

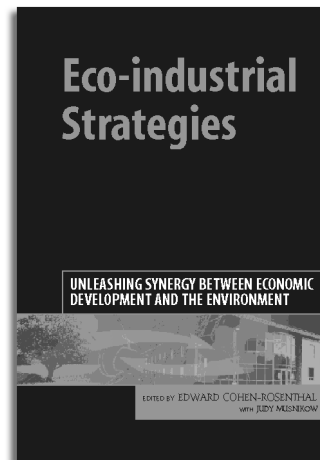
Eco-industrial Strategies

UNLEASHING SYNERGY BETWEEN ECONOMIC DEVELOPMENT AND THE ENVIRONMENT

EDITED BY EDWARD COHEN-ROSENTHAL

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Eco-industrial Strategies was edited by Ed Cohen-Rosenthal, a pioneer in the field of industrial ecology, whose untimely passing early in 2002 has left this book as a legacy to his passion and commitment to improving both the environment and places in which people work. The book explores the key issues involved in eco-industrial development and identifies the stakeholders and their roles in such projects. In addition, it offers a compendium of eco-industrial development case studies.

While an increasing number of handbooks and manuals focus on eco-industrial development, no other book containing process analysis, a breakdown of stakeholder responsibility, and case study assessment exists. What sets this work apart is the pooling together of resources and knowledge from a wide array of sources within the eco-industrial field and the framing of the concept from multiple angles.

Eco-industrial development is an idea and practice still in its infancy; as a document of the concept's earliest theorists, *Eco-industrial Strategies* provides current and future readership with an understanding of eco-industrial development's foundations, its beginnings and its aspirations. Most excitingly, policy-makers, industry professionals, community developers, grass-roots activists, and all other readers yearning for a better way to work and live, will experience a glimpse of the thoughts, concerns, ambitions, technological insight, communities and economies that embody eco-industrial development.



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The Need For Environmental Reporting by Companies

An Examination of the Use of Environmental Reports by Swedish Public Companies*

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This paper examines the issues of environmental reporting in Sweden. Sweden has been at the forefront of such environmental reporting, and the survey cited in the final section of the paper investigates the extent and form of disclosure being undertaken by Swedish public companies. The main findings of the survey are as follows:

- ▶ The trend towards greater disclosure of environmental performance among Swedish public companies is continuing.
- ▶ Environmental reporting is seen as being important in maintaining or improving competitiveness in today's business environment. It is also seen as demonstrating an openness about company activities to society at large.
- ▶ The main target groups for disclosure are identified as customers and consumers and as shareholders and investors, and the information provided is invariably structured to meet their needs.
- ▶ The form of disclosure varies considerably between companies, with most providing information only in their annual reports.
- ▶ There is little consistency in the methods of valuation or accounting for environmental issues, and very little detail of expenditure is provided in the reports.
- ▶ About a quarter of companies have satisfactory internal tracking systems for liabilities, and about a fifth for investment, but there is little evidence of systems to recognise environmental costs or revenue.
- ▶ There is a significant difference in the verification of environmental disclosures between that relating to financial information and that relating to ecological aspects.

The paper concludes that many areas need to be developed if we are to achieve a harmonised environmental report from companies. Measurement (both expenditure and income) is vital for financial accounting, while external (independent) verification is also important if environmental reports are to be seen as reliable. There are considerable limitations on what environmental reports can achieve compared with company financial reporting. In particular, financial reports are developed with use of accepted accounting practices as the basis for a common understanding among users. By contrast, environmental accounting and reporting involves estimation and the public disclosure of environmental liabilities and material environmental costs without that common basis of understanding.

- Environmental reporting
- Swedish environment
- Company environmental reports
- Environment
- Sustainability
- Verification
- External verification

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* This paper was submitted in October 2001.

HILARY FORTES

REPORTING ON THE ENVIRONMENT SERVES MANY PURPOSES. ALTHOUGH THE evidence of excellent reports from individual companies is heartening, the general level and quality of information provided is very variable. Overall, increased comparability is required. The development of a consistent framework for reporting will help to speed up the move to environmental accounting and the provision of useful information. Further legislation may provide an added impetus. In its 1998 *Annual Report and Accounts*, Rio Tinto observed that:

Over recent years there has been a swing as companies come round to the view that excellence in environmental performance is an integral part of excellence in business. Early environmental regulations were seen as a costly add-on to production. Now it is realised that, unlike taxes, environmental performance is intimately tied in with efficiency of production (Rio Tinto 1998).

This view is increasingly being reflected by the disclosure of company responses to environmental matters through the development of environmental reports.

