

CHAPTER 3

ENVIRONMENTAL RESPONSIBILITY

3.1 INTRODUCTION

The related problems of a growing world population, depletion of natural resources and pollution have led to an ecological crisis that is endangering natural systems of which humans are part (Pelser & Van Rensburg 1997: 169). Many contemporary environmentalists have accused the Judeo-Christian tradition of containing “the historical roots of our ecological crisis” (Enderle 1997:176). According to Pelser & Van Rensburg (1997: 169 – 170) the Western view of life can be traced back to Judeo-Christian times and is founded in the assumptions that humans have the obligation to master and manipulate nature to their benefit and that the natural environment has unlimited possibilities for exploitation.

“Christian environmental stewardship” is strongly embodied in the document, *Peace and justice for the whole creation* (1989), of the European Ecumenical Assembly. The document declares “we have to reconsider the prevailing ethics of recent centuries, which, in contrast to the real meaning of the Word of God, allowed humanity to dominate the creation for its own ends, when, on the contrary, humanity should act as steward in service – service both of God and of creation itself..”. (Enderle 1997: 177.)

There appears to be a paradigm shift from the traditional Western view of life to an environment focused view. According to the new paradigm there are ecological limitations for humans relating to use of natural resources, pollution and population growth. Some industrialized countries, for example Germany and the U.S.A., is experiencing such a paradigm shift since the late 1980s resulting in a cultural revolution. (Pelser & Van Rensburg 1997: 170).

It is necessary to understand what environmental responsibility is before the relationship between environmental responsibility and financial performance measures of companies can be investigated. In this chapter environmental responsibility is defined, the elements of environmental responsibility are discussed, including the pressures on companies and employees to be environmentally responsible as well as the progress that companies have made. Studies that attempted to measure the level of environmental responsibility are reviewed.

3.2 DEFINING ENVIRONMENTAL RESPONSIBILITY

According to Walden & Schwartz (1997: 129) corporate social responsibility is not easy to define due to diverse interpretations of the principle of corporate social responsibility and ultimately environmental responsibility as well. They refer to Davis (1973) who noted that social responsibility “refers to the firm’s consideration of, and response to, issues beyond the narrow economic, technical, and legal requirements of the firm”. It simply “begins where the law ends”.

After considering a few definitions of corporate social responsibility, Huckle (1995: 11) adapted Davis & Blomstrom’s (1975) definition to provide the following definition of corporate environmental responsibility:

“The obligation of decision makers to take actions which protect and improve the environment as a whole, along with their own interests.”

Van Niekerk (1998: 31) chose Anderson’s (1989) definition of social responsibility for the purposes of her study which reads as follows:

“...social responsibility is the obligation of both business and society (stakeholders) to take proper legal, moral-ethical, and philanthropic actions that will protect and improve the welfare of both society and business as a whole; all of this must of course be accomplished within the economic structures and capabilities of the parties involved”.

Erasmus (1998: 1) concentrated on the environment and employees as facets of social responsibility and chose the following definition after taking the above definition into account:

“The social responsibility of enterprises encompasses the attitude of enterprises to do business in accordance with the ethical and moral standards acceptable to society”.

DesJardins (1998: 826), co-editor of *Contemporary issues in business ethics*, discussed the classical model, the neo-classical model and the sustainable development model of corporate social responsibility. The classical model is succinctly captured in the following quotation from Milton Friedman (1962):

“There is one and only one social responsibility of business – to use its resources and engage in activities to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition, without deception or fraud”.

The classical model incorporates legal constraints while the neo-classical model includes moral constraints as part of its limits. The neo-classical model seeks to overcome the obvious ethical deficiencies of the classical view by focusing on a “moral minimum”. The moral minimum is interpreted in different ways by different versions of the neo-classical model, for example Norman Bowie (1990) favours “avoiding harm” as the moral minimum. (DesJardins 1998: 828; 831.)

DesJardins (1998: 829) criticizes the neo-classical model for its continued reliance on consumer demand in setting environmental limits to business conduct. Unconstrained demand will not resolve the dilemma created by poverty, population growth, and environmental destruction. He is a supporter of the sustainable development model that seeks to combine the natural constraints established by ecological laws with minimal moral constraints placed upon business activity. Economist Herman Daly is a well-known defender of sustainable economics. His

view is that the distinction between “development” and “growth” is at the heart of sustainable economics:

“To *grow* means ‘to increase naturally in size by the addition of material through assimilation or accretion’. To *develop* means ‘to expand or realize the potentialities of; to bring gradually to a fuller, or better state’. When something grows it gets bigger. When something develops it gets different. The earth ecosystem develops (evolves), but it does not grow. Its subsystem, the economy, must eventually stop growing, but can continue to develop. The term ‘sustainable development’ therefore makes sense for the economy, but only if it is understood as ‘development without growth’.”

(DesJardins 1998: 831 – 832.)

According to Enderle & Tavis (1998: 1134) the now widely accepted general standard of environmental soundness is “sustainability” defined by the World Commission on Environment and Development (1987) as “to meet the needs of the present without compromising the ability of the future generations to meet their own needs”. They state corporate responsibility in the environmental realm as being committed to sustainable development by consuming less natural resources and burdening the environment less with effluents.

Bowman & Haire (1975: 54) argued that corporate social responsibility (for purposes of this study read environmental responsibility) is a signal of the presence of a style of management that extends broadly across the entire business function and leads to a more profitable operation.

