

Continuity, Credibility and Comparability

Key challenges for corporate environmental performance
measurement and communication

by

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1 Introduction & Background

1.1 Aim and scope of the report

This report, aimed at both individual companies and organisations representing company stakeholders and policy-makers, summarises current trends, problems and developments in the areas of Environmental Performance Indicators (EPIs); Environmental Reporting; Environmental Performance Ranking; and their interconnections as a contribution to enhancing the eco-efficiency of companies. There is also a supplementary report focusing on environmental reporting and small-and medium-sized-enterprises (SMEs).

1.2 Relationships between environmental management tools

There are interrelationships between the various environmental management tools that need to be acknowledged in strategic environmental management, even though they have all not yet been clearly identified. In many cases companies have launched projects involving environmental management systems, environmental auditing, environmental accounting, life-cycle assessment, environmental reporting, development of environmental performance indicators (EPIs) and environmental benchmarking etc., without reflecting on the interrelationships between them and the potential synergetic or counteractive effects they could have on each other.

Some of the interrelationships are quite self-evident in the light of the saying “you manage what you measure”. Environmental reporting promotes improved environmental performance by forcing companies to measure their impacts and communicating them to the stakeholders. To effectively manage and measure the environmental impacts the company needs an environmental management system. The environmental management system provides quantitative data on environmental performance to be included in environmental reporting, but there needs to be agreement on standardised and normalised environmental performance indicators to improve the credibility and comparability.

This report has been structured following the ideal chronology of environmental reporting presented in the UNEP/SustainAbility 1996 report “Engaging Stakeholders” (see below). How environmental issues can be integrated in financial accounting is addressed in chapter 2 “Environmental Issues and the financial sector”. Chapter 3 focuses on the need for standardised and normalised environmental performance indicators. In chapter 4 current issues and challenges for environmental reporting are explored in depth and the issues surrounding verification addressed. Environmental Management Systems and Environmental Auditing are not addressed in this report, except indirectly. The current practice of environmental benchmarking in the form of environmental performance rating / ranking is described in chapter 5.

Table 1. Based on the “Inverted chronology of reporting” (UNEP/SustainAbility, 1996)

Actual chronology	Ideal chronology	Covered by report
<i>Environmental Auditing</i>	Environmental / Full Cost Accounting	overview
<i>Environmental Reporting</i>	Environmental Indicators	overview
<i>Environmental Management Systems</i>	Environmental Management Systems	not covered
<i>Verification</i>	Environmental Auditing	not covered
<i>Environmental Benchmarking</i>	Environmental Reporting	in depth
<i>Environmental Indicators</i>	Verification	in depth
<i>Environmental / Full Cost Accounting</i>	Environmental Benchmarking	rating/ranking in depth

As is stated in the UNEP/SustainAbility (1996) report initial efforts would logically first have been focused on developing appropriate environmental accounting methodologies for measuring performance and then installing full management structures and systems for auditing against these, before a company starts to report externally on their environmental performance. Unless this ideal chronology is followed, verification and environmental benchmarking activities are next to impossible or at least very difficult. Only by implementing this entire framework will the Continuity, Comparability and Credibility of corporate environmental reporting and performance ranking be able to be substantially improved.

This holistic approach is the only practicable one for the future in light of the international standards for environmental management systems and auditing; the current initiatives to standardise environmental performance evaluation, environmental reporting and verification; as well as the rising awareness in the financial sector and subsequent need for environmental performance benchmarking tools. Below you will find a short introduction to the areas Environmental/ Full Cost Accounting; Environmental Performance Indicators; Environmental Reporting; and Environmental Performance Rating / Ranking, which will all be expanded on in the following chapters.

1.3 Environmental / Full Cost Accounting

What is environmental accounting? The issues surrounding environmental accounting have not yet been sufficiently penetrated for a theoretical framework to be established. The environmental debate indicates that companies are accountable for their impact on the environment. There are three main perspectives from which environmental accounting can be discussed (Gray, 1993):

- environmental accounting for management purposes
- environmental accounting for external reporting
- accounting for sustainability.

The subject of environmental accounting can thus be defined broadly to encompass both environmental reporting, environmental performance evaluation and indicators, environmentally related financial accounting and capital budgeting, elements of environmental auditing and management, life cycle analysis and issues of sustainability.

An important discussion here is whether, or at least to what extent environmental accounting should be monetary. Total Cost Assessment, Full Cost Accounting and Life Cycle Costing are a few of the most well-known techniques under development, that all require some kind of monetary evaluation. Most researchers seem to agree that there is an overlap between

traditional monetary accounting and environmental accounting, comprising monetary parts of environmental accounts and environmentally related parts of monetary accounts, but the question is how large is this overlap. How to integrate environmental issues into financial accounts has been the focus of a debate within the financial sector over the past few years. This report will focus primarily on the integration of environmental issues in financial accounting and the financial sector's need for environmentally related information. The various environmental accounting techniques and the problematic evaluation of external effects involved in Full Cost Accounting will not be addressed further in this report.

1.4 Environmental Performance Indicators

Environmental Performance Indicators are becoming increasingly important at the company level. This is in part due to stakeholders demanding environmental improvements and proof that these have been made. Bartolomeo (1995) defines environmental performance indicators as the quantitative and qualitative information that allow the evaluation, from an environmental point of view, of company effectiveness and efficiency in the consumption of resources. Environmental performance indicators thus have the aim of evaluating company efficiency (economical and environmental) and effectiveness in achieving environmental objectives and allowing:

- the adoption of the most appropriate measures of environmental protection in terms of effectiveness and efficiency;
- the empowerment of environmental policy by a better definition and monitoring of environmental objectives;
- an effective definition of responsibilities and an aid for the implementation of the environmental management systems; and
- the improvement of external and internal communication on environmental achievements and programs.

Environmental Performance Evaluation (EPE) is defined by ISO/DIS 14031 as a ***“process to facilitate management decisions regarding an organization's environmental performance by selecting indicators, collecting and analysing data, assessing information against environmental performance criteria, reporting and communicating, and periodic review and improvement of this”***.

ISO/DIS 14031 also states: ***“Indicators for EPE are selected by organizations as a means of presenting quantitative or qualitative data or information in a more understandable and useful form. They help to convert relevant data into concise information about management's efforts to influence the organization's environmental performance, the environmental performance of the organization's operations, or the condition of the environment. An organization should select a sufficient number of relevant and understandable indicators to assess its environmental performance.”***

1.5 Environmental Reporting

“Corporate environment reports have quickly become the key channel for companies to communicate their environmental performance and, just as important, have become an effective tool to demonstrate company-wide integrated environmental management systems, corporate responsibility and the implementation of industry voluntary codes of conduct” (UNEP, 1994).

The action plan for sustainable development *Agenda 21*, which was adopted at the United Nations Conference on Environment and Development in Rio de Janeiro in June 1992, demands that: *“The business community, including transnational corporations, should recognise that environmental management is one of the highest priorities and a decisive factor in sustainable development”*. Chapter 30 encourages business and industry to communicate their environmental performance and to report *“annually on their environmental records, as well as on their use of energy and natural resources”* and *“on the implementation of codes of conduct promoting best environmental practice”*.

Corporate environmental reporting has known an almost explosive growth over the past years, as various stakeholders have begun to take a greater interest in the environmental performance of the companies. Some companies have now advanced far enough to serve as best practice examples, but it has been difficult to gain a clear understanding of what the current status of environmental reporting was world-wide. This report will summarise the experiences of corporate environmental reporting to date, analyse the problems and obstacles as well as make recommendations for further development work.

Environmental reports are now well known as an important instrument in company environmental management and are widely used, especially by large companies in the industrial sector in Europe and North America. In the short period since the first report appeared the progress has been astonishing. However, only a relatively small number of large companies produce corporate environmental reports (CERs), but the quality of disclosure in the reports that are produced has improved considerably.

In summary, environmental reports can be considered a sort of small world where many crucial points in the relationship between a company and its stakeholders meet together (Bartolomeo and Ranghieri, 1996). It is often stated that most voluntary initiatives on environmental reporting come from pressures from various groups that have a direct interest in the performance of companies. These groups include shareholders, banks, local communities, corporate customers, employees and business analysts. In the case a company finds that its competitors are issuing environmental reports it may decide it is necessary to follow suit in order not to leave itself at a disadvantage (Brophy and Starkey, 1996).

There has also been speculation on the advent of new laws and regulations that will force companies to report. Environmental reporting is also a key requirement for industrial sites wishing to be registered under the voluntary EU Eco-Management and Auditing Scheme. By reporting voluntarily a company can build up expertise in advance of the expected regulation. Also, there are internal benefits of environmental reporting, since the reporting process helps the company to pinpoint problems and inefficiencies of its operations.

However, it is important to remember that the corporate environmental report is only one of many tools that can be used for communicating with the stakeholders. All companies must start by identifying the target audiences and their needs and formulate an environmental communication strategy based on this. Within this environmental communication strategy the format of environmental reporting should be determined.

1.6 Ranking corporate environmental performance

One of the many challenges within the field of environmental management is to assess the environmental performance and status of an organisation - one's own or somebody else's. Several attempts have been and are being made to find the most suitable format among industries, institutes and consultants. One of the uses for assessing environmental performance is to support decisions by the finance sector players: investors, fund managers, creditors and insurers. Various assessment methods have been developed by several organisations to meet the need to identify and quantify environmental exposure in order avoid costs, encourage awareness of environmental issues, and/or to improve financial performance. This phenomenon, which can be called environmental *rating* or *ranking*, being an ambition to equal the credit rating systems, is a practise developed during the 1990:s.

An organisation engaged in rating/ ranking corporate environmental performance typically uses one or more indicators on companies' performance and/ or management for its assessment. These indicators may very well be of EPI-status. The ambition of rating/ ranking instruments is to incorporate at least some dimensions of the process, product, and/ or management and their related environmental aspects, with the analysis varying in depth.

A common method in rating/ ranking is to use information provided by the company of interest (for example in an environmental report) as one input for the assessment. The potential reliability and credibility of rating/ ranking instruments is thus dependent on the current and future quality and comparability of corporate environmental reports, as well as the environmental performance indicators used.

Environmental rating has been widely perceived as a useful way of engaging the financial community's interest in environmental matters. But the financial markets are still sceptical about environmental issues and their potential financial implications. The financial community have as yet rarely expressed their need for environmental information. (Lascelles, 1997, Schmidheiny & Zorraquín, 1996)

Current environmental ranking/rating systems are generally considered inadequate, due to the fact that they are built on insufficient data for the system to be statistically considered reliable. More transparency as to how the rating/ ranking systems are constructed and availability of more complete, high quality environmental performance data would improve the credibility of environmental rating/ ranking.

The main objective in developing rating/ ranking instruments for assessing corporate environmental performance should be to construct reliable, progressive, flexible and user-friendly instruments in order to promote improved environmental performance by supporting raised awareness of environmental issues and their associated financial implications.

2 Environmental issues and the financial sector

2.1 Introduction

When discussing environmental issues and the financial sector there are a few main questions which need to be addressed:

- The financial sector's relative indifference towards environmental issues.
- How environmental information is included in the financial statements and how financial auditors should deal with environmental issues in financial statements.
- What other environmental information should be of/is of potential interest to the finance sector, and how it best can be provided.
- Tools for incorporating externalities (Environmental/ Full Cost Accounting).

These issues will be addressed separately.

2.2 Sectorial indifference?

The swift development of complex social, economic and legal factors in combination with environmental concerns affects business in several ways, creating new pressures - laws, rules, public opinion etc. This means there are a growing number of environmentally related risks, to which a company is exposed. Just like other business risks environmentally related business risks can threaten a company's viability in both the short and long term. Until recently financial environmental risks have been perceived as limited to land remediation and claim for damages, implying that many aspects of environmental exposure have been ignored by the financial sector. This indifference, rather than short-sightedness (of which the sector has been accused), may have several causes (Lascelles, 1993). One is that the financial sector does not see environmental issues as a separate moral issue, but rather just another one of the phenomena, perhaps temporary, occurring in the business world. Another explanation might be that the price of natural resources does not reflect the upcoming shortage, or the unsustainable situation, which environmental activists claim prevail. A third cause for the financial sectors indifference to environmental issues could be a general confusion around the importance of environmental issues, and uncertainty on how their effects should be measured. The result is that environmentally based arguments often are perceived as tiresome, causing strange concepts entering the normal financial system, and forcing companies to make non-productive investments in order to comply regulations. Such non-productive investments reduces the capital available for productive investments and yield. It would then seem as the greener a company, the higher the costs for legal compliance.

The financial sector does not agree it has a lack of interest in environmental issues, but maintains that the link between improved environmental performance and improved financial performance needs to be drawn more clearly (Schmidheiny & Zorraquín, 1996). A greater body of evidence should be accumulated to support this link to extend across industries and sectors. Users and potential users of environmental information also need to clarify their needs, to remove the perception that there is no demand for such information. Useful indicators of environmental performance need to be developed, as the integration of environmental performance into business accounting cannot be achieved until there is greater

consensus about the practicalities of measuring the financial implications. In the longer term this integration will come as it will benefit both the market and the environment.

Recent research has shown that pro-environmental activities do not adversely affect bottom line performance (see for example EAAR, 1997, referred in box below, BAE, 1997, Blumberg *et al.*, 1997, Holden Meehan, 1997), but there is no indisputable evidence as yet that improved environmental performance actually leads to improved financial performance in terms of improved share price performance. However, some companies are beginning to see higher profit margins on their environmentally adapted product lines than on the traditional product lines, for example the Swedish manufacturer of white goods Electrolux.

EAAR (1997) in an article compared the alleged or refuted interlinkage between financial and environmental performance as put forward in a number of studies. The EAAR conclusions were that “(T)he importance of the results reported above lies in the almost unanimous findings:

- (i) that pro-environment activities will not adversely affect share price and
- (ii) that socially screened portfolios by and large achieve similar results to portfolios selected from the full universe of available stocks.

As a refutation of the argument that pro-environmental activities adversely affect bottom-line performance, this is some positive ammunition for those who would wish to see companies generally improve their environmental performance. The overall results DO NOT seem to lend support to the hypothesis that improved environmental performance leads to improved financial performance in terms of improved (or outstanding) share price performance. What the papers DO seem to suggest is that improved environmental performance does not appear to act as a brake on profitability or share price performance as compared with non (or less) - environmentally conscious companies. **Thus, investors who make a deliberate choice to single out environmentally (or ethically) commendable companies will no longer have to feel that they are paying a financial penalty for doing so.”**

The article is based on, among others, the following studies:

IRRC 1996 *Environmental and Financial Performance: Are they related?* Cohen M.A., Fenn S.A. & Naimon J.S. Investor Responsibility Research Center

National Provident Institution *Global Care Best in Class* May 1996 unpublished data

Hart S.L. & Ahuja G. 1994 *Does it Pay to be Green? An Empirical Examination of the Relationship Between Pollution Prevention and Firm Performance* Michigan Business School Paper

Repetto R. 1996 *Diversification and the Alleged Cost of Environmentally Screened Portfolios* World Resources Institute (unpublished discussion draft)

di Bartolomeo D. 1996 *Explaining and Controlling the Returns on Socially Screened US Portfolios* (unpublished conference paper)

Diltz J.D. 1995 *Does Social Screening affect Portfolio Performance?* The Journal of Investing

Johnson S.D. 1995 *An Analysis of the Relationship Between Corporate Environmental and Economic Performance at the Level of the Firm* (abstract of doctoral dissemination, unpublished)

WM Company 1996 *Is there a Cost to Ethical Investing?*

2.3 Environmental information in financial statements and financial auditors

The key findings of a UK survey carried out by the University of Dundee in 1995 under the title “*The financial auditor and the environment*” can be summarised as follows:

- For most auditors “environment” is just another business issue and is treated no differently from any other area of actual and potential risk. For a small minority, the moral dimensions and the longer term implications of sustainability do suggest that environmental issues are qualitatively different from other matters.
- UK businesses and their auditors generally face an uncertain environmental and legislative climate. It is often very difficult to assess from where the next major issue will emerge.
- Most of the big auditing firms have initiated procedures within both their audit manuals/processes and within their training schedules.
- However, the majority of auditors do not perceive environmental issues as requiring special attention. They are simply part of knowing clients’ businesses thoroughly.

The Fédération des Experts Comptables Européens (FEE) published a report in 1995 entitled *Environmental accounting, reporting and auditing: survey of current activities and developments within the accountancy profession*. The survey covered all the EU member states as well as Iceland, Israel, Norway and Switzerland. The survey showed that a growing number of companies across Europe are disclosing environmental information in their annual accounts or in separate environmental reports. FEE however emphasised that a difference needs to be established between ***environmental accounting*** (which concerns the treatment of environmental issues in financial statements and within environmental valuations) and ***environmental reporting*** (which goes further).

In Canada, the Securities Commission requires public companies to report the current and future financial or operational effects of environmental protection requirements in the Annual Information Form. In the USA, the *Comprehensive Environmental Response and Liability Act* (CERCLA, also known as the Superfund regulation), which forces ‘responsible parties’ to clean up land contaminated by such activities as dumping and waste storage, was introduced in 1980. This led to a change in US company accounting policies and companies are now required to include information on material environmental liabilities in their 10-K and 10-Q filings for the Securities and Exchange Commission (SEC).

The International Auditing Practices Committee (IAPC) is finalising a draft of a proposed Practice Statement which provides guidance for auditors on how to deal with environmental issues in auditing financial statements. Whereas an earlier IAPC draft had a wide scope covering also non-financial audit situations, the draft Practice Statement will probably restrict itself to financial audit issues under the headings (EAAR, 1996):

- consideration of environmental laws and regulations;
- knowledge of the business;
- risk assessments and internal control;
- detection risk/substantive procedures;
- using the work of others;
- management representations;
- reporting.

The USA, Canada, Norway and Sweden are so far the only countries where there are requirements for including environmental information in the annual report or financial statements. The Accounting Advisory Forum (AAF) in the European Union published a document entitled *Environmental Issues in Financial Reporting* in December 1995. The recommendation of AAF is that environmental issues related to financial reporting should only be disclosed in the accounts and annual report to the extent that they are material to the financial performance or financial position of the undertaking.

The United Nations Center for Transnational Corporations Intergovernmental Working Group of Experts on International Statements of Accounting and Reporting (UN CTC ISAR) produced a list of its recommendations concerning the level of environmental disclosure that companies should undertake in the director's report. This includes:

- environmental issues pertinent to the enterprise and industry
- environmental policy adopted
- improvements made since adopting the policy
- enterprise environmental emissions targets and performance against these
- response to government legislation
- material environmental legal issues that the enterprise is involved in
- effect of environmental protection measures on capital investment and earnings
- material costs charged to current operations
- material amounts capitalised in the period.

In the notes to the financial statements, UN CTC ISAR recommends that companies should give details of:

- accounting policies for recording liabilities and provisions, for setting up a catastrophe reserve, and for disclosing contingent liabilities
- figures for liabilities, provisions, contingent liabilities and reserves
- tax effects
- any government grants received.

In February 1997 the UK Government's Advisory Committee on Business and the Environment (ACBE) issued the document "*Environmental reporting and the financial sector - An approach to good practice*". The objective of the ACBE project was to ascertain the rationale for, and the best means of achieving, improved communications between business and the financial sector on environmental performance. A large proportion of the respondents supported the ACBE proposal, but some objections and/or alternative views were also expressed. One obstacle for fuller environmental reporting often mentioned were the difficulty of defining environmental costs. Environmental costs become even more difficult to separate from other costs as environmental considerations are "built into" the everyday decision making process. The document gives examples of environmental performance having material financial implications:

- Capital expenditures required for compliance with BATNEEC process authorisation under EPA 1990.
- Capital expenditure for the remediation of contaminated land - or provisions for this if a future liability can be foreseen.

- Capital expenditures which may ensue from the need to respond to specific customers' requirements - the competitive 'license to operate'.
- Revenue on improved waste management, thereby minimising the burden on landfill taxes.
- Capital or revenue costs in improved management practices, e.g. To attain energy or materials utilisation rates per unit of output which match those of comparable competitors.
- The cost of dealing with unexpected environmental impacts - whether accidental discharges due to operator error or arising from inherently hazardous processes - and whether in the form of physical damage to be rectified, or the payment of fines or damages imposed by the regulators or the courts.

2.4 Environmental information of current and future interest to the financial sector

In 1996, an investigation initiated by the Swedish government concluded that the financial sector has difficulties defining what environmental information would reduce their current uncertainty on environmental issues and their financial implications (SOU 1997:4). The only exception was information on contaminated land (a concern surely influenced by the US Superfund chaos). One reason for this difficulty is that the experiences from environmental factors resulting in damages and influencing financial results are still limited. This situation also applies to most countries other than Sweden, with the possible exception of the US. The investigation divided the environmentally related corporate information of *potential* interest to the financial sector in four areas:

1. Relevant environmental legislation and the company compliance
2. The managerial and organisational environmental competence
3. Emissions to air, ground, water; polluted land; potential liabilities
4. Resources; types and volumes used.