The demand for greater transparency and responsibility has developed from increased social awareness of the damage caused by pollution and from the debate about sustainable development. The responsible use of our natural resources has become a major social and political issue. As such, it has also developed into a significant factor in business decision-making, and accounting practice now needs to include the measurement and analysis of environmental costs as part of the information provided to decision-makers.

Environmental reporting aims to take the communication of such information to a wider range of interested parties. It provides the basis of a dialogue with stakeholders, which include company management, employees, shareholders, government and society in general. There is now a general expectation—and in certain circumstances, a requirement (legislative or otherwise)—that companies provide relevant information about their environmental policies, together with the management systems in operation to support them.

Although environmental accounting and auditing has received increased attention in recent years, there remains little in the way of accepted standards for disclosure. The reports are voluntary—emanating essentially from the proactive attitude of companies towards environmental issues. Without rules, standards and regulations there is little homogeneity and it is difficult to make comparisons between different reports. As a result, the quality of reporting is not always good and it is difficult for stakeholders to evaluate the information provided. Nevertheless, the process of reporting does force companies to define their policies and investment programmes and provides an opportunity for stakeholders to be involved in environmental management at the company level.

During interviews with Swedish environmental managers, they described the environmental report as the tip of an iceberg. In their opinion the rest of the iceberg is the system of controlling and planning strategic issues of environmental management. Environmental reporting implies a commitment to environmental issues. This, in turn, implies that company plans embrace all functions within the organisation—research and development (R&D), personnel, marketing and finance, to name but a few. Increasingly, companies are setting up special departments to oversee the environmental implications of their activities. Such departments are responsible for the internal organisation of, for example, the production processes and also for the development of communications strategies to create the 'green' image for the organisation's products and activities.

It is recognised that greater attention to environmental matters is likely, in the first instance, to increase costs and lower profit. Today, however, and especially in the chemical and gas sectors, awareness of the environmental consequences of their operations has forced companies to take stock of their disclosure practices. They can no longer

afford to be passive participants with respect to environmental issues, and new laws, environmental taxes, pollution permits and ecological labels (eco-labels) further stimulate this. It has also been found that, for those giving attention to the environment, there are significant cost reductions available through energy efficiency and waste recycling.

1 Methodology

In this paper I set out to investigate the need for environmental reporting by companies. In so doing I incorporate the findings of a survey of Swedish public companies conducted in 1999 (Fortes and Akerfeldt 2000).

In that survey the general trends in environmental reporting in Sweden were examined by reference to companies listed on the Stockholm Stock Exchange. Initial research was conducted by a postal questionnaire to 231 companies, together with a review of company annual reports and, where applicable, their separate environmental reports. This was followed up by personal interviews with environmental managers and executive officers in selected companies.

From the total numbers of companies, financial companies were initially excluded as their activities were judged as having (seemingly) no impact on the environment. A further 26 companies were also eliminated at a later stage as it became apparent that they too were not involved in activities that impact on the environment (real estate and finance). This left a total of 205 companies in the survey, as shown in Table 1.

Total number of firms	263
Total number of firms surveyed	205
<i>Financial (initially excluded)</i>	32
<i>Real estate (excluded later)</i>	26

Table 1 NUMBER AND TYPE OF COMPANIES SURVEYED

No attempt was made to deal with the detailed content of the environmental reports. To evaluate the relevance, completeness and reliability of the information included would require an in-depth knowledge of the operations and environmental context of each company and the challenges they face. This study is concerned, rather, with establishing the approach and scope of environmental reporting.

The remainder of the paper is organised into three sections. In the next section, Section 2, I detail the background to the main issues in environmental reporting with reference to environmental accounting. In Section 3 I examine the treatment of environmental matters in Sweden as a context for the survey, including a review of the history of environmental reporting. In Section 4 the results of the survey are examined. The key findings are given and the current position is discussed in light of the issues and themes previously established. I conclude Section 4 by highlighting the need for further analysis and research.

2 Environmental accounting and environmental reports

Pollution and sustainable development are key issues in environmental accounting. The report of the World Commission on Environment and Development (WCED) in 1987—*Our Common Future* (the Brundtland Report)—demonstrated the need to address them

through government policies at the national and international levels. To the individual company, they represent important challenges that impact on the firm in many different ways, for example:

- ▶ Stringent environmental controls to reduce pollution, backed by legislation and penalties, constrain company operations and require them to act within defined parameters.
- ▶ Sustainable development—defined by the Brundtland Report (WCED 1987: 43) as the utilisation of natural and man-made resources to ‘meet the needs of the present without compromising the ability of future generations to meet their own needs’—demands that organisations reduce their use of scarce resources and look to alternative, renewable resources as replacements.