The environmental impact of manufacturing processes and products, environmental regulation, and initiatives undertaken in environmental management and technology must be considered when determining the corporate strategy towards the environment. As one integrative element of corporate strategy, environmental management affects environmental performance. (Klassen 1995: 1201.)

According to Veroutis & Aelion (1996: 61) planning the strategy for a company's environment-related activities is a function of not only where the company is but also where the company wants to be in terms of its environmental performance. They broke down environmental responsibility into the following different environmental positioning options:

Compliant positioning

This position requires environmental spending to be prioritized on the basis of following legal requirements. It is a responsive approach to regulatory mandates.

Informed positioning

This position is similar to compliant positioning but includes an effort to remain informed on developments in the environmental arena. It is a responsive approach to regulatory mandates with the added flexibility and advanced warning afforded by being informed of developments.

Market-driven positioning

This position is responsive to market place, not just regulations. It involves compliance with regulations and keeping abreast of regulatory developments, as well as non-regulated voluntary environmental performance improvement initiatives, if that will help to maintain market position. This is a "safe" approach in terms of resource allocation, as the company will only spend where the market has determined that there will be a recognized benefit.

Competitive advantage positioning

This position is practised by companies trying to drive the market from the environmental perspective to determine where the market will head if the approach it takes is widely adopted. This proactive positioning involves higher investment

risk stemming from the possibility that the market may not follow the lead of that company.

Sustainable development positioning

Companies selecting this proactive position invest with the intention of improving their environmental performance in conjunction with fulfilling their social responsibilities and maintaining their economic health, to ensure sustainability of the company and natural resources, and increase environmental or other benefits for their stakeholders.

(Veroutis & Aelion 1996: 62.)

Roome (1994: 19) suggested that education and training for environmental awareness should recognize the roles and responsibilities of students as individuals, as managers and as citizens. Environmental education should therefore encourage all students to have an:

- Understanding of the concept of sustainability, the values implied by and responsibilities that stem from sustainability, and recognition of the implications for individual and organizational behaviour of working towards that concept;
- understanding of the main principles and interconnections of the earth's resources, support systems and processes, at local and global level;
- understanding of the importance of individual and organizational vision, thinking and perspective which matches the complexity and interconnections of environmental and social systems;
- awareness of the contribution and limitations of legal, economic and technical systems to the attainment of sustainability;
- recognition of the contribution and limitations of management systems, organizational designs and organizational cultures in the attainment of sustainability;

- knowledge of the assumptions and approaches used in environmental management techniques which measure, monitor and control environmental impacts, such as environmental impact assessment, environmental reviews, environmental auditing, accounting and reporting and life-cycle analysis;
- development of the ability to exercise critical judgement, to initiate or support innovative action and to empower others to achieve these ends;
- development of the skills to lead, participate in and implement programmes for the management of change and to support the process of adaptation towards sustainability.

(Roome 1994: 19 – 20.)

Environmental responsibility manifests itself in a strategy that the management of a company decides to follow relating to the level of environmental performance it wishes to attain; the levels ranging from mere compliance with legal requirements to following sustainable development principles.

3.3 ELEMENTS OF ENVIRONMENTAL RESPONSIBILITY

3.3.1 Pressures towards environmental responsibility

Stakeholders interested in environmental reporting (refer to section 2.3) are placing increasing pressures on companies to be environmentally responsible.

Moves towards stricter and even retrospective legislation, as well as the possibility of U.S.-style lawsuits against directors becoming commonplace in Europe have come partly in response to corporate arrogance towards environmental responsibility. Many offending companies have reacted inappropriately to fines, treating them as running costs rather than taking the anti-pollution legislation seriously. The legislators responded with laws that allow criminal action against individuals, putting pressure on senior executives to take responsibility for their company's actions. (Cozens 1996: 47.)

Court rulings have not imposed liability on individuals solely because of their role as an officer or director, but due to personal participation in an unlawful activity, or because of their ability to control the corporation's disposal of hazardous material (Freeman 1994: 61). According to Jeremy A. Gibson, an attorney with a Chicago law firm, the courts rely on three main legal tests for finding individuals liable:

- *Direct participation*

An individual engaged in improper or illegal conduct that is involved directly with a release or disposal will not be protected by a corporate entity.

- *Management or control*

Not only individuals who participate directly in wrongdoing, but also those who supervise environmental management specifically, or facility management generally could be found personally liable.

- *Prevention*

If an individual could have prevented the harm from occurring he or she will be liable.

(Anonymous 1995: 13 – 14.)

The United States' Department of Justice is serious about criminal prosecution. From the beginning of 1983 to July 1995 environmental criminal indictments against 1 458 corporate and individual defendants and 1 063 (73%) guilty pleas and convictions were recorded. Of the 1 063 convictions, 331 were against organizations, and the remaining 732 (69%) were against individuals. In 1993 alone, 186 companies were indicted of which 168 (90%) were convicted. (Millner 1995: 37.)

Along with the increase in prosecutions have come greater fines and jail terms for environmental violations. The increase in jail sentences has been dramatic. Each year between 1982 and 1989 the courts issued to corporate managers, on average, a total of fewer than 35 years in jail terms. By 1993 this average had more than doubled to a total of 80 years and for 1994 it was 99 years. According

to the then federal district attorney Richard Thornburgh, the use of criminal sanctions has become one of the most effective means of deterring non-compliance. (Kubasek 1996: 64.)