Four groups of financial players and their potential interest for environmentally related information are presented below. The groups' interests sometimes overlap, since financial players increasingly offer more than one main financial service, e.g. banks offering insurance services and insurance companies investment funds.

Creditors

There are three ways in which a company's environmentally related risks and opportunities can be transferred to a creditor (European Bank for Reconstruction and Development, 1995).

1. Enhanced credit risk, due to punitive fines for environmental violations, or remedial works; delays and increased costs because of public opposition; loss of business because of inability to comply with environmental standards required by customer demands or respond to new consumer demands, these costs reducing or eliminating the company' ability to pay back the loan.
2. Security impairment risk, e.g. due to contamination of land; inventory or equipment rendered obsolete by the introduction of new environmental laws and standards, reducing or eliminating the value of the security.
3. Direct liability risk, where legislation or common law makes financial institutions directly liable for environmental damages associated with the customers. This is currently only relevant to the US.

A 1995 study of international banks by UNEP stated that bankers believe a need exists for more meaningful analytical data and risk-quantification tools (UNEP, 1995). The study revealed that over 80 % perform some degree of environmental risk assessment before giving credit to a client. Apparently, environmental risk management is part of the basic credit process in virtually all industrial countries and most transitional economies. For this purpose, extensive checklists and questionnaires have been developed. It has also been reported that bankers are beginning to look beyond legal and regulatory issues and beyond the physical issues directing greater attention towards management quality and environmental management systems.

Underpinning the efforts of bankers to assess and price environmental risk, regulatory authorities such as the US Federal Deposit Insurance Corporation (FDIC) in 1993 issued guidelines on good practise. Environmental credit risk programmes are formal guidelines consisting of policies and procedures, questionnaires, worksheets and checklists for the assessment of a borrower's actual or potential exposure to environmental liabilities. published information and recommendations for implementing environmental risk programmes which could be tailored to the specific need of a lending institution. The guidelines detail eight elements which should constitute an environmental risk programme: training, loan policies and procedures, initial environmental risk analysis, structured environmental risk analysis, loan documentation, monitoring, avoiding involvement in the borrower's operations, and foreclosure. The American Bankers Association has based their Environmental risk Programme on these guidelines.

In 1992, 55 banks signed the UNEP document *Statement by Banks on the Environment and Sustainable Development*. The signatories hereby committed themselves to among other things to "support and develop suitable banking products and services designed to promote environmental protection".

Insurers

Insurers have had a painful experience: The American Insurance Association estimates that insurers spend \$450 million a year on transaction and legal costs alone for Superfund. "American insurers alone are facing what has been described as the insurance industry's black hole: US\$ 2 trillion in pollution, asbestos, cleanup liabilities and related claims." (The Economist, 1995)
 "So far, environmental catastrophes over the world resulted in the insurance industry having to pay L34 billion in claims and we have noticed that these costs continue to grow." (Knut Francke at Norwegian insurance company UNI Storebrand, 1995).

The industrial insurers interest in environmental information is very much influenced by the high costs for clean-up from waste dumping and polluted industrial sites related to the US Superfund project. The experience has taught insurers to avoid writing insurance policies without a time limit ("long-tails"). Nowadays insurers often exclude gradual pollution (as separate from sudden and accidental) from insurance coverage. In the US, certain industrial sectors can also be refused insurance.

Industrial insurers, and especially re-insurers, may also have an interest in knowing (or avoiding) industries contributing to climate change, as this phenomenon has been identified to

have a negative financial effect on the insurance industry. Through the premiums, insurers also have a role as investors, though the legislation surrounding the investment of insurance premiums often is strict.

In 1995, as a parallel to the banks' initiative three years earlier, a number of insurance companies in collaboration with UNEP signed *Statement of Environmental Commitment by the Insurance Industry*. The commitment includes to "reinforce the attention given to environmental risks in our core activities. These activities include risk management, loss prevention, product design, claims handling and asset management. We are committed to manage internal operations and physical assets under our control in a manner that reflects environmental considerations".

Investors and fund managers

For various reasons, some investors wish to channel their capital into companies engaging in certain activities, and/or withhold it from others. The phenomenon of screened investment dates back to the 1920s, when certain religious institutions eschewed investments in 'sin' stocks such as firms connected with alcohol or tobacco. The channelling of financial flows using environmental criteria is a more recent practice. Funds using specific environmental criteria first appeared during the late 1970s. The late 1980s and early 1990s saw a boom in the numbers of environmental funds. By 1995 there were more than 80 separate environmental funds registered in Europe, investing a total value of 1.8 billion ECU (Opticom, 1996). There is no consensus on what constitutes an environmental fund. In the Opticom (1996) study by environmental funds are classified in four main types (combinations occur), according to their investment strategy:

1. Classical environmental industry funds, investing in environmental technologies such as waste management companies, recycling industry, emission control filters and scrubbers. Several of the US environmental funds belong to this category.
2. "Best in business" funds, investing in companies that have a clear environmental awareness and actively work with environmental issues to reduce impact from their activities. Many recently started funds are of this type.
3. Funds investing from either negative or positive lists of criteria, such as energy production, environmental management etc. Sometimes ethical criteria are included, such as human rights.
4. Funds giving scholarships or financial support to companies, organisations, individuals or projects.

Rather than to support sustainability from ethical/environmental concerns, the purpose of environmental investment can be strictly profit driven - to benefit from competitive advantages due to environmental reasons. Many have claimed tangible advantages of responsible environmental behaviour, where corporate concern for environmental issues is said to indicate an overall sound business practise. Research has tried to establish a positive relationship between corporate environmental and financial performance. As mentioned earlier, the results are ambiguous, to a large extent depending on the time period studied and the chosen performance indicators. An interesting illustration is that the negative PR following the Brent Spar turmoil failed to cause more than a marginal decrease in share price of Royal Dutch/Shell Group (de Aenelle, 1997).

The criteria used by the environmental investors is from time to time a matter of public debate, as is their interpretation of the criteria. The environmental investors may agree that environmental issues matter, but the importance they give various environmental aspects, such as nuclear power, ozone depleting chemicals, water pollution, greenhouse chemicals, tropical hardwoods and hazardous chemicals, vary greatly, and sometimes arbitrarily. A conclusion from the above mentioned study (encompassing 60 funds) is that the investment criteria used are very general, and that the assessment methods are non-transparent and therefore not trustworthy.

There is little evidence that environmental funds have made any difference in terms of sustainable development. Naimon (1995) points out two crucial factors limiting the impact of environmental investing. First, the overall weight of funds held by environmental and ethical investors is still tiny in relation to the market capitalisation of companies in which they invest. Second, corporate environmental indicators are limited to markets with the most regulation. Naimon concludes that there is no way of telling if there was any environmental improvement as a result of green fund investment in listed securities.

Financial analysts

Financial raters Standard & Poor's and Moody's claim that their rating systems currently *do* consider environmental factors with a potential impact on a company's financial stability and credit worthiness (House, 1995; SOU 1997:4). The base for assessing corporate environmental status is current and future legal framework, affecting the company and the industry sector. The assessments varies according to industry and its exposure to environmental risks. In e.g. the paper industry, an important variable is the age of the machinery, and its usually corresponding emissions. For companies in the power generating sector, information on variation in energy sources is of major importance, while in another sector the management of chemicals may be crucial. The experience of Moody's is that the risk which is due to environmentally related factors is usually of minor importance, and not affecting the company's ability to pay back its loan.

Several associations of banks and financial analysts have produced their own guidelines for what information related to the environment they want to see reflected in the annual report and financial statements, one example being Swiss Banker's Association which recently produced a draft consultation paper on what they would like to see as standard environmental disclosures (Swiss Banker's Association's taskforce, 1997). The recommendations, meant to facilitate the assessment of companies' environmental performance, come under three headings:

1. Key environmental figures: energy use; CO₂ and equivalents; CFC-11 and equivalents; NO_x emissions; SO₂ emissions; VOC emissions; waste including special waste; additional sector specific data.
2. Relevant financial figures: energy costs; raw material costs; waste disposal; depreciation on environmental investments; depreciation or provisions for environmental liabilities; quality assurance costs; environmental investments; environmentally motivated provisions.
3. Relevant management information: strategy (the three most important environmental issues affecting the company's bottom line in the next 5-10 years); EMS with special focus on risk management and legal compliance; communication (knowledge of most important stakeholders; type of communication); description of measures taken to improve eco-efficiency of processes and products.

2.5 Tools for incorporating externalities

Externalities is a term used for side effects of an economic activity, when the side effect (which can be negative and/or positive) is not reflected in the price of the goods or services produced by the economic activity (EEA, 1996). Environmental pollution is an example of a negative externality. Because the prices paid by consumers do not include these external costs, they give incorrect market signals encouraging demand and hence supply (i.e. production) beyond the level of economic efficiency for the economy as a whole. The consequence of this “market failure” is that activities that may be of substantial private benefit but costly to society, e.g. car driving, is encouraged. The effort to bring these external costs into prices (i.e. *internalising* the externalities) or in other words making private costs better reflect the social costs, is called *Full Cost Accounting* (FCA). One way of applying FCA is by taxing. Environmental taxes also offer means of implementing the so called *Polluter Pays Principle*. The tax raises prices to the consumer, providing an incentive to use less of the taxed product or service. But to make the tax reflect the monetary value of externalities is difficult, since there are little or no agreed data on their actual economic costs.

There are three main categories of environmental taxes (EEA, 1996):

1. cost-covering charges, designed to cover costs of environmental services and abatement measures;
2. incentive taxes, designed to change a behaviour of producers and/or consumers; and
3. fiscal environmental taxes, designed mainly to raise revenues.

“(...) accountants are caught in a difficult position. They can play according to the rules of the game, which exclude most environmental concerns. They realise, too, that it is their job to find a way of valuing what society values - and this means putting a price on those things that are now considered external to the accounts, such as damage to common resources.” (Schmidheiny & Zorraquín, 1996)

In the debate around internalising external costs, the company accountants are often mentioned as an important group. According to Professor Rob Gray at University of Dundee, an advocate of full or environmental accounting, a major indicator of progress towards more environmentally sensitive systems is the extent to which the accounting and financial systems incorporate environmental costs. A survey has suggested that less than 15 % of accountants in large UK companies had any explicitly environmental factors built into the budgeting process and only a further 4 % had any plans to do so. “The systems at the heart of an organisation, the budgeting and investment and performance appraisal systems (...), have remained largely untouched by the changing environmental agenda. Until they do develop in this way, organisations will face conflicts between environmental and conventional financial factors - and in those circumstances the financial will always win over the environmental.” (Gray, 1993)

Further according to Gray, a necessary step is for companies to internalise some of the costs that were previously external, beginning with taxation changes reflecting environmental matters, but also to recognise the choice made when ignoring the environmental consequences of their actions. Examples of factors which ought to be reflected in an organisation’s budget are environmental capital spending, spending on waste management and disposal, spending on

energy, landscaping, decommissioning, abandonment costs, provision for fines, insurance costs and other legally related costs etc.

Business has developed a number of management tools as means to incorporate environmental dimensions in their accounting and financial systems. The business sector's use of the same terminology as used for national environmental accounting may cause confusion (especially FCA). Three of these business tools are described below.

Full Cost Accounting (FCA) is by the business organisation GEMI (1994) described as a tool to identify, quantify, and allocate the direct and indirect environmental costs of ongoing company operations. FCA helps identify and quantify the following four types of costs for a product, process, or project:

1. Direct costs (e.g., capital, raw materials);
2. Hidden costs (e.g., monitoring, compliance reporting);
3. Contingent liability costs (remedial liabilities); and
4. Less tangible costs (e.g., public relations, good will)

Total Cost Assessment (TCA) is used to assess pollution prevention projects using environmental cost data, appropriate time horizons, and standard financial indicators. TCA utilises FCA techniques to properly assign environmental costs and savings to all competing projects, products or processes as part of capital budgeting. Under TCA, decision makers will use traditional financial measures in determining the feasibility of an investment project, such as:

1. Net present value;
2. Internal rate of return;
3. Profitability index; and
4. Payback period.

Life Cycle Costing (LCC) developed from Life Cycle Analysis (LCA), which is a system-oriented approach estimating the environmental inventories (i.e., waste generation, emissions, and discharges) and energy and resource usage associated with a product, process, or operation throughout all stages of the life cycle). Through LCC managers assign a cost to each impact quantified in the LCA and sum these costs to estimate the net environmental cost from a product, process, or project. The difference from TCA is that it may include private (internal) and social (external) costs and benefits of an investment.

A study by Gray and Bebbington (Gray, Owen & Adams, 1996) revealed that the more sophisticated environmental accounting approaches employing full cost accounting (EPA/Tellus Institute) methodologies are being used by 11 % of the responding UK companies (including some of the world's leading companies).

3 Environmental Performance Indicators

3.1 Introduction

Performance indicators can be defined as a finite set of quantities chosen to reflect certain aspects in an organisation. One definition of an indicator is “*A number, absolute or relative, that facilitates management, communication and follow-up of an organisation’s performance*” (Ross 1996). In the financial field, performance indicators (ratios) are well established. They have been used in financial markets to describe for example the value of stocks in relationship to price in various ways. Today, performance indicators are used to describe productivity, quality and other important factors for an enterprise. In the same way, performance indicators could be, and in some cases have already been, developed for various objectives that may be relevant to the environmental management of a company.

Environmental Performance Indicators are becoming increasingly important at the company level. This is in part due to stakeholders demanding environmental improvements and proof that these have been made. Bartolomeo (1995) defines environmental performance indicators as the quantitative and qualitative information that allow the evaluation, from an environmental point of view, of company effectiveness and efficiency in the consumption of resources. Environmental performance indicators thus have the aim of evaluating company efficiency (economical and environmental) and effectiveness in achieving environmental objectives and allowing:

- the adoption of the most appropriate measures of environmental protection in terms of effectiveness and efficiency;
- the empowerment of environmental policy by a better definition and monitoring of environmental objectives;
- an effective definition of responsibilities and an aid for the implementation of the environmental management systems; and
- the improvement of external and internal communication on environmental achievements and programs.

There is currently no consistent, established way of measuring environmental performance and improvements achieved. There is no consistent basis for choosing indicators; the number of indicators; or measuring techniques and definition of standards. Two broad types currently occur:

- Environmental management EPIs, measure the extent to which the company has in place best practice management systems, procedures and practices for compliance with environmental regulations and to achieve wider environmental protection objectives defined by the company and its stakeholders. Categories: compliance; systems and implementation; integration with general business functions; total quality management.
- facilities and operations EPIs, designed to measure the actual environmental performance of company in scientific terms, technical and quantified. Categories: materials use; energy; emissions/effluent (air/water/soil); waste; incidents; local ecological impacts.

EPIs can be:

- absolute - basic data e.g. total CO₂ emitted in 1997;
- relative - quota of parameters e.g. energy consumption per unit of output
- compound - combining data from absolute and relative categories, e.g. total CO₂ emitted per unit of production in 1997;
- group - data for related factors, e.g. waste: total solid, hazardous waste, waste incinerated, waste recycled etc:
- indices - constructed to produce a number by using a baseline year, factoring equivalents on a scientific basis or through the use of factors and weighting to produce a number.

The user groups increasingly want quantitative data on environmental performance to be included in the environmental reports. If a company does not measure anything, it does not have much to include in the environmental report. But on the other hand the audiences are often numbed by talk of CO₂, SO₂, VOCs and other environmental measures. This explains why managers have to move in two directions at once as they devise and disclose quantitative measures of environmental performance - trying to give more detail and less at the same time. Trying to feed data-hungry and data-averse stakeholders has led to a string of innovations. Managers have come up with many fresh new ways to measure environmental performance. But despite the innovation, the science of environmental performance measurement remains far from mature. Five trends can be identified in the field (Birchard, 1996):

1. Normalising	Assuring year-to-year comparability of figures by adjusting them for changes in revenue or production
2. Standardising	Furthering cross-industry comparability by adopting standard measures
3. Materials Accounting	Reporting inputs as well as outputs of raw materials, energy, water.
4. Monetising	Translating quantitative measures into financial ones
5. Auditing	Retaining outside auditors to certify the integrity of measures

But not only corporations have a use for environmental indicators - they have also become indispensable to policy makers (Smeets & Weterings, 1997). The EEA report **“Environmental indicators: Typology and overview”** defines the main types of environmental indicators and attempts to provide guidance to policy makers who want to understand the meaning of the information in annual indicator reports.

The recent **“Measuring up - Toward a Common Framework for Tracking Corporate Environmental Performance”** report from the World Resources Institute (Ditz & Ranganathan 1997) stresses that for EPIs to really be effective a common set of metrics must emerge that are universally adopted and understood by all, and that the full potential of corporate EPIs will only be realised when they serve decision-makers both inside and outside company walls. Ditz and Ranganathan (1997) also maintain that a universal framework for the measurement and communication of corporate environmental performance is coming and that it will resemble today’s financial reporting system as comparability, transparency and completeness are prerequisites also for the independent evaluation of a company’s environmental performance.

3.2 *Where and what to measure*

Regardless if indicators are developed primarily for internal or external use, they will tend to direct management attention to the issues they reflect. In part, this is simply human, an effect of our limited capacity of attention. It is of course also an effect of how stakeholders affect a company. An indicator for reporting purposes becomes an indicator for internal management if it is of interest to influential company stakeholders.

What then should the indicators reflect? The answer depends of course on who you ask. Economic arguments point to cleaner production approaches as preferable, which is discussed below. The political issue of sustainability is difficult to define in terms of indicators, but would also seem to stress conservation of non-renewable input rather than maximising output in relation to waste, which is a way of seeing eco-efficiency. An environmental perspective would also seem to necessitate a life-cycle approach, including upstream and downstream effects (e.g. the impacts of suppliers, use and disposal of product). This of course means an infinitely more complex indicator and opens up the quagmire into which LCA appears to be sinking. Regardless of what the constructor of an indicator wishes to measure, the problem of measurability will in any case force compromises.

3.3 *Problems with indicators*

“Research says that financial indicators don’t work!” (Wolff, 1996). This statement, though blunt, is actually more a reflection of the obvious fact that a simple indicator can not accurately and completely describe a complex reality. Mathematically, it is axiomatic that a multi-dimensional reality can not be completely described in fewer dimensions. Information is lost. This should of course be no surprise. It is, after all, the whole idea of an indicator that it should be concise and give an idea or indication of what is going on, not describe it completely.

An active financial analyst (Malmquist, 1996), painted a rosier picture, when he pointed out that:

1. *Everything is relative - the relative winners are the important thing*
2. *Help is needed - the analysts do not have the competence, just as in other fields (technology for example)*

There are any number of things that an indicator should be, but three concepts that are central are:

- | |
|--|
| <ul style="list-style-type: none"> • <i>Relevancy</i> • <i>Measurability</i> • <i>Comparability</i> |
|--|

Relevancy would seem to be obvious, but is not. The problem of measuring cleaner production, or indeed sustainability, and the difficulties of deciding where and what to measure are described below.

Measurability is an immense practical problem, which is rather under-researched as it lies in the border between technology and management. What one would like to measure in theory is often very different from what is measurable with the equipment at hand. Monitoring systems

can be prohibitively expensive if they even exist for the desired application. In the simpler case, the information simply does not seem worth the investment. A common example is indicators for energy use, where a company might have one electricity meter for an entire building, which contains a number of different activities. It thus becomes difficult to construct an indicator for energy efficiency.

Comparability is the central issue. There are several levels of comparability:

- comparability with an earlier time period
- comparability with other sites in the same company
- comparability with other companies in the same line of business
- comparability with all other companies.

It is often of interest to construct an indicator in the form of a measurement of total environmental performance in relation to a measure of operations, such as the amount of a certain effluent in relation to production volume. This allows better comparability with varying volume of operations, but has other problems. One central problem is that of how to account for suppliers.

Any system of comparisons will also have winners and losers, which means that the losers can be expected to put up a fight against any system that is suggested. They will always have ammunition for that battle, since an indicator never can be an accurate reflection or reality. The problems with indicators are thus forbidding. In that context it is helpful to lower ambitions so that the goal of an indicator is to be useful, not to be absolutely correct. This would seem to imply that they need not be long lived. An indicator could be very useful for a limited time period.

Sören Bergström (1994) lists a number of principles for developing performance indicators. Two of these are especially interesting and concern the way indicators describe performance. They are the on-the-board principle and the cluster principle

On the board principle: Approximate and useful is better than exact and impracticable.

Cluster principle: Several indicators that approximately describe a phenomenon can, if the indicators are independent, together give a more exact picture than a single one.

Environmental performance measurement is not an objective process but a communication tool. The system boundaries and the basis for comparison are arbitrary. A few successful cases exist of performance measurement for employee motivation in medium sized industry (Parker, 1996). This use, to affect decisions by workers in operations, show how performance measurement can be seen as an instrument of power.

3.4 Standardisation of Environmental Performance Evaluation

Environmental performance evaluation (EPE) is currently the focus for ISO TC 207 SC 4 and the ISO/DIS 14031 defines EPE as a *“process to facilitate management decisions regarding an organization’s environmental performance by selecting indicators, collecting and analysing data, assessing information against environmental performance criteria, reporting and communicating, and periodic review and improvement of this”*.