These requirements have serious implications for the cost of operations and also for company balance sheets (with the need to account for contingent liabilities). Shareholders need to be aware of these implications as much as the ‘green’ face of the company.

Traditionally, the cost of exploiting so-called ‘natural’ capital—air, water or the sustainable productive capability of land—has not been recorded. These have been considered to be ‘free goods’ and not resources effectively lent to the company at a cost. The concept of such assets has not covered the future economic benefit obtainable from someone outside the accounting entity—the company itself. Recognising such costs leads to the concept of invisible stakeholders, although there continues to be little recognition of their interests.

A similar situation arises with liabilities where the future sacrifice of investors outside the traditional structure of the accounting entity are not recognised. At present, only explicit contractual obligations to shareholders and suppliers and so on can be recorded as liabilities. There is no provision for transactions with future generations and so, for example, the potential liability for the dumping of toxic waste in a river cannot be recognised. Accounting statements do not require accruals, or even an estimate of loss, be shown in such circumstances.

Environmental obligations are difficult to account for under current accounting rules. In many instances, the liabilities take a long time to settle, are uncertain and entail complex estimations.¹ However, it may be argued that the estimation involved is no more difficult than that for pension obligations: in both instances they are long-term undefined liabilities.

2.1 The limitations of traditional accounting

Traditional accounting suffers from limitations in dealing with environmental issues. These limitations can be summarised as follows:

- ▶ Accounting is concerned only with the inherent limits to economic activity.
- ▶ Accounting deals only with legislated social costs and does not account for air, water or land as costs of production.
- ▶ The accounting entity is limited to the firm itself, but natural capital is not owned by the entity. If environmental laws were in place, then ownership and ‘green’ profits would be equal.

¹ An example of this is shown in the annual accounts of British Nuclear Fuels plc, in which they report on the ‘fundamental uncertainty [that] remain[s] regarding the measurement of the liabilities’ (BNF 2001: 70)

- ▶ Accounting places the residual profit before the environmental issues of going-concern and high risk (even if of low occurrence), whereas there is a strong case for these to be recognised before the residual profit is calculated.
- ▶ Accounting records the costs of environmental investments as production costs, a fact that penalises rather than encourages those companies that use environmental accounting. There is no vehicle for recording 'green' assets.
- ▶ Environmental accounting requires a long-term view, but accounting is essentially concerned with short- to medium-term projections.

A successful environmental management system should have a method of accounting for the full environmental costs, and these should be integrated into capital budgeting, cost allocation and other decisions. Companies can start with those costs that they know the most about and work towards more difficult costs—estimating where necessary as they build up information about their nature.

What, though, is the scope of environmental costs? Does environmental accounting extend beyond conventional costs to include potentially hidden, future, contingent, image and relationship costs? There have been many legal actions dealing with environmental accounting and effectively defining a new contract between business and society.

Do companies consider only those costs that affect their bottom-line profit or do they recognise costs that result from their activities, but for which they are not accountable—that is, external costs? Liabilities for environmental damage have soared, and society faces the problem of determining who is responsible. However, accountants are still not clear about how to account for clean-up costs and other liabilities—are these contingent liabilities or hidden costs?

Many companies do disclose environmental liabilities, but such disclosure very often does not occur in their financial accounts. There is also a lot of room for discretion in determining if these liabilities should be accrued.

The key questions relate to how costs can be measured and incorporated for internal and external users of accounting information. Ecological development and sound environmental management are complementary aspects of the same agenda.

Environmental costs have two major dimensions: direct and indirect costs. Direct environmental costs impact on the company's bottom line. They may be obscured in overheads or be overlooked, but analysis of them can help with gaining a more accurate costing and pricing of products. It can also lead to the better management of those costs, resulting in improved environmental performance and benefits—in greener processes, products and services. For example, it may be possible to generate revenue through the sale of waste, to offset environmental costs.

Although indirect costs impact on society at large they may not impact directly on the company's financial position, but that does not mean that they can be ignored. As discussed above, the concept of a contingent liability may need to be addressed. In addition, such costs are often imposed on companies by external agencies in the form of taxes and permits and so on—becoming, effectively, direct costs.

Accounting for all forms of environmental cost can support the development and operation of a company's environmental management system. As businesses account more fully for environmental costs and benefits, they will clearly see the financial advantages of pollution prevention practices. Many costs can be reduced or eliminated either through the introduction of greener processes or through the introduction of new processes.

3 Environmental reporting in Sweden: a review of the perspectives

Sweden is well endowed with natural resources and has a long history of measures to conserve and protect its environment. That is not to say there are no conflicts—as in most other countries, there is pressure on the environment as a result of the demands of economic development, employment and export opportunities and from leisure. Sweden has, though, taken a lead in environmental issues, both at home and internationally. Indeed, the first global discussion of the issues and problems took place at a United Nations (UN) conference on the environment held in Stockholm in 1972.

3.1 Historical perspective

The long tradition of environmental consciousness in Sweden dates back to the 13th century, when Swedish law set out rights to water and other natural resources (Bennulf 1994: 52).

By the beginning of the 20th century, environmental protection was well regulated by a variety of laws, including the 1874 Public Health Act 1874 and the 1876 Decree on the Selling of Poisonous Substances. The development of comprehensive sanitation brought with it debates about environmental pollution, since most sewers flowed directly into the nearest lake, causing extensive local environmental problems.

The past 50 years have witnessed many varied debates concerning environmental issues. On the domestic front, these have included the pollution of rivers, energy extraction, the acidification problem, the creation of national parks, deforestation, energy policy and the impact of volatile organic compounds (VOCs) on nature. In the international arena, this has meant dealing with problems such as pollution in the Baltic Sea or trying to influence neighbouring countries to shut down worn-out nuclear power plants. In addition, and especially since the fall of the Soviet Union, Sweden has been very active in helping Eastern European countries with their own environmental problems.

The Swedish penal code has been developed since the early 1960s and contains penalties for environmental violations and also regulations for protecting the natural environment. The Swedish Environmental Protection Agency (Statens Naturvårdsverk [SNV]) has developed a strategy for sustainable development in accordance with Swedish policy objectives. This looks at the environmental impact of different sectors of society across a wide range of measures. There are separate programmes for products, chemicals and waste. The SNV stresses the importance of eco-labelling and product information to make it easier for consumers and to enable businesses to make environmentally sound choices.

The environmental perspective is widely recognised in Swedish business. Organisations of all kinds are increasingly concerned with achieving and demonstrating sound environmental performance by controlling the impact on the environment of their activities, products and services and by taking these into account in their environmental policy and objectives. They do so in the context of increasingly stringent legislation, the development of economic policies and other measures to foster environmental protection and a general growth in concern from interested parties about environmental matters, including sustainable development.

Although companies are in existence to make a profit, there is an acceptance that they must be responsible for developing sustainable production and consumption patterns. However, this philosophy is relatively new among small and medium-sized companies. Detailed knowledge of practical measures is low, and companies need incentives to react. Small companies in particular may be dependent on one large client or supplier that may effectively control the environmental measures that may be taken.

Among consumers, knowledge and understanding is generally high. However, a report on environmental behaviour (Konsumentverket 1994)—as evidenced through the return of empty bottles, used batteries and old newspapers for recycling and the buying of eco-labelled products—noted that 25% of the population were not prepared to pay more for 'green' products and behaviour.

3.2 Accounting perspective

Without explicit laws in the area of environmental accounting, important information is usually covered by the same legal requirements as for accounting information. Two key regulations are (SFS 1995:1554):

- ▶ 2:4 ÅRL (Årsredovisningslagen, the Accounts Law), which states that consideration should be taken into account of all foreseeable and possible losses that can be linked to the current or past financial years
- ▶ 6:1 ÅRL, which states that the directors' report shall contain information regarding essential events and important conditions; in addition, information must be given about the company's expected future development and its R&D activities

In spite of the lack of explicit laws, the number of listed companies presenting environmental information in their annual reports and/or in separate environmental reports has increased considerably over the past ten years. This finding is supported by earlier work (Linghede 1996a; Fortes and Akerfeldt 2000) in which it was found that up to 78% of companies are now reporting, in some form, on the environment. As yet there are no uniform standards on how to report and, as a result, the extent and content of published environmental information varies.

What are the possible reasons for this development in environmental reporting? The most commonly expressed purposes of companies in working with environmental accounting were found to be as follows:²

- ▶ To inform employees and customers about the company's environmental work
- ▶ To contribute to the general environmental debate by offering its own viewpoints and information
- ▶ As an important tool in contacts with governmental authorities and other parties in the environmental field
- ▶ As a reflection of the belief that efficient environmental work is the foundation of long-term profitability and good economic growth
- ▶ To add to competitiveness by making customers and society increasingly aware of environmental issues and its own work in addressing them
- ▶ To enhance the company's own evaluation of its environmental work at its production facilities
- ▶ To meet the demands of business partners

In 1996 the Swedish government required the Accounting Commission to investigate whether companies should be forced to give certain environmental information in their annual reports. In presenting its report the Commission concluded that the requirements in 2:4 ÅRL and 6:1 ÅRL were sufficient and that no changes were necessary

² These results were obtained through an examination of the 25 companies that entered the 1996 Environmental Report of the Year competition.

(Accounting Commission 1996: 157). However, a number of recommendations were made. These included a request for environmental information in the directors' report, albeit limited to such environmental matters that are a direct and natural consequence arising from the company's business and to the environmental impact arising from the company's production processes.

3.3 Political perspective

The Swedish government, in common with most other governments around the world, has responded to public opinion with strong affirmative statements about the need for environmental consciousness. This has been backed by action in a number of areas, including:

- ▶ Car producers being forced to ensure that cars are recycled and materials re-used (Swedish Ministry of the Environment 1995: 174)³
- ▶ The creation in 1996 of a delegation by the Ministry of Industry and Commerce to promote environmental adapted technology and encourage ecological sustainability as the driving force in technical development

In addition, the Ministry of Environment gave specific priority to such issues as:

- ▶ Greener trade and industry
- ▶ The Baltic Sea and Eastern Europe
- ▶ Environmental protection

The Swedish government enacted an environmental code (Swedish Ministry of the Environment 1998: 90) which amalgamated the provisions and rules of 15 previous acts into one comprehensive piece of legislation. This code came into force at the beginning of 1999 and sets out the fundamental rules applicable to all human activities that may harm the environment. The provisions of the environment code are aimed at promoting sustainable development whereby present and future generations will be guaranteed a healthy and good environment.

3.4 Financial analysts' perspective

Swedish financial analysts are also aware of the importance of certain environmental information if they are to make well-reasoned analyses of company results. This derives from a response to:

- ▶ The increased demands from customers about the environmental life-cycle of products (including production processes)
- ▶ The increased risks linked to environmental issues as a result of the hardening political climate surrounding such issues
- ▶ An increased awareness of the link between the economy and ecology

Karlsson (1996) cited the following examples:

- ▶ The clean-up of over 6000 petrol stations that have been closed will cost SEK1.5 billion; the Swedish Petroleum Institute has requested the government to increase petrol prices by SEK0.06 per litre to cover this cost.

³ Vehicle scrapping premium first introduced on 1 January 1976.

- ▶ In one case where a price was to be set for a company, the income forecast indicated that growth would rise from a 65% capacity utilisation rate to 100%, but the potential buyer found that environment-related permissions were enough to cover only an 85% utilisation rate—as such there could be no expansion without considerable additional investment.

The Society of Financial Analysts has recommended a way in which environmental information should be disclosed in annual reports. They support this approach as follows:

By telling the companies what we want, we speed up the information-giving process and make it more structured. If we ask for certain information, the companies might be forced to explain why that information is not presented in their annual report (quoted in Karlsson 1996: 10).

4 Environmental reporting in Sweden: survey results

The study, carried out by Akerfeldt and myself (see Fortes and Akerfeldt 2000) commenced during the latter part of 1999 and was followed by interviews conducted during the first quarter of 2000. As such the information contained in the survey is based on company practice as it existed in 1998 and 1989 and may not reflect current company practice.

Table 2 lists the number of companies involved in environmental reporting, to some degree or other. These results show the continual upward trend in reporting by companies, as Linghede (1996b: 17) found in earlier work.

Number of companies surveyed	205
Number of companies responding to survey	54
Number of responding companies that report environmental issues	42
<i>As a percentage of companies surveyed</i>	20
<i>As a percentage of companies that responded</i>	78

Table 2 THE NUMBER OF COMPANIES REPORTING ON ENVIRONMENTAL ISSUES

Source: author's survey

The number of companies providing an element of environmental information, as a percentage of those responding to the survey, is remarkably high (78%). However, the response rates were relatively low, and the true figure is likely to lie between that for the percentage of companies responding (54 from a total of 205 [26%]) and that for the percentage of companies surveyed (205 from a total of 263 [78%]).

To investigate these response rates, a follow-up study was conducted. This established that many companies felt unable to answer the survey as their activities did not involve them in the environmental questions raised. The response rate is, therefore, a good reflection of those companies that consider themselves as having an impact on the environment. On this basis, the survey shows that the trend towards greater disclosure of environmental performance is continuing and that Swedish companies are at the forefront of such reporting.

Although the survey did not focus on individual sectors of the market, it was noted that the pattern of reporting accorded with that found by other studies in that it was most frequent in the chemical, oil, gas and utilities sectors. However, the survey indicates that a new sector could be added to this group, covering the forestry, paper and pulp industries.