The due diligence defence was established by the Bata case in Canada (1992). In this precedent-setting case the court made it clear that due diligence will always be a matter of the particular circumstances of the case. The highest duties are imposed on operational directors, slightly lower standards on managerial directors, and the lowest standards on outside directors. The defence puts the burden on the defendant to prove that the manager or company has been duly diligent in attempting to prevent the commission of the environmental violation. The establishment of due diligence requires active environmental policies on the part of the company and the responsible individuals it employs. A successful due diligence defence requires that companies had constructed an efficient system designed to avoid the commission of environmental offences and that the proper operation of that system is ensured. (Kubasek 1996: 66.)

European environment ministers were recently admonished to step up efforts to ensure that their environmental policies actually help the environment. A report from the Copenhagen-based European Environment Agency says just one of 12 problem areas has improved during the last five years. U.K. businesses may face new legislation to clean up their environmental acts. (Anonymous 1998: 13.) According to Gallagher (1998: 5) a new driving force for cleaner technologies, waste minimization and the re-use and recycling of materials will come from changes in taxation. These changes will undoubtedly put pressure on some industries. He is of the opinion that the environment will play an increasingly large part in transforming industry and society within the lifetime of this and the next generation of business leaders.

The pressure for companies to take a more holistic approach to environmental management, and specifically to reduce the environmental impacts of their activities is increasing in the U.K. Environmental regulations are becoming more stringent, new policy instruments such as green taxes and charges are being

implemented and the expectations of customers and local communities and demands for responsible corporate environmental governance are also increasing. The quality of a company's environmental management is increasingly seen as an indicator to the outside world of the overall quality of its management. (Howes 1999: 32 – 33.)

In the U.S. the pressure towards a holistic approach to compliance is evidenced by the Environmental Protection Agency and state agencies who are beginning to regulate air, water, and solid waste in concert. An example of this "multimedia" approach is the Cluster Rule, which addresses wastewater and volatile air pollutants in the pulp and paper industry. Merely moving a pollutant from one medium to another is a solution of the past. (Parsons & Coyne 1998: 54.)

According to Williams (1999: 65) direct pressures on organizations include new legislation or regulation as well as pressures that are marginally short of legislation but almost equally effective. An example is the pressure for better environmental reporting by companies with the threat of legislation if a solution is not voluntarily found which is acceptable to the U.K. government.

Indirect pressures noted by Williams (1999: 65) are customer opinion (especially if the organization has a consumer brand to protect), pressure exerted by institutions such as banks and insurance companies, as well as organizations that are increasing awareness by selling advice on the new problems.

Bennett & James (1998: 20) are of the opinion that worsening environmental problems will increase pressures on business. They provide the following examples of such pressures:

- A growing number of energy and environmental taxes, such as the UK's landfill tax and a possible "carbon" tax on fossil fuels;
- large financial liabilities resulting from civil and criminal actions related to accidents or long-term environmental effects;
- damage to reputation and/or additional costs resulting from pressure group

campaigns;

- “sunsetting” of products (and opportunities for “sunrise” replacements) as a result of environmental legislation;
- evidence that some manufacturing companies have “costs of inefficiency”; and
- increased costs of capital for companies with poor environmental performance because investors and lenders demand a higher risk premium.

According to Sharfman, Ellington & Moe (1997: 14) there are pressures for similarity between companies, being coercive (having the rule of law or markets behind them), normative (professional organizations putting forth value-laden pressure), or mimetic (actions of leading firms inducing imitation by other firms).

Another source of pressure on companies comes in the form of procurement practices. Many U.S. federal contracts now contain clauses requiring contractors to investigate and monitor the environmental performance of sub-contractors and vendors. Some companies have adopted such practices on their own, without a federal mandate. Large manufacturers are developing criteria for selecting environmentally responsible suppliers and standards to which they must adhere. (Fenn 1995: 62.)

South African business must work with authorities to plot a relevant course that meets both our own challenges and global responsibilities. It must also take cognisance of the growing sensitivity of European businesses to competition from developing world countries which they perceive to be unregulated. European companies are being squeezed by ever tighter regulations and despite the efforts of world trade organizations environment can become a non-tariff trade barrier. (Anonymous 1997: 9.)

The polluter pays principle (refer to section 2.3.2) and the precautionary principle (if there is uncertainty as to the composition or hazardous nature of a given waste, action should be cautious and based on a worse-case-scenario assumption) are

guiding principles for future waste management legislation in South Africa. These principles strongly suggest that future waste management legislation will place heavy responsibility with waste generators in relation to the generation, transport, treatment and disposal of their waste. (Noble 1997: 34.)

3.3.2 Progress made by companies

Beaumont, Pedersen & Whitaker (1993: 253) state the following: "There is no longer debate about the existence of interlocking environmental crises and that "business-as-usual" is sustainable. Business is both a major cause of the problems, and their main source of solutions. Business has a responsibility to act, and, by so doing, can realize new business opportunities. The greater incidence of an environmental consciousness among business people in recent years gives some signals for hope, but there will not be any real progress until it is translated into action. While the complex environmental pressures require co-ordinated policy and action, the decisive forces must be driven by business."

