Characteristics of environmental reporters on the OM Stockholm Exchange

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Abstract

External validation of company environmental performance is normally based on corporate environmental reports, due to the lack of other information. Critics of these reports, however, claim that these are no more than public relations exercises, consisting mainly of wordy descriptions and glossy pictures. It is therefore important to turn the spotlight on the real character of the companies behind the reports. Less than 10% of the companies listed on the OM Stockholm Exchange, however, provide documented environmental reports on the Internet (DERI) annually. The highest DERI percentages are found among those industry sectors that began reporting some ten years ago. Data from the Dow Jones Country Index Sweden shows that DERI producers have an average market capitalisation some six times greater than non-producers. Moreover, the DERI producers emitted twice as much CO_2 per turnover as the non-DERI producers'. The fact that less than half of the companies on the OM Stockholm Exchange presented CO_2 emission data somewhat weakens the conclusions on emissions. The fact 60% of the DERI producers could not provide complete CO_2 emission data for their companies does say something concrete about the usefulness of current DERIs as a tool for externally determining company environmental performance characteristics.

Keywords

Corporate environmental report, CER, environmental reporting, documented environmental reports on the Internet (DERI), OM Stockholm Exchange, market capitalisation, CO_2 emissions, rating.

JEL classification

G14; L11; L15; L16; N20

1 Introduction

Since the early 1990's, a new branch of corporate reporting has emerged out of relative insignificance to an important information source for discussing company-related environmental issues and communicating performance to stakeholders. Today, mainly the larger companies listed on the stock exchanges within the OECD countries[1] conduct environmental audits. Reporting, furthermore, is separately from their financial reports, even though – in most cases – this is not required by law.

The voluntary nature of reporting in conjunction with the increasing interest in environmental issues shown by corporate stakeholders has created a new field of inter-company competition and the rapid growth in environmental reporting seen in the past few years. In other words, the underlying driving force for conducting these reports is corporate self-interest. It can be argued that communicating through these separate reports has been performed primarily where a net corporate benefit has been achieved (Gray, *et al.*, 1990). These net benefits may, however, be difficult to estimate. Lately, there are some indications that growth in the number of environmental reports produced in some markets is flattening out, for example in Sweden and the UK (Bränfeldt, 1999, 2000; *Miljöguiden*, 2000; Corporate Register, 2000www). A report from the New Economics Foundation (2000) shows that despite this, only

[1] For more information turn to following: The Global Environment Business Magazine *Tomorrow*, lists Corporate Environmental Reports (CER) on the Internet, World Wide Web at [www.tomorrow-web.com]. CERs can also be viewed at Sunderland University's site *Centre for Environmental Informatics* at [cei.sund.ac.uk]. *The Corporate Register* online database on the Internet at [http://www.corporateregister.com/] houses a collection of corporate environmental reports.

a very small proportion of the companies listed on either the New York or the London Stock exchanges produce these types of reports. A similar occurrence has been observed in this study on the OM Stockholm Exchange where only the larger companies report annually (see Section 2 below).

Different companies have different motives for commencing reporting on company-related environmental issues and performance data. For some industrial sectors[2] (what one usually calls industries), such as oil, transport and chemicals, and in particular those companies within these sectors responsible for well-publicised environmental disasters (such as Exxon and Union Carbide), there has been little, and in some cases nothing to lose by reporting on the impacts on "our common" environment caused by their own activities. On the contrary, by producing environmental reports these companies use the opportunity to tell their own side of the environmental story (Brophy and Starkely, 1996:183). These sectors still remain under environmentalist or legislative pressure (or both) today, and produce some of the best environmental reports[3] (according to i.e. KPMG, 1999). In addition, companies manufacturing products for ordinary citizens (end consumers) and the firms retailing these products have quickly realised the potential of showing their environmental concerns to their stakeholders. Good examples of these companies are Electrolux and The Body Shop (KPMG, 1999www).

While there has been a small increase in the number of information categories and an even smaller – incremental – enlargement in the number of quantitative categories[4], there has been an explosion in the number of pages in each environmental report (Ljungdahl, 1999:59ff). Hence, instead of an increased focus on quantifiable performance issues such as the amounts of resources consumed and substances emitted, the opposite appears to be the case. Already in 1982 Wiseman concluded that there is no correlation between the length of an environmental disclosure (in corporate annual reports) and its quality. The positive corre-

[2] Industry sectors are often referred to as industries in economics, but the financial markets and related literature uses the term sectors. This paper will use sectors when referring to industry sectors.
[3] In UNEP's *Sustainability Benchmark Survey* (1997) the magazine *Tomorrow* presents their ranking of the best environmental reports by sector in the following descending order: pharmaceuticals, transport, retail, electrical engineering and banking.
[4] Ljungdahl (1999:554) divided the environmental reports into 11 categories based on the recommendations from the UNCTC (1991) and the model used by Almer et al (1992) and Ljungdahl (1995).

lation that Wiseman (1982) found is one between social disclosure and market performance, but not between social and market performances[5]. There was, moreover, a tendency towards lengthy disclosures omitting costs. Ingram and Fraizer (1980) notice the lack of external monitoring of these social disclosures as an explanation of the deficiency in quantitative data (and lack of reporting requirements Rockness, 1985), enabling the poorly performing companies to bias their selections in their disclosures (cf. Cerin 2002 on decoupling in environmental reporting and company performance).