4.1 Rationale for reporting

Companies that do report on their performance with respect to environmental issues indicate that they do so to improve or maintain competitiveness. However, reporting is also a clear response to the desire to influence the perception of observers of environmental reporting, as it is believed that readers of such reports will tend to associate good environmental reports with a willingness and readiness of the company to communicate openly to stakeholders and to make its business more transparent. This was evident in discussions with three of the largest companies surveyed: Ericsson Telephon AB, SAS Sverige AB and Electrolux AB.

Linghede (1996a: 9) is of the opinion that

many things have happened during the last ten years. Earlier environmental issues were mostly all about different demands from the authorities. They dealt only with costs and not with competitive edges. During the last ten years there has been a pronounced development towards a situation where market demand influences environmental issues.

Magnus Swahn, environmental manager at ASG AB, emphasised that the factor pushing the development forward is the environmental opinion of the public, which, in turn, is created by the media, pressure groups (such as Greenpeace) and young people coming through the present education system. As a result, consumers tend to control the development. He was of the opinion that all this is taking place at a rapid pace and cites as an example from the washing detergent market in which detergents bearing the Swan⁴ eco-label have within four years captured over 80% of the Swedish market.⁵

There are efforts and costs in setting up a first-time reporting process and in improving past processes of reporting. However, these have been shown to provide benefits to a business and to improve communications with stakeholders. The process of reporting, then, may be seen to have the advantage of:

- ▶ Demonstrating good management
- ▶ Showing an openness to stakeholders
- ▶ Highlighting deficiencies in internal environmental reporting and accounting systems
- ▶ Linking financial and environmental data, thus allowing quantification of environmental costs, which, in turn, shows up areas of cost savings

4.2 Target audience

The survey questionnaire specifically addressed the issue of the main target groups for environmental reports. Two groups are clearly identified—customers and consumers, and shareholders and investors. This is shown in Table 3.

Whereas suppliers have always been advanced as a strong reason for preparing environmental information, in no single instance did a company identify suppliers as being a target group. This position may be contrasted to the lack of consensus that emerged from the interviews with companies as to who is the main audience for environmental reports. From this point of view, many companies report to a wide spectrum of target groups—employees, shareholders, the local community, customers—with the reports being used to show environmental responsibility. For example, the chemical industry's pre-eminence in providing environmental reports (and, indeed, in implementing environmental management systems) comes mainly through pressure from

⁴ Svanen, the Swan, is a Nordic eco-label.

⁵ Source: interview with Magnus Swahn, environmental manager, ASG AB, 23 April 1999.

Target group	Percentage*
Customers and consumers	50
Shareholders and investors	33

* Number of companies citing this as the main target group as a percentage of all companies surveyed.

Table 3 MAIN TARGET GROUPS OF ENVIRONMENTAL REPORTS

Source: author's survey

environmental groups and its position as a potentially high-risk industry with a 'dirty' image.

For effective communication, the target groups must be clearly identified and companies need to rank and define their priorities—for example, companies in consumer electronics and cosmetics show customers as targets, the needs of this audience requiring a different approach from those of the financial community, which insists on details of environmental risks, contingent liabilities and environmental expenditure.

A majority of user groups prefer environmental information on a corporate level, as it is the group as a whole that should be held accountable for its overall environmental responsibility. There are, however, strong drivers for reporting at site level—local communities regard site-specific environmental reporting as more important than corporate information. Indeed, the Eco-Management and Audit Scheme (EMAS)⁶ of the European Union (EU) requires site-specific environmental performance reporting to the public for those companies that register voluntarily with the scheme.⁷

4.3 Valuation and accounting methods

The survey attempted to identify whether companies were working on the establishment of valuation methods and accounting methods. It also tried to identify if companies were able to account for and quantify in some way the three forms of waste: liquid, solid and gaseous.

In response to these questions, it appeared that 38% of all companies surveyed were working to establish mutual valuation methods, but that only 23% had made any attempt to establish accounting methods. It was notable that, although many companies are not actively engaged in quantification or accounting determination, only 13% of the total sample disagreed with the concept.

Of the companies working on ways of accounting and quantifying waste, the main emphasis was on solid waste (34%), with gaseous waste (30%) and liquid waste (26%) having lower priorities. This may, however, be a result of the company sector, and further research will need to be undertaken to investigate this aspect.

In order to be able to present environmental information it is necessary for companies to be able to effectively track and trace environmental costs, liabilities, investments and revenues. This requires a company to have effective systems to gather and collate environmental information.

On the question of internal tracking, the sample companies reported that they had a satisfactory internal system for liabilities (27%) and investments (20%), but that there was little or no system to recognise environmental costs or revenue. In dealing with

⁶ In EMAS participating companies are required to produce an annual environmental statement to provide specific public information on their environmental performance. The statement has to be verified every three years by external verifiers.

⁷ For example, in Denmark, since 1996 nearly 2,000 companies have been required to issue annual 'green' accounts for their environmental performance at the site level

external policy, the sample indicated that this was satisfactory only with regard to liabilities (23%).

Thus, it was noticeable, on examining the reports themselves, that there was very little detail of expenditure. For example, although just over half of the companies surveyed generated income from selling their waste, very few of them could give an estimate of the amount raised. This was also the case with respect to the 80% of companies that responded that they practise waste minimisation and energy efficiency.

This can be illustrated by reference to the information published by Electrolux AB, as shown in Table 4. This company selects the most cost-effective energy sources available for its operations and heating, and publishes substantial key environmental information in a separate report. The figures in the report do reflect some idea of the costs involved, but cannot be deemed to be exact: for example, Electrolux (1996: 28) states that 'water consumption has fallen by more than 50%, energy consumption by about 25% and carbon dioxide emission by nearly 25%'.

	Year					
	1991	1992	1993	1994	1995	1996
Number of business units	156	156	165	181	173	166
Energy consumption per value added (kWh per thousand SEK)	156	149	128	112	117	130
Energy consumption per heated area (kWh per square metre)	609	609	608	585	587	621
Cost of energy as a percentage of added value	3.54	3.33	3.24	3.08	3.05	3.22
Carbon dioxide emissions per added value (kg per thousand SEK)	45	43	37	33	35	38
Water used per added value (cubic metres per thousand SEK)	1.5	1.2	1.0	0.7	0.7	0.7

Table 4 ELECTROLUX AB: KEY ENVIRONMENTAL FIGURES

Source: Electrolux 1996

The lack of detail in expenditure could be explained by the fact that environmental expenditure is difficult to account for with use of common established criteria—companies have to decide if the expenditure is of a specifically environmental nature or if it has been incurred for other reasons.

Companies themselves must provide environmental performance figures that are understandable in the financial context in order to make it possible for internal and external stakeholders to process decisions on environmental issues in an economic and financially sustainable way. To bring these environmental issues within the arena of financial accounting is an emerging issue that poses a major challenge not only to companies but also to those that set accounting principles and conventions. It is recognised that better information will lead to an improved evaluation of the financial risk associated with the environmental performance of a particular company. There is a need for accounting policy notes that would deal with the way in which a company accounts for environmental matters. As an example, it should be possible to show how a company discloses its environmental liabilities or provisions, or even its contingent liabilities.

The financial community recognises that environmental issues will affect the financial value of companies and their ability to make a profit and, even, to survive. There

is, though, no evidence that the financial community uses environmental reports in its decision-making processes. It does not rely on the information given, partly because it does not know how to evaluate the information and partly because it does not know what information it needs.

4.4 Verification

Verification of environmental reporting is the subject of much discussion, and the survey explored the issue with respect to both the verification of the financial aspects of environmental performance and the verification of the ecological aspects. In questioning the sample companies about who undertakes the verification it became clear that the two areas are treated differently. Whereas the financial aspects are verified by the company's auditor in 56% of cases, the ecological side is either not verified (76% of the sample) or, if it is, then it is usually verified by an external party other than the auditor. This seems to add weight to the argument that the auditors are not able to undertake this form of verification because of a lack of knowledge and, therefore, it is only by forming a team—of auditors and external experts who must be credible—that such verification takes place. Although the process demonstrates the accuracy and reliability of the reports, it suffers from the problem of a lack of a framework for reporting and consequently for verification.

One way to ensure that environmental reporting is more than simple 'hype' is to show that its credibility is supported by an independent viewpoint. Verification by third parties may, therefore, increase the reliability of the information provided. However, users are sceptical and do not necessarily regard such verification as adding value. They want to know that all the major issues and risks are included and that the report presents a true and fair view—a third party is able only to describe a limited number of identified issues and procedures used by the company and to explain the methods utilised to evaluate their use. The user, then, must decide how much credibility can be attached to the information provided in the report. All this points to an urgent need for standards of attestation to be developed.

The confusion over the value of verification may be illustrated by the conflicting positions of two of the companies surveyed, as stated in the following extracts from their environmental reports:

As one element of greater openness, and thus increased credibility with regard to our environmental work, ASG has decided to have an external expert on the environment verify the 1995 Environmental Report (ASG 1995).

External bodies are sometimes engaged to audit companies environmental reports. We [MoDo] have . . . decided at present not to adopt this approach. The figures . . . are all public information . . . available at the relevant public authorities, where they are also checked. We do not believe there is any justification for merely obtaining further verification (MoDo 1996).

Without relevant quantified data that is capable of enabling comparisons, the financial community will be:

- ▶ Making judgements on risk with incomplete information
- ▶ Unaware of any consensus on what companies should cover in their report
- ▶ Unable to read from a fixed format
- ▶ Have no information on what value such reports have for stakeholders

4.5 Form of disclosure

A great deal of attention has been given to the way in which companies disclose their environmental information. Environmental reports have been criticised for being too glamorous—as simply another company marketing brochure—and for not seriously reflecting the issues that concern the stakeholders. The challenge is in the formulation of a style and language in which the financial and ecological implications of environmental performance can be communicated in such a way that user needs are met and comparability between businesses is achieved.

One surprising result of the survey was the strong statement by 63% of all companies that Swedish legislation did not give good guidance in relation to environmental financial information. The companies surveyed went further and stated that enforcing legislation would lead to better-quality environmental information. However this is achieved, it was felt important that environmental reports, as presented, must be understandable and useful to the readers.

Report award schemes encourage companies to experiment with ways of bringing details of their environmental performance to the attention of financial institutions. They emphasise the development of separate environmental reports, produced to a high quality and sent direct to their target groups. This, in turn, demands the use of multidisciplinary teams and technical experts, all of whom would be called on to help evaluate the extent of environmental liabilities. One of the reasons for Swedish companies being in the forefront of environmental reporting (Fortes and Akerfeldt 2000) may be that many have set up special departments to develop, co-ordinate and disseminate information to stakeholders.

In exploring this aspect of company reporting, it was found that by far the greatest number of companies surveyed disclosed their environmental information only in their annual report (55%). Of the companies issuing a separate environmental report, it was notable that 46% mailed a copy of the report automatically to shareholders together with the annual report.

4.6 Environmental management systems

Environmental reports are not achievable unless there is a thoroughly designed and implemented environmental management system in place. The system must form the basis for high-level external reporting and for managing performance, plans and progress on environmental issues. These systems need to be fully integrated as part of the normal business practice.

The survey was concerned with identifying the extent to which Swedish companies had developed and implemented the concept of an environmental management system as part of their commitment to the environment. Almost without exception, the sample companies indicated that they had either implemented or were working on one of the EMAS schemes. Some 71% indicated that they had already implemented some form of environmental management system, and 61% (including some of those that had already implemented some form of environmental management system) were working on implementing ISO 14001,⁸ of the International Organisation for Standardisation (ISO);⁹

⁸ ISO 14001 is an international standard similar to British Standard BS 7750, requiring companies to publish environmental policies and objectives designed to achieve and demonstrate sound environmental performance through controlling the environmental impact of the company's activities, products and services. It is part of the ISO 14000 series of standards, based on a number of national standards, which defines how to establish, document, implement and maintain an effective environmental management system.

⁹ ISO develops and promotes standards worldwide to ensure consistency in management systems.

all such companies indicated that they planned to implement the system within three years.

When asked to give some indication of the rationale for adopting environmental management systems, the highest-ranked responses were:

- ▶ To respond to customers
- ▶ To help management
- ▶ To meet customer–supplier selection criteria
- ▶ To comply with legislation

Responding to peer pressure and as a device to assist in increased turnover were both considered as least important in all cases.

4.7 Conclusions

Environmental reporting is an emotive topic, and it is often difficult to separate accounting considerations from what could be termed ‘good citizen’ considerations. However, this is not to say that they are mutually exclusive—as long ago as 1991, the UK accounting profession was told it must ‘measure up to the environmental challenge’ if it was to fulfil its ‘duty as a profession to promote the public interest’ (Lickiss 1991: 6).

Environmental reporting shows significant business benefits. It demonstrates and strengthens the internal commitment of companies to the environment and appraises stakeholders of company progress with respect to caring for the environment, both of which help in achieving improved public relations and a deeper awareness of environmental issues on the part of employees. It could also be said that reporting helps to identify areas where management systems need to be strengthened. With all these positive aspects, it only requires further legislation to provide guidance on what should be contained in an environmental report.

In spite of the progress of internal systems, there is the need to recognise environmental costs and revenues. More in-depth research will assist in determining the problems of accounting recognition. This research should be extended to include an in-depth examination of environmental reporting by the different industrial sectors.

Another important area for further research is that relating to the verification of environmental reports. There is clearly a need for a ‘standard’ in verification as this would provide some form of guarantee as to the reliability of the data and the information contained in the environmental report.

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