According to Ferrone (1996: 41) we are in the early stages of transformation from non-integrated systems to integrated eco-efficient systems that control material flow in product creation for the benefit of both the environment and the bottom line. Allen Aspengren (Global Eco-efficiency Manager at 3M), describes eco-efficiency as "the next step" for companies who are seeking to optimize their environmental performance. He notes that eco-efficiency encompasses life cycle analysis and includes concepts like pollution prevention and cleaner production in trying to develop a philosophy that your products can be sustainable while also being profitable. (Anonymous 1996: 4.)

The rapid changes occurring in corporate environmental management during the 1990s may validate predictions about a new industrial revolution by environmentally conscious business leaders, for example Schmidheiny who said: "It is the most forceful trend in my lifetime. It will reshape business because it will redefine the rules of the game." Multinational corporations have gone through a dramatic transformation in their approaches to environmental protection, from

avoiding compliance with regulatory controls during the 1960s and 1970s to reacting to regulatory requirements and attempting to minimize the costs of compliance during the 1980s to taking control of their environmental problems and even turning them into competitive opportunities during the 1990s. (Berry & Rondinelli 1998: 38; 41.)

3.3.2.1 Environmental management systems and environmental audits

Companies are adopting environmental management systems to look at the impact of their businesses' entire operation. Britain was one of the first countries to develop a national standard (BS 7750) for environmental management systems. Certification to BS 7750 or ISO 14001 (which replaced BS 7750), is a public statement that a company is meeting its environmental responsibilities. (Pritchard 1997: 24 – 25.)

The International Standards Organization (ISO) issued ISO 14000, a set of voluntary standards for environmental management systems that provides flexible guidelines on maintaining a management system that will ensure compliance with environmental laws and regulations while promoting continuous improvement in environmental performance. Demand for these standards arose from a world-wide recognition by companies that economic growth is adversely affecting the environment. (Tucker & Kasper 1998: 344.) These standards define common criteria for a wide variety of industries that are recognized from one country to the next, removing technical barriers to trade (Wilson 1997: 37).

Some companies have dealt with potential liabilities by systematically assessing their environmental compliance efforts by using environmental audits. The audit process results in an environmental profile that shows whether the company satisfactorily complies with regulations and whether the potential for future non-compliance exists. (Chilcutt 1995: 41.)

However, the focus of the standards being developed is on environmental management system audits, for example ISO 14000 describes environmental

responsibility in terms of a management system and states that the purpose of the audit is to verify that the system is operating as intended. Environmental management system (EMS) audits have the following advantages over other types of environmental audits:

- EMS audits consider whether the management system is in place to ensure compliance on a continuous basis;
- EMS audits seek to discover and explain why non-compliance is occurring; and
- EMS audits provide a defence were the company ever cited for violation of an environmental law.

(Tucker & Kasper 1998: 348.)

The Justice Department of the United States will not prosecute violations of environmental statutes discovered through self-audits that are then reported to regulators and corrected. Although this policy was created to provide incentives to undertake voluntary audits, the Environmental Protection Agency retains discretion to recover the economic benefit a company gains from non-compliance. (Chilcutt 1995: 42.)

3.3.2.2 Environmental risk assessment

An environmental risk assessment survey (ERAS) is a highly effective method of identifying potential exposures associated with a facility's operations and procedures. Where a compliance audit simply measures if and where regulations are being met, an ERAS measures compliance, identifies significant and subtle areas of risk, and then recommends an appropriate risk management programme, such as who to contact in the case of a spill or what steps to take to prevent contaminants from spreading to surrounding areas and incurring further liability. (Piatkowski 1997: 72 – 73.)

A risk assessment study is a valuable loss prevention tool for site remediation. By conducting their own assessments using site-specific data, companies have proven that regulatory assumptions often seriously overstate site risks (or pollution from facility operations). One company avoided \$14 million in cleanup costs by investing \$100 000 in a risk assessment study. (Parsons & Coyne 1998: 53.)

3.3.2.3 Environmental reporting

The overall number of companies producing environmental reports is still relatively small, particularly outside the global mega-sized companies, but are increasing steadily. A survey of the U.S. Fortune 500 companies indicated that at least 20% of companies produced environmental reports in 1996. In the U.K. KPMG published its fifth survey of environmental reporting by the FT Top 100 companies in 1997. Although nearly 80% of these companies are providing some environmental information in their annual reports, only 30% (up from 20% in 1993) are issuing separate environmental reports and only a third of these reports had been externally verified. (Webb 1998: 32.)

The volume of social reporting in the U.K. has shown very rapid growth since 1986. South Africa appears to have reached the point of rapid increase sometime between 1992 and 1997. The current trend in the U.K. may indicate where South African social disclosures are headed during the next six to eight years. (De Villiers 1999: 8 – 9.)

Accounting for environmentally sustainable profits is a research project currently investigating how companies can develop more integrated and complete management and financial accounting and reporting systems that specifically take into account the most significant environmental impacts resulting from their activities. Interface Europe Ltd is the case study company for the project. *The 1997 Benchmark Survey, the third international progress report on company environmental reporting* by Sustainability/United Nations Environment Programme suggests that the monetarization/valuation of environmental impacts and their

integration into corporate accounting will become an increasingly important issue. (Howes 1999: 32 – 33.)

3.3.2.4 Full-cost environmental accounting

According to Berry & Rondinelli (1998: 44 – 45) the concept of environmental cost has had two major dimensions until recently. Environmental costs could refer to costs that directly affect a company's bottom line or to the costs to individuals, society, and the environment for which the firm is not accountable. The emergence of full-cost accounting is beginning to reshape the concept of environmental accounting and making it essential to business success.

Full-cost accounting (FCA) identifies and quantifies environmental performance costs for a product, process, or project. FCA considers four levels of costs:

- Direct costs, such as labour, capital, and raw materials;
- hidden costs, such as monitoring and reporting;
- contingent liability costs, such as for fines and remedial action; and
- less tangible costs, such as public relations and goodwill.

(Berry & Rondinelli 1998: 45.)

Many companies do not track or measure environmental costs and therefore do not know what their true environmental costs are. Conventional accounting practices often hide costs associated with environmental compliance in general overhead accounts. The result is that these costs are not managed and can have a negative effect on the bottom line that is unnecessary. (Carrera & Iannuzzi 1998: 64.)

Companies can use full-cost accounting (FCA) not only to determine the financial impact of their environmental activities, but also to find less costly alternatives by changing process or product design, increasing prices, or developing an exit strategy to eliminate environmentally costly products (Berry & Rondinelli 1998: 45.)

Companies that are serious about getting a handle on their true environmental costs have initiated some form of environmental cost accounting. Ontario Hydro, a large utility in Canada, has made FCA one of the cornerstones of its sustainable development strategy. By better understanding the internal and external environmental costs associated with its activities, quantifying those costs, and incorporating this information into planning and decision-making, Ontario Hydro expects to be in a better position to fulfil its sustainable development mission and enhance its competitiveness. (Carrera & Iannuzzi 1998: 64.) Corporations like Dow Chemical, DuPont and Ciba Geigy are using FCA to identify, quantify, and allocate the direct and indirect environmental costs of ongoing operations (Berry & Rondinelli 1998: 45).

Companies that embrace product stewardship (refer to section 3.4.9.) apply the principles of environmental cost analysis to everything from product design to packaging and shipping. Xerox achieved excellent results with this cradle-to-grave approach: By using an exceptionally detailed environmental cost analysis the company was able to produce a copier that is more environmentally friendly throughout its life with 98% of the product being recyclable. They also found a more effective way to make the copier, reducing the number of parts in the device from 2 000 to 250. The machines are easier to service because only two types of screws are used. (Dutton 1998: 60 – 61.)

3.3.2.5 Total quality management

In the late 1980s proactive environmental management and the total quality management (TQM) movement began to converge. TQM initiatives gave companies unexpected insights into how to make environmental management cost-effective and market-driven. (Berry & Rondinelli 1998: 41.)

Stiff competition and ever-rising worker compensation premiums forced many leading companies to achieve near-perfect performance in the areas of product quality, inventory management, preventive maintenance, and worker health and safety. They essentially reduced product defects, downtime, and worker injuries to

zero. This was accomplished by using TQM. Environmental departments can eventually reach this same level of performance. The first steps are to reduce waste and pollution to virtually zero but the ultimate goal is to attain complete environmental sustainability by imposing “zero drain on the natural economy”. True sustainability is still years away, and will require the development of new technologies that can maximize the usefulness of renewable energy and materials. Several companies are already taking steps in that direction. (Anonymous 1998: 1 – 4.)

3.3.2.6 Pollution prevention

Pollution prevention focuses on minimizing or eliminating waste before it is created. Much like TQM, pollution prevention strategies depend on continuous improvement efforts to reduce waste and energy use. This transformation is driven by a compelling logic: pollution prevention pays. (Refer to section 2.4.2 for examples.) Emerging global standards for environmental management systems (for example ISO 14000) have also created strong incentives for companies to develop such capabilities. (Hart 1997: 71.) Berry & Rondinelli note that in the 1980s a growing number of businesses began focusing on, anticipating and preventing waste problems before they occurred.

BASF, the German chemical giant, is helping to design and build chemical industries in China, India, Indonesia, and Malaysia that are less polluting than in the past. By co-locating facilities that in the West have been geographically dispersed, BASF is able to create industrial ecosystems in which the waste from one process becomes the raw material for another. Co-location solves a problem common in the West, where recycling waste is often infeasible because transporting it from one site to another is dangerous and costly. (Hart 1997: 71.)

3.3.2.7 Demand-side management

According to Berry & Rondinelli (1998: 43) demand-side management is an approach to pollution prevention that originated in the utility industry. It focuses on

understanding customers' needs and preferences and on their use of products, and is based on the following principles:

- Do not waste the product (electricity);
- sell exactly what the customer demands; and
- make the customer more efficient in the use of the product.

Demand-side thinking emphasized that utility companies are not primarily in the business of selling electricity or gas, they are really in the business of selling environmental conditions such as comfort, brightness, and conveyance. By looking at the market in terms of real demand, utilities can prosper by providing customers with a variety of environmentally beneficial services, and not just electricity or gas. Another example is Monsanto who has developed genetically bio-engineered plants, such as potatoes and cotton, that are protected against disease and insects. Building protection into plants genetically obviates the need for millions of pounds of raw materials and enormous amounts of fossil fuels for energy to produce pesticides, hundreds of thousands of containers and packages that require disposal, thousands of litres of fuel to distribute and apply the product, and millions of kilograms of pesticide residue that pollute land and water. (Berry & Rondinelli 1998: 43.)