The draft international standard also states: *“Indicators for EPE are selected by organizations as a means of presenting quantitative or qualitative data or information in a more understandable and useful form. They help to convert relevant data into concise information about management’s efforts to influence the organization’s environmental performance, the environmental performance of the organization’s operations, or the condition of the environment. An organization should select a sufficient number of relevant and understandable indicators to assess its environmental performance.”*

The ISO/DIS 14031 describes two general categories of indicators for EPE:

- a) environmental performance indicators (EPIs); and
- b) environmental condition indicators (ECIs).

Management performance indicators (MPIs) should provide information on the organization’s capability and efforts in managing matters such as training, legal requirements, resource allocation and efficient utilisation, environmental cost management, purchasing, product development, documentation, or corrective action which have or can have an influence on the organization’s environmental performance. MPIs should assist evaluation of management efforts, decisions and actions to improve environmental performance.

Operational performance indicators (OPIs) should provide management with information on the environmental performance of the organization’s operations. OPIs relate to:

- inputs: materials (e.g., processed, recycled, reused, or raw materials; natural resources), energy and services;
- the supply of inputs to the organization’s operations;
- the design, installation, operation (including emergency events and non-routine operation), and maintenance of the physical facilities and equipment of the organization.
- outputs: products (e.g., main products, by-products, recycled and reused materials), services, wastes, (e.g., solid, liquid, hazardous, non-hazardous, recyclable, reusable), and emissions (e.g., emissions to air, effluents to water or land, noise, vibration, heat, radiation, light) resulting from the organization’s operations;
- the delivery of outputs resulting from the organization’s operations.

Environmental condition indicators (ECIs) provide information about the local, regional, national or global condition of the environment, and they are not measures of impacts on the environment. If management’s interest is the organization’s contribution to the regional, national or global condition of the environment, the organization may use indicators being investigated and developed by government agencies, non-governmental organizations, and scientific and research institutions. Examples of such indicators include thickness of the ozone layer, average global temperature, and the size of fish population in oceans. Examples of areas for which local or regional ECIs may be developed are air; water; land; flora; fauna; humans; and aesthetics, heritage and culture.

3.5 *Next generation of EPIs*

Naimon (1995) identifies five generations of indicators:

1. Earliest indicators converted absolute measure of environmental loadings (e.g. SO_x emissions) into relative terms to describe and enable comparison of various regions respective environmental qualities.
2. Second generation compared environmental risks with economic terms to indicate a specific firm's comparative exposure to environmentally related financial risk.
3. The third generation focuses on trends positively linked to financial performance. Certain organisational features seem to be linked to progressive improvement.
4. A fourth generation begin to assess the problems related to products during their life cycle. A life cycle analysis (LCA) as an internal tool has enabled many companies to achieve environmental and financial advantages.
5. A fifth generation of environmental indicators would incorporate many elements of the earlier generations. It would combine already existing *result* or *impact* indicators, such as indicators of human health and equity (diseases, infant mortality, life expectancy, air/ water quality etc.) with geographic information on biodiversity, natural history and baseline environmental impacts.

Naimon adds "since various stakeholders have partially overlapping needs, one would expect that mixtures of the aforementioned indicators will be devised and deployed to serve a variety of corporate, investor, and environmental ends over the next few years."

3.6 *Conclusions*

A consensus needs to be reached by the business sector on a portfolio of core environmental indicators, overall and on an industry specific level. These environmental indicators need to be both qualitative, quantitative and monetary. They need to concern both environmental performance and environmental impact. They need to focus on process, product and system. The forthcoming standard on Environmental Performance Evaluation, ISO 14031, will only be the very first step in the direction of such a consensus. This is an area which the business community, NGOs and governmental authorities will pay close attention to during the next couple of years. The environmental indicators need to be so constructed that they can illuminate whether or not the corporate environmental management endeavours are having the desired effect: moving us closer to a sustainable society. Here the development of environmental performance indicators would definitively benefit from a merge with what Naimon calls result indicators. These are the type of elements that eco-economists are fighting to include in national environmental accounting, recent contributions being the latest report to the Club of Rome *Taking Nature into Account* (van Dieren 1995) and the European Commission report *Environmental Indicators and Green Accounting* (Commission of the European Communities 1996).

4 The current state of environmental reporting

4.1 What is environmental reporting?

It is important to distinguish between the terms environmental reporting and corporate environmental reports (CERs). In both the academic literature and the business periodicals the two terms are far too often used as if they were one and the same. However, “*it is important to remember that a printed environmental report is only one tool for communication*” and that “*there are many ways to provide environmental information*” (WICE, 1994).

Environmental reporting can be defined as a catch-all term that describes the *various means by which companies disclose information on their environmental activities*, while **corporate environmental reports (CERs)** are only one form of environmental reporting defined as *publicly available, stand-alone reports issued voluntarily by companies on their environmental activities* (Brophy and Starkey, 1996). Great emphasis should also be put on the CER is a means to environmental improvement and greater accountability, not an end in itself.

There can be said to be three categories of environmental disclosures (DTTI, 1993):

1. **involuntary disclosure** - the disclosure of information about a company’s environmental activities without its permission and against its will;
2. **mandatory disclosure** - the disclosure of information about a company’s environmental activities that is required by law;
3. **voluntary disclosure** - the disclosure of information on a voluntary basis.

Examples of involuntary disclosures are environmental campaigns, press and media exposés and court investigations. Toxic Release Inventory (US), Pollution registers and Freedom of Access to environmental information (EU) are all examples of mandatory disclosure. There are two types of voluntary disclosures: confidential and non-confidential. Confidential voluntary disclosures are those required by banks, insurers, customers and joint venture partners that are not publicly available. Non-confidential voluntary environmental disclosures is practically any environmental information the company voluntarily makes available to the general public. Environmental reporting can be defined as consisting of both mandatory and voluntary disclosure, i.e. it is something that a company does rather than has done to it (Brophy and Starkey, 1996).

4.1.1 Mandatory environmental reporting schemes

Among the key findings of the 1996 UNEP/SustainAbility report “*Engaging Stakeholders*” is that there is a building pressure for mandatory - rather than voluntary - reporting. Mandatory public reporting of environmental information is currently limited to a few countries, while mandatory reporting to the authorities is more widespread. Mandatory reporting of environmental issues in financial reporting is dealt with in chapter 2 on environmental issues and the finance sector.

The OECD published a guidance manual for governments regarding Pollutant Release and Transfer Registers (PRTRs) in 1996. There are already various national PRTRs that exist in many of the European countries (in the UK and France for example). A PRTR system usually

calls for firms to report periodically on their releases and transfers of a variety of substances of interest. The information is made publicly accessible bearing in mind legitimate needs for business confidentiality. The results provide comparative quantitative information among reporters and have stimulated investors and other stakeholders to ask questions of firms whose performance is significantly below normal for their sector and demand improvement (OECD, 1996).

A PRTR thus provides a powerful incentive for reporters to cut releases and transfers. Corporate and environmental groups alike have said that PRTRs have had a stronger impact than many regulatory programmes even though a PRTR sets no improvement goals mandatorily. Simply by making pollutant release and transfer information accessible encourages firms to take pollution prevention actions (OECD, 1996). The need for a European wide Pollutant Release and Transfer Register has long been discussed, but there is no definite plans or proposals for such a register at this time.

The Council Directive 96/61/EC of 24 September 1996 concerning Integrated Pollution Prevention and Control (IPPC) contains some elements of a European wide PRTR, since it requires all installations belonging to the categories of industrial activities referred to in the directive to supply the competent authority with data required for checking compliance with the permit. The competent authority must in turn make this data available to the public and supply data to an inventory of the principal emissions and sources responsible to be published every three years by the Commission.

In the USA there is the *Emergency Planning & Community Right-To-Know Act (EPCRA)* that established the *Toxic Release Inventory (TRI)*, which requires all companies with more than 10 full time employees to submit data on their use, manufacture and/or emissions of approximately 600 different toxic chemicals to the Environmental Protection Agency (EPA). Around 20 000 manufacturing facilities and 200 federal facilities submit reports each year. This data is compiled and processed by the authorities and then made available to the general public over the Internet and through other channels.

TRI is meant to be a public "report card" for the industrial community, creating a powerful motivation for waste reduction. This annual accounting of the nation's management of industrial toxic chemical wastes is a valuable source of information for concerned individuals and communities. Citizens can use TRI to evaluate local facilities through comparisons, determine how toxic chemicals are used, and, with other information, evaluate potential health risks for their community. Organisations can use TRI information as a starting point for constructive dialogue with manufacturing businesses in the area (EPA, 1997).

Since a few years back companies operating on permits in Sweden have to report back to the authorities on their environmental performance in relation to government regulation (SNFS 1993:1, MS57), and from the fiscal year 1996 more than 3000 companies in Denmark have to produce "Green accounts" (Environmental Protection Act §35). Legislation making environmental reporting mandatory for certain categories of companies is also to be introduced in 1998 in the Netherlands as an extension of the Environmental Management Act of 1993. Both the Danish and Dutch regulations involve both reporting to the authorities and the public. The Swedish regulation so far only contains requirements for reporting to the authorities.

In Norway the Norwegian Companies Act and the Law of Accounts state that the company must report whether it pollutes the environment and what actions and/or plans have been taken to prevent this. Companies with operating permits also have to perform self controls and report back to the authorities on their environmental performance. Similar requirements for disclosure in the annual report will be introduced in Sweden.

On the European level there is the EU Directive on Freedom of Access to Environmental Information (90/313/EEC), under which all public authorities with responsibilities for the environment must make environmental information available to any person who requests it. Thus all environmental reporting to the authorities is publicly available and can thus be regarded as public reporting. However, the recently published EEA report “*Public Access to Environmental Information*” highlights the fact that the EU rules on the provision of information are being overtaken by the development of information technology and therefore will need to be transformed.

The European Environment Agency’s central concern is to put information to work in support of environmental policy-making. Public access to environmental information supports good environmental decision-making. The “Information Society” we live in today makes monitoring, retrieval and transmission of data with high precision and rapidity possible. There lies a real challenge in anticipating future demands and technological innovations and adjusting national legislation and the EU Directive accordingly.

4.1.2 Regulated voluntary environmental reporting

There are also voluntary government programs that require standardised environmental reporting. In the United States the voluntary **Environmental Leadership Program (ELP)**, recently introduced by the EPA, requires participants to issue a public annual environmental report that contains:

- environmental performance data;
- audit information;
- information on its environmental management system (EMS); and
- descriptions of its mentoring, community outreach, and employee involvement activities.

The **Eco-Management and Audit Scheme** (Council Regulation No 1836/93) is also an example of a regulated voluntary reporting scheme since it details the exact requirements for public environmental statements.

The EMAS regulation requires that an environmental statement be prepared following the initial review and the completion of each subsequent audit or audit cycle for every site participating in the scheme, and with some exceptions a simplified environmental statement should be prepared annually in intervening years. The environmental statement should be designed for the public and written in a concise, comprehensible form.

The environmental statement should draw attention to significant changes since the previous statement and needs to include at least:

- a description of the company’s activities at the site considered;
- an assessment of all the significant environmental issues of relevance to the activities concerned;

- a summary of the figures on pollutant emissions, waste generation, consumption of raw material, energy & water, noise and other significant environmental aspects, as appropriate;
- other factors regarding environmental performance;
- a presentation of the company's environmental policy, programme and management implemented at the site considered;
- the deadline set for submission of the next statement;
- the name of the accredited environmental verifier.

So far only around 800 hundred sites have been registered to EMAS (mainly in Germany) and most of them have only produced one environmental statement. Thus there is still a lack of experience and a survey undertaken by the Swedish competent body "Miljöstyrningsrådet" in 1996 showed that the first environmental statements had many shortcomings. But with more sites registering to EMAS and with more experience of producing environmental statements the quality will improve. In any case the requirements for the EMAS statement has had and will continue to have a considerable impact on voluntary environmental reporting.

Research carried out by Anne Grafé-Buckens at Imperial College on behalf of the European Commission regarding EMAS and SMEs showed that the environmental statement is perceived as perhaps the most delicate part of EMAS. The main difficulties in producing the statement were to summarise the data and translate them into an understandable statement. The unidentified audience made this challenge even larger. There was also concern about the time and human resources required at the managerial level. The time spent to elaborate the statement varied between 6 and 48 man-days. The main audiences were identified as customers, employees and local regulators, while suppliers, neighbours, environmental groups, bankers and insurers were secondary audiences. The research also showed that although the level of awareness regarding the environmental statement is low, 80% of the consulted stakeholders showed interest in EMAS as a potential source of information and even in using it as a basis for risk assessment (Grafé, 1996).

4.1.3 Guidelines for voluntary environmental reporting

A number of guidelines have been published since the beginning of the nineties. The Public Environmental Reporting Initiative (PERI) guidelines in North America is one of the most well known. Another established format of environmental reporting in North America is the one promoted by the Coalition for Environmentally Responsible Economies (CERES). The World Industry Council for the Environment (WICE, now the WBCSD) also published a manager's guide to environmental reporting in 1994. As mentioned UNEP has also identified 50 separate reporting ingredients, among which 20 were considered core reporting elements to be regarded as the required minimum key features of any corporate environmental report worthy of its name. More information about the CERES, PERI, WICE and UNEP guidelines can be found in the annexes. In the annexes you will also find excerpts from the ICC Business Charter for Sustainable Development 16 principles for environmental management, relating to environmental reporting.

Dozens of other organisations have developed recommendations, standards or guidelines for environmental reporting as well. To mention a few: Advisory Committee on Business and the Environment (ACBE, UK), the European Chemical Industry Council (CEFIC), European Green Table (EGT), Global Environmental Management Initiative (GEMI, USA),

International Network for Environmental Management (INEM), The Japan Federation of Economic Organisations (KEIDANREN, Japan), the Prince of Wales Business Leaders Forum (PWBLF, UK) and Social Venture Network (SVN) etc.

All of these recommendations are more or less checklists for the content of environmental reports, including both qualitative and quantitative information and both monetary and non-monetary data. Areas addressed in many of the guidelines include: organisational profile, environmental policy, environmental management, legislative compliance, environmental releases, resource efficiency, life cycle perspective of product impacts, environmental liabilities & costs, stakeholder relations etc.

Germany's national standards body, Deutsches Institut für Normung (DIN), has recently published a standard for corporate environmental reports (DIN 33922). Although there are already a number of industry- or NGO-developed guidelines for environmental reporting, this is the first attempt by a national standards body to offer such guidance for voluntary environmental reporting. The DIN guidelines focuses more on ethical issues - providing information that is true and clear - than on providing clear guidance on report content.

4.1.4 Award Schemes and Rating/ Ranking of Environmental Reports

The UK ACCA award scheme for best environmental report was initiated in 1991. There are award schemes in many countries apart from the UK, among others in Sweden, Denmark, Norway, and the Netherlands. The first European Environmental Reporting Awards were also presented in May 1997, sponsored by professional accounting organisations in the UK, Denmark and the Netherlands. Apart from award schemes there are yearly ratings/rankings of the published environmental reports, for example in Germany by IÖW in Berlin and in the Nordic countries by Deloitte & Touche. UNEP/SustainAbility and Tomorrow magazine are other organisations who rate/rank/benchmark corporate environmental reports regularly.

Each of the award schemes and rating/ranking organisations have set up their own list of criteria for what constitutes a good environmental report in their opinion and how each criteria should be weighted. It thus follows that these criteria are quite subjective. The award schemes have a significant effect on how the contents of environmental reports evolves, since they along with other surveys/rankings of environmental reports to a large extent determine what is considered to be best practice in environmental reporting and thus function as guidelines for environmental reporting. The criteria used by ACCA and Deloitte & Touche can be found in the annexes. Both these awards take a broad approach to environmental reporting, including annual reports as well as others means of communication in their judgement, in addition to the Corporate Environmental Reports (CERs).

However, since an environmental report can have many different audiences with different needs, it is impossible to use the results of such ratings as an indication of how well the environmental reports serves their purpose. For this, stakeholder dialogue is necessary as is illustrated by the UNEP/SustainAbility report "*Engaging Stakeholders*". For example environmental liabilities are more interesting for the financial sector, while customers might be more interested in information about the environmental management practices and product stewardship.

These awards and surveys often get a lot of attention from the media, and in this way they promote a wider adoption of environmental reporting. But unfortunately they are often misinterpreted as a rating/ranking of the environmental performance and/or environmental management of the companies, rather than only a ranking of quality of the environmental reports themselves. In any case, winning an award for the best environmental report has had a very positive impact on the image of the companies concerned. This is not surprising since the main use made by various stakeholders of the corporate environmental reports today is often as an indicator that the company takes environmental issues seriously and is open to dialogue with their stakeholders. The credibility for the environmental program of any company thus increases with a good environmental report, and decreases when an environmental report is not available or of inferior quality.

4.2 Why voluntary environmental reporting?

It is often stated that most voluntary initiatives on environmental reporting come from pressures from various groups that have a direct interest in the performance of companies. These groups include shareholders, banks, local communities, corporate customers, employees and business analysts (KPMG, 1994). But why do these stakeholder groups want/require environmental information? One argument is that environmental information is required because of the environmental risks run by stakeholders, but this is a research area that needs to be more fully explored. The issue is particularly important since the answer to the question 'why?' are likely to provide answers to 'what?' environmental information a company should disclose (Ballantine and Stray, 1995).

The benefits derived from environmental reporting can roughly be divided in two categories: financial and strategic. If a company can demonstrate good environmental performance and an acceptable level of environmental liability to its stakeholders, it may benefit financially in that its share price may increase. Potential strategic benefits include improving the company image and building better relations with relevant stakeholder groups (Brophy and Starkey, 1996).

The prediction is that there will be growing pressure on those companies that do not report on environmental issues coming from their competitors who do produce an environmental report (KPMG, 1994). In the case a company finds that its competitors are issuing environmental reports it may decide it is necessary to follow suit in order not to leave itself at a disadvantage (Brophy and Starkey, 1996). There has also been speculation on the advent of new laws and regulations that will force companies to report (KPMG 1994). By reporting voluntarily it can build up expertise in advance of the expected regulation (Brophy and Starkey, 1996).

Surveys have shown that the most common reasons given for voluntary reporting were duty-based, such as duty to the environment or the public's right to know. Motivation for

disclosure can also be one of self-interest, with companies choosing to report if they judge that the benefits exceed the costs associated with environmental reporting. However, the motivation for reporting is not likely to be based solely on duty or self-interest but will contain elements of both.

Environmental reporting can also have many important internal positive effects. There even seems to be consensus among industries with some experience of environmental reporting that the internal effects of the reporting process, including the information gathering process, are often greater than the external beneficial effects. The information on environmental performance generated by the reporting process is often itself of sufficient value to management to motivate the reporting process. Employees are also important recipients of the reports and if they feel more informed and involved this hopefully will lead to greater work satisfaction. Here it is important to acknowledge the interrelationships between the various environmental management tools.

Environmental reporting promotes improved environmental performance by forcing companies to measure their environmental impacts and communicating them to the stakeholders. An environmental management system is needed to effectively manage the environmental impacts and the employees are the key to successful implementation of such a system. The environmental management system can then in turn provide quantitative data on environmental performance to be included in environmental reporting, to inform the stakeholders of progress made and especially to give the employees pride over their achievements and motivate them to strive towards new targets.

In summary, environmental reports can be considered a sort of small world where many crucial points in the relationship between a company and its stakeholders meet together (Bartolomeo and Ranghieri, 1996). The advocates of environmental reporting are convinced that reporting is a crucial lever for change in the direction of improved environmental performance, and in the longer term, sustainability.

4.3 The history and trends in corporate environmental reports

The first voluntary corporate environmental reports were published in the late 1980's and early 1990's. Among the very first were Norsk Hydro, Norway's largest industrial group, and the U.S. chemical company Monsanto. Leading up to the United Nations Conference on Environment and Development in Rio de Janeiro in 1992, several more companies started down the road of environmental reporting. Many of the reports were however "green glossies", containing more scenic landscape photographs than actual information about the environmental performance of the company. The ICC Business Charter for Sustainable Development 16 principles for environmental management as well as the chemical sector's Responsible Care program both stimulate environmental reporting. Two of the Charter's principles refer to promoting openness and reporting and from the outset the Responsible Care initiative has had the dual goal of improving real performance and demonstrating this to a sceptical public, applying the "don't trust us, track us" principle.

"Coming Clean - Corporate Environmental Reporting, Opening up for Sustainable Development" was the first international survey of corporate environmental reporting which was produced jointly by SustainAbility, Deloitte Touche Tohmatsu International (DTTI) and the International Institute for Sustainable Development (IISD) in 1993. One key feature of that

study was a five stage reporting model, running from so-called “green glossies” at Stage 1, through to full-blown sustainable development reporting at Stage 5. This was one of the first attempts to develop a “taxonomy” of reporting. The view of the report was that environmental reporting is a step-by-step process which companies have to initiate and improve over time.

The UNEP Technical Report No. 24, the result of a joint UNEP/SustainAbility project focusing on international reporting trends published in 1994 and entitled “***Company Environmental Reporting: a Measure of the Progress of Business and Industry towards Sustainable Development***”, further elaborated the five stage reporting model. One-hundred corporate environmental reports were ranked according to the five stage reporting model and then “reverse engineered” to spot the key reporting ingredients - and track the various reporting “recipes” being used. The report identifies 50 separate reporting ingredients, among which 20 were considered core reporting elements to be regarded as the required minimum key features of any corporate environmental report worthy of its name.

The UNEP report also contrasted the “Anglo-Saxon” reporting model, which focused on policy, management systems and inventories and was favoured by most North American and UK companies, with the “Rhine” reporting model, used by many Scandinavian and German companies and based on an eco-balance of environmental inputs and outputs across the life-cycle of the company’s operations. The UNEP report also concluded that, since environmental reporting is still at the experimental stage, diversity is to be encouraged as long as it does not degenerate into confusion or warring factions. Competition can fuel innovation, given the right circumstances. The report however predicts a process of automatic standardisation in reporting as companies learn from their experiences and best practice emulates.

The “***1993 KPMG International Survey of Environmental Reporting***” was designed to explore the current practice of environmental reporting by the leading companies, based on market capitalisation or revenue, in ten countries: Belgium, Canada, Denmark, France, Germany, Ireland, the Netherlands, Portugal, the UK and USA. Of the 690 companies that responded 400 companies (58%) mentioned the environment in their annual report and 105 (15%) had produced a separate environmental report. The survey showed that environmental reporting had already become quite widespread, especially in the UK (20 reports), Canada (23 reports), USA (14 reports) and Germany (11 reports).

When analysing the trends the survey concluded that the companies that were leading the way in environmental reporting continued to produce good reports, a few new companies had started to produce separate environmental reports and many more had begun to address environmental issues briefly in their annual reports. The growth trend was however slower than expected, which the survey thought might be due to the high standard of reporting that some companies were demonstrating. Companies that wished to start down the road of environmental reporting could no longer produce a glossy magazine discussing their various achievements to date. This might have been acceptable in the early nineties, but the user groups had since become more sophisticated. They now expected reports to be logical, honest, and full of quantifiable data. Since few companies had the environmental management systems that allowed them to produce this kind of data, there was a significant hurdle to jump before a state of the art CER.

In the end of 1995 Tomorrow magazine published a survey of environmental reports. The main conclusion was that the Corporate Environmental Report was “*not so much coming of*

age as emerging into an awkward adolescence - there is a lot of potential and the occasional flash of brilliance but it is a long way from maturity" (Wright, 1995). The article also concluded that there was surprisingly little consensus over exactly what a CER should include and how it should be presented. But although there is no one way to do a CER, standards are getting closer to unification.

The article mentions the question of who exactly the report is aimed at (employees, customers, industrial colleagues/rivals, investors, NGOs, press etc.) as one major element of confusion. Mostly the answer is all of them, despite the fact that the stakeholders are such a disparate bunch. This poses a number of problems for the report writers: How detailed should the report be? How technical? Is the primary aim to communicate statistical information or a broader environmental vision?

In any case, as the title of the article indicates we have said goodbye to the green glossy and most CERs bear the marks of a serious, considered attitude to environmental impact and include quantitative data. However, hardly any companies seem prepared to question whether their current products and operations are environmentally justifiable on a global level and whether their products are meeting a genuine need which outweighs the negative impacts. Social and ethical concerns are also largely ignored in the corporate environmental reports to date.

The second international progress report on company environmental reporting entitled "***Engaging Stakeholders***" was published by UNEP and SustainAbility in 1996. Questions addressed in the report include: What have leading report-makers learned from stakeholder feedback? Who do they see as key stakeholders? What other ways are being explored to engage stakeholders? Which reports best meet current stakeholder needs? How will these needs evolve? The report is a result of a research program supported by the United Nations Environment Program (UNEP) and sixteen international companies from Australia, Belgium, Denmark, France, Germany, Sweden, Switzerland, the UK and USA.

Among the key findings reported in "***Engaging Stakeholders***" the following can be mentioned:

- a new - and growing - focus on verification, environmental benchmarking, performance indicators, full cost accounting and the implications of 'sustainability'
- demands for environmental performance data are increasingly coming from market users (e.g. customers, financial stakeholders)
- corporate environmental reports (CERs) are increasingly being used to monitor, benchmark and rank companies
- a building pressure for mandatory - rather than voluntary - reporting
- leading report-makers see the social dimension of reporting as a critical new area.

Volume 1, "***The Benchmark Survey***", focuses on the rapidly evolving area of environmental reporting. A new CER ranking process is introduced and some of the latest CERs are ranked. Ten key transitions now facing report-makers are also explained. Volume 2, "***The Case Studies***", explores how 12 key stakeholders use - and plan to use - Corporate environmental reports. These range from regulators, through campaigning groups to new types of financial market users (financial risk rating agencies, insurers, stock exchanges).

Because the green glossies have now almost disappeared due to the user groups demands of quantifiable data, SustainAbility have also updated their five stage reporting model. The entry level for companies beginning to produce environmental reports will from now on be Stage 3 - Descriptive reporting. Stage 4 - State of the art corporate environmental reporting - now has three different sub-stages: Quantity, Quality and Comparability, in order to better be able to differentiate. Stage 5 - Sustainability reporting - has also been opened up to reflect that genuine sustainability reporting will require a new systematic stakeholder framework in which all key actors have parallel, complementary roles to fulfil: Triple Bottom Line Responsibility (Company), Triple Bottom Line Accountability (Government) and Triple Bottom Line Sustainability (Market).

An international survey carried out by IIIIE on behalf of KPMG Environmental Advisors in 1996 (KPMG, 1997) showed that environmental reporting is spreading rapidly. Environmental issues are on the business agenda to stay, as illustrated by the fact that 70% of the companies mentioned environmental issues in their annual reports and 24% had published some sort of environmental report. The results varied between countries and industries but the main trend was clear. More and more companies are publishing environmental reports and the quality of the reports has also improved.

Among the key findings of the KPMG survey of environmental reports can be mentioned that:

- details of an environmental policy was given in 80% of the reports;
- details of future plans and targets were given in 91% of the reports, but only 37% included quantitative targets and only 20% included quantitative target and deadlines as well as reporting back on previous targets;
- quantitative data was included in 87% of the reports and 70% also provided data from previous years to allow comparison;
- in 35% of the reports bad news was disclosed as well as good;
- in 54% of the reports there was some mention of environmental management systems;
- details of environmental audits were given in 43% of the reports;
- 15% of the reports were verified by an independent third party; and
- 47% of the reports provided opportunity for further dialogue.

In summary it can be said that it is still predominantly large, multinational industrial companies in industries in focus of the environmental debate that produce environmental reports. Process industries such as chemical, oil & gas, power generation and forestry, paper & pulp are the industries that reported on environmental issues most frequently and the financial services sector the least frequently, according to the 1996 KPMG survey.

4.5 Issues and challenges in environmental reporting

4.5.1 The need for an environmental communication strategy

In the 1994 WICE document “*Environmental Reporting - A manager’s guide*” it is stated in the introduction that although the guide focuses on the preparation of a written report “*it is important to remember that a printed environmental report is only one tool for communication*” and that “*there are many different ways to provide environmental*

information". The broad range of environmental concerns and interests expressed by stakeholders highlights many possibilities for the flow of information.

Any communications plan should answer the following basic questions: 'who?', 'why?', 'what?', 'how?', 'when?', and 'which?'. 'Who?' refers to which audience is to be addressed, 'why?' to the targets and goals of communication, 'what?' to the content of the message, 'how?' to the way it is to be delivered, 'when?' to the timing and co-ordination and 'which?' to the channels selected for transmission. Bearing this in mind the company environmental report, often used as the primary medium for environmental communication, should be seen as the tip of the environmental communications iceberg rather than its bulk (van Dijk, 1994).

To earn public trust, a company must both improve its environmental performance and develop a wide range of communications and dialogue initiatives. For example, Dow Europe has promoted effective initiatives and has used appropriate tools to transmit targeted information. At the same time, the company has developed an influential voice in setting the environmental agenda. The problem is that environmental reporting is usually "*too much information but not enough dialogue*" (Sancassiani, 1996). Engaging the stakeholders is thus a natural next step in the evolution of environmental reporting.

4.5.2 Engaging stakeholders

Companies have been producing environmental reports since the beginning of the 1990s, yet there is growing unease among companies and their stakeholders about their effectiveness. Companies producing reports are uncertain of the benefits that accrue and stakeholders are concerned that reports fail to present a clear and comprehensive picture of a company's actual environmental impact. In response to this IBM (UK) and the consulting firm ECOTEC consulted 75 of IBM's stakeholders in 1994 - from employees, consumers and suppliers, to opinion-formers, local communities, financial and regulatory bodies - to determine their views on which environmental performance parameters IBM should include in their environmental reports (Haines *et al.*, 1996).

The stakeholders defined eleven key parameters including the use of information technology for pursuing sustainable development, environmental aspects of customer relations, manufacturing processes and IBM's global environmental responsibilities. These were ranked according to stakeholder priority and IBM's performance against each of these indicators was assessed. The stakeholder ranking and environmental performance together produce the environmental performance profile for IBM, which provided a novel tool for prioritising the company's initiatives in improving and reporting its environmental performance (Haines *et al.*, 1996).

IBM UK realised that a successful environmental report needs to report performance across parameters which incorporate the expectations and concerns of the company's stakeholders; otherwise the report fails to satisfy the information needs of its target audience. Stakeholder consultation is crucial in defining these needs and IBM awarded a contract to the environmental consultancy ECOTEC in the beginning of 1994 to:

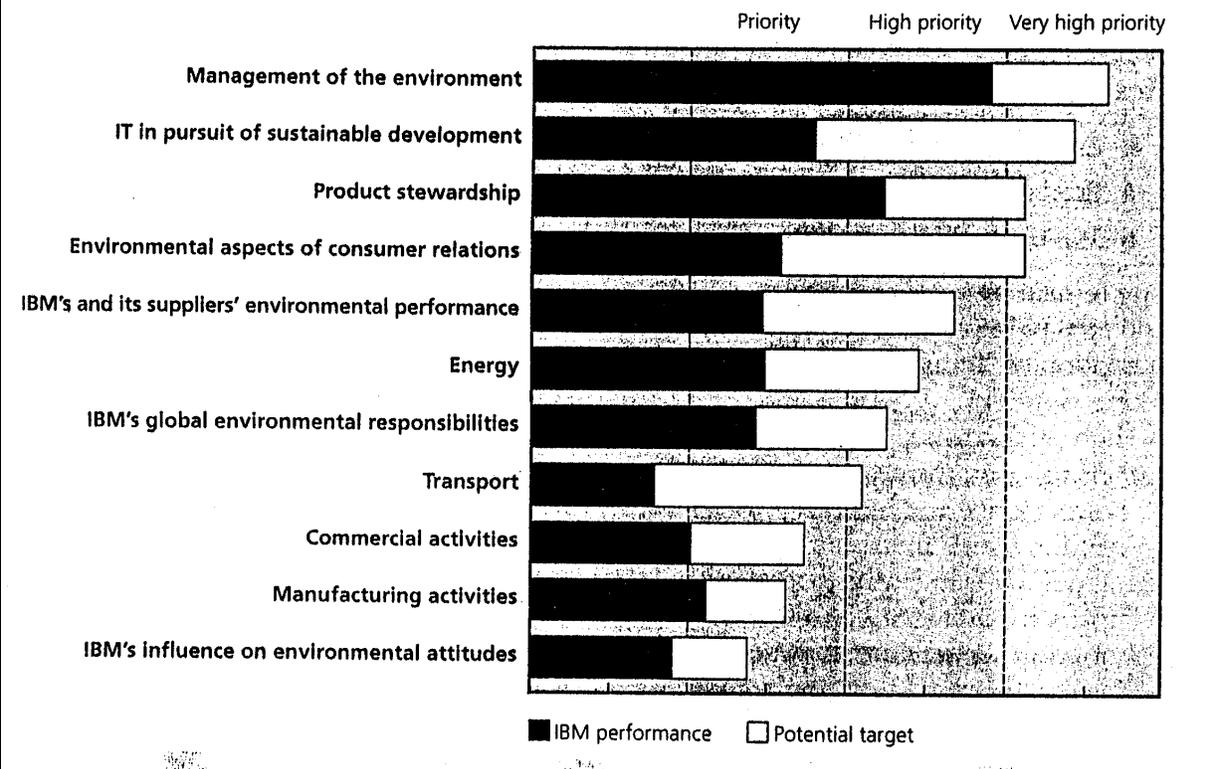
- Identify and prioritise the stakeholder's requirements and expectations
- Devise an environmental performance index by which IBM UK could measure its performance
- Provide an independent external assessment of IBM's performance.

The methodology used for generating IBM's Environmental Performance Profile involved five steps:

1. Consulting stakeholder priorities for IBM's environmental performance
2. Stakeholder ranking of the priorities
3. ECOTEC's environmental best practice questionnaire

- 4. Assessing IBM's environmental performance
- 5. Building IBM's Environmental Performance Profile

IBM Environmental Performance Profile



Another survey made by the US Investor Responsibility Research Center (GEMI 1996) showed that a balanced tone, input-output graphics, a sustainability discussion and a CEO statement all were more important for the credibility of environmental reports than third party attestation. Both these surveys thus indicate that a discussion on sustainability and the implications for the company is viewed as important by the stakeholders. The surveys thus suggest that it might be time for companies to start questioning whether their current products and operations are environmentally justifiable on a global level and whether their products are meeting a genuine need which outweighs the negative impacts. This would be a first step towards sustainability reporting.

But getting response from the stakeholders on environmental report is not easy. A 1995 survey showed that the highest response rate recorded was 8% and most companies only got 1-2% responses (Elkington and Spencer-Cooke, 1996). A response card is clearly not the best way for engaging the stakeholders, so the challenge is to find new ways of engaging stakeholders in dialogue with environmental reports as one step in the process. Companies need to identify their audience(s), clarify their need(s) and then adapt their reports accordingly, as Ciba Geigy put it (Elkington and Spencer-Cooke, 1996).

4.5.3 Mandatory versus voluntary environmental reporting

Mandatory reporting obligations play a crucial role in promoting cleaner production and ensuring corporate accountability (UNEP, 1994). Governments will continue to examine how to implement the recommendations contained in Agenda 21, particularly the part concerning *Environmentally Sound Management of Toxic Chemicals* (Chapter 19). Since many of the environmental problems are of a global nature there is a need to create international registers

of pollution and mandatory environmental reporting systems is a cost-effective way for the individual states to collect the necessary information. Also there is a need for regulation of how to deal with environmental issues in financial reporting, since regulation is obviously a prerequisite for inclusion of these issues in the financial statements.

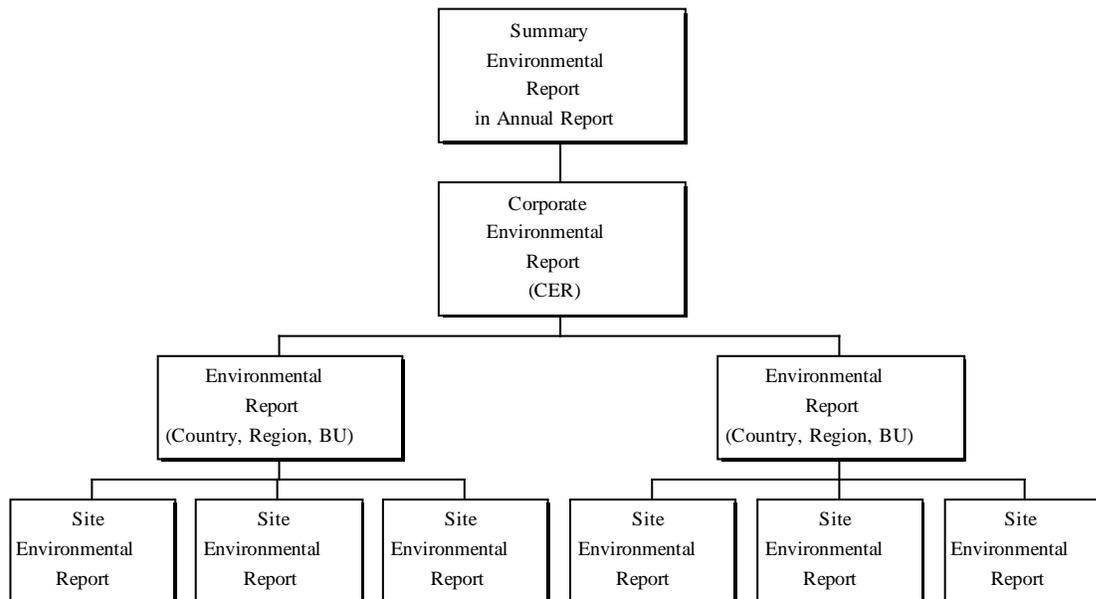
Industry also prefers mandatory environmental reporting to regular inspections, as it is more in line with self-regulation. Recent research published by the Green Alliance and the environmental consultancy Entec revealed that 58% of company respondents to the second *“UK Business and The Environment Trends Survey”* were in favour of compulsory environmental reporting. A parallel interview survey undertaken with 50 “opinion formers” showed a 72% level of support for mandatory environmental reporting.

The answer to the question whether environmental reporting should be mandatory or voluntary is probably that it should not be either or - it needs to be both. Mandatory reporting of core environmental performance indicators does not exclude continued experimentation and development of corporate environmental reports in the direction of sustainability reporting. Companies will continue to produce and improve their environmental reports for the same reasons as before also when there are mandatory reporting requirements to comply with. In fact, as is suggested by the updated SustainAbility model for environmental reporting, without minimum mandatory reporting frameworks sustainability reporting might not be possible.

4.5.4 Framework and format of environmental reporting

It is to be expected that environmental issues will be integrated into the regular corporate reporting and accounting as environmental issues become integrated into the business mainline decision making process. We have seen trends with separate reports before (working environment, quality, productivity etc.), but then these issues have become part of the annual report as they became “business as usual”. There will be more and more information about environmental issues in the annual report, but sustainability reporting will require a transformation of all forms of company reporting to include also social and ethical accountability issues.

Different stakeholder groups have different needs for detailed information. Making everybody happy with one corporate environmental report is an almost impossible task. It is important to remember that written environmental reports are only one part of a complete environmental communication strategy, that also needs to include many other tools for engaging stakeholders in dialogue. Therefore there is no need for more guidelines to environmental reporting that are checklists for what should be included in the environmental report. If companies engage their stakeholders in dialogue they will find out what information they should include in their environmental report. What is needed is instead an established corporate environmental reporting structure with mandatory site reports at the bottom of the hierarchy.



The mandatory site reports would provide information on site performance mainly for the employees and surrounding local communities as well as authorities. The second level would be national, regional and/or business unit reports according to the structure and type of company. An aggregate corporate environmental report on environmental performance should also be produced to provide overview of total company environmental impacts. This report should also contain summary information about environmental performance at the site, national, regional and/or business unit level. A short summary of the corporate environmental report should be included in the annual report, along with information about what environmental reports and other information materials are available and how these can be obtained. The environmental reports should always be referenced in the annual report and should ideally be published simultaneously.

The British multinational conglomerate **Imperial Chemical Industries (ICI)** has to some extent adopted a similar framework for their own reporting. Each manufacturing site produces an environmental report and chemical release inventory in pamphlet form, which are distributed to employees, the local inhabitants and other local stakeholders. The different national, regional or business units can choose to publish their own environmental reports if they think it is needed, as for example ICI Australia has done. An environmental report has been published at the corporate level every year since 1992, lately also integrating Health and Safety issues. There has also been some environmental information in the annual reports, although not in the form of a summary environmental report as proposed by the above described framework.

State-of-the-art environmental reporting should thus involve a framework of individual site reports and an aggregated corporate environmental report. Aggregate reports on the national, regional and/or business unit level can also be produced if such are deemed valuable for stakeholders depending on the industry sector and structure of the company. The aggregated environmental report should focus on environmental management, the life cycle perspective of the products, stakeholder relations and a sustainability discussion (e.g. are the current products and processes justifiable and what must be done to become more sustainable) with summary environmental performance targets and data. The site reports should focus on environmental management, stakeholder relations and environmental performance targets and data.

The progress made by large multinationals in the field of environmental reporting might be a barrier for the adoption of environmental reporting by small-and-medium-sized-enterprises (SMEs). They might feel that since they have neither the need or the means to produce a full scale corporate environmental report of the type produced by the multinationals, then environmental reporting is not for them. In the proposed reporting framework with activities only at one site the site report would be all they need. A reporting framework with clear requirements and guidelines for environmental reporting on a site level might thus make it easier for SMEs to adopt environmental reporting, since they can then do it more on the same terms as the multinationals.

HÅG is a Norwegian manufacturer of office chairs with around 370 employees and an annual turnover of NOK 417 million. With a business concept that focuses on ergonomics and human needs, environmental concern fitted naturally into the philosophy of the company. The environmental initiatives picked up speed in 1993 with Design for the Environment initiatives and implementation of an Environmental Management System (the HÅG manufacturing facility is EMAS registered). Since three years back a summary environmental report has been included in the annual report, aimed primarily at the financial markets. HÅG has shown that environmental reporting of an SME can be of the high quality with limited resources. The 1995 HÅG Environmental Report received an honourable mention by the Norwegian Environmental Reporting Award program and was also among the best in the Nordic Survey of Environmental Reporting by DTTI. The company calculates that 10-15% of the sales in Germany are dependent primarily on the company's environmental image, which was also a decisive factor for recent large orders from the State of California.

Many companies foresee a growing interest in the Internet as a channel for environmental performance reporting. In summary electronic publishing over the WWW is a viable, cost-efficient, complementary and powerful communications tool. The WWW will by no means replace the printed report but it offers an opportunity to provide professional stakeholder groups such as customers, financial analysts and environmental activist groups with the information they require in a more efficient way. If the company receives a question from a stakeholder, it can answer it once and for all by making the information available on the WWW thus eliminating duplication of labour. The WWW is the communication tool of the future and should be present in all corporate environmental communications strategies. The EEA report "The SME CER" prepared by SustainAbility especially highlights the importance of Internet reporting for SMEs.

4.5.5 Comparability and link to financial performance

Most CERs now include quantitative data, but still very few reports contain any kind of environmental performance indicators that allows for easy comparison between different companies. This is one of the most important areas for improvement if environmental reporting is to promote cleaner production efficiently. With standardised and normalised environmental performance indicators included in environmental reports, an investment in cleaner technology would immediately shine through. If the company only includes the raw emission data it is more difficult to spot the improvement, especially if the company augments its production volume at the same time.

By determining standard industry specific environmental performance indicators to be reported to the industry association an industry average could be computed and included for comparison in the environmental reports of the individual companies. A parallel can be drawn with for example accident data in the chemical industry. There is a trend towards increased comparability of the environmental performance data presented in environmental reports. For example, the forestry companies in Sweden agreed on a format to present their environmental performance data in their 1996 environmental reports so that comparisons are possible.

However, the measures used need also be expanded to include more than the common areas of emissions, wastes, inputs, resources and efficiency. Introduction of measures of impact and sustainability are a requirement for environmental reporting to progress towards sustainability reporting. Aggregated eco-efficiency indexes have also been developed by various companies and can be an aid for the users of the reports although they are difficult to standardise.

Environmental issues need to be integrated into financial reporting and there needs to be monetary environmental performance indicators in order for environmental issues to be fully integrated in business decision-making (see chapter 2 Environmental issues and the financial sector). A potential worry is that increased financial reporting can be a step backwards. It is not environmental issues that need to be adapted to fit into the current financial evaluation frameworks; it is the current financial evaluation frameworks that need to be adapted to take into account environmental and social effects if we are going to achieve sustainability.

Also it can be questioned if the current debate about the definitions of terms such as environmental investments, costs and liabilities is really relevant. When implementing cleaner production or integrated pollution prevention measures it is almost impossible to distinguish the environmental investments and costs. Some costs also should be minimised, i.e. environmental liabilities, environmental fees & taxes and the costs for end-of-pipe solutions, while others should merely be optimised (costs for education, personnel, R&D, investments etc.). A link between environmental and financial performance is important to establish.

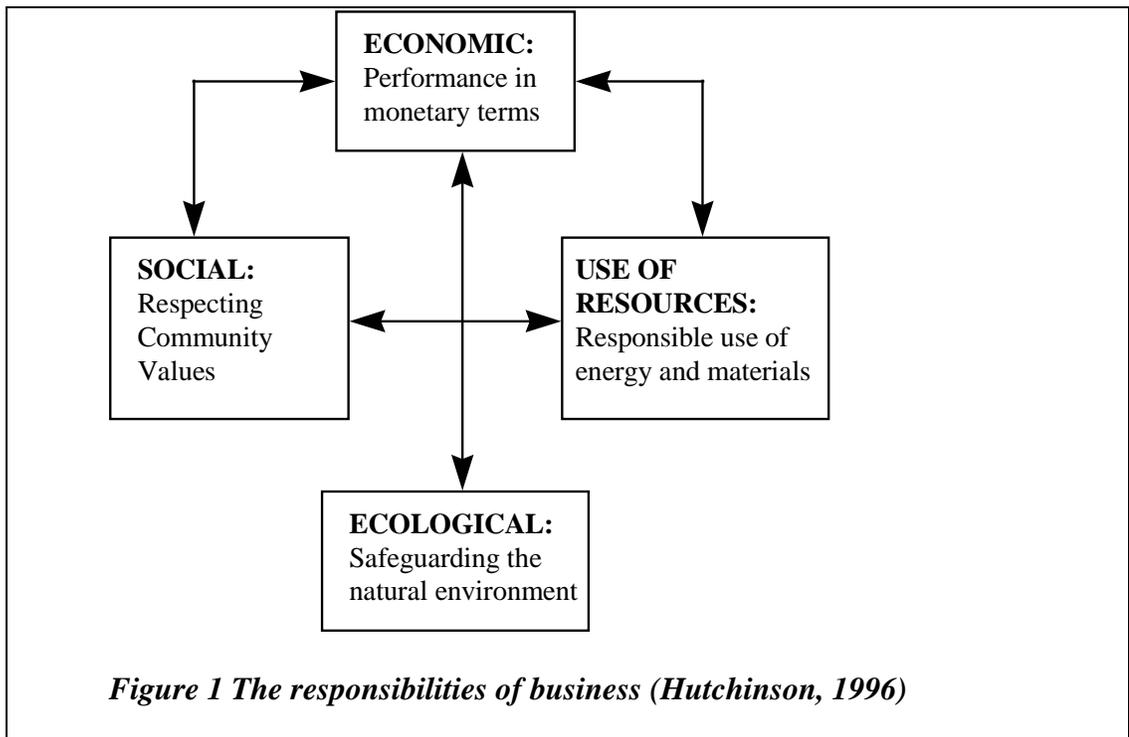
Kvaerner is one of the world's largest engineering companies, registered in Norway but with its international headquarters in London. The group employs more than 56 000 people worldwide and has operation revenues exceeding USD 10 billion. In 1996 it introduced the EcoPlus Performance Program which involved setting goals in resource and energy productivity improvement, developing environmentally friendly technology, reducing its insurance and credit costs by reducing risk; and improving its health and safety performance. Kvaerner has quantified these goals and expects to realise large environmental and financial savings. Among other things they estimated that a one percent decrease in the consumption of energy and materials would result in increased profits in the order of NOK 400 million. Kvaerner and the EcoPlus program are featured in the recent WBCSD report "Environmental Performance and Shareholder Value". The 1996 environmental report also recently won the Swedish award for best environmental report, largely due to the way it distinctly described the link between environmental and financial performance.

4.5.6 Sustainability

In the pursuit of sustainability, companies need to question whether their current products and operations are environmentally justifiable on a global level and whether their products are meeting a genuine need which outweighs the negative impacts. Social and ethical concerns are also largely ignored in the corporate environmental reports to date. Environmental reporting needs to include not only measures of emissions and waste but also needs to address issues of environmental impacts and compatibility with sustainable development.

The sustainability transition will require companies to widen their horizons to embrace the 3 E's: the economy, the environment and the social equity dimensions of development. "The Triple Bottom Line" approach - focusing on economic prosperity, environmental protection and social equity - is promoted by the British consultancy/think-tank SustainAbility. But how can sustainability be measured? It is not easy and much research is required to develop sustainability indicators, but it may be one of the most important preconditions for sustainable development on our planet (Bennett and James, 1994).

The figure below identifies four broad areas of corporate responsibility and accountability; economic, use of resources, social and ecological (Hutchinson, 1996). So far corporations only take full responsibility for their performance in monetary terms, although business has begun to be more concerned about the responsible use of energy and materials as concepts such as cleaner production and eco-efficiency have taken hold and there is a clear link between resource use and financial performance. Safeguarding the natural environment and respecting community values are the challenging areas corporations now must integrate in their overall business strategy. The third phase of the UNEP/SustainAbility corporate environmental reporting research program will focus on both the parallel developments in corporate social reporting and the emerging board-level issues raised by the triple bottom line of sustainability.



Companies can not make the transition to sustainability reporting all by themselves. There is need for a minimum mandatory reporting frameworks, as well as common environmental and social accounting methodologies and adjustment of economic indicators to reflect externalities. Environmental and social tax reform that reward 'sustainable' companies and sustainability-screened public procurement and investment is also needed. In the end all consumers need to use the disclosed information in all investment and consumption decisions.

4.5.7 The verification debate

The reasons for commissioning a verification are not as well established as the reasons for producing environmental reports. The reason why a company submit their environmental report to independent scrutiny is that they want to underpin the credibility of the environmental report. However, research published in 1996 by the Global Environmental Management Initiative (GEMI) and the Investor Responsibility Research Center (IRRC) in Washington DC found that the significant stakeholder groups thought that verification added little, if anything, to the credibility of the reports overall. The lack of standards for verification is the main drawback at the moment (GEMI 1996). Nobody knows what the value of a verification statement is.

One reason for this is probably that verifiers do not have any self-evident benchmarks to verify the report against. When comparing with financial statement auditing, the financial auditors review the financial statements for compliance with legal requirements as well as generally accepted accounting principles (GAAP). For the verifiers of environmental reports there is no such guidance. Therefor most verification processes are simply concerned with the accuracy of the data and statements included in the report and that the report reasonably reflects the approach taken and the progress made to date with environmental issues.

The use of environmental performance indicators are a vital step toward effective and verifiable reporting to stakeholders (Azzone *et al.*, 1996). The current trends towards normalising and standardising the measures used for environmental performance will make it easier for external verifiers to assess if the environmental report gives a complete and truthful account of the company's environmental performance.

The Fédération des Experts Comptables Européens finalised a Europe-wide survey of verifiers reports in 1996. Their conclusions were similar to those of the GEMI study. The FEE argues that an expert statement should add value to corporate and site environmental reports, but finds that at present current reporting is too varied for it to add value from a user perspective. One of FEE's main recommendations was that given the absence of generally accepted guidelines on how to perform an audit of an environmental report or how to report, expert statements should contain a description of the scope of the audit and the audit objectives. The report also suggests contents for the expert statement on an environmental report (FEE 1996).

But standardised wordings will not be sufficient to avoid an "expectation gap" from appearing. An expectation gap occurs when the expectations of the users as to the uses to which corporate reports can be put, and the degree of reliance that can be placed upon them, exceed the expectations of the auditors responsible for delivering an independent opinion on such reports.

The respondents to the GEMI research indicated that what will add credibility and diminish (though perhaps not eliminate) unrealistic expectations will be:

- the development of standards covering the scope and limitations of third party audits;
- the development of standards covering the content of third party statements;
- the development of accepted facility sampling techniques for third party statements;
- the eventual integration into the accepted accounting statement attestation scheme.

In the case of verification of environmental reports, the qualifications of the verifier are of vital importance. The verifiers for EMAS statements for example need to be accredited. In order for verification to add credibility to environmental reports, the verifiers themselves must be credible. The same type of qualification requirements that exist within the financial auditing profession will probably start to appear also for auditors of environmental reports, since it is in the interest of both the verifiers and their clients to ensure a certain standard in the profession and thus enhance the credibility of verification statements.

In some cases however, the company has no choice but to let a third party verify the accuracy of the report if the environmental reporting is to have any positive effect. In industries where the public distrust the companies, verification is necessary. As an environmental executive of a major chemical company put it: *“We could report until the cows come home but no one would believe us. Credibility is only going to come if environmental reports are verified by independent people.”*

4.5.8 International outlook

Environmental reporting is still mainly a Western European and North American phenomenon, but is slowly spreading to other parts of the world. Environmental reporting is becoming more popular also in Australia and New Zealand, and in South Africa companies like ESKOM are leading the way. Examples of environmental reporting can also be found in Asia, Eastern Europe and South America. In a global economy facing global environmental challenges environmental reporting cannot remain a Western European and North American trend. UNEP Industry and Environment office’s vision for environmental reporting year 2005 thus includes the following objectives:

- *10 000 major companies reporting world-wide;*
- *a stronger focus on the “triple bottom line” aspects of reporting, embracing indicators of progress in the linked areas of economic prosperity, environmental quality and social equity;*
- *clear evidence from all world regions of companies and industries successfully engaging their stakeholders.*

The influence of pressure from competitors in the development of environmental reporting cannot be overestimated. In many cases a company produced an environmental report one year and its competitors then produced one the following year as well. The influence of competitor pressure can also clearly be seen in the content of the reports and especially when it comes to verification. Here again if one company does it one year, next year others will follow providing the first company got a positive response. This innovation and competition is what develops environmental reporting best practice.

4.5.9 Ten transitions

In the report “Engaging Stakeholders” UNEP/SustainAbility (1996) sketch out what they believe to be the ten key transitions that will shape company environmental reporting practice over the coming years. Many of these ten transitions have been touched upon in this section

on trends and challenges for environmental reporting, especially the need for dialogue, benchmarkability and mandatory reporting.

Ten Transitions (UNEP/SustainAbility, 1996)

<i>Established focus on</i>	<i>Emerging focus on</i>
One-way passive communication	Multi-way, active dialogue
Verification as option	Verification as standard
Single company progress reporting	Benchmarkability
Management systems	Life-cycles, business design, strategy
Inputs and outputs	Impacts and outcomes
Ad-hoc operating standards	Global operating standards
Public relations	Corporate governance
Voluntary reporting	Mandatory reporting
Company determines reporting boundaries	Boundaries set through stakeholder dialogue
Environmental performance	“Triple bottom line” performance

4.6 Summary

The important challenges of corporate environmental reporting today can be summarised in three words: *Continuity, Comparability and Credibility*. Continuity can be ensured by publishing environmental reports with regular intervals, by setting targets and reporting back on progress, and by using the same performance indicators over time. Comparability is a best achieved by using standardised and normalised environmental performance indicators. A reporting structure with mandatory site reports and mandatory disclosure in the Annual Report and financial statements will also improve the comparability. Credibility will only be achieved by openness and balanced tone in the report. Engaging stakeholders in dialogue is an important part of the process. Verification of environmental reports will only add credibility when the value of the verification statement is clear and the credibility of the verifier is higher than the credibility of the company itself.

The challenge facing the business sector is to develop environmental reporting both as a useful environmental management tool, and as a means to provide stakeholders with credible information about their environmental performance. Dialogue with the stakeholders is the only way to ensure that the strategic environmental management initiatives of a company has the right content and direction to fully exploit the new opportunities and avoid unnecessary risks. The conclusion of the authors is therefore that environmental reporting can only fulfill its potential if it is viewed as a *process* rather than as a *product*.

5 The current state of corporate environmental performance ranking

5.1 What is rating/ ranking of corporate environmental performance?

Environmental rating is in this context defined as the use of one or more environmental assessment criteria to assign a score, or rate, to a specific company, depending on the it's fulfilment of the set criteria. By *Environmental ranking* is meant the resulting listing of companies, with the relative order depending on the attained score.

5.2 Rating of what? Types and developments

One of the earliest rating strategies was to assess the companies' respective physical impact on the environment, i.e. their emission volumes and consumption of natural resources. The main target group were investors wishing to channel their investments to companies with an environmental profile and good environmental status, or environmental activists. But for the majority of the financial community, primarily interested in profitability and risks, this information was of little interest (Schmidheiny & Zorraquín, 1996). Thus systems for controlling historical compliance with environmental legislation developed, together with approaches to evaluate emissions as being a risk for regulatory intervention and third party damage claims. This development was also hoisted by the major and well known environmental catastrophes with repercussions in the financial sector (Exxon Valdez, Sandoz, Bhopal etc.). More recent rating instruments includes criteria for assessing the environmental management of the company as the link to future compliance. These approaches evaluate the presence and quality of the company's EMS, environmental policy, audit process, environmental targets, etc. A division can be made between methods primarily concentrating on environmental risks and exposures, and those which do not. The first type are sometimes labelled *environmental risk rating* methods. Environmental risk can be said to represent an aggregate of individual risks: regulatory, technological, operational and event risk. These environmental risk rating systems which have been developed primarily for banks and insurers consider two elements (Lascelles, 1993):

- How large are the company's environmental liabilities and costs?
- How able is the company in dealing with them managerially, and financially?

The other approach is to take into account environmental parameters without an obvious and direct link to risk (at least within a short time), having an ethical dimension, e.g. dependency on petroleum oil, nuclear energy or other issues which would depend on the rater's values and perceptions of sustainability. Sometimes these rating systems also include non-environmental ethical issues such as charitable giving, workplace or gender issues.

Interestingly the actual product/service of the company is one of the rarer dimensions of rating schemes. The approach assesses the environmental value of the product or service, and would reward products improving energy efficiency, waste management, recycling, etc. The dimensions on which products are assessed are in the majority of rating/ ranking instruments related to risk, such as in-going chemicals and product stewardship.

Some “hybrid” rating schemes combine criteria for environmental performance with criteria for financial performance. Thus, a “good” score for environmental performance would not be possible without the company also having a good financial performance.

5.3 Rating how? Methodologies

Rating methods can be categorised according to their assessment approach (or price!). One approach can be described as relatively superficial, often being desk based, enabling the assessment of a large volume of companies in shorter time, and at a low cost. Information used here must be easily and publicly available, e.g. companies’ environmental reports or authority registers. Conclusions can also be drawn directly from the industry sector to which the company of interest belongs. The other assessment method is much more complex and involves several steps, such as on site investigations, interviews with the management and expert consultations. This method is time and labour consuming and therefore expensive.

Categorisations could also be based on the type of information used for rating. An approach mentioned is to use the material provided by the company of interest, such as environmental reports and other publications. Often mentioned is also publicly available data, as required by authorities, for example on penalties for environmental offences, and emission registers. The use of questionnaires, where companies are asked to answer a set of questions formulated by the assessing organisation, is widespread. The outcome of this method obviously depends on the design of the questionnaire. A certain questionnaire exhaustion among European companies has also been reported by Urresti (1996). This may reduce the credibility of questionnaire-based assessments.

The approach in dedicating scores to the companies in the rating varies from simple figures, e.g. -5 to 5, where 0 indicates compliance with environmental legislation; descriptive comments; pass/ fail systems; to parallels to the credit rating system (C to AAA). Combinations do occur.

5.4 Rating for whom?

There is still not much specialisation in the field of rating/ ranking: most instruments seem to be targeting a wide group of clients. With few exceptions the majority of system managers list lenders, investors and fund managers, financial or business analysts and insurers as potential users. Some also mention the corporations themselves, environmental NGOs, environmental local authorities, environmental consultants and lawyers, purchasing organisations and the public.

5.5 Who rates?

Rating/ ranking systems are developed by various individuals and institutions. They can be divided in seven categories:

1. Independent and semi-independent agencies
2. Rating for environmental funds or portfolios
3. Academic institutions
4. Governmental organisations

5. Business organisations
6. Information providers
7. Corporations

5.5.1 Independent and semi-independent rating agencies

The most obvious rater is perhaps independent rating agencies, companies that market and sell their rating as a service. Such services could also be semi-independent, where a system is developed for a main client, but the ratings are commercially available for others. Environmental consultancies are well represented in this category of raters.

5.5.2 Rating for environmental funds or portfolios

A common approach among investing houses with a substantial percentage of environmental investment services, e.g. environmental funds, is to have an in-house environmental analysis department to conduct the research and the rating of corporate performance. Ethical or environmental funds or portfolios need a system for deciding whether a share should be incorporated or not. This is done by adopting criteria, which can be negative, positive, or both. There is often a degree of overlap between ethical and environmental criteria. The list below, which by no means is exhaustive, presents some of the approaches and methodologies used by environmental portfolio managers.

5.5.3 Academic institutions

A number of academics have developed rating/ ranking systems, encompassing the factors these individuals believe such as system ideally should. In general these systems are not commercially available.

5.5.4 Governmental organisations

A few governmental organisations are worth mentioning here. Their aim is not primarily to rate corporations environmental performance, but to evaluate environmental impact on a national level. These efforts are often continued by calculating to what extent each industrial sector is contributing to the country's identified environmental problems. From these exercises the individual corporations negative environmental impact, and thus performance, can be, and sometimes is, estimated, resulting in rating/ ranking lists.

5.5.5 Business organisations

Certain business organisations have shown interest in developing systems for measuring and evaluating environmental performance. Three initiatives will be presented.

5.5.6 Information providers

A subgroup among rating agencies consists of agencies which do not perform the rating themselves, but provide information enabling rating. There is only one agency truly belonging to this category.

5.5.7 Corporations

Corporations having developed rating systems for mainly their own, internal use are for example the Swedish forest industry. These are essentially sets of performance indicators used to compare the performance of the company's different industry sites. Other company rating initiatives are used to differentiate between various suppliers and subcontractors. No such initiatives are presented in this report.

5.6 *Five levels of sophistication or depth of analysis in rating*

From what has been said above on developments and categories of rating/ ranking systems, five different levels of ambition can be described:

1. Systems concentrating on a single technical issue, e.g. land contamination
2. Systems assessing liability; compliance with environmental regulations, risk of claims for damage
3. Eco-efficiency systems; assessing the product's, process's and management's efficiency in use of resources
4. Systems which set out to also include the companies' strategic abilities and potentials
5. Systems incorporating dimensions of all the above, but which also take sides; i.e. have an enviro-ethical aspect.

Below is a list of systems developed for rating/ ranking of corporate environmental performance divided according to the above categories. The list attempts to give the following information on each system: name of system and operator, country of origin, operator category, main approach, field of assessment, criteria used, information used, weighting (if any), assessment scores, and targeted clients. For sake of completeness, systems in operation as well as systems not yet launched (though often referred to) are included.

5.6.1 **Single issue systems**

Benchmarking U.S Petroleum Refineries, The Environmental Defence Fund (EDF), U.S. NGO. Ranking environmental performance of 166 oil refineries. Publicly available data on toxic waste generation and pollutant release was normalised by refinery capacity to adjust for size (Ditz & Ranganathan, 1997).

ContamiCheck, Environmental Auditors Ltd, West Sussex UK

Consultancy. "An indispensable first stop review of site history and the potential for contamination". A review is based on large scale maps detailing high and medium risk areas, completed with information from statutory, non-statutory and historical sources. The sources include a variety of data sets and other information from authorities. ContamiCheck also employs data from the SYBERR (see below) database. Rates 23 different environmental elements on a site-by-site basis. Primarily used for land and property transaction screening.

5.6.2 **Liability systems**

Assessment of Pollution Risk, Loss Prevention Council, UK

Procedure designed to provide UK insurers with a framework for developing pollution risk assessment systems, "suitable for liability cover". Loss Prevention Council is supported by insurance industry through Association of British Insurers and Lloyd's. Two main areas are considered:

- the risk of a pollution incident occurring on a site, which will be a combination of the probability of the incident occurring and the quantity of material released;
- the off-site consequences of the incident.

These aspects are obviously interlinked, but are assessed separately. The procedure is divided into four levels:

1. Proposal form; basic question on industry type, location of sites and management systems.

2. Questionnaire; detailed questions on aspects of management of processes at sites to identify those that have a high degree of risk and where a surveyor site visit may be required. At this stage an off-site assessment should also be initiated. The off-site assessment takes into account geographical, economic and social factors.
3. Insurance surveyor site survey; checklists designed to provide information about the client's environmental performance.
4. Environmental consultant site investigation, appropriate if the earlier assessment levels indicate high risk of pollution incident.

The assessment results can be used in a risk assessment matrix to allow comparison of degree of hazard (low; medium; high) with an estimate of the competence of the management to control the hazard (excellent; average; poor). With regards to the off-site assessment, LPC has initiated development of a Geographical Information System called Pollution Hazard Estimation System (PHAZES). It utilises national environmental data to provide insurers with information on the susceptibility of the air, groundwater and surface water pathways to different types of pollution incident. (Loss Prevention Council, 1997)

ECCO-CHECK Index, Environmental Risk Rating Ltd., Surrey UK

Not in operation. Consultancy. Described as a fully commercial index of corporate environmental performance in Europe, with the aim to provide definitive information about a company's potential liability under key elements of site specific UK legislation. Originally designed in association with credit risk rating agency. It uses a broadbrush approach, giving a quantitative base for rating public source information, legislation and commercial standards. Assessment based on two elements: inherent risk attaching to process, and evidence of management probity in operating the company. Currently efforts are made to incorporate criteria for sustainable management. The potential number of companies in database is said to be 850 000. The information sources would be almost exclusively from public domain, or which could be independently corroborated, e.g. public registers with Environment Agency or Local Authority Environmental Health Offices, waste handling registers, records of prosecution for polluting events, EMAS verification records, definition of polluting industrial processes with pollution risks in national and EC legislation. Database based upon a questionnaire challenge, followed by the issue of an unsubstantiated report on which the company is invited to comment. At this stage the report is filed for sale to the general market. The environmental index would have pursued the same process and would have been renewed annually. Two sets of scores: to reflect categories of inherent risks (A for low, B for medium and C for high risk); and for management or operational performance (4 for no response to questionnaire), 3 for response but no information, 2 for an EMS in place, and 1 for a sustainable company). An "E" indicates a polluting event and successful prosecution in the last three years. E2B would be a company with medium risk, an EMS in place, but with a successful prosecution for a polluting event. System has not yet reached commercial production, but aspects of the concept is used for work with local authorities. Coverage: whole industrial sector. Targeted users: banks, insurance companies, purchasing organisations, local authorities, business analysts, academic researchers.

Fortune Environmental Scorecard, Fortune, USA

The newspaper Fortune evaluated 130 of America's largest manufacturing companies. 30 were selected ranking from zero (worst) to ten best) in 20 key performance areas. The areas were weighted according to importance, i.e. amount of toxic releases and percentage reduction of those releases; comprehensiveness of environmental programme; violations of environmental laws carrying large fines and penalties; and ratings by credible environmental

groups were given most importance. Other areas were clean up responsibility; reuse of recycle of waste; participation in EPA voluntary programmes. Main data source U.S government, investment firms (i.e. Franklin's), CEP; and expert interviewees (Fortune, 1993).

Method to identify and measure corporate environmental contingencies, Environmental Assessment Group Limited, London UK

EAG Ltd is a commercial consultancy which recently developed a system to estimate costs associated with remediating contaminated land and claims from third parties for environmental damage. The site-based methodology includes evaluation of the following fields: land portfolio identification; ensure phase 1 information is available for all sites (e.g. previous uses of the site); initial risk assessment of each site using the phase 1 results; phase II site investigations for high risk sites; estimates of remediation costs at sites with strong likelihood of contamination; estimate third party costs using population densities and estimated claim sizes; actuarial assessment and contingent valuation; management actions (insurance policy, charge to profits, remediate site).

Targeted users: any owner or claimer to land with potential contamination, such as financial lending institutions, banks or pension funds with large land portfolios.

System Based Environmental Risk Rating (SYBERR), London UK

System developed by Risk & Opportunity Intelligence (R.O.I) and Environmental Auditors Ltd (EAL). Broadbrush approach: industry sector expert opinion; correlation with financial database (Dun & Bradstreet). No site specific information. System combines credit and environmental risk ratings on over 330 000 businesses. Details from UK National River Authority and Her Majesty's Inspectorate of Pollution (HMIP) prosecutions have been included, as well as other financial performance measurements. The question of potential environmental liabilities and costs is addressed by assigning one of four ratings (minimal; low; above average; significant risk) associated to each business sector using the British Standard Industrial Classification (SIC Code). Ratings formed using expert opinion of six environmental assessors based on the processes and materials handled per sector. Database information (National Rivers Authority, Her Majesty's Inspectorate of Pollution) is considered on an ongoing basis. The question on the company's financial ability to deal with its potential liabilities is addressed using a credit information database.

Operator and Pollution Risk Appraisal (OPRA), HMIP UK

Governmental organisation initiative. British Her Majesty's Inspectorate of Pollution has developed a system for identifying areas targeted for environmental improvements. The system rates seven management performance elements ("Operator Performance Appraisal") and seven elements of pollution hazard ("Pollution Hazard Appraisal") related to specific site within a company. Each factor is given a weight reflecting HMIP judgement of relative importance. It is applicable only to UK processes requiring IPC permits. The system is intended to improve HMIP effectiveness in regulating leading to reduction in pollution and encouraging good environmental management within industry in general (Costaras, 1996).

5.6.3 Eco-efficiency systems

International Environmental Rating System (IERS), Det Norske Veritas (DNV)

The IERS is described as a tool to measure the quality and effectiveness of environmental management, consisting of a management and audit protocol providing a framework for recognising achievements in relation to standards. Two aspects of environmental management are assessed: the management system, and the development activities. The company is

assessed for its respective fulfilment in percent of 16 possible management activities to create a company environmental profile. The activities are: Leadership and administration; Environmental issue identification; Environmental programme; Performance monitoring and assessment; Emergency preparedness; Operational Permits and controls; Training, Investigation of undesired events; Planned inspection and maintenance; Engineering and change management; Personnel communications; Environmental awareness; Relations with external parties; Materials and services management; Product stewardship; Management system evaluation.

Investor Responsibility Research Centre (IRRC), Washington DC USA

Information provider, product enabling rating. Independent non-profit research firm which offers environmental information service. Produces a Corporate Environmental Profile Directory consisting of a series of indicators of emissions (total weight of corporate Toxic Release Inventory emissions), volume of oil spill, volume of chemical spill, hazardous waste (number of Superfund National Priority List Sites), compliance (punitive fines for environmental non-compliance), environmental litigation (number of disclosed environmental litigation incidents) normalised by considering 'environmental risk per unit revenue', enabling comparisons of companies of different sizes. Directories also include information on EMS, environmental policy, projects and targets. For each environmental indicator a revenue-weighted industry average has been derived based on all companies included in an industry sector of Standard & Poors listing. All indicators include data for subsidiaries. Data is quantitative; rating to be made by client. Data compiled from government records and financial information (Form 10-K) from company financial reports.

Targeted users: Institutional investors, boards of directors, government agencies, consultants and law firms.

5.6.4 Strategic systems

Council on Economic Priorities (CEP), New York USA

CEP is a public service research organisation, assessing not only environmental but also other ethical factors such as charitable giving, community outreach, family benefits and workplace issues. The environmental aspect involves concerns and risks, as well as accomplishments and efforts of corporations to improve their environmental performance. 13 areas of corporate environmental performance are evaluated: releases, policy, packaging, office recycling, raw materials/waste, toxic reduction, community impact, energy conservation, natural resources, accidents, Superfund sites, compliance and environmental technologies. The information used is provided by the company, and/or a questionnaire. Companies are rated based on weighted average of performance in categories 1-13, and on size/type of industry. Rating A to F (outstanding-poor performance).

Targeted users: Ethical investors, environmental NGOs, lawyers, environmental consultants, corporations and the public.

CSFI Environmental Risk Rating, Centre for the Study of Financial Innovation, London U.K.

Academic product, not commercially available. The non-profit think-tank CSFI has for experimental purposes developed an instrument for rating environmental risk (defined as the risk of financial loss from environmental factors such as accidents, claims for damages, fees, financial commitments, politically or consumer related events and inferior management). The instrument has been applied to a Scottish nuclear power station. An expert panel identified

eleven environmental risk factors, e.g. regulation, dismantling, security, radioactive waste, suppliers, management, business opportunities and financial status. The possibility of taxes or regulations on fossil fuels was identified as a positive factor. The experiment used a time perspective of ten years, and each risk factor was weighted partly according to its probability of realisation, partly from its potential effect and consequences. Information from site audit and interviews with management and staff. Assessment given from AAA to C.

Eco-Corp Rating, Eco-Rating International (ERI), Zurich Switzerland (main office)

Consultancy. ERI was one of the earliest raters, and has developed various environmental assessment instruments (Eco-Agro Rating EAR, Eco-Tech Rating ETR, Eco-Product Rating EPR etc.). The Eco-Corp Rating is founded on a qualitative/ semi-quantitative assessment scheme, based on an LCA approach. It “takes the entire spectrum of a corporation’s activities into account”. An ECR could consist of a weighted aggregation of the phase-specific ratings mentioned above, combined with ten criteria: environmental impacts, logistics, infrastructure, product/service eco-profile, legal compliance, R&D, management and “soft issues”. Based on questionnaires, checklists, on-site visits and inspection “balanced by in-depth scientific appraisal along with a certain degree of subjectivity”. Scores -5 to +5 are given, but also gives interpretation with the rating.

Mainly in demand for financing of innovative small cap companies (venture capital investments). Targeted users: Financiers, brokers and consultants, public authorities, communication and marketing consultants.

Eco-Risc '21, Innovest Group International

System not yet launched. Investment decision support tool developed by a consortium of three partners: the Innovest Group Int. S.A, Coopers and Lybrand L.L.P., and Vista Environmental Information Inc. Attempts to balance the level of environmental risk with the companies’ managerial and financial capacity to manage that risk in the future. Three main types of environmental risk factors:

1. Historical liability, ongoing risk from past actions
2. Operating risk, arising from current operations
3. Sustainability and eco-efficiency risk, potential undermining of company’s material sources of long-term profitability and competitiveness.

Assessment in two parts: I quantitative on levels of environmental risk and performance in relation to competitors, indicators being:

- Historical environmental risk profile of the company’s industrial sector.
- Number of Superfund sites relative to the industry average.
- Officially estimated capital cost of remediation and clean-up liability exposures, relative to industry averages.
- Ratio of environment-related fines to revenues, relative to industry averages.
- Concentration of high-risk products in company products portfolio
- Site specific emissions data on individual plant sites.
- Corporate budget allocation for environmental protection and R&D.
- Adequacy of environmental insurance cover.

II Qualitative factors, assessing the companies ability to manage environmental risk in the future risk (based on expert opinion):

- Adequacy of board-level mechanisms for environmental reporting and management
- Company wide environmental management capability
- staff resource commitment to environmental management

- environmental audit capacity, frequency and transparency
- environmental cost accounting and measurement systems
- adequacy and universality of staff training on environmental risk management
- capacity to manage supplier relations for environmental performance
- environmental innovation capacity
- mechanisms for corporate reporting for environmental performance
- integration of environmental performance with staff compensation and
- potential for successful commercialisation of environmental R & D.

Information from over 75 separate authoritative US environmental data bases. Assessment in scales AAA to C. Target users: institutional investors, insurers, venture capital companies, industrial companies, commercial banks, investments banks, professional service firms (lawyers, environmental consultants).

EIRIS Services Ltd, London UK

EIRIS is subsidiary of the Ethical Investor Research Service, a registered charity established with the help of a group of churches and charities. These groups needed a research organisation to help them apply their ethics to their investments. EIRIS aims are “to provide information on a wide range of issues to help concerned investors apply positive or negative ethical and social criteria to investments; to identify forms of investments which meet certain non-financial requirements on the part of the investor; and to promote a wider understanding of and debate on corporate responsibility”. Assesses UK and European companies against more than 30 ethical criteria, of which those environmentally related are greenhouse gases, health and safety convictions, nuclear power, ozone depleting chemicals, pesticides, tropical hardwood, water pollution and environmental initiatives. Seven possible environmental initiatives are investigated: the companies environmental communication, support for the ICC Business Charter, EMS certification/registration, accredited energy efficiency scheme*, success in environmental award schemes*, develop or make direct use of UK renewable energy sources*, sponsorship of UK conservation projects* (*applies to UK company Groups only). Information used is Annual Reports, CERs, ACCA, ICC UK, Confederation of British Industry Environment Business Forum, and authoritative registers. Several British ethical funds use the corporate assessment from EIRIS, e.g. Abbey Life Ethical Trust, Scottish Equitable Ethical Fund, TSB Environmental Investor Fund and Friends Provident Stewardship Trusts and Fund. EIRIS information services is also obtained, and sold by independent financial advisers, such as Global And Ethical Investment Advice (GAIEA).

Environmental and Financial Action Transformation (EFACT) rating system, New Consumer Institute, Illinois USA

Academic product, not a commercial system. New Consumer Institute is an international research organisation focusing on environmentally sound and socially responsible practices. NCI has developed a 20-point scoring method to indicate how well an organisation performs according to a number of criteria. It is presented as an initial assessment gauge which can identify trouble areas and suggest areas of improvement. The system reviews the following:

- Environmental policy statements. Written objectives (2 points).
- Environmental management action. Implementing working programmes (4 points).
- Environmental management programs and investments. Expenditures, should produce savings (4 points).
- Energy-efficiency programs (2 points).
- Corporate responsibility and citizenship. Labour and community relations etc. (2 points).

- Socially enhancing factors. Nuclear or armaments production, tobacco etc. (2 points).
- CERES signatory. Highly weighted because of accountability clause (4 points).
- Quality product and consumer information. Independent trade and consumer groups ratings (2 points).

Companies highest in the EFACT rating were Merck, McDonalds, HJ Heinz and Quaker Oats, each scoring 16 points.

Environmental Performance and Shareholder Value, World Business Council for Sustainable Development (WBCSD)

Business organisation initiative, not commercial product. Based on findings of a working group composed of 40 business and financial experts from WBCSD member companies. Lists four key issues which should be considered by a financial analyst, as well as a company (Blumberg *et al.*, 1997). For each issue, a set of questions to “help interested parties to evaluate the environment’s impact on shareholder value” are given.

Strategy and Vision

- Question examples: Does the company have a global environmental policy?
- Is there an environmental program with objectives and measures to monitor and ensure progress?
- How is progress measured against the main environmental problems and opportunities of the company?

Operational Fitness

- Question examples: Is there an organisational and functional chart of responsibilities?
- What environmental and certification systems are in place?
- Does the company conduct periodic health, safety and environmental audits?

Product/ Services and Markets

- Question examples: Are environmental criteria part of the company’s approach to product stewardship?
- Are negative side-effects assessed during the life-cycle of products?
- Does the products help customers to reduce environmental impacts?

Stakeholder Satisfaction

- Question examples: What, when and to whom does the company report?
- Does it provide specific information to investors?
- Does it communicate on environmental drivers?

No guidance on how to interpret the potential answers to the questions are given. Due to the high status of the organisation, the report and its recommendations can be expected to have substantial influence on future developments of rating methods.

Methode CI, Centre Info Suisse, Fribourg Switzerland

Assess environmental performance of (currently only) Swiss companies using 22 environmental criteria belonging to four groups: strategy (six criteria), management (seven), production (five), and products (four). There is a supplementary criteria in each criteria group for particular events, enabling assessment of circumstances not covered by other criteria. The assessment process is completed by a criteria on global environmental responsibility, a function of the company’s sector level and general attitude of environmental aspects. The

method also includes 22 social criteria, grouped in six categories. The CIS assessment is based on four general principles:

- Companies are assessed on a world-wide basis, including all subsidiaries.
- The fields of evaluation are defined in advance (and may vary with industry sector, country or region of operation).
- Actual, rather than circumstantial or advertised changes are assessed.
- Formal aspects such as certification *can* be an advantage, but do not automatically result in a better score.

For the main part of the assessment criteria, a series of indicators are elaborated which can be either quantitative and qualitative. Examples of environmental indicators are the company's signing of a Chamber of Commerce environmental charter; the existence of environmental report; and the certification of an Environmental Management System. The use of environmental and social indicators is supplemented by fundamental strategic analysis to answer the question: has the company the necessary capacity to deal with the socio-economic and environmental challenges it faces? Information sources are specialist studies, measurements, but also NGOs, and company visits. Weighting: each criteria is given a weight from one to three, three indicating that the company is making a positive contribution to the sustainable development. Each group of criteria are to be equally important, and this is achieved through a mathematical operation. The resulting score is then corrected by the particular circumstances criteria, the global responsibility factor and the "management tendency". CI currently evaluates Swiss based companies, but are starting to work on European and international companies. The customers are mainly institutional investors (Spicher, 1997).

Sustainable Asset Management (SAM) Zurich, Switzerland

Independent/semi-independent. Serves as an in-house department for the investment company Sustainable Performance Group (founded by Swiss Re, Volkart Brothers Group and SAM), but also assess companies for external clients such as Credit Suisse Eco-Efficiency Fund. The approach is to "invests world-wide in companies which have committed themselves to sustainability: in companies which, thanks to the successful integration of their economic, ecological and social interests into the way they conduct their business, are able to recognize opportunities and risks early and thus create for themselves long-term, sustainable competitive advantages, and achieve above-average profitability." Two types of companies are targeted:

- Sustainability-Pioneers, companies which are highly innovative, dynamic, and active in new areas of sustainable business.
- Sustainability-Leader, companies which have created sustainable competitiveness advantages within their industry sector.

The assessment process includes the following stages:

1. Identification of sustainability issues, e.g. organic food;
2. Definition of sustainability scenarios for that specific issue and identification of its crucial aspects;
3. For each industry sector; identification of key factors for success and failure in relation to the sustainability scenario;
4. Identification of the leaders and pioneers of a particular industry sector, followed by a final company analysis.

The assessment fields are the companies' "sustainability chances" (it's strategic chances; product; corporate sustainability), and its "sustainability risks" (stakeholder exposure; environmental management; resource efficiency; strategic risks; sustainability costs). In total more than 100 criteria are used, all deducted from the scenarios. Companies involved with

production and distribution of weapons and arms; production and distribution of electric power from atomic energy are excluded from the analysis. SAM's research database includes information about 4,000 companies, of which 500 are analyzed in detail and 100 were directed to a qualifier list. The research is backed by a global information network consisting of a Strategic Advisory Board and a number of international Sustainability-Experts.

SBC Eco-Performance Investment Fund, Swiss Bank Corporation, Basel Switzerland

The Swiss Bank Corporation launched their Eco-Performance Investment Fund in June 1997. For the purpose of the fund, SBC rates a potential investment in three stages: an initial screening, followed by analysis of company documentation, and finally analysis of questionnaire response. Criteria in three fields are used: policy (or management), production (eco-efficiency) and products. The aim of the portfolio is to include both companies demonstrating above average commitment to the environment (companies which progressively raise their eco-efficiency, called *eco-leaders*) and whose products show a high degree of resource efficiency (future oriented companies supplying products or services that contribute to meeting a particular need with the highest possible resource efficiency, called *eco-innovators*). Assessment emphasis on environmental management for the "eco-leaders", and on utility for "eco-innovators". Information from CER, questionnaire, newspapers, journals and databases (external media office).

Storebrand-Scudder Environmental Value Fund, Oslo Norway

In 1996 Norwegian insurer UNI Storebrand initiated the Storebrand-Scudder Environmental Value Fund. The fund uses two indices: a Sustainability Index and a Financial Index. The Sustainability Index consists of nine indicators: global warming contribution; ozone depletion impact; toxic emissions; material efficiency; energy efficiency; water efficiency; product characteristics; quality of environmental management and environmental liabilities. The Sustainability Index is a weighted average of these indicators, where the weights used are based on the relative importance of each indicator for a particular sector. The supplementary Financial Value Index consists of three elements: balance sheet; accounting quality; and earnings stability, intended to measure the financial strength of a company relative to a global universe. The targets are to yield better than the Morgan Stanley World International Capital Index, and through the investment strategy contribute to a sustainable development (Knight & Storebrand-Scudder EVF Research Team, 1997).

Top50-project, Hamburger Umweltinstitut, Hamburg Germany

The Hamburger Umweltinstitut is a registered, independent, non-profit organisation for scientific research on environmental solutions. The Institute's Top50-project conducted in co-operation with CEP (see above) and Ecological Lifestyle Encouragement centre, Tokyo, evaluated the environmental performance of the world's 50 largest chemical and pharmaceutical companies by world sales. The following topics were assessed, with respective weightings:

- environmental policy and its implementation in the strategic long-term goals, 10%
- world-wide standards equivalence, 10%
- internal management organisation, 15%
- sustainability of products, 15%
- process optimisation towards sustainability, 15%
- information policy, 10%
- management of waste and discarded products, 10%

- environmental accident prevention, 5%
- contaminated sites remediation, 5%
- external environmental activities, 5%.

Number one in the 1996 HUI-ranking is US company Johnson & Johnson (reaching 295.5 points out of 500), followed by German Henkel KGaA, US 3M and Procter & Gamble. Assessment is based on company questionnaire and comprehensive research. The study “wants to support those persons within industry who show commitment to environmental matters”. The ranking also provides a decision tool for potential investors, customers and future employees.

The Index of Corporate Environmental Engagement, Business in the Environment, London UK

Index rating from ten key attributes of environmental management based on company self assessment. The survey is “designed to test how far companies have equipped themselves with the tools to minimise their impact on the environment.” No weighting. Parameters:

1. Corporate environmental policy (three possible levels of engagement, “No”, “Yes, but not published”, “Yes and published”, scores ranging from zero to one).
2. Main board with environmental responsibility (two possible levels, “No”, “Yes”).
3. Formal environmental management system (four possible levels).
4. Environmental objectives (three levels).
5. Measurable targets (four levels).
6. Internal audit process (five possible levels).
7. Environmental stewardship of products, processes and services (four levels).
8. Employee environmental programme (four levels).
9. Supply chain programme (four levels).
10. Environmental communication with stakeholders (four levels).

The definitions for parameters 3, 4, 5, 6, 7 are from EMS’ BS 7750 and EMAS. The Index gauges the extent to which companies are systematic in addressing environmental challenges by ranking them into five levels reflecting their achievement of environmental impact management “building blocks”, but does not measure actual environmental performance or impact. The Index was applied to FTSE 100 companies in 1996, and was repeated in 1997. (Business in the Environment, 1996, Boulton, 1998).

The Safety and Environmental Risk Management Rating, SERM Rating Agency Ltd, Surrey UK

Provides an “independent and dynamic overview of a company’s ability to manage the physical hazards arising from its operations, measuring the potential impact of safety and environmental incidents upon a company relative to its financial strength”. Based on a mathematical model which takes into consideration the total cost of any potential incident and the likely effectiveness of the company’s existing risk management system in avoiding or mitigating any such incident. A company’s environmental risk is researched in two ways - by publicly available information and from site and head office visits and interviews. Sources of public information: company’s own publications, relevant newspaper and articles, information from standard electronic databases. The output is an alphabetical rating and a detailed report. An update is conducted twice-yearly. Factors considered are key hazards, transport and distribution management, waste management, use of contractors, supply chain, direct costs such as compensation, plant rebuilding, clean-up costs, indirect costs (such as loss of reputation from protest boycotts, damaged relationship with local authorities, lenders and investors etc., poor employee morale, safety concerns) assessed in financial terms, added and

adjusted by probability factor assuming average management system and implementation. Management systems and implementation, including lines of communication are evaluated and given scores, used to derive a residual risk for each area of concern. Preliminary conclusions submitted to a specialist panel comprising of the project team together with some external experts to ensure consistence of rating. Total residual risk calculated as percentage of market capitalisation, converted to a rating on 27 point rating scale from AAA+ to C-, analogous to credit ratings. Targeted to insurers, lenders, shareholders, and corporate sector.

ökom Environmental Rating System, Öko-Invest, Munich Germany

System rates primarily smaller German companies. Assessment of three fields: environmental management; product and service development; environmental data. Weighting: first field 25%, second field 50%, third field 25%. Each field assessed from -5 to +5. Grade 0 equals compliance with environmental regulations. Also rate single companies. Has recently developed a system to produce environmental profiles for larger companies, on request by Union Bank of Switzerland. Information from 30 page questionnaire combined with analysis of company reports; interview with managers; external party assessment. Clients consist of institutional investors, main client oeco capital live insurance company Munich. Targeted users: Investment funds, insurance companies and banks, shareholders and consumers, companies and consultants.

5.6.5 Systems including enviro-ethical dimensions

Clerical Medical Evergreen Fund, the Evergreen Trust, UK

Invest in companies where a “major part of their operations is making an important contribution to environmental improvement”. Seeks to avoid companies involved in production, sale, distribution of fur products; cosmetics involving animal testing; manufacture of ozone depleting chemicals; supply of tropical hardwood; production, processing or sale of meat products. Negative list further include involvement in armaments, repressive regimes, gambling services, tobacco products, production or distribution of pornography. Information on UK companies obtained from EIRIS.

Index of Environmental Friendliness, Statistics Finland/EUROSTAT

Governmental organisation initiative, not commercial. Ranking of Finnish companies as main contributors to six problem indices: Greenhouse effect; Ozone depletion; Acidification; Eutrophication; Ecotoxicological effect; and Resource depletion (Puolamaa *et al.*, 1996).

Jupiter Tyndall Merlin funds, (subsidiary of Jupiter Tyndall Group PLC), UK

Fund management services, eight UK unit trusts, eleven investment trusts specially created to pursue environmental and financial objectives. Very substantial investment criteria. Fund manager ask companies to report in detail on their environmental and social performance. Analyse of environmental and ethical information received by companies and conduct additional research from other sources to build up complete picture in which a green evaluation can be made. Avoid companies deriving more than 1% from oppressive regimes, or the arms, nuclear or tobacco industries. Aim to strike a balance between good and bad aspects of company activities and the emphasis of the fund is to encourage higher standards and the positive aspects of corporate behaviour. Push companies to respond beyond compliance to issue raised by the sustainable development agenda, and through the Merlin Resources Unit have the most proactive agenda. Assessment process in three stages:

1. Precautionary: is the company operating without excessive harm to the environment? Adverse attention from regulators, environmental NGOs or media? Socially useful products. Ethical criteria (animal testing, nuclear power, tobacco industry, minorities etc.). Information from short questionnaire, publications from the company, public registers, environmental NGOs, media, experts.
2. Further investigation. Involving direct contact, site visit, local experts, inquiries with environmental bodies. Sector studies of companies in same field.
3. Fuller profile analysis. Assessment of (a) management (targeting competence, system, stance, policies, focus, staff, monitoring, disclosure, procurement, community involvement); (b) process (targeting pollution, waste, energy, materials, transport) to evaluate proactiveness, radicality of own environmental criteria, willingness to invest in cleaner production, compliance with current regulation minimum; and (c) product (targeting environmental performance, environmental impacts, energy efficiency, life length, disposal, reclaimability/ recyclability, packaging and labelling).

Aim to find leaders in field, encourage performance review. No standard method for evaluation, checklists may assist, though integrity and management not quantifiable. Wants to be satisfied that corporate performance is good, and commitment firmly in place to maintain and improve performance. Building up database including files of companies in portfolios and other being tracked.

Kinder, Lydenberg, Domini (KLD) Corporate Social Rating Monitor, Cambridge USA

KLD supplies social research on US corporations to institutional investors. The firm is best known for the Domini 400 Social Index, a benchmark for socially screened equity portfolios, launched in 1990. Started with companies in Standard & Poor's 500. Three screens:

1. Exclusionary. Eliminate companies that derive two percent or more from weapon-related product or manufacturer of alcohol, tobacco, or gambling products and electric companies with interest in nuclear power plants or that derives four percent or more from nuclear power industry.
2. Qualitative. Eliminate companies facing substantial environmental controversies, and with a history of unstable employee relations.
3. Inclusive. Include companies with a positive record in environment, employee relations, community relations, products or particular social usefulness.

Firms with stock prices under \$5 per share are also eliminated, as firms with long term financial problems. Information from public documents, press, regulators discussions, company interviews, and other sources.

NPI Global Care funds, National Provident Institution

The British insurer NPI manages the Global Care family of environmental funds, consisting of two unit trusts and two pension funds. NPI is also a large institutional investor as an insurance company. Invests in industries which "offer solutions to environmental and social problems, such as healthcare, education, telecommunication, recycling, pollution control and renewable energy." Successful business "will have to be highly flexible and develop mutually supportive relationships with staff, suppliers and customer communities. They may also have to introduce new ways of working, including the innovative use of information and communication technologies. Successful businesses in the next century will minimise waste and shift their dependence to a renewable energy resources." The process to evaluate corporate social and environmental performance described as "complex", environmental concerns addressed in three ways: the first is called environmental insight; the second active dialogue and the third innovation. Companies with good environmental and social practices must also be financially

attractive. No investment will be made in a company unless it has good investment potential. Auditing system to monitor process of research and investment. Research team assisted by independent advisory committee, with the role to review portfolios and provide strategic advice on company research.

Oeko Sar Fund, Bank Sarasin & Cie, Basel Switzerland

The bank is assessing environmental performance for their own environmental fund (64 million DM), and has recently begun providing environmental assessment for a pension scheme. The assessment system is developed by environmental consultant Ellipson Ltd in Basel, and is the same as the system used by Norwegian UNI Storebrand (also designed by Ellipson). In a detailed seven stage selection procedure, four dimensions of environmental performance are evaluated: the product/service, the environmental strategy, the environmental management system, and the process. The companies are divided in three groups according to the potential environmental impact: high (e.g. an energy producer), medium and low (service sector companies). To be included in the fund, the company must attain a certain level, depending on impact group. Also, negative criteria is used: defence industry, nuclear power and nuclear power plant construction, gene technology, chlorine industry, agrochemical and automobile industries are automatically disqualified. The criteria used for the pension scheme is less strict than for the Bank's environmental fund. Certain ethical criteria are added: weapons industry, and gambling. The information used is CER:s, AR:s and other material from the companies, management interviews, a newspaper article database, information from environmental pressure groups such as Greenpeace, and a questionnaire.

Swedish Environmental Research Institute (IVL), Stockholm Sweden

Academic initiative. IVL has analysed industry sectors for their respective contribution to environmental problems such as climate change, acidification, eutrophication, ozone, waste, consumption of energy and transports. The evaluation is based mainly on information from Swedish EPA and the Statistical Bureau. To illustrate, the industrial sector Agriculture's contribution to climate change is 8.8 Mton CO₂ equivalents per unit of value-added. This corresponds to 15% of Sweden's total CO₂ load, and is 12 times more than the average for all Swedish industry sectors. Meanwhile, the steel sector produces 66 kton hazardous waste per unit of value-added, corresponding to 34% of the total Swedish hazardous waste production, 30 times the average. The method has also been implemented for individual companies. For this purpose, the company's environmental performance is compared to a benchmark of its industrial sector, and to the company's environmental performance in a historical perspective (Zetterberg, 1997).

The Natural Step Top 30-list

The Sweden based environmental consultancy The Natural Step each year produce a ranking list of the 30 companies best suited to be included in an environmental fund consisting of Swedish industries. The criteria against which the companies are assessed are four "system-criteria", essentially the thermo-dynamic laws (e.g. a systematic increase of substances from the earth's crust is a violation against one of the system-criteria). Three company-related issues are analysed: the industry's development and potential; the company's potential to meet future demands from clients and authorities; and the company's strategic approach.

5.7 *Experiences from and challenges in rating/ ranking*

5.7.1 **Why environmental performance rating? Potential benefits**

The potential advantages of using the various rating systems include (Hadley, 1996):

- Offering simple means of benchmarking companies, ideally both within and across industry sectors and even nation borders.
- Determining the size of a company's environmental risks in the context of the resources - both managerial and financial - available to deal with them, also allowing a company to allocate resources to bring the greatest environmental benefit.
- Providing a useful way of monitoring a company's progress over time.
- Enhancing the abilities of the financial sector to differentiate between levels of risk that have, until relatively recently, been indistinguishable. This would raise liquidity in the markets because bankers and investors would use the rating systems to discriminate on the basis of environmental risks and price them accordingly. Differential pricing would encourage the development of more innovative risk management techniques and specialist insurance for high-risk customers, funded by a higher premium on their borrowings or insurance. This could then pave the way for greater interest in companies which are perceived to be high conventional financial markets, as has happened to a considerable extent in North America.
- For a company that has invested heavily in new, cleaner technology and environmental management systems, it would allow obtaining recognition in the financial marketplace and to receive favourable discrimination when compared with competitors that have not made such investments.
- Enabling multinational companies to take political credit for their environmental awareness and inward investment in environmental performance - this is particularly important when companies are seeking new manufacturing sites around the world.
- Allowing financial institutions to satisfy their own stakeholders that proper and responsible actions are being taken to ensure that business is only transacted with environmentally sound companies.
- By raising awareness of environmental issues and the associated financial implications, the financial sector can promote improved environmental performance from its clients. This would reduce the need for costly (and often inefficient, as a static and non-continual pressure) regulation.

There is still not enough experience from assessing corporate environmental performance, or of using the results, to draw conclusions on whether these benefits actually are achieved from use of the current systems.

5.7.2 **Assessment focus**

The rating/ ranking systems that focus on eco-efficiency of companies are still fighting to prove the relationship between environmental and financial performance. The WBCSD report *Environmental Performance and Shareholder Value* (Blumberg *et al.*, 1997), which despite claiming there is such a link also lists three problems which adhere to the various studies of links between financial and environmental performance:

- The time-lag problem. Eco-efficiency as a component of company strategy is not a phenomenon which at yet is substantially spread.

- The measurement problem. No standard indicator of environmental performance exists.
- The isolation problem. The environmental dimension as a discrete component of share value is as yet not possible to isolate.

The list of criteria (or indices) in each instrument varies in length and detail, but the ambition - to identify potential environmental risks, and assess them - may be identical. It would be very interesting to test and compare the various approaches by letting them rate/ rank a number of (sham) companies, which of course should be identical. This exercise would be similar to accreditation of labs and their testing methods.

5.7.3 Generality

Most rating/ ranking systems target several types of financial players: investors, insurers, creditors, companies etc. To assess companies environmental performance is expensive whatever approach is used, therefore it makes sense to market the results to a broad group of potential users. This generality could be one of the causes for the low acceptance of the financial community: various dimensions of the systems do not seem relevant to a specific player group. For example, emissions on a site potentially pose varying financial repercussions to different financial users:

- for the bank the emissions could reduce the value of an asset, lead to failure of the company and its ability to repay a loan;
- to the insurer it could require covering legal and clean-up costs, while the exposure can be controlled by the setting of deductibles and limiting payouts;
- for the investor an event can result in the officer being held personally liable as well as loss of returns on the investment; and
- to the corporation it can result in poor publicity leading to loss of revenue, fines, expensive capital and insurance, with liability for damages and remediation.

To overcome this barrier, schemes for different target groups could be promoted.

5.7.4 Reliability of assessment methods

A crucial factor for the value of the rating is the information or data on which it is based. Is it reliable? Considering the problems of questionnaires (designing them so that they return filled in, not to mention correctly filled in, or filled in by the correct executive - and most importantly giving an input to the assessment process!), this is an interesting issue to which discussion is invited. And what is the value of an environmental report? Is it bold words, proof of real commitment, or a waste of resources that would have been better spent elsewhere? Furthermore, the information sources used by the various rating systems varies according to the country of operation. This means difficulties in developing an European wide system with different reporting standards and requirements.

A difficulty in environmental assessment is estimating the extent of potential environmental liabilities. These are depending on the outcome of national regulations which, in turn, may depend on imprecise scientific evidence or subjective value. A further factor is the timing of the expenditure, and third which polluter is liable.

5.8 Conclusions

There is a measure of subjectivity in all existing and planned schemes, including the ones claiming to be based on computer modelling or mathematical formulas. There will always be

an individual or group of individuals, with their personal set of educational backgrounds, professional experiences and values, having constructed some dimension of a scheme, e.g. the weighting method, having designed the questionnaire, analysing it etc. A certain degree of subjectivity may very well be inevitable, but the credibility for the practise of rating/ ranking would improve by increased transparency and increased quality of the input data.

6 Problems & Obstacles

6.1 Continuity

A prerequisite for benchmarking environmental performance is availability of continuous and reliable information. The sources for, as well types and continuity of information on corporate environmental performance varies according to country of operation. The different reporting standards and requirements means difficulties in developing European wide systems for reporting and rating/ ranking. An EC wide Pollution Emissions Register, modelled after the US Toxic Release Inventory (TRI) could here be useful.

6.2 Comparability

There are some important questions to consider when discussing communicating and comparability of corporate environmental performance. These questions are listed below:

- **How can different environmental problems be compared to each other?** For example, how does the environmental impact of one ton of CFC correspond to the impact of using one hectare agricultural land for industrial development? What should be prioritised? Despite this a few initiatives in this area have been taken, e.g. the previously mentioned *Index of Environmental Friendliness* by Statistics Finland/Eurostat Environment. Furthermore, the severity of environmental impacts may vary according to physical, social and economic factors. For example, the impact of SO₂ emissions may be worse in a region of acidic bedrock such as granite as compared to a region of limestone; or in a region where acidifying emissions are already abundant; the impact of effluents in a developing country without municipality water treatment facilities will be worse as compared to a situation were these effluents are treated in several steps before release to a water course (though this treatment may result in hazardous waste); and also impact on human health will vary depending on availability of health care and the population's general health status.
- **How can the environmental status or performance of different industrial sectors be compared to each other?** The direct environmental impact of a company in the service sector may always be less than those of a manufacturing company, but is this a true reflection of the potential capacity for environmental improvements that say, a bank, has as a source of funding for industrial activity?
- **How should industries of varying sizes be compared?** From their environmental impact per unit revenue, per employee, or per number of products? Some industries are especially negative on environmental performance indicators based on production.
- **Where are the system borders?** Certain companies will be able to achieve a better rating result because they have out-sourced some of their activities which they nevertheless are depending upon for their production. How should the environmental impact of a company's subsidiaries and suppliers be accounted for?
- **How should the extent of potential environmental liabilities be estimated?** These depend on the outcome of regulations, which, in turn, may depend on imprecise scientific evidence or a subjective value. A further factor is the timing of the expenditure and, third, which polluter is liable.

- **How reliable is the information or data upon which companies are assessed?** Many funds use questionnaires as a source of information, which brings several problems such as subjective interpretation of questions and answers.

The above difficulties are important to keep in mind also when planning future EEA actions with respect to corporate environmental performance communicating and rating/ ranking systems.

6.2.1 Comparability of data

Most large corporations now produce quantitative information on their environmental performance, but still only a few include standardised and normalised indicators to enable easy comparison between companies. The lack of comparability of the environmental performance data (as e.g. contained in corporate environmental reports) is a major obstacle for them actually being useful to stakeholders. Key environmental performance indicators need to be identified and agreed upon, at least on an industry wide basis. Not only must what is measured be standardised, but also how it is measured in order for data to be both comparable and reliable.

6.2.2 Comparability of corporate environmental reports

The differences between different industries and between individual companies will make it impossible for corporate environmental reports ever to be entirely comparable. There is also environmental reports being published both on site, national, regional, business unit and corporate levels. The progress made by large multinationals in the field of environmental reporting can in this respect even be a barrier for adoption of environmental reporting by SME's. They might feel that since they neither have the need or the means to produce a 20-40 page corporate environmental report, then environmental reporting is not for them. An environmental report for a multinational conglomerate with hundreds of sites should not be compared to an environmental report for an SME with only one site. A reporting framework with clear requirements and guidelines for environmental reporting on a site level might make it easier for SME's to adopt environmental reporting, since they can then do it more on the same terms as the multinationals.

6.2.3 Comparability of environmental rating/ ranking systems

It is also very difficult to compare different rating/ ranking systems. The ambitions of the assessments methodologies are not the same. There is also little transparency as to how the systems are built. This in itself leads to a low credibility for environmental rating/ ranking as a whole. Also, since the types of environmental impacts are numerous and of complex nature, they are impossible to assess by the same measurement. For obvious reasons, comparing aerial measures with weight measures is problematic. A comparison and weighting of different environmental problems, e.g. climate change against biological diversity, will inevitably be based on subjectivity. Furthermore, constructing uniform instruments of benefit to all users causes difficulties since the users purposes to a great extent differs.

6.3 Credibility

The credibility of both environmental reporting and environmental rating/ ranking is quite low, much depending on that they are not comparable and it is still not clear how dependable they are.

Credibility for environmental reporting can be improved by more openness and a balanced tone in the report. Credibility for environmental reporting will also be improved when it is a part of an environmental communication strategy that focuses on stakeholder dialogue, through which the boundaries of reporting are decided. Verification can also be a way to ensure credibility, but first standards need to be developed for verification and the qualifications of verifiers.

Current environmental ranking/ rating systems are generally considered inadequate, due to the fact that they are built on insufficient data for the system to be statistically considered reliable. More transparency as to how the rating/ ranking systems are constructed and availability of more complete, high quality environmental performance data would improve the credibility of environmental rating/ ranking.

Environmental rating has been widely perceived as a useful way of engaging the financial community's interest in environmental matters. But the financial actors are sceptic: the new environmental rating/ ranking services appear to have been developed in the belief that traditional players in the market *should* be looking at environmental performance. Once they realise this, they will buy the rating services. In the words of Schmidheiny & Zorraquín (1996) "this is definitely a case of product push, rather than market pull".

There is a need to encourage market pull, via leaders from the financial sector engaging in standard improvements. One way of achieving this could be via an 'EEA awards' for best ranking system funded by financial leaders.

7 Further development work

- Sustainability - what does it mean?
- EPI's for comparability and sustainability
- Mandatory reporting on site level
- Mandatory disclosure in financial reporting
- Rating practise too recent for regulatory initiatives

7.1 Sustainability

The concept of sustainability was popularised and defined by the Brundtland commission. As has been pointed out by e.g. Brooks (1992), the term “has a ring of scientific objectivity which can serve to legitimise various personal or group political agendas, overt or hidden, and thus has a rhetorical value in public discussions which is not matched by its operational usefulness. There is “still a challenge inherent in how to translate this concept into operational criteria for the choice of development strategies and for the selection and adoption of new technologies (...) the difficulties are multiplied when the enormous number of possible social, economic, technical, and cultural variables are brought into the picture, especially in the light of their complex interactions and interdependence.” Before trying to identify sustainability indicators and encouraging reporting and rating/ ranking on the basis of sustainability criteria, there needs to be a consensus on what is actually meant by “sustainability”.

7.2 EPI's for comparability and sustainability

There needs to be further development work in the field of environmental performance indicators. Key environmental performance indicators need to be identified at least on an industry wide basis. Industry has started this process by itself, but needs to be supported. Also, identifying and designing sustainability indicators is an important area where research should be focused. This could be achieved from combining corporate environmental performance indicators with result indicators of environmental and human health developed on national or regional levels. Efforts are currently being made to include this type of elements in national environmental accounting (so called greening of GDP).

7.3 Mandatory reporting scheme

A mandatory reporting scheme for certain key environmental performance indicators on the European level would not only facilitate the collection of data for an EC wide Pollution Emissions Register, but also provide the possibility for benchmarking. The possibilities for implementing such a system, perhaps as an extension of the current Eco-Management and Auditing Scheme needs to be explored fully.

7.4 Mandatory disclosure in financial reporting

European wide guidelines also need to be developed for how environmental issues are to be integrated into financial reporting. Here it is important to remember that it is not the environmental issues that need to be adapted to fit into the current financial evaluation

frameworks; it is the current financial evaluation frameworks that need to be adapted to take into account environmental and social effects if we are to achieve sustainability reporting.

7.5 *Rating practise too recent for regulatory initiatives*

The phenomenon of corporate environmental performance rating or ranking is far too recent to motivate any regulatory initiatives. The development of reliable instruments will be greatly supported through the standardisation and improvement of environmental performance indicators and environmental reporting as mentioned above. Also, an interesting project which could test the usefulness of existing rating/ ranking methods, and perhaps lead to a screening of them, would be to arrange for a number of anonymous companies to be rated by several different instruments separately, and then compare the results.

7.6 *Regulatory initiatives - how and when?*

It is important that government regulation of reporting does not impede, rather than enhance development of better reports by stifling innovation, as too detailed regulation might. The current *voluntary* environmental reports are developing year from year, but still leave much to be desired. It is too early for standardisation as there is as yet no consensus on how reports should be structured or what they should contain. New schemes like EMAS have yet to have their major effects and new legislation should be based on experience from their evaluation.

The real danger would be if there develops a patchwork of unrelated national regulations that would force multinationals to develop separate data-gathering structures for their mandatory national and voluntary corporate environmental reporting. This would be very costly and probably also inefficient. The international business community needs to exert its influence to ensure that national regulations are as compatible as possible. One way to ensure this is for the business community to involve both NGOs and governments when developing global standards, such as the ISO 14000 series, to ensure that they can be accepted as guidance also when developing national regulations.

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As can be seen from above there are several justifications for further developments in the area of assessing and communicating corporate environmental performance. The main objective should be to construct reliable, progressive, flexible and user-friendly instruments in order to promote improved environmental performance and to raise the financial sector's awareness of environmental issues and the associated financial implications.

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APPENDIX 1

UNEP's 50 reporting ingredients (UNEP, 1994)

<u>Management policies and systems</u>	26. Transportation
1. CEO Statement	27. Life Cycle Design
2. <i>Environmental Policy</i>	28. Packaging
3. <i>Environmental Management System</i>	29. <i>Product Impacts</i>
4. <i>Management Responsibility</i>	30. Product Stewardship
5. Environmental Auditing	<u>Finance</u>
6. Goals and Targets	31. <i>Environmental Spending</i>
7. <i>Legal Compliance</i>	32. <i>Liabilities</i>
8. Research and Development	33. Economic Instruments
9. Programs and Initiatives	34. Environmental Cost
Accounting	35. Benefits and Opportunities
10. Awards	36. Charitable Contributions
11. Verification	<u>Stakeholder Relations</u>
12. Reporting Policy	37. <i>Employees</i>
13. Corporate Context	38. <i>Legislators & Regulators</i>
<u>Input/Output inventory</u>	39. <i>Local Communities</i>
14. <i>Material Use</i>	40. <i>Investors</i>
15. <i>Energy consumption</i>	41. Suppliers
16. <i>Water consumption</i>	42. Consumers
17. <i>Health & Safety</i>	43. <i>Industry Associations</i>
18. EIAs and Risk Management	44. Environment Groups
19. <i>Accidents & Emergency Response</i>	45. Science & Education
20. Land Contamination & Remediation	46. Media
21. Habitats	<u>Sustainable Development</u>
22. <i>Wastes</i>	47. Global Environment
23. <i>Air Emissions</i>	48. Global Development
24. <i>Water Effluents</i>	49. Technology Co-operation
25. Noise and Odours	50. Global Standards
<i>Bold Italic</i> = Core Reporting elements	

APPENDIX 2

Public Environmental Reporting Initiative (PERI) Guidelines

Guideline Components

Each reporting organization may decide how, when, and to what extent to present the PERI reporting components listed below. No specific order of presentation is mandatory or encouraged. The recommended content to be included is as follows:

1. Organizational Profile

Provide information about the organization that will allow the environmental data to be interpreted in context:

- Size of the organization (e.g., revenue, employees)
- Number of locations
- Countries in which the organization operates
- Major lines of activity, and
- The nature of environmental impacts of the organization's operations.

Provide a contact name in the organization for information regarding environmental management.

2. Environmental Policy

Provide information on the organization's environmental policy(ies), (e.g., scope and applicability, content, goals and date of introduction or revision, if relevant).

3. Environmental Management

Summarize the level of organizational accountability for environmental policies and programmes and the environmental management structure, (e.g., corporate environmental staff and/or organizational relationships). Indicate how policies are implemented throughout the organization and comment on such items as:

- Board involvement and commitment to environmental matters
- Accountability of other functional units of the organization
- Environmental management systems in place (if desired, include references of registration under -- or consistency with -- any relevant national or international standards).
- Total Quality Management (TQM), Continuous Improvement or other organization-wide programmes that may embrace environmental performance.

- Identify and quantify the resources committed to environmental activity (e.g., management, compliance, performance, operations, auditing).
- Describe any educational/training programmes in place that keep environmental staff and management current on their professions and responsibilities.
- Summarize overall environmental objectives, targets and goals, covering the entire environmental management programme.

4.Environmental releases

Environmental releases are one indicator of an organization's impact on the environment. Provide information that quantifies the amount of emissions, effluents or wastes released to the environment.

Information should be based on the global activity of the organization, with detail provided for smaller geographic regions, if desired. Provide the baseline data against which the organization measures itself each year to determine its progress, and quantify, to the extent possible, the following -- including historical information (e.g., last three years, where available) to illustrate trends:

- Emissions to the atmosphere, with specific reference to any:
 - Chemical-based emissions (include those listed in any national reportable inventories, e.g., TRI in the U.S., NPRI in Canada, SEDESOL's Emissions Inventory in Mexico).
 - Use and emissions of ozone-depleting substances
 - Greenhouse gas emissions, e.g., carbon dioxide, methane, nitrous oxide and halocarbons
- Discharges to water (include those considered to be a priority for your organization).
- Hazardous waste, as defined by national legislation. Indicate the percentage of hazardous waste that was recycled, treated, incinerated, deep-well injected or otherwise handled, either on- or off-site. Comment on how hazardous waste disposal contractors (storers, transporters, recyclers or handlers of waste) are monitored or investigated by the organization.
- Waste discharges to land. Include information on toxic/hazardous wastes, as well as solid waste discharges from facilities, manufacturing processes or operations.
- Objectives, targets and progress made regarding the above-listed items, including any information on other voluntary programme activity (e.g., U.S. EPA 33/50 programme).
- Identify the extent to which the organization uses recommended practices or voluntary standards developed by other organizations, such as the International Chamber of Commerce, the International Standards Organizations, CMA, API, CEFIC, U.S. EPA, Environment Canada, MITI Guidelines, etc.

5.Resource Conservation

- Materials conservation

Describe the organization's commitment to the conservation and recycling of materials and the use and purchase of recycled materials. Include efforts to reduce, minimize, reuse or recycle packaging.

- **Energy conservation**
Describe the organization's activity and approach to energy conservation: commitment made to reduce energy consumption, or to use renewable or more environmentally benign energy sources, energy efficiency programme activities, reductions achieved in energy consumption and the resulting reductions achieved in VOCs, NO_x, air toxics and greenhouse gas emissions.
- **Water conservation**
Describe the organization's efforts in reducing its use of water or in recycling of water.
- **Forest, land and habitat conservation**
Describe the organization's activities to conserve or reduce/minimize its impact on natural resources such as forest, lands and habitats.

6.Environmental Risk Management

Describe the following:

- Environmental audit programmes and their frequency, scope, number completed over the past two years -- as well as extent of coverage. Indicate whether the audits are conducted by internal or external personnel or organizations, and to whom and to which management levels the audit findings are reported.
- Describe follow-up efforts included in the programme to ensure improved performance.
- Remediation programmes in place or being planned, indicating type and scope of activity.
- Environmental emergency response programmes, including the nature of training at local levels, frequency and the extent of the programme. Indicate the degree and method of communications extended to local communities and other local organizations regarding mutual aid procedures and evacuation plans in case of an emergency.
- Workplace hazards. Indicate the approach taken to minimize health and safety risks in the organization's operations, and describe any formal policies or management practices to reduce these risks (e.g., employee and contractor safety training and supervision, statistical reporting).

7.Environmental Compliance

Provide information regarding the organization's record of compliance with laws and regulations. Summary history for the last three years should be given. Additional detail should be provided for any significant incidents of non-compliance since the last report, including:

- Significant fines or penalties incurred (define in accordance with local situation, e.g., over \$25,000 in the U.S.) and the jurisdiction in which it was applied
- The nature of the non-compliance issues, (e.g., reportable, uncontrolled releases, including oil and chemical spills at both manufacturing and distribution operations)
- The scope and magnitude of any environmental impact
- The programmes implemented to correct or alleviate the situation.

8.Product Stewardship

This component defines "product" as the outcome of the organization's activity and is applicable whether an organization manufactures, provides services, advocates, governs, etc. In addition, the section is intended to focus on both the organization's activities in producing its products or services not addressed elsewhere in the guidelines and any activities associated with the "end-of-life" of products or services.

Provide information that indicates the degree to which the organization is committed to evaluating the environmental impact of its products, processes and/or services.

Describe any programme activity, procedure, methodology or standard that may be in place to support the organization's commitment to reduce the environmental impacts of its products and services. For example:

- Discuss technical research or design: (e.g., new products, services or practices, redesign of existing products or services, practices implemented or discontinued for environmental reasons, design for recyclability or disassembly, or redesign of accounting practices).
- Provide information on waste reduction/pollution prevention programmes from the organization's products, processes or services, including conservation and reuse of materials, and the use of recycled materials.
- Describe the organization's efforts to make its products, processes and services more energy efficient.
- Describe post-consumer materials management, or end-of-life programmes, such as product take-back.
- Detail customer cooperative or partnership programmes and their development: (e.g.; used oil collection and energy efficiency services).
- Describe supplier programmes and cooperative or partnership activities designed to reduce environmental impacts or add environmental value to the design or redesign of products and services.
- Include information regarding selection criteria for environmentally responsible suppliers and standards to which they must adhere.
- Identify the scope of the supplier certification process (e.g., all suppliers, major suppliers or those in specific sectors).

Other components:

- Specify product stewardship targets and goals, and comment on established procedures to monitor and measure company performance.
- Provide any baseline data against which the organization can measure its progress.

9.Employee Recognition

Include information regarding employee recognition and reward programmes that encourage environmental excellence. Comment on other education and information programmes that motivate employees to engage in sound environmental practices.

10. Stakeholder Involvement

Describe the organization's efforts to involve other stakeholders in its environmental initiatives.

Indicate any significant work undertaken with research or academic organizations, policy groups, non-governmental organizations, and/or industry associations on environmental issues -- including cooperative efforts in environmentally preferable technologies.

Describe how the organization relates to the communities in which it operates, and provide a description of its activities. For example, indicate the degree to which the organization shares pertinent facility-specific environmental information with the communities in which it has facilities.

APPENDIX 3

The CERES Report

The CERES Report represents the first attempt to produce a comprehensive and accessible environmental reporting format for corporations. Endorsers of the CERES Principles complete the Report on an annual basis, and in it disclose information vital to assessing the real environmental impacts of their corporations. The CERES Report is developing a standardized mechanism for enhanced environmental reporting, to establish criteria for the assessment of corporate environmental performance over time. This information is proving extremely useful for: Companies, to present an gauge their environmental performance accurately; Investors, to screen their investments better on environmental impact; and Individuals, to become better educated about corporations and the environment.

Information collected in the CERES Report should reduce corporate environmental degradation significantly by strengthening the importance of environmental impact as a measure of the strength of management systems.

CERES' efforts in this area are increasing dialogue and understanding between business, environmentalists and the public, to help transform an historically adversarial relationship into one of collaboration and mutual respect.

CERES provides two different formats of the CERES Report for different companies: the Standard Form and the Short Form. The Standard Form is designed with manufacturing concerns in mind, where use of chemicals, toxic substances, large quantities of resources, and complex production operations are a factor. The Short Form is intended for smaller or non-manufacturing companies.

A CERES Report comprises of an executive summary and twelve different sections:

Section I	Company Profile
Section II	Environmental Policies, Organization and Management
Section III	Materials Policy
Section IV	Releases to the Environment
Section V	Waste Management
Section VI	Use of Energy
Section VII	Workplace Health and Safety
Section VIII	Emergency Response and Public Disclosure
Section IX	Product Stewardship
Section X	Supplier Relationships
Section XI	Health, Safety and Environmental Audits
Section XII	Compliance

More information can be found in the "*CERES Report Help Guide - Instructions for Companies*", which available for download on the internet along with the report forms.

APPENDIX 4

WICE 1994 “Environmental Reporting - A Manager’s Guide”*Excerpt from Chapter 5: Possible Contents*

QUALITATIVE

1. Foreword by a Senior Responsible Person
2. Profile of the Enterprise
3. Environmental Policy
4. Environmental Targets and Objectives
5. Views on Environmental Issues
6. Community Relations

MANAGEMENT

7. Environmental Management Systems
8. Management of Environmental Risks
9. Office and site practices

QUANTITATIVE

10. Environmental Indicators and Targets
11. Use of Energy and Natural Resources
12. Compliance with Regulations and Permits
13. Financial Indicators

PRODUCTS

14. Products, Processes and Services
15. Giving more Information

APPENDIX 5

Excerpts with connection to environmental reporting from

**The ICC Business Charter for Sustainable Development
Principles for Environmental Management**

PRINCIPLES

1. Corporate Priority
2. Integrated Management
3. Process of Improvement
4. Employee Education
5. Prior Assessment
6. Products and Services
7. Customer Advice
8. Facilities and Operations
9. Research
10. Precautionary Approach
11. Contractors and Suppliers
12. Emergency Preparedness
13. Transfer of Technology
14. Contributing to the Common Effort
15. Openness to Concerns

To foster openness and dialogue with employees and the public, anticipating and responding to their needs about the potential hazards and impacts of operations, products, wastes or services, including those of transboundary or global significance.

16. Compliance and Reporting

To measure environmental performance; to conduct regular environmental audits and assessments of compliance with company requirements, legal requirements and these principles; and periodically to provide appropriate information to the Board of Directors, shareholders, employees, the authorities and the public.

APPENDIX 6

ACCA - Condensed criteria used by the panel of judges

1. **Environmental policies** (or reference to ICC, CEFIC, PERI, Responsible Care, identification of target audience)
2. **Management (commitment/systems)** (reference to environmental audits, reviews, EMAS, 7750 etc: management systems and structure)
3. **Narrative (impact of core business(es))** - the value of understandability
4. **Factual data (good + bad news)** at global and/or site level
5. **Historical trends (+ commentary and explanations)** at global and/or site level
6. **Targets** (again, global and/or site) preferably quantified so as to be capable of verification
7. **Performance against targets**
8. **Explanations of variances**
9. **Financial linkages:** financial statement links via cross-references or by inclusion of environmental data in the full financial statements or summary financial statements themselves
10. **Liabilities and provisions:** quantified liabilities and provisions (+ movements), accounting policies, Operating and Financial Review statements (MD&A), risk positioning
11. **Environmental Expenditures** - capital vs. Revenue expenditure, actual and likely spends
12. **External (meaningful) verification** - from auditor or consultant : consider scope of examination and form of report
13. **Sustainability** (some discussion of sustainability and the company's attitude to it)
14. **Life Cycle / Mass Balance / Eco Balance Sheet** - resource use, efficiency indices etc. Alternative methods of communicating the entity's environmental impact and commitments
15. **Extras (Computer discs, Internet availability, newsletters, videos etc.)** - do they add to/detract from/adequately substitute for - the overall environmental reporting package?

APPENDIX 7

Excerpt from the Deloitte & Touche
“Assessor’s Manual for the Analysis and Evaluation of
Corporate Environmental Reporting 1995”

Reporting Criteria

This manual is the instrument used by Deloitte & Touche Miljö to analyse and evaluate corporate environmental reporting in the annual reports and voluntary stand-alone environmental reports published for the benefit of shareholders and other stakeholders.

It is important to emphasise that it is the quality of the report rather than the quality of the environmental performance which is being evaluated, and so the criteria relate solely to reporting issues.

The evaluation consists of seven areas. These are discussed in general terms below with the maximum points for each area given in parentheses. A detailed description of each area can be found on pages 7-26 together with examples used as a basis for assigning a score for each criterion.

- 1. General:** This area, encompassing six criteria, deals, for example, with evaluation of the company’s description of its activities, reporting policy, limitations regarding the sites included, and the information contained in any audit or verification statement included in the report. (Max. 5 points)
- 2. Environmental Impact:** The area “environmental impact” comprises only two criteria, which mainly deal with how well companies have described the environmental aspects of their operations, the links between environmental issues and environmental data, as well as the life-cycle considerations on which environmental reporting is based. (Max. 10 points)
- 3. Environmental Data/Accounts:** Consisting of nine criteria, this section aims to illustrate how adequately the company describes the physical impact of the company’s operations on the environment and, in Safety, Health and Environment reports, on its employees. (Max. 15 points)
- 4. Environmental Management:** The criteria relating to environmental management primarily focus on evaluating the company’s description of the most important components of its environmental management system and their application. Nine criteria are considered relevant in this area. (Max. 15 points)
- 5. Finance:** Six criteria are used to bring economic factors into the picture, so enabling an integrated view of the company’s activities. (Max. 10 points)
- 6. Stakeholder Relations:** The four criteria in this section focus on the reporting of co-operation between the company and its internal and external stakeholders and how these relations are managed from a strategic point of view. (Max. 10 points)

7. Report Design: The design of the report is important since it has a major influence on how the information in the report is received, interpreted and understood. Creativity contributing to the development of best practice can result in additional points. Three criteria are used to evaluate the design. (Max. 5 points)