Through the variety of means at their disposal, and by illuminating unquantified data, companies are able to choose what to report to suit their purposes (Ness and Mirza, 1991). Stray and Ballantine (2000) identify environmental disclosure differences across industry sectors and see a correlation between the higher rate of disclosures and increasing company size. The writers do, however, not study the correlation between rate of disclosures and rate of emissions – an eco-efficiency indicator. As Stanwick and Stanwick (2000) describe environmental reporting messages from firms: *However, not all firms incorporate this environmental leadership philosophy (Dechant and Altman, 1994) into their day to day operations.* Schaltegger (1997) describes the accounting phenomena – where in most cases the quality can not be assessed by the recipients – as being due to existing management incentives together with loose accounting requirements where bad information quality tends to drive out good quality reports[6]. This situation differs markedly from fiscal accounting, which is based upon a strict set of accounting rules, predetermined by legislation and professional associations of accountants.

The aim of this report is to provide a state-of-the-art study on the distribution of environmental-reporting companies on the OM Stockholm Exchange, by industry sector, stock market value and ratio of CO_2 emissions per SEK turnover. Section 2 of the report relates the environmental-reporting distribution amongst companies listed on the OM Stockholm Exchange to type of industry sector and stock market value. The same distribution by ratio of

[5] Cerin and Dobers (2001a) found that companies with large market capitalisation have a higher market performance than mid and small sized ones. The authors, moreover, found that this is one reason why Dow Jones' sustainability index outperformed Dow Jones Global Index. Dow Jones and SAM Sustainability Group had, however, marketed the caring for sustainability issues to be the sole reason.

[6] Akin to the theoretical concept developed by Akerlof in his Noble price rewarded article *The Markets for Lemons* (1970).

CO_2 emissions per SEK turnover is described in section 3. Section 4 concludes with a discussion.

2 Documented environmental reports on the Internet (DERI)

Along with its Scandinavian neighbours, Sweden is often referred to as a world leader in the adoption of IT and mobile telecommunications services (Berggren and Laestadius, 2000; McGuire, 2000; Wired, 2000www). Access to information on the Internet World Wide Web can decrease the time needed by stakeholders to retrieve information they are looking for. Moreover, information on the Internet also provides opportunities for decreasing the amount of paper used in the process of obtaining information. However, the vagaries of human behaviour are difficult to predict and may in fact lead to an increase in paper consumption through an increasingly positive predisposition to printing out reports.

In a country where Internet penetration is comprehensive, corporate Internet sites are important tools for both accessing and providing access to stakeholders. When browsing the environmental information available at corporate web sites it soon becomes apparent that data stored on an electronic document format is relatively easy to use for extracting specific information with the help of, for example, search tools. However major difficulties can be encountered in relation to ascertaining whether or not all of the relevant information contained in a web-based report has been retrieved, or whether part or all of the web site is up to date and therefore whether or not all of the environmental disclosures correspond to the current fiscal year and the corresponding annual report.

The focus of the study has been on the environmental messages retrieved from documented environmental reports on the Internet (DERIs). The DERIs used in the study are all updated annually at their respective corporate web sites.

The companies listed on the OM Stockholm Exchange have been evaluated in this report to find out the extent to which they produce DERIs. The OM Stockholm Exchange consists of two lists: the A List and the O List. It is the listing committee that decides on the respective

listing of each company. According to the exchange, in simple terms: *"The larger companies are listed on the A List"* and *"The O List is intended for other companies, for example companies which lack the requisite operating history for listing on the A list."* (OM Stockholm Exchange, 2000www). There are also other determinants of *list residence*, such as stronger demands on ownership structure and external communication. More information regarding listing requirements can be found at the OM Stockholm Exchange web site [http://www.omgroup.com/transaction/].

The Swedish-based environmental consulting firm, *EcoManagement SE* (2000www), provides Internet visitors with a list of the companies listed on the OM Stockholm Exchange that have DERIs or similar environmental reports (e.g. html based ones) available at their respective web sites. This can be viewed on the Branch Index page and shows that of the 88 companies on the A list, 22 create DERIs annually. After visiting all the respective company sites during this study, it was found that 20 of these 22 companies provided an environmental report on an electronic-document format - in other words DERIs all in PDF. The remaining two companies provided their environmental information solely on the format of html-coded pages. On the O list, just four out of the 219 listed companies provided environmental reports on the Web. These four are all available as electronic documents. Totally, 24 DERI-producers where, hence, identified. A validity check has been made on *Eco-Management*'s work, dividing companies into those which produce environmental reports on the Internet, and those that do not. The review is incomplete however, and includes the majority of the 307 companies listed on the OM Stockholm Exchange but not all of them. The analysis resulted in finding one company originally categorised as a non-producer, that was in fact a DERI producer (and therefore included in with the 24 DERI producers above).

2.1 DERI producing companies, by sector

The companies listed on the A and O lists have been divided into 16 industry sectors in this study. This enables the companies to be assessed by industry group with respect to the availability of their electronically-stored environmental report documents on the Internet. The results have been plotted in Figure 1. The x axis contains two numbers in parenthesis after each industry-group name.

1. The first is the number of constituent companies within the industry group.
2. The second is the number of companies within the group that provide DERIs at their web site.

In each of the two end-parenthesis that are followed by an asterisk, indicates that one of the companies within the sector providing environmental data on the Web is not presenting it on an electronic document format and is, thus, not an actual DERI.

Insert Figure 1 about here.

The industry-sector data shown in Figure 1 may not provide a solid enough foundation for making comprehensive and rigid conclusions regarding each sector's behaviour. Moreover, the industry-sector information may be difficult to grasp at first glance. However the data do contain several underlying messages as presented below.

- The highest percentage of environmental reporting on the Net is found in the *power*, the *chemical & pharmaceutical*, and the *forestry* industry sectors. These sectors also contain some of the earliest environmental reporters, such as petroleum and pharmaceutical firms.

- The *power* group is actually statistically too small for any general conclusions - represented by two companies only. Both companies have provided an environmental-report document. One of these two companies produced a separate report and the other included environmental information into its annual report. In Sweden, several power suppliers are still governed by municipal or governmental authorities. The two major Swedish energy suppliers have provided environmental-report documents on the Internet. Other energy suppliers not listed on the OM Stockholm Exchange also provided DERIs.

- The *chemical and pharmaceutical* group consists of seven companies. Three of these seven produce environmental reports on the Internet. Two of these are DERI-reporters and the other, a former Swedish and now US-based company, has stopped publishing their electronic document and now displays their environmental messages briefly on their web pages. Organisations within this sector that are not listed on the stock exchange also provide environmental information on the Net in document form.

- The *forestry* group is based on nine companies. Three of them document their environmental data on the Internet. This industry sector is annually rated as the best reporting sector in the prestigious award, *The best Swedish CER of the year*.

- Numerous sectors contain at least some companies producing environmental documentation annually. Often they, however, make up less than one sixth of the total number of companies. A good example is the large *manufacturing* industry sector and the industries of: *raw materials*; *transport*; *real estate and construction*; *banking and investment*; and *service providers*. The formerly inactive (environmentally speaking) *banking and investment* sector today includes two companies providing environmental documents on the Web.

- The real underachievers, failing to present any annual environmental reports stored in document format on the Internet, are the following sectors: *retail*; *research, medical & IT*; *consumer goods*; *media*; and *consulting*.

These findings agree reasonably well with those from the following two studies: *'Percentage of companies in the Fortune global top 250 companies producing a corporate environmental or HSE report*', and '*Corporate environmental and HSE reports for 1100 companies, by sector'*, both KPMG (1999) studies. In the sub-study of 1100 companies, the three sectors showing the greatest proportion of reporters were: *chemicals and synthetics*; *forestry, pulp and paper*; and *utilities* (including power). Similar findings per sector were made in the Fortune Global 250 study by Kolk *et al.* (2001). Clarke and Gibson-Sweet (1999) found in their legiti-

macy-based study that companies within sectors experiencing high levels of public exposure and producing large (direct) environmental impacts are more likely to communicate environmental information in their reports. Kolk *et al.* (2001) also found this to be the case.

2.2 DERI-producing companies, by market-capitalisation size

The data underlying the sector distributions in Figure 1 clearly indicates reporting differences between the A and O-listed companies. For instance, one in every four A-listed company provides environmental reports on a document format on their web site, while less than one in 50 O-listed companies do. The Dow Jones Database at http://indexes.dowjones.com was used to estimate the capitalisation size of the reporting companies. This world index database covers approximately 95% of the underlying market capitalisation on each regional exchange. Companies listed on the OM Stockholm Exchange that today are based in other countries (such as ABB, Akzo Nobel, AstraZeneca) are excluded from the Dow Jones Country Index Sweden[7]. On the OM Stockholm Exchange, the group consisting of large (LRG) and mid-sized (MID) companies contains 28 companies (of which only three are LRG), 10 of which produce environmental reports in the form of electronically-stored documents on the Web. Using the Dow Jones' market capitalisation range codes, it can be seen that a good one third of the large and mid-sized companies produce environmental reports on the Web. The corresponding numbers for small companies (SML), (totalling 31 listed companies), is five. In other words, only one sixth of the small-sized companies produce a DERI. The remaining 239 stock exchange companies not covered by the 95% of the OM Stockholm Exchange market-capitalisation value (which is included into the Dow Jones Country Index Sweden) are smaller than the SML companies on the Dow Jones indexes and are referred to in this study as "tiny" companies (TNY). Only six TNY companies produce DERIs, which is one in every forty.

Insert Figure 2 about here.

[7] These corporations are all examples of mergers and acquisitions which have lead to migration of their abodes abroad, away from Sweden.

The market capitalisation size is retrieved from the Dow Jones Database for each company as of November 28th 2000. Applying these data both to companies that electronically-store their environmental-report documents for public access via the Internet, and companies that do not, shows that the average market capitalisation of the former is more than USD 8,700 million and the latter less than USD 3,700 million. This means that the companies electronically-storing their environmental-report documents for public access via the Internet that are also included in the Dow Jones Country Index Sweden are in general 4.2 times larger than the rest of the companies within the same country index. If TNY companies were also included in the comparison between DERIs and non DERIs, the company-market-capitalisation differences would be considerably greater.

Insert Figure 3 about here.

It is possible to roughly estimate the size of TNY companies. In these calculations made, the average size of the TNY companies storing electronic environmental-report documents for public access on the Internet and those that do not is assumed to be about the same. There are six TNY companies that store their environmental reports on the Web, and 233 that do not. Assuming that company size is equal will therefore not bias a comparison with all companies on the OM Stockholm Exchange. Moreover, if applying the assumption (equal average TNY size) further to the larger company groups (LRG, MID and SML) would decrease the differences in market capitalisation size (shown above) between DERIs and non-DERIs. Consequently, the calculations show that the average market capitalisation for both TNY company groups is (at least) USD 49 million. Excluding foreign-based companies, companies publishing environmental-report documents on the Internet number 21, whereas non-reporters number 277. The corresponding market-capitalisation size for these two groups is USD 6,200 million and USD 370 million respectively. Hence the DERI group is 16 times larger than the non-DERI group in terms of average capitalisation.

The data and telecommunications company Ericsson dominates the OM Stockholm Exchange as well as the Dow Jones Country Index Sweden. Ericsson's market capitalisation for

example, constitutes almost 40% of the entire Dow Jones Country Index Sweden at the closing date November 28th 2000. This over-weighting towards Ericsson increases the average market-capitalisation size of the environmental-reporting companies on the Internet in the comparison[8]. If Ericsson is excluded from the Swedish-based companies on the OM Stockholm Exchange a significant difference in the mean company-market-capitalisation values, however, still remains between those companies reporting environmental issues in document format on the Internet and those that do not. The relative size difference between the two groups is in excess of 5.6 times.

Insert Figure 4 about here.

These findings are in agreement with those of the KPMG International Survey of Environmental reporting 1999 (however not commented on by them[9]). In the KPMG study, the reporting rate amongst the Fortune global top 250 companies was 35%, while the corresponding rate for the 1100-company sub-study was 24%. Moreover, Patten (1991) found social reporting was more common amongst larger corporations early in 1991. Stray and Ballantine (2000) also found that the mean turnover of companies disclosing environmental information was almost 10 times larger than the mean turnover for those that do not. Similar results have been found regarding environmental management, environmental – aspects identification, and environmental assessments by Bugge (1998), Karvonen (2000), Wagner *et al.* (2001), and Holgaard and Remmen (2000) in small electronics companies; by Cerin and Laestadius (2000) in smaller corporate units; and by Burström (2000) in smaller municipalities. Cerin and Laestadius (2000) showed that, not surprisingly, the environmental analyses carried out at smaller units constituted a larger share of unit revenues and, thus, more difficult to finance. Lanoie *et al.* (1998) indicate, moreover, that larger firms are more severely hit by negative environmental information (i.e. regarding lousy environmental performance and penalties) reaching the capital markets. Bartol and Martin (1994) found the limited human and financial resources in smaller companies to be a main reason behind these management differences. This is unfortunate as 70% of global GNP may be generated by small to medium-sized com-

[8] Ericsson is a DERI producer.

panies (SMEs) (O'Laire and Welford, 1996) plus they are most likely to be important with respect to the environment too. Cerin and Dobers (2001a; cf. Fries and Feldhusen, 2001) found that the companies retrieved from the Dow Jones Sustainability Group Index have been selected on the merits of their own communications, which has lead to the selection of large companies with respect to market capitalisation.

Selecting the large reporting firms—a case study:

The Swedish based construction company Skanska, the by far largest company in the Swedish construction sector, is one such example. The company have exhibited great ability in communicating their environmental work, for which it has been awarded in environmental report competitions. The company have been selected by Dow Jones' two sustainability indexes as the sustainability sector leader[A]. Skanska is, hence, (rated as) the most sustainable company in the world, within the construction sector. Despite this reward, Skanska have currently built houses mould before being ready for use, and bridges that may collapse due to lost support structure one year after construction – the bridges having to be closed and reconstructed. More seriously is the ongoing investigation in Sweden where Skanska and a few other construction companies are accused by the antitrust authority to have split the Swedish construction market among them. Skanska and NCC constitute together 70 % of the Swedish construction market. NCC has already admitted its wrongdoing and documents, said to show Skanska's involvement, are now in the possession of the state attorney. The cartel is estimated to have cost Swedish municipalities considerable resources that could have been used, e.g. in schools and care of the elderly. Skanska, however, denies any involvement, so far. The largest Swedish environmental disaster in the 1990's has, moreover, been caused by Skanska when trying to bore a tunnel through a boulder-ridge in southern Sweden. Surprisingly enough they failed to finish the tunnel, but

[9] Perhaps KPMG did not think in these terms – of firms' market capitalisation differences.

managed to lower the surrounding water table considerably. When Skanska, eventually, tried to stop this lowering of the groundwater table nearby farmland was contaminated, cattle stock had to be put to sleep and food from the area was declared not suitable for consumption. The workers, moreover, got the cancerous chemical, Roca-Gil, into their blood through their skin and by breeding. When the environmental scandal became a fact, in the late 1997, the railway project was stopped. If this Skanska, in fact, is the worlds most sustainable construction company in the world, how do then the other construction firms act?

A As discussed by Cerin and Dobers (2001b) this sustainability rating is heavily based qualitative information provided by the evaluated companies themselves.

3 Comparisons of ratios of company carbon dioxide emissions per turnover

Folksam, a large Swedish insurance company and *Finanstidningen, a* daily Swedish business paper have teamed up with a consultancy firm called *GreenIndex* to develop an environmental index called the *Miljöindex*. The aim of the index is to provide a clear picture of how companies listed on the OM Stockholm Exchange perform environmentally in terms of, for example real quantified emissions.

The key indicator, which has received most attention, relates company contribution to potential global warming (GWP) to company turnover. This index also provides a picture of the financial risk the company faces, for instance where new policy instruments are implemented to decrease contributions to global warming. The main constituent of GWP for most energy types is carbon dioxide (CO_2) emission.

The validity of the *Miljöindex* could, however, be made higher. Of 311[10] companies listed on the OM Stockholm Exchange, 184 chose not to complete the environmental index questionnaire. Nevertheless, this is the most ambitious known attempt in Sweden to quantify comparisons of environmental performance. Of the 127 companies listed on the A list (containing mainly large companies), 61 fully or comprehensively reported their CO_2 emission data. Of the 184 non-responding companies, only 29 were listed on the A list[11].

In this article, firm environmental performance on the *Miljöindex* for the year 2000 (based on those companies that have reported emission data) has been divided into two groups: one group that presents its environmental-report documents annually on the Web, and the other that does not. The commonly used ratio *company*[12] *CO_2 emissions per company turnover* can, for example, illustrate how a CO_2 tax would financially affect a company[13]. Using the company ratios, it is found that the average emission ratio for the reporting companies is 26 tonnes of CO_2 / turnover (SEK million), which is twice as large as the emission ratio for the non-reporters of annual environmental data, on 12 tonnes of CO_2 / turnover (SEK million). Hence, the financial risk for the non-reporting companies may be just half that of the reporting companies, with respect to possible implementation of CO_2 abatement policy instruments.

Due to the uncertainties associated with this environmental index the highest and lowest ratios within each of the two groups have been left out from Figure 6. Even without this correction, however, the difference between the averages of the two groups remains considerable.

Insert Figure 5 about here.

[10] The reason why *GreenIndex* have a total on 311 companies listed on the OM Stockholm Exchange while the firm *EcoManagement SE* only have 307 companies on the very same exchange (in their lists on environmental report provides on the Internet) is that these two firms have extracted the companies listed on the OM Stockholm Exchange at different times.

[11] For further information regarding the methodology used by *GreenIndex* turn to the URL http://greenindex.com .

[12] Both direct emissions from the judicial borders and indirect emissions are included in the index. The latter are connected, for instance, to purchased electricity and transports. A more appropriate measure would be emissions that originate from within the judicial entity per added value. This definition corresponds directly with what has been generated in the studied company and with traditional accounting practice. Unfortunately, such a ratio will vary widely depending with fluctuating revenues and hence give a distorted picture of company performance.

To estimate the potential financial impacts on companies from the use of a possible policy instrument the Kyoto protocol carbon emission targets will be used together with the estimated initial cost for emitting one tonne of carbon dioxide to USD 54 – according to the OECD Green model (OECD, 1999). Hence, the potential initial costs for DERI and non-DERI companies per turnover will be[14] 1.5% and 0.7% respectively. Using these indicators on firms in different phases in the value chain of offered services – emitting carbon during use – we can clearly see that the direct financial risk from carbon emissions of a manufacturing company is not that important. The indirect financial risk originating in the use of their products by their customers is, however, large (see Table 1 – a brief version of table in Ericsson, 2001[15]).

Insert Table 1 about here.

The companies that present annual environmental reports in document form on the Web generally show poorer environmental performance with regard to CO_2 usage, and are, therefore, less eco-efficient in this regard[16]. These findings are in line with those of Kreutze *et al.* (1996), who claim that companies within sensitive (highly-polluting) sectors report more frequently. This was also found to be the case by Halme and Huse (1997), stating that *"Corporations in industries which are traditionally considered to be polluting, report most on the environment"*. Moreover, Wagner *et al.* (2001), showed that there is no correlation between registered environmental management systems (EMS) and (a) better environmental performance, (b) better economic performance or (c) better overall performance. Even more surprising is the fact that among the companies producing environmental reports, 60% could not provide complete information about how large their CO_2 emissions were. This is astonishing, especially considering the importance attached in the Kyoto Protocol to limiting emissions of substances that contribute to global warming. This lack of data is also astonishing since, as

[13] The company's financial risk may be due to the conditions elsewhere in the value chain of its various products and services. To account for these risks a "from-cradle-to-grave" technique has been used for these emissions.
[14] If using the exchange rate in January 2002, 10.40 SEK/USD.
[15] Sector financial risks calculations made by P. Cerin for Ericsson Environmental Report 2000.
[16] This fact may be surprising to some, due to the fact that environmental funds and indexes are largely based on external company communication and the positive attention "good" reporters have received in

Cerin and Dobers (2001b; cf. 2001a) point out, numerous environmental indexes and environmental investment funds base their sustainability criteria heavily or exclusively on companies' own – self-generated external – environmental communication.

4 Concluding discussion

Despite the rapid increase in the use of corporate environmental reports during the last decade, often only the corporate giants produce such reports and the growth in reporting has flattened considerably in recent years. On the OM Stockholm Exchange, only 8% of the Swedish-based companies produce documented environmental reports on the Internet (DERI). When excluding the largest single company on the OM Stockholm Exchange (itself a DERI producer), this shows that the Swedish-based, DERI-producing companies on the exchange still have an average market-capitalisation almost six times greater than the non-reporters. Comparisons with other studies (see Section 2) show that environmental work is complex. The costs of environmental work are, hence, too large for the SMEs. This is also assumed to be the case in producing DERIs. Moreover, it was found that the *power,* plus *chemicals and pharmaceuticals* and *forestry* sectors today have the highest proportion of DERI producing companies on the OM Stockholm Exchange. The same business communities, in fact, were the ones to begin producing CERs (corporate environmental reports) around the world about a decade ago.

Studies point to the fact that that there is little quantifiable substance in these environmental reports, for instance in the form of emission-performance indicators. Some 60% of the DERI companies could not provide complete information about their CO_2 emissions despite the facts that CO_2 emissions and their resulting risks for global warming are central step issues in the currant global environment debate.

A correlation between environmental-reporting practice and company CO_2 emissions per turnover could be observed. On the OM Stockholm Exchange the average CO_2 emissions/turnover for DERI companies is twice as large as it is for non-DERI producers. We may,

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environmental reporting contests. The worst emitters (per turnover), are however the agents with the

hence, conclude that companies producing DERIs on the OM Stockholm Exchange are less eco-efficient than the non-DERI companies when concerning contributions to global warming. The emission data, however, vary considerably depending on the extent to which the companies report the relevant data, and on the way they do it.

Polluting companies (those emitting relatively large amounts of carbon into our atmosphere) exhibit a greater inclination to report their interest in the environment. By spending a considerably smaller amount on an impressive environmental report, large companies may both gain environmental legitimacy (through positive PR), and save millions by not having to attend to the real problem of improving their environmental performance. This is actually a case of decoupling environmental information away from firm activities as well as a by-pass of environmental public attention to other environmental issues other than those that may be of sensitive character to the firm. For a small company, expenditure on such reports may be difficult to cover due to smaller turnover and emissions, and relatively little public pressure.

Insert Figure 6 about here.

As indicated, there is a risk in basing the sustainability criteria of environmental indexes, environmental and classifications in investment funds heavily or exclusively on companies' own – self-generated external – environmental communication. This may lead to the selection of companies that are large with respect to capitalisation, and more importantly, of companies with higher ratios of CO_2 emissions per turnover. How then will society's stakeholders – i.e. environmental and sustainability indexes – be able to induce the corporate community to move towards sustainability if it is not possible to determine just how eco-efficient companies actually are, through reading available reports?

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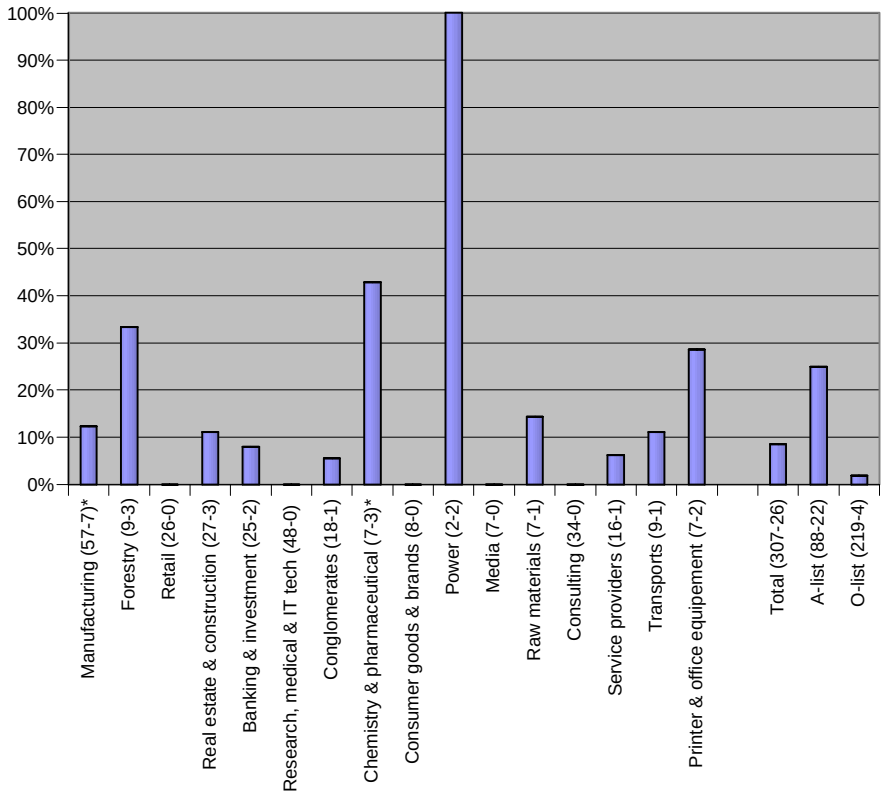

Figure 1. Presented by industry sectors, companies on the OM Stockholm Exchange producing DERIs, including two companies with only html based environmental reports indicated by " * ".

The two numbers in parenthesis after each industry-group name represent the number of constituent companies within the industry group followed by the number of companies within the group that provide DERIs at their web site. Where the numbers are followed by an asterisk, this indicates that there are more companies within the sector providing environmental data on the Web, but not in an electronic-document format.

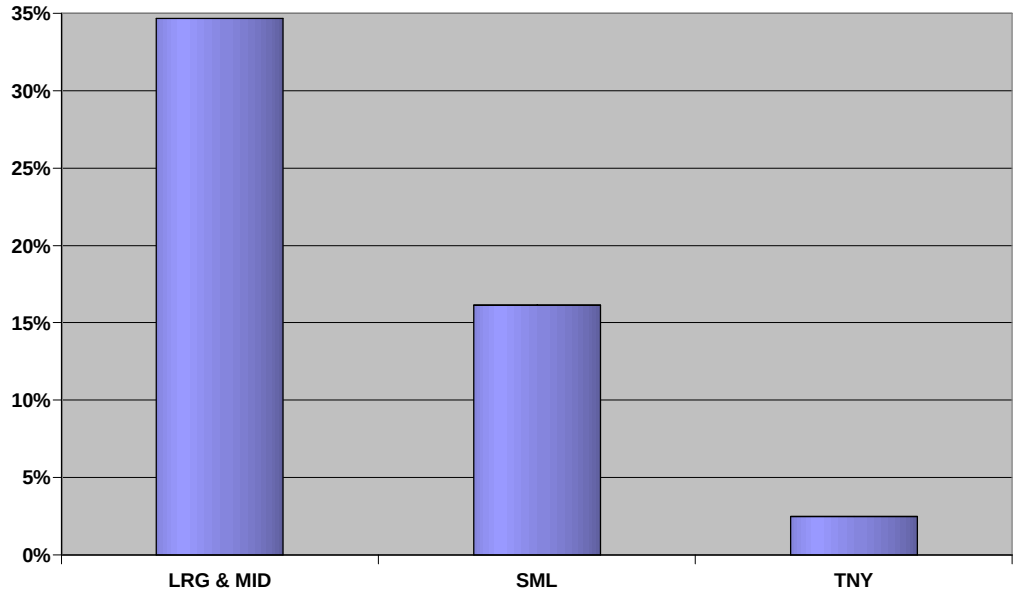

Figure 2. Swedish-based, DERI-producing companies on the OM Stockholm Exchange, by market capitalisation range codes.

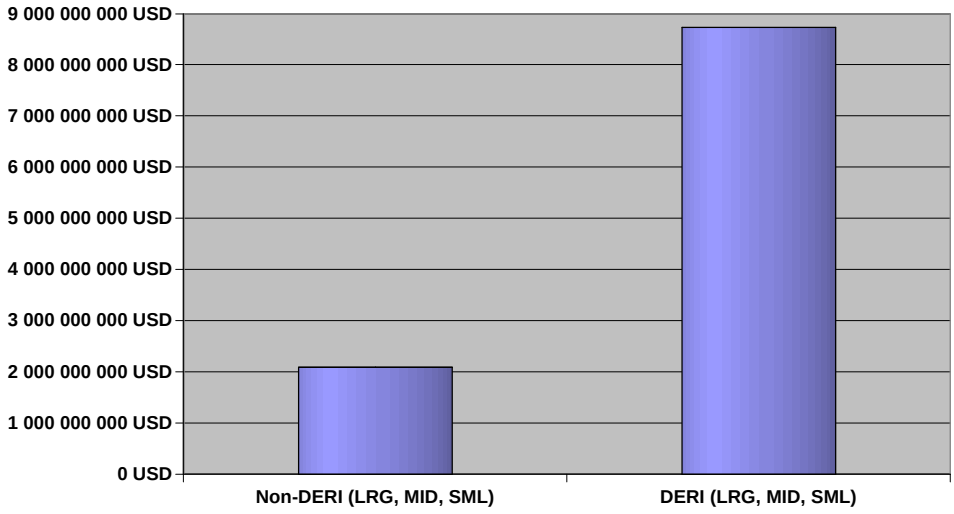

Figure 3. Average company market capitalisation of DERI and non-DERI producers listed on the OM Stockholm Exchange and the Dow Jones Country Index Sweden.

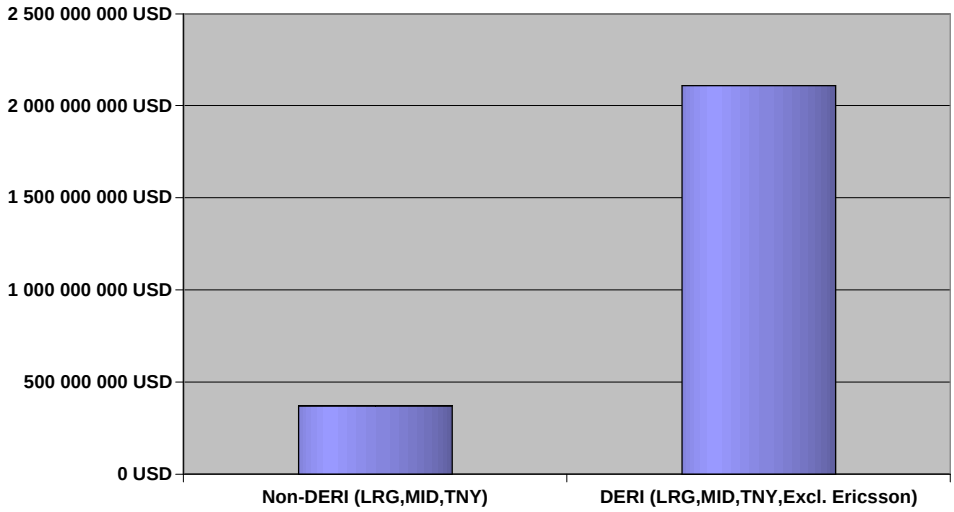

Figure 4. Average company market capitalisation of DERI and non-DERI producing companies listed on the OM Stockholm Exchange.

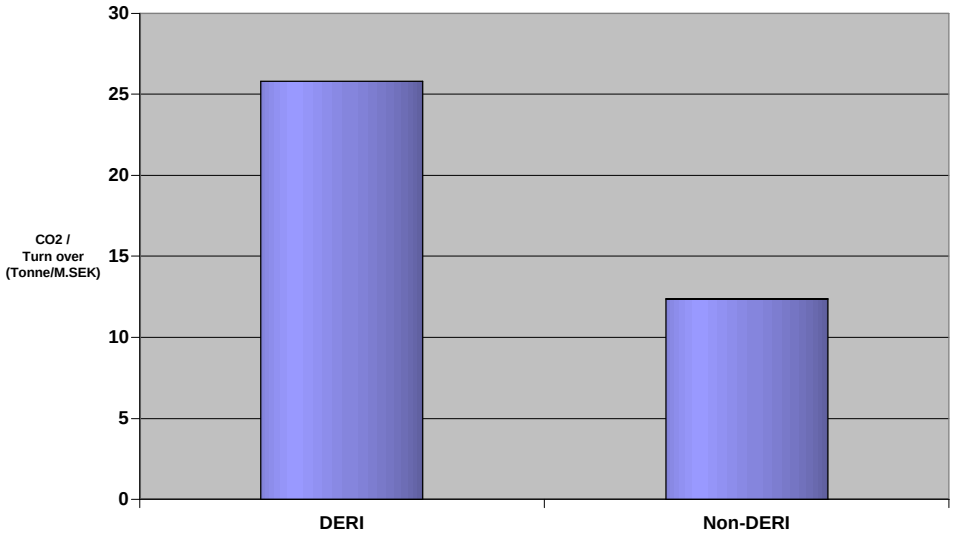

Figure 5. **The average ratio of CO_2 emissions per turnover for companies producing environmental report documents on the Web (DERI) and those that do not (Non-DERI).**

Table 1. Potential company CO_2 emission costs per net sales, described per business sector.

	Line of business	Tonne CO_2 / net sales MUSD	Potential emission cost / net sales (%)
Manufacturing companies	IT and telecom	0.43	0.20
	Vehicle manufacturer	*0.46*	*0.21*
Service producers (product users)	Mobile telecom provider	0.06	0.03
	Road transport	*22 **	*10*

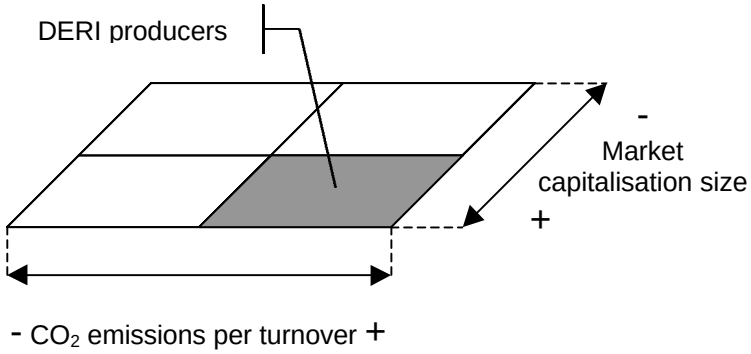

Figure 6. Matrix showing the two characteristics *CO_2 emissions/turnover* and *market capitalisation size* for the DERI producers on the OM Stockholm Exchange.