3.3.2.8 Design for environment

Design for environment is becoming an integral part of pollution prevention in proactive environmental management. Businesses are finding it far more efficient to design products for disassembly, modular upgradeability, and recyclability at the outset than to deal with disposal problems at the end of a product's life. (Berry & Rondinelli 1998: 43.)

Steelcase Inc. is a leader in industrial design and environmental responsibility as evidenced by 29 design awards in 10 years. Steelcase linked its "design for environment" focus with an equally strong "design for manufacturing" perspective in the development of the Protégé chair. The development of this chair identified

key elements of a cohesive, environmentally responsible product development initiative and led to the creation of a formal “design for environment” tool for use in future development efforts. (Quinn 1997: 23 – 24.)

Discarded electronic consumer products cause enormous environmental problems as no thought were given to their possible reuse when they were designed 15 – 20 years ago. Some European governments have passed laws to make manufacturers and importers responsible for their products when discarded by the consumer. Therefore, manufacturers have started to think about product designs which allow the reuse of components and the recycling of materials. (De Ron & Penev 1995: 363.)

3.3.2.9 Product stewardship

Berry & Rondinelli (1998: 44) define product stewardship as practices that reduce environmental risks or problems resulting from the design, manufacturing, distribution, use, or disposal of products. According to Hart (1997: 72) product stewardship focuses on minimizing not only pollution from manufacturing but also all environmental impacts associated with the full life-cycle of a product. He describes design for environment as a tool for product stewardship that is becoming increasingly important.

Companies are responding to the European takeback laws by using product life-cycle analysis to determine ways of reducing or eliminating waste at all stages – from raw materials acquisition, production, distribution, and consumer use to waste reclamation, recycling, reuse, and disposal. (Berry & Rondinelli 1998: 44.)

3.3.2.10 Clean technology

The existing technology base in many industries is not environmentally sustainable. The chemical industry has made substantial headway over the past decade in pollution prevention and product stewardship, but is still limited by its dependence on the chlorine molecule. (Many organochlorides are toxic or

persistent or bioaccumulative.) As long as the industry relies on its historical competencies in chlorine chemistry, it will have trouble making major progress toward sustainability. (Hart 1998: 73.)

Japan's Research Institute for Innovative Technology for the Earth (RITE), financed and staffed by the Japanese government and more than 40 corporations, is one of several new research and technology consortia focusing on the development and commercialization of clean technologies for the developing world. RITE has set forth an ambitious 100-year plan to create the next generation of power technology, which will eliminate or neutralize greenhouse gas emissions. (Hart 1998: 73.)

3.3.2.11 Responsible care

The Canadian Chemical Producers' Association took the lead in setting up an *Initiative for Chemical Industry* (called *Responsible Care*) in 1984 to commit itself to both a set of guiding principles and to a series of management practice standards which form the basis of how chemicals are to be managed (Lotter 1996: 20). In 1994 this initiative was adopted by 15 South African chemical companies. This number has since grown to 120, accounting for 90% of the chemicals manufactured in South Africa. The principles of Responsible Care include integration of health, safety and environmental considerations into business processes. (Lotter & Gerrans 1998: 8.)

3.3.2.12 Green alliance

"Green alliance" partnerships between businesses and environmental groups are proving to be effective strategies for integrating corporate environmental responsibilities with market goals. They are a consequence of an emerging philosophy called "Market-based Environmentalism" which advocates making ecology attractive to business via market incentives. (Hartman & Stafford 1997: 184.)

Internationally, Greenpeace has adopted the slogan “Whatever it takes” as its environmental directive. Allying with businesses to solve ecological problems and help companies become environmentally responsible is now an integral part of its arsenal of eco-tactics, along with non-violent demonstrations, research and public opinion shaping. They allied with Foron, a former East German appliance maker on the verge of insolvency to launch the award-winning, environmentally-friendly “Clean Cooler” refrigerator which won Germany’s prestigious “Blue Angel” award and came to dominate the eastern German market. Greenpeace provided Foron with an “early mover” advantage against its larger, western German competitors who ultimately followed Foron’s lead. (Hartman & Stafford 1997: 184.)

Partnering with environmentalist organizations is becoming a viable green strategy for many companies that do not possess the expertise or public trust to address adequately environmental problems. Corporate executives and environmentalists are burying the hatchet and finding economic and ecological advantages through cooperation. Green alliance partners include The Body Shop International and the World Wildlife Fund, General Motors and the Coalition for Environmentally Responsible Economies and McDonald’s and the Environmental Defense Fund.

3.4 MEASURING ENVIRONMENTAL RESPONSIBILITY

It is crucial to attempt to measure environmental responsibility as appropriately as possible for the purpose of establishing what the relationship between environmental responsibility and financial performance measures is. The following studies give some indication of what measures to use when measuring environmental responsibility:

Ingram (1978: 283) found that the information content of firms’ social responsibility disclosures is conditional upon the market segment with which the firm is identified. He suggested that it may be important to evaluate information content by analyzing the impact of the signals on market segments (or segments identified by firm-specific characteristics), rather than on a general cross-section of firms.

Abbott & Monsen (1979: 514 – 515) attempted to develop a social involvement disclosure scale based on a content analysis of the annual reports of the *Fortune 500*. They found that the self-reported social disclosure method of measuring corporate social involvement, despite its own drawbacks, has significant advantages as a technique for measuring corporate social responsibility.

Ingram & Frazier (1980: 616) used content analysis to measure the content of each firm's environmental disclosures. Their methodology of content analysis involved the selection of analytical categories within the content material. They set the following requirements for categories:

- Categories must be defined as precisely as practicable so that different judges could be expected to arrive at the same results with the same material.
- Each set of related categories should be exhaustive and mutually exclusive and defined as such.

Wiseman (1982: 62) attempted to measure and evaluate voluntary environmental disclosures made by companies in their annual reports in order to provide preliminary evidence on the relationships between objective measures of a firm's environmental disclosure and the firm's actual environmental performance. She found that voluntary environmental disclosures were incomplete, providing inadequate disclosure for most of the environmental performance items included in the index. She also found that no relationship existed between the measured contents of the firms' environmental disclosures and the firms' environmental performance.

Wiseman (1982: 55) constructed an indexing procedure similar to the ones used by Buzby (1974) and Singhvi & Desai (1971) for evaluations of corporate disclosure in annual reports to evaluate the contents of the annual report environmental disclosures. She identified 18 index items from the environmental reporting literature and developed a rating sheet to measure the extent of disclosure of those items. The items were classified into four categories. Rating

of the disclosures was based on the presence or absence and the degree of specificity of each of the information items. A score of three (highest possible) was assigned to an item if it was described in monetary or quantitative terms. A score of two was assigned if company specific information was disclosed in non-quantitative terms. One was assigned to items mentioned only in general terms. A zero was assigned if the item was not present in the disclosure.

Cowen, Ferreri & Parker (1987: 121) found that discussion of only the total number of corporate social responsibility disclosures (as has occurred in the past) might be misleading. Different types of disclosures may receive different treatment from corporations and may constitute a response to different pressures.

Belkaoui & Karpik (1989: 46) found a significant and positive association of social disclosure with social performance which they said shows that social improvements by a firm are quickly capitalised by social disclosure in an attempt to create an impression of sensitivity to important non-market influences that may be in the long-term interest of the shareholders. They also found it interesting that those studies finding no correlation or negative correlation between social performance and social disclosure rely on either student ratings or on the CEP pollution performance index. Both indices do not measure social performance *per se*, but rather perceived social performance by individuals who cannot be considered constituents, or pollution control records which do not represent overall effectiveness (Ullmann 1985: 544).

According to Klassen (1995: 48) measures can be classified as either *objective*, reported by external organizations or government databases, or *perceptual*, based on environmental reputation as evaluated by some collection of peers. For his study he chose an objective measure (reported in the EPA TRI database) given the significant weaknesses of perceptual measures of environmental performance (Klassen 1995: 52).

Huckle (1995: 47 – 48) used content analysis as a measure of environmental responsibility as well as reputational ratings to validate the results of the content

analysis. The reputational rating was based on the views of the investment analysts and portfolio managers responsible for the relevant sectors of the J.S.E. He found a poor correlation between the two measures that suggested a lack of validity and expressed the hope that a better, more sophisticated measure of environmental performance could be developed.

Erasmus used a control list to do a content analysis of the reporting on environmental issues in the annual financial statements of companies listed on the J.S.E. She applied a judgement scale to the results of the control list to evaluate the quality of environmental reporting. This control list and judgement scale was based on the control list and judgement scale used by Van Niekerk (refer below). (Erasmus 1998: 85; 255.)

Erasmus (1998: 181) compiled a questionnaire with questions that are comparable to the topics in the control list. This questionnaire was sent to all companies listed on the J.S.E. during 1997 in order to compare a company's actual performance relating to the environment to its environmental reporting in the annual financial statements (Erasmus 1998: 182; 256).

Although Erasmus (1998: 266 – 268) found that there is a poor relationship between environmental reporting in the annual financial statements during financial years ended 1994, 1995 and 1996 of J.S.E listed companies and their actual environmental performance, she also found that since 1994 there has been a constant increase in the percentage of companies that report on environmental issues, as well as that the quality of environmental reporting is improving.

After considering studies criticizing environmental disclosure in annual financial statements as well as studies motivating the use of annual financial statements as main source of information relating to environmental responsibility Van Niekerk (1998: 66 – 68) came to the conclusion that there is overwhelming evidence that researchers view annual financial statements as the most important source of information with respect to environmental reporting; therefore she decided to use annual financial statements for the purposes of her study.

Van Niekerk (1998: 62, 69) compiled a control list comprising of 23 questions, based on a control list developed by Bogiages & Vorster (1993) to evaluate the environmental information that companies disclose in their annual financial statements. The recommendations of the Institute of Chartered Accountants of England and Wales were used as foundation for the development of this control list. Van Niekerk developed a scale to judge the quality of the environmental information that was gathered by using the control list. With these two measures she ranked companies from high to low according to the quantity and the quality of their environmental information.

The control list and judgement scale used by Van Niekerk is presented respectively in Appendix 1 and 2.

The questions in the control list are categorized as follows:

- Policy/mission statement regarding the environment;
- environmental objectives;
- environmental activities;
- environmental reporting; and
- audit reports.

(Van Niekerk 1998: 69.)

Van Niekerk (1998: 85) considered the methods of work of researchers who wanted to judge the information in annual financial statements objectively. She noted that the control lists and judgement scales of Cerf (1961), Singhvi & Desai (1971) and Buzby (1974) were based on general information in the annual financial statements while the judgement scales of later researchers like Ingram & Frasier (1980), Wiseman (1982), Freedman & Jaggi (1986), Gamble, Hsu, Kite & Radtke (1995) and Fekrat, Inclan & Petroni (1996) were more specifically aimed at the disclosure of environmental information in the annual financial statements.

Van Niekerk (1998: 87) used the categorizing of Ingram & Frasier (1980) as the starting point for the development of her judgement scale. Ingram & Frasier (1980: 616) identified four dimensions and 20 categories of which Van Niekerk used three dimensions and 10 categories as set out below.

Van Niekerk (1998: 88) judged every question in the control list according to the following 10 categories that is spread over the dimensions of evidence, time and specificity:

<i>Evidence</i>	<i>Time</i>	<i>Specificity</i>
Monetary	Past	Specific
Non-monetary	Present	General
Qualitative	Future	
Declarative		
None		

The potential information value of monetary values are greater than those of non-monetary values. Therefore the category *monetary* carries a greater weight than the category *non-monetary*. The comparativeness of information relating to social accounting in the financial statements of enterprises is limited by the fact that the social costs of different enterprises may differ considerably (Lubbe & Vorster 1991). Due to this limitation the category *qualitative* carries a lower weight than the category *monetary*. However, the information provided by the category *qualitative* is of paramount importance, therefore this category carries the same weight as the category *non-monetary*. (Van Niekerk 1998: 90.)

Declarative information (or narrative disclosure) does not assist investors to evaluate an enterprise's efforts to reduce activities that is harmful to the environment and the future risks relating to environmental activities (Freedman & Jaggi 1986.) Therefore the category *declarative* carries a lower weight than the category *qualitative*. (Van Niekerk 1998: 91.)

Investors' decisions are usually future-orientated, therefore the category *future* carries a higher weight than the categories *present* and *past*. As the annual

financial statements of companies were used as the source of environmental information in Van Niekerk's study, the category *specific* carries a higher weight than the category *general*. The judgement scale makes provision for one extra point over and above the basic weight for specific information in the case of questions in the control list that make provision for companies that provide specific information in respect of more than one item. In order to maintain the balance between the weights of the different questions within the various categories a maximum is applicable on the number of points for specific information. (Van Niekerk 1998: 91 – 92.)

The measures used by Van Niekerk were developed to judge the disclosure of environmental information in annual financial statements by companies listed on the Johannesburg Stock Exchange (Van Niekerk 1998: 63). As this study will also use annual financial statements of companies listed on the Johannesburg Stock Exchange and the measures are objective, these measures appear most appropriate for the purposes of this study.

3.5 SUMMARY AND CONCLUSIONS

The related problems of a growing world population, depletion of natural resources and pollution have led to an ecological crisis that is endangering natural systems of which humans are part. The traditional Western view of life is founded in the assumptions that humans have the obligation to master and manipulate nature to their benefit and that the natural environment has unlimited possibilities for exploitation. There appears to be a paradigm shift from the traditional Western view of life to an environment focused view. According to the new paradigm there are ecological limitations for humans relating to use of natural resources, pollution and population growth.

Environmental responsibility is not easy to define due to diverse interpretations of the principle. The classical model, the neo-classical model and the sustainable development model can be identified. The classical model incorporates legal constraints while the neo-classical model includes moral constraints as part of its

limits. The neo-classical model may be criticized for its continued reliance on consumer demand in setting environmental limits to business conduct. Unconstrained demand will not resolve the dilemma created by poverty, population growth, and environmental destruction. The sustainable development model seeks to combine the natural constraints established by ecological laws with minimal moral constraints placed upon business activity.

The now widely accepted general standard of environmental soundness is “sustainability” defined by the World Commission on Environment and Development (1987) as “to meet the needs of the present without compromising the ability of the future generations to meet their own needs”.

Environmental responsibility manifests itself in a strategy that the management of a company decides to follow relating to the level of environmental performance it wishes to attain; the levels ranging from mere compliance with legal requirements to following sustainable development principles.

Increasing pressures on companies and their employees to be environmentally responsible have led to considerable progress by companies in the area of environmental responsibility. Business has realized that it is both a major cause of environmental problems, and their main source of solutions. Multinational corporations have gone through a dramatic transformation in their approaches to environmental protection, from avoiding compliance with regulatory controls during the 1960s and 1970s to reacting to regulatory requirements and attempting to minimize the costs of compliance during the 1980s to taking control of their environmental problems and even turning them into competitive opportunities during the 1990s.

Companies make use of the following concepts in their quest to be environmentally responsible:

- Environmental management systems and environmental audits;
- environmental risk assessment;

- environmental reporting;
- full-cost environmental accounting;
- total quality management;
- pollution prevention;
- demand-side management;
- design for environment;
- product stewardship;
- clean technology;
- responsible care;
- green alliance.

Abbott & Monsen (1979) attempted to develop a social involvement disclosure scale based on a content analysis of annual reports. They found that the self-reported social disclosure method of measuring corporate social involvement, despite its own drawbacks, has significant advantages as a technique for measuring corporate social responsibility.

Ingram & Frasier (1980) used content analysis to measure the content of each firm's environmental disclosures. Their methodology of content analysis involved the selection of analytical categories within the content material.

Wiseman (1982) constructed an indexing procedure similar to the ones used by Buzby (1974) and Singhvi & Desai (1971) for evaluations of corporate disclosure in annual reports to evaluate the contents of the annual report environmental disclosures. