure themselves against environmental losses.

Clouding the issue for many businesses is the State-mandated environmental damage and remediation insurance. Businesses operating potentially environmentally hazardous facilities are seemingly confused and have taken for granted that they are the insured party. In some cases this confusion may have led to companies misjudging their need for

environmental insurance, and the EIL market in Sweden may have been negatively affected as a result.

This study points to the following factors in the sluggish EIL market in Sweden to date:

1) companies' unawareness of their insurance protection, 2) confusion over the mandatory environmental insurance and even the 3) scarcity of environmental tort liability rulings in the Swedish Courts.

## 8 Propositions

Based on the findings of both the feasibility and the main studies, I would like to make a number of propositions. Each proposition is followed by a brief motivation.

- I. Businesses should integrate Environmental Managers in their business-decision mechanisms, such as including them in their Executive Committees. Companies should draw on Environmental Manager's strengths in environmental risk assessment to improve the company's corporate risk management.
  - Results indicate that Environmental Managers in general have a poor knowledge of their companies' environmental insurance protection.
- II. Improve communication and cooperation among different departments within companies to minimize not only actual environmental risks but also ensuing environmental losses.
  - Results indicate that many Environmental Managers are not included in their respective company's insurance policy decisions.
- III. The mandatory environmental insurance program should be replaced by a State fund. Abandonment of the insurance may reduce confusion for potentially environmentally hazardous facilities in regards to strict liability and susceptibility to high environmental impairment losses. The contributions to the fund can be adjusted based on the need for replenishment to the fund. The fund should be administrated by a State agency, allowing for both flexibility and lower administrative costs.
  - Results point to a significant difference in premiums paid to the mandatory insurance and reimbursements made. Many of the surveyed companies have assumed that they are the insured party.
- IV. An implementation of a State fund precludes the need for the seemingly ineffective Association for Environmental Impairment Insurance.
  - The Association has had no direct impact in bettering businesses' knowledge of the mandatory insurance.
- V. Trade organizations should assume a larger role in educating its members about environmental legislation, expected changes in legislation and how they can most effectively mitigate costly environmental losses.

- One objective of trade organizations is to keep businesses informed of laws and regulations in order to give its member businesses an edge over their competitors.

VI. Insurance providers should ensure that their corporate customers understand the distinction between sudden, accidental as opposed to gradual pollution sources. Not only will this information enable companies to manage their risks more effectively, but it may also prove an effective means of marketing EIL insurance.

- The results indicate that many businesses are unaware of the differentiation between the two claim conditions. In addition many businesses had never heard of EIL insurance.

**Some interesting areas for further study:**

- How well do banks communicate the importance of environmental risk mitigation through insurance to their corporate customers with high-risk operations?
- What impact is globalization having on perceived environmental liability risks in Sweden?
- What is the current role of Environmental Managers in Sweden? Are Environmental Managers primarily responsible with compliance issues? Quality Control? Etc.
- How can the role of Environmental Managers become more integrated in businesses' economic success strategies?

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## **9.2 Personal Communications**

### **9.2.1 Company Interviews**

*Note: Names of businesses and contact persons are confidential!*

### **9.2.2 Other Personal and Telephone Communications**

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# Appendices

## Questionnaire for Businesses

Jag ber dig svara på följande frågor baserat helt på din egen erfarenhet och uppfattning:

### Del I: Generellt om företaget

I.1. Hur många anställda har företaget i Sverige?

Vad var omsättningen 2005?

Utifrån företagets årliga omsättning har jag kategoriserat Ert företag som ett \_\_\_L/M/S\_\_\_\_\_ företag. Instämmer du med den kategoriseringen?

I. 2. Har företaget några utländska ägare eller motsvarande intressenter?

I. 3. Definieras verksamheten som miljöfarlig verksamhet? **Ja / Nej**

A. Till vilken svensk myndighet är företaget tillstånds- alt anmälningspliktig?

B. Vilket år fick företaget nämnd tillstånd alt anmälningsplikt?

I. 4. Vem är miljöansvarig för företaget?

A. Har denna person andra befattningsområden? **Ja**, vilka?

B. Vad har den miljöansvarige för utbildning respektive arbetserfarenhet inom miljöområdet?

C. Är det flera inom företaget som delar på miljöarbetet? **Ja / Hur många?**

### Del II: Försäkringsbilden på företaget idag

II. 1. Betalar företaget årligen den lagstadgade miljöskadeförsäkringen?

**Ja**, Hur mycket betalar företaget i premier?

II. 2. Berätta om informationen företaget fått angående denna försäkring?

A. Kändes informationen relevant för företaget? **Nej**, varför?

B. Vilken myndighet har ni fått informationen av?

C. Kom informationen från annan källa än från en myndighet?

D. Vilket skydd ger miljöskadeförsäkringen för företaget?

E. Om försäkringen faller ut, vem är förmånstagaren?

II. 3. Har företaget sparat pengar i en särskild fond (captive) för ev. framtida miljöskador? **Om nej**, varför inte?

II. 4. Har företaget tagit hjälp av någon jurist med miljökompetens för att identifiera eller begränsa ert miljöansvar?

II. 5. Anser ni att företagets ansvarsförsäkring täcker plötsliga, oförutsedda miljöskador?

A. **Om ja:** 1:a och / eller 3:e part?

B. **Om ja:** Vilket försäkringsbolag?

II. 6. Anser ni att företagets ansvarsförsäkring täcker gradvisa miljöskador?

II. 7. Har företaget tecknat en **frivillig** miljöförsäkring?

A. **Om JA**

Vad innefattar den?

Typ?

Undantag?

1:a eller 3:e part? Eller både och?

1. Vilket försäkringsbolag?

2. Varför valde ni detta försäkringsbolag?

3. Varför har ni tecknat en sådan försäkring?

4. Hur länge har ni haft denna miljöförsäkring?

5. Vilka inom ert företag har varit med om beslutet angående försäkringen?

6. Vem är förmånstagaren?

7. Tycker du att premienivån är skälig? **Ja / Nej** Motivera svaret!

8. Får företaget försäkringsråd av någon försäkringsmäklare?

B. **Om NEJ:** Varför inte?

### **Del III: Företagets framtida miljöansvar**

III. 1. Antag att en miljöskada som torde kunna förknippas till Er verksamhet, skulle uppstå imorgon på en grannfastighet till er. Vem, anser du, vore i så fall ansvarig för saneringskostnader och andra tredjeparts anspråk om:

A. Skadan orsakades av ett gradvist utsläpp?

B. Skadan orsakades av ett plötsligt, oförutsett utsläpp?

C. Ert Företag har betalat in till den lagstadgade miljöskadeförsäkringen?

- D. Ert Företag inte har bidragit till den lagstadgade miljöskadeförsäkringen?
- E. Ert företag har tecknat en privat miljöskadeförsäkring?
- F. Det kan visas att ert företag inte har varit oaktsam i sin kontroll för att förebygga miljöskadan?

III. 2. Antag att en miljöskada som inträffat på ert företags fastighet skulle uppdagas imorgon samt orsakat av ett gradvist utsläpp från den egna verksamheten. Vem vore i så fall betalningsansvarig för saneringskostnader och ev. företagsrelaterade avbrottskostnader om:

- A. Företaget har betalat in den lagstadgade miljöskadeförsäkringen?
- B. Företaget inte har bidragit till den lagstadgade miljöskadeförsäkringen?
- C. Företaget har tecknat en privat miljöskadeförsäkring som täcker föroreningar på den egna fastigheten?

III. 3. Prioritera följande påståenden genom att rangordna dina svar med 1-5 där 5 stämmer mest överens med din åsikt och 1 stämmer minst överens med din åsikt:

Företaget skulle teckna en ny privat miljöskadeförsäkring i en nära framtid om:

\_\_\_\_\_Försäkringsbolagen erbjöd lägre premier?

\_\_\_\_\_Det blev påtagligt flera uppmärksammade fall av miljöbrott / miljöskadestånd?

\_\_\_\_\_Försäkringsbolagen erbjuds miljöskadeförsäkring med färre undantag?

\_\_\_\_\_Sverige tog till sig strängare miljölagstiftning?

\_\_\_\_\_Annan faktor, nämligen \_\_\_\_\_

\_\_\_\_\_\*\*Nej, ingen faktor kommer att övertyga mig om att vi behöver teckna en sådan försäkring!

III. 4. Är det någonting angående miljöskadeförsäkringar som du skulle vilja lägga till eller fråga om?

Tack för din medverkan i studien!

Skulle du vilja ha en kopia av den färdiga rapporten när den är klar efter årsskiftet?

### **Questionnaire for banks**

1. Brukar banken ta hänsyn till verksamhetens art när ni bedömer kreditgivning för företag?

Ja, beskriv tillvägagångssättet:

Schablonmässigt

Branschvis

Individuellt med stöd av t ex due diligence?

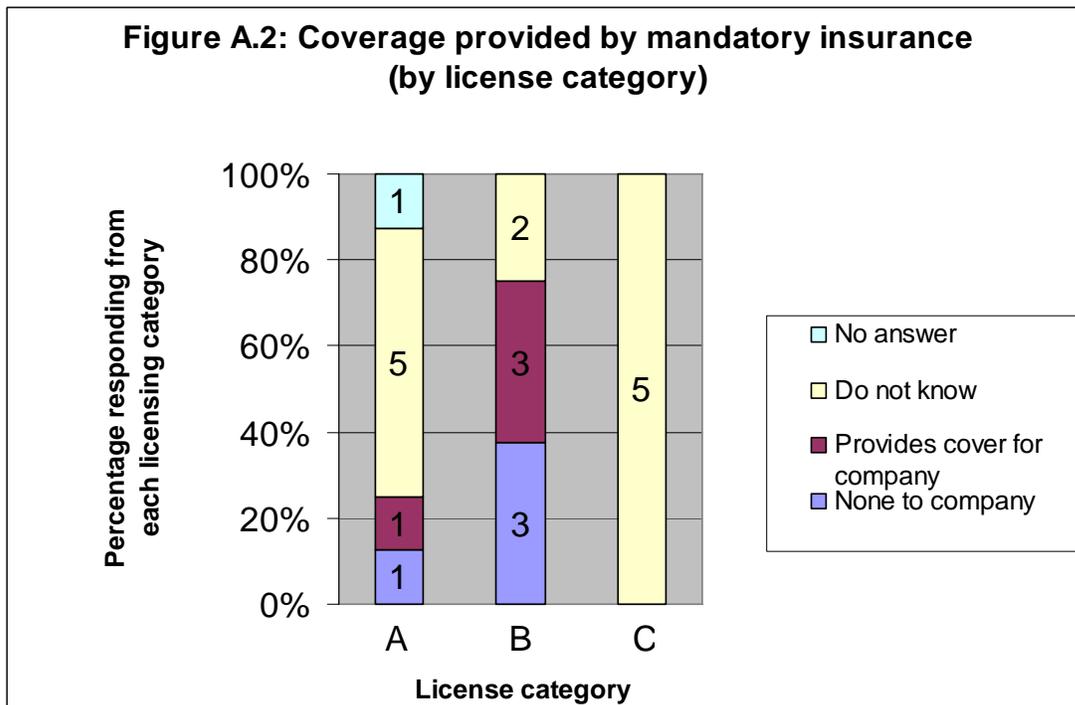
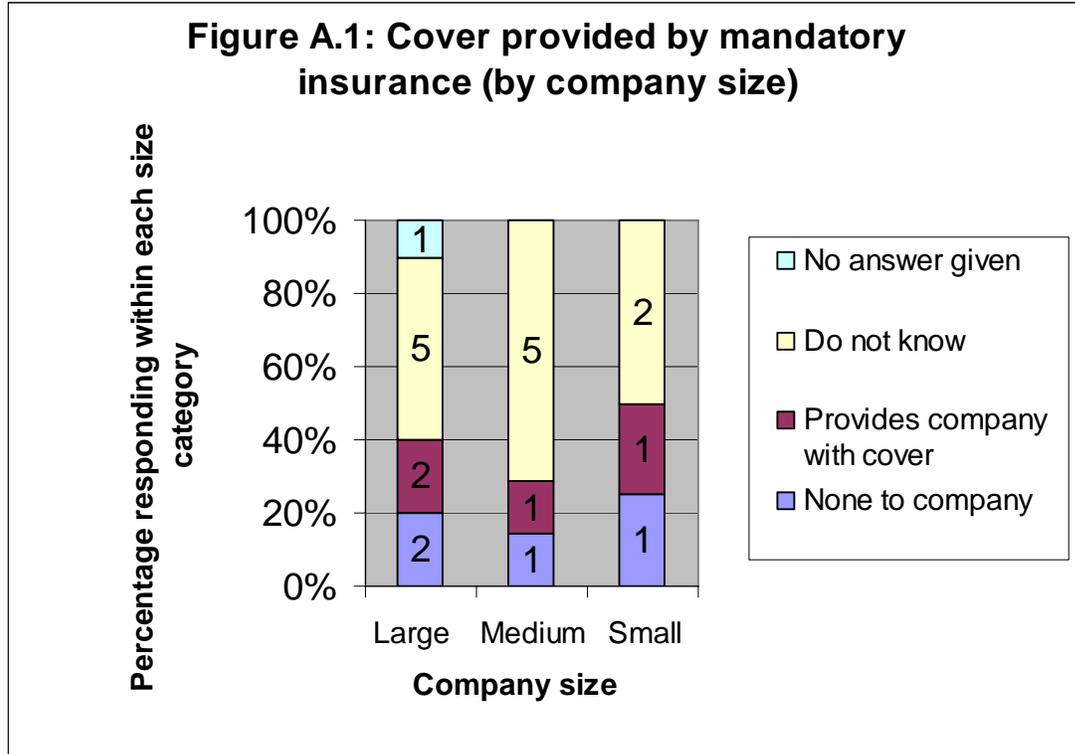
Annat svar \_\_\_\_\_

Nej, varför inte?

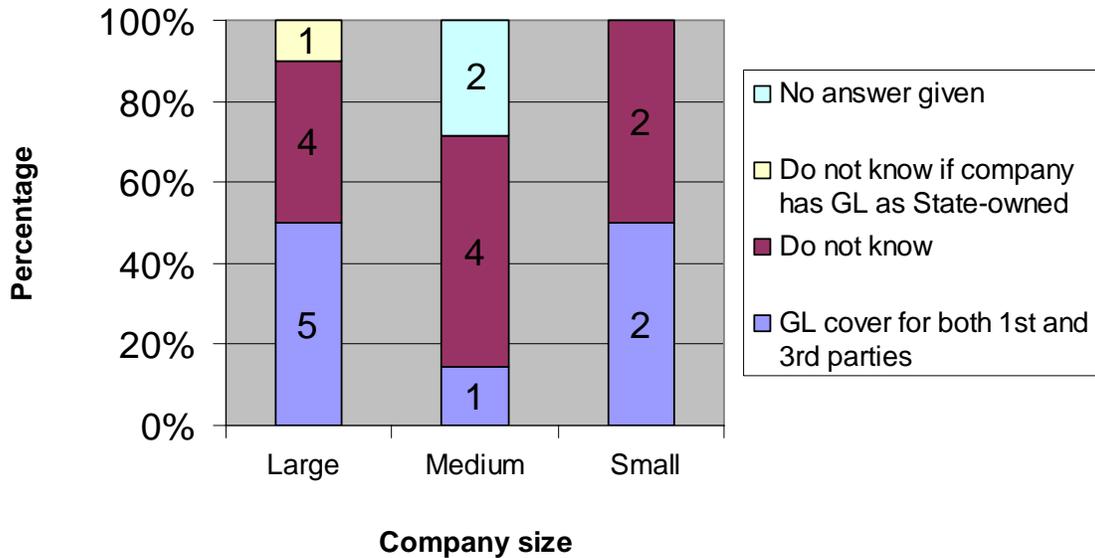
2. Vilka inom banken bedömer huruvida ett företag har miljörisiker?
  - a. Vilken kompetens/bakgrund har dessa inom miljöfrågor?
    - b. Brukar ni hyra in kompetens där det behövs? I vilken omfattning?
3. Om ni identifierar stora miljörisiker, hur bedömer ni de riskerna?
4. Nekar banken kredit till verksamheter som anses för riskabla ur en miljöansvarssynpunkt?
5. Brukar banken ta del av ev. underlag för ansökan om miljötillstånd alt. underlag för anmälningspliktiga verksamheter?
6. Har banken vid något tillfälle inkasserat skulder från företag pga. deras miljöskulder?  
Ja, beskriv:
7. Tar banken hänsyn till företagets försäkringsskydd när ni bedömer kreditgivande?  
  
I vilken omfattning?  
  
Brukar ni läsa försäkringsvillkoren och ta reda på t ex eventuella undantag?
8. Brukar banken kräva särskilda miljöförsäkringsskydd för vissa verksamheter?  
  
Vilka typer av verksamheter i så fall?
9. Tar banken hänsyn till om företaget avsätter pengar i en så kallad "captive" för ev. framtida miljöskador under bedömningsprocessen?
10. Har banken uppmärksammat en global alt lokal trend när det gäller finansinstitutioners intresse för kartläggning av miljörisiker?

## More Figures

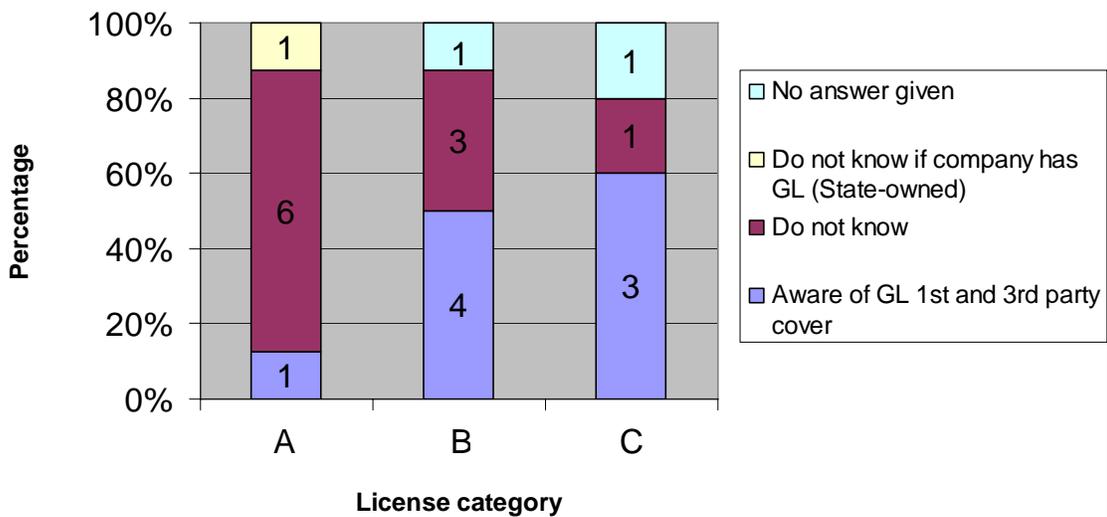
Figures A:1-A-20 in which responses have been disaggregated by company size and license type.



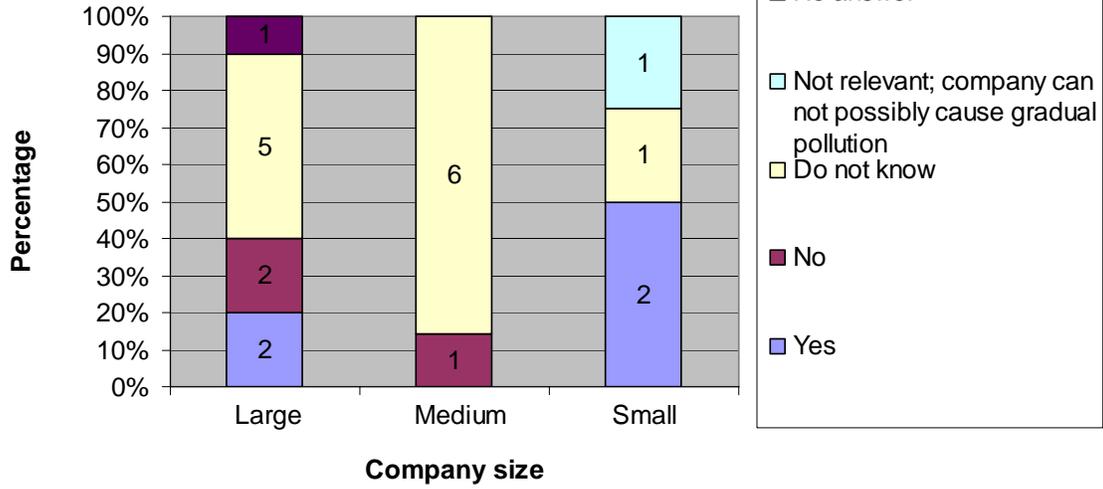
**Figure A.3: General Liability cover for sudden, accidental environmental incidents (by company size)**



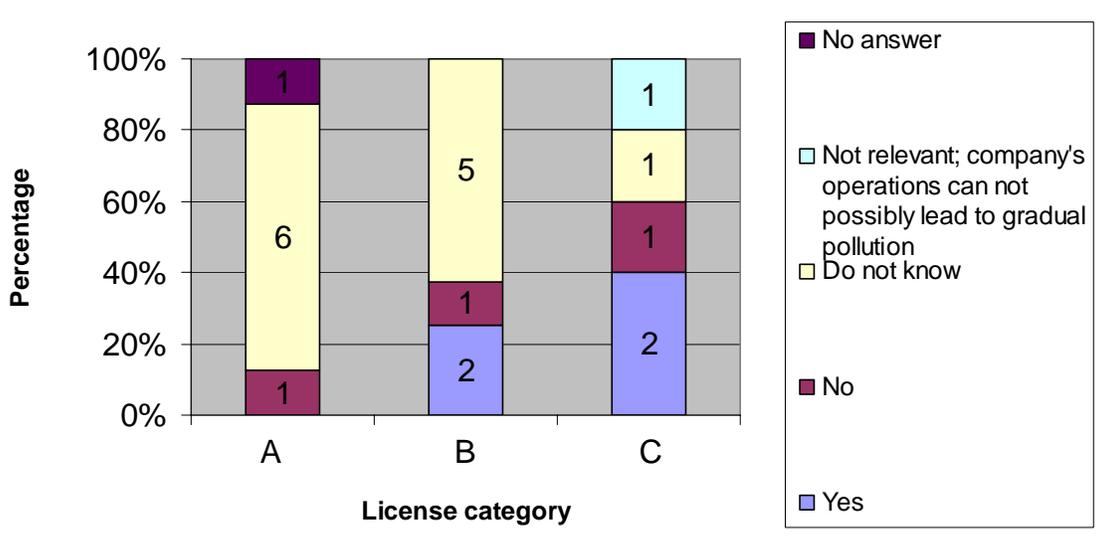
**Figure A.4: General Liability cover for sudden, accidental environmental incidents (by license type)**



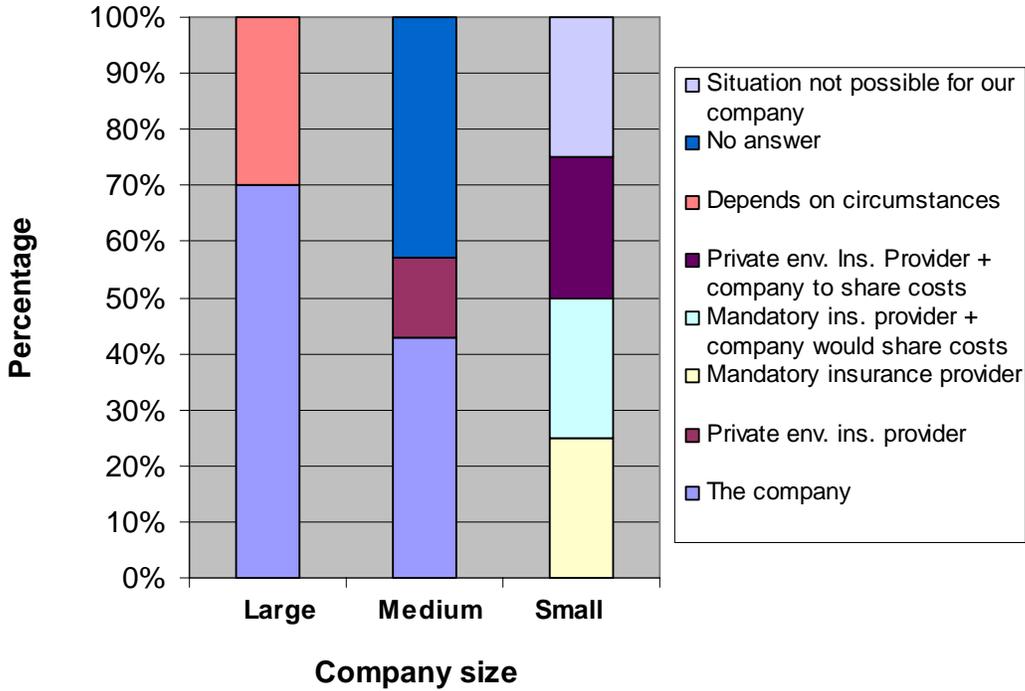
**Figure A.5: GL cover for gradual environmental pollution  
(by company size)**



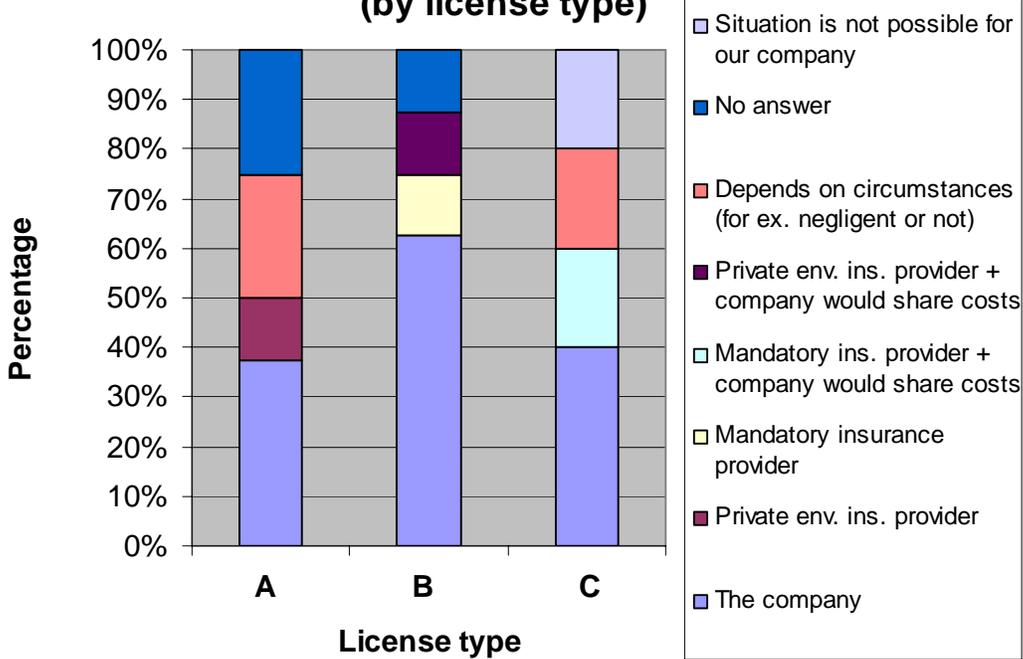
**Figure A.6: GL cover for gradual environmental pollution  
(by license type)**



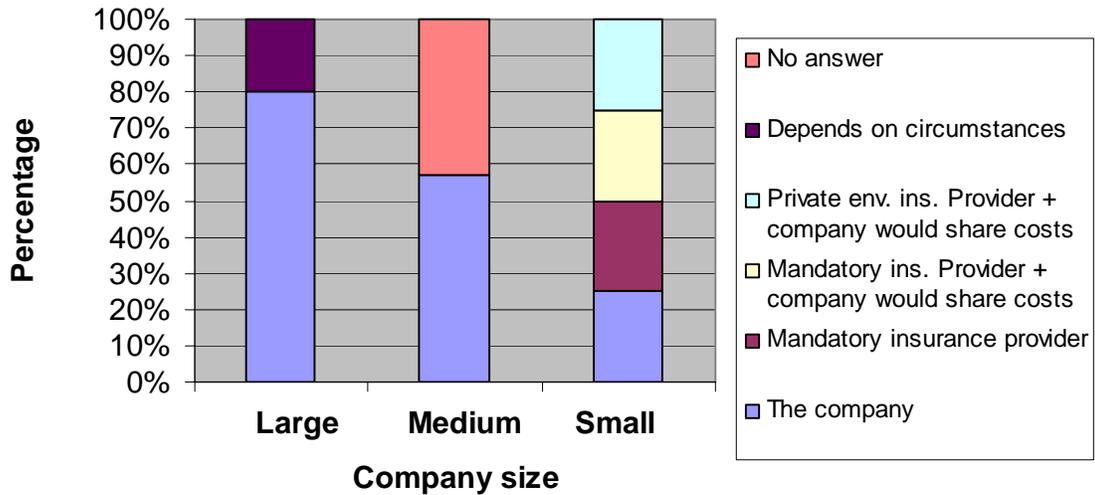
**Figure A.7: The third party impairment resulted from gradual pollution? (by company size)**



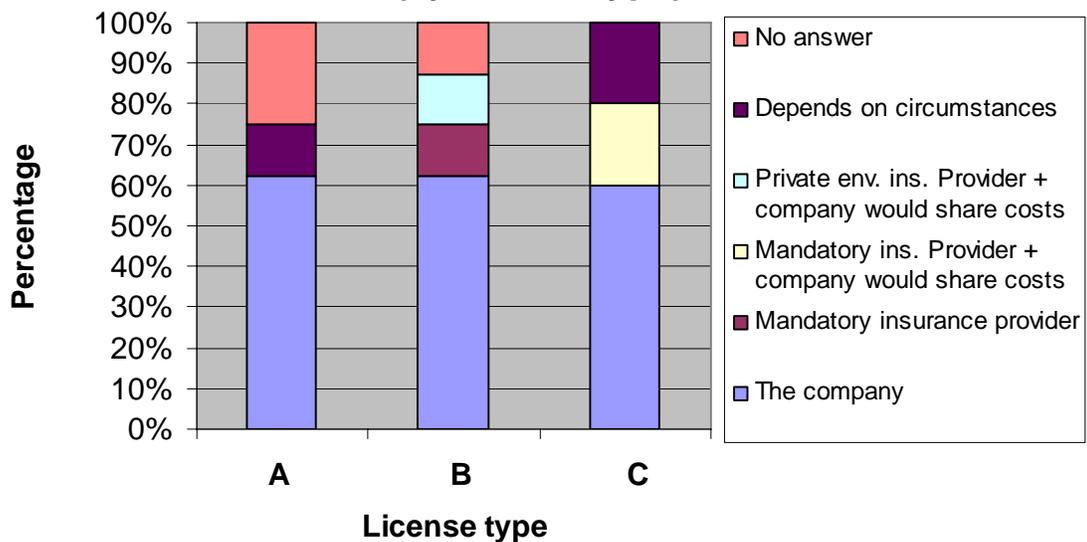
**Figure A.8: The third party impairment resulted from gradual pollution? (by license type)**



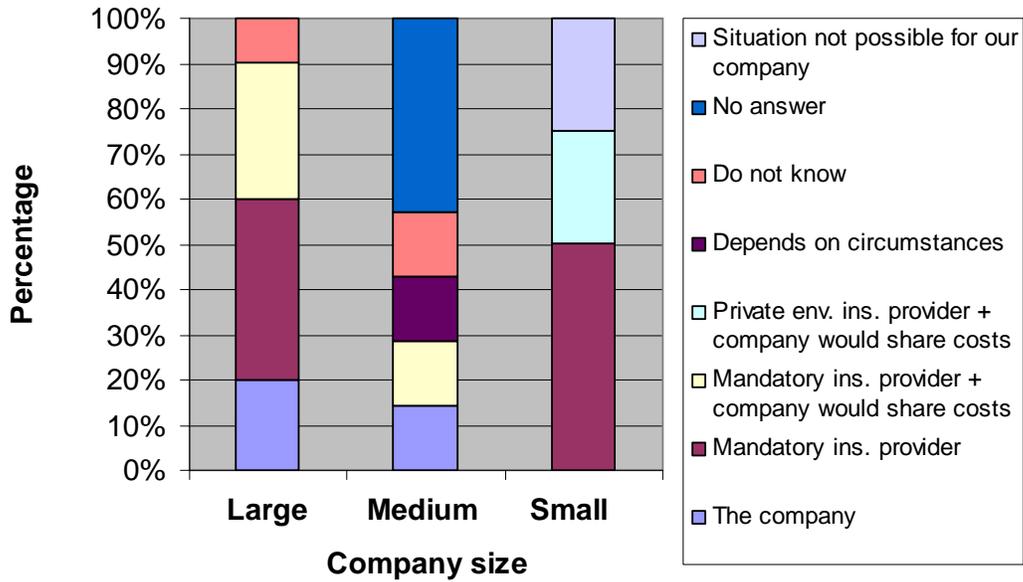
**Figure A.9: The third party impairment was a result of a sudden, accidental release?  
(by company size)**



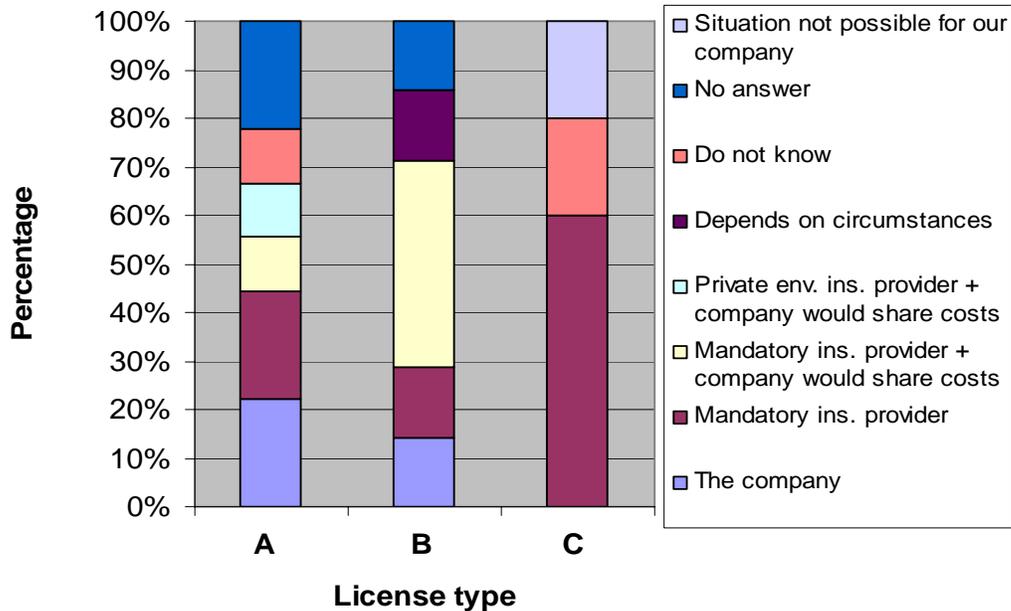
**Figure A.10: The third party impairment was a result of a sudden, accidental release?  
(by license type)**



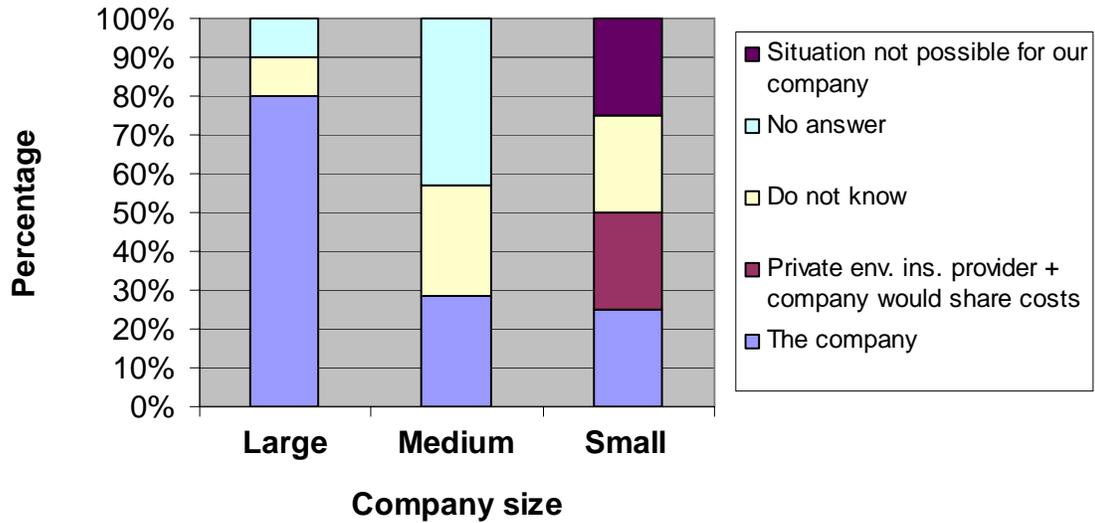
**Figure A.11: Third party-Your company has contributed to the mandatory environmental damage insurance? (by company size)**



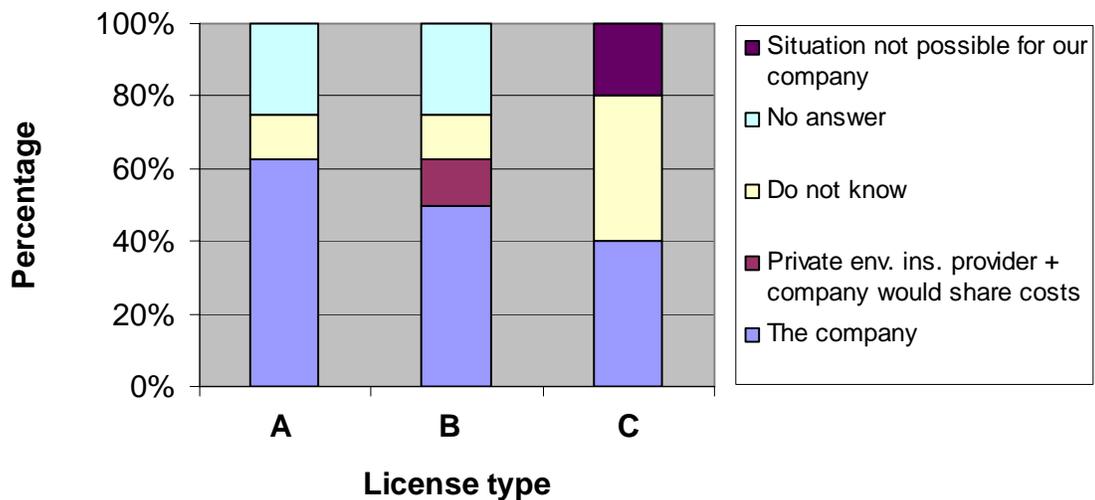
**Figure A.12: Third party-Your company has contributed to the mandatory environmental damage insurance? (by license type)**



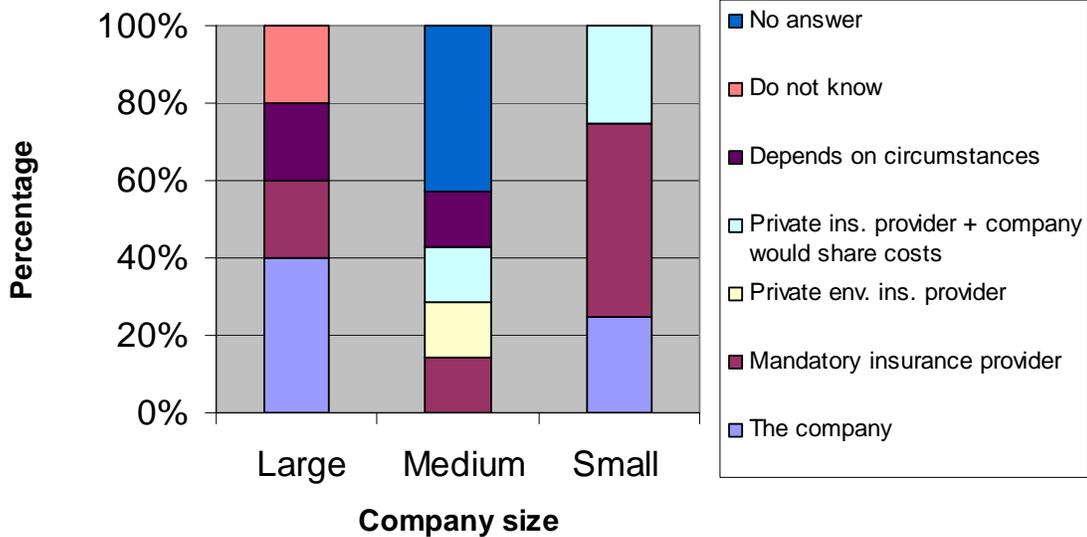
**Figure A.13: Third party-Your company has not paid the mandatory environmental insurance? (by company size)**



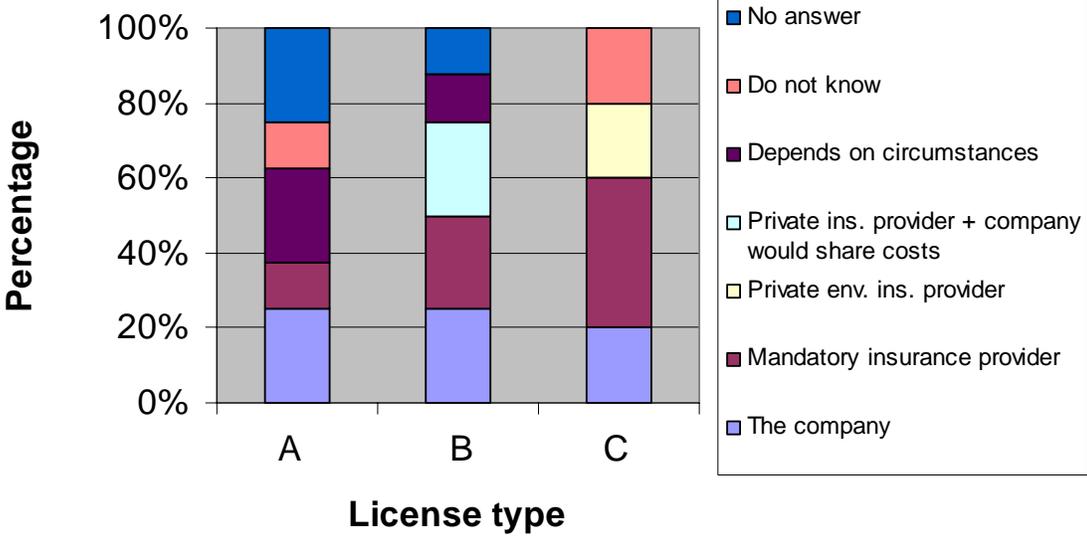
**Figure A.14: Third party-Your company has not paid mandatory environmental insurance? (by license type)**



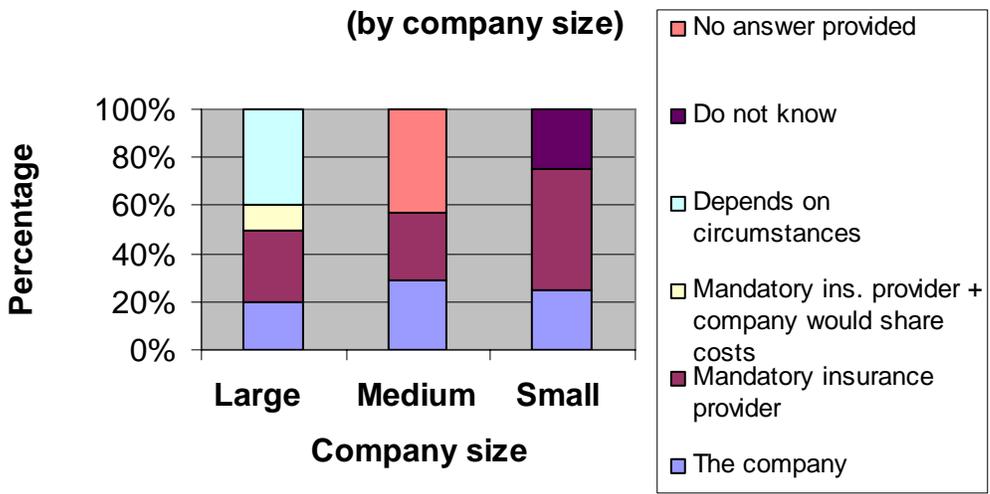
**Figure A.15: Third party- It is clear that your company has not contributed to the pollution through negligence? (by company size)**



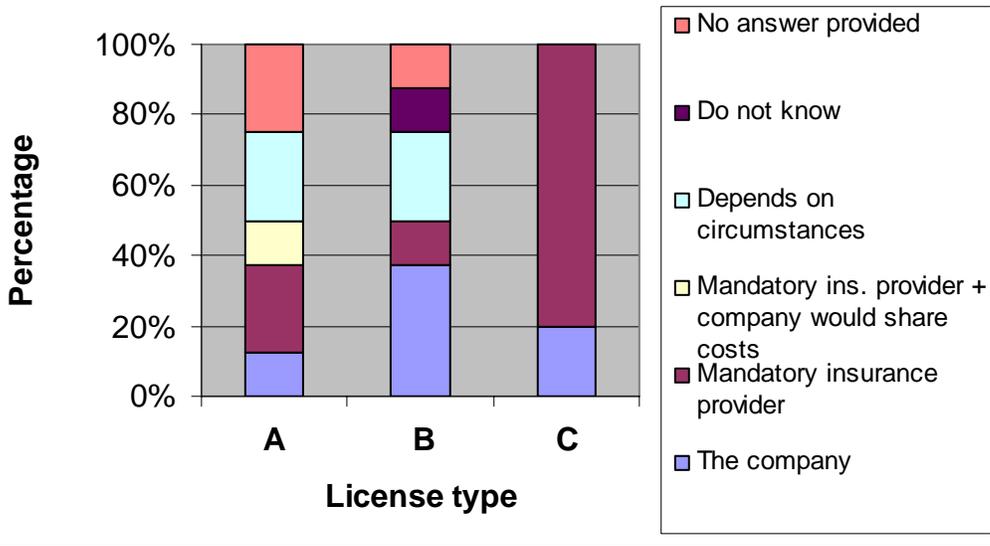
**Figure A.16: Third party- It is clear that your company has not contributed to the pollution through negligence? (by license type)**



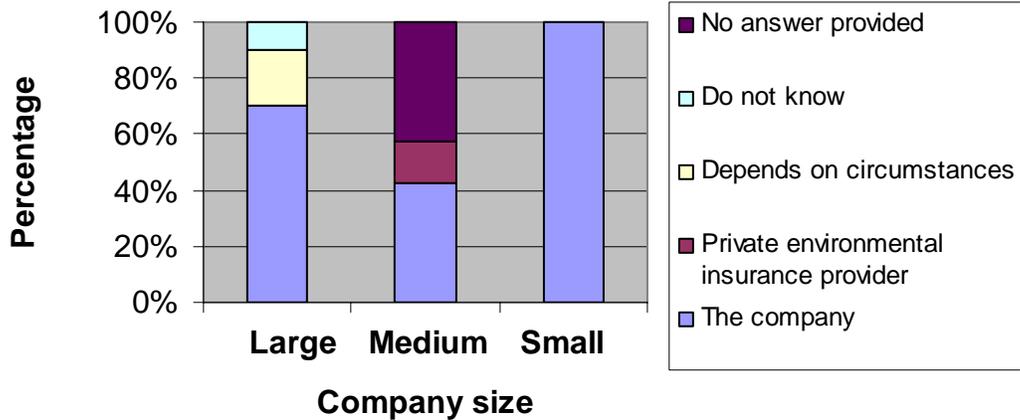
**Figure A.17: First party- Who is responsible for costs if the company **has** contributed to the mandatory environmental insurance? (by company size)**



**Figure A.18: First party- Who is responsible for costs if the company **has** contributed to the mandatory environmental insurance? (by license type)**



**Figure A.19: First party- Who is responsible for costs if company **has not** contributed to mandatory insurance?  
(by company size)**



**Figure A.20: First party- Who would be responsible for costs if company **has not** contributed to the mandatory insurance?  
(by license type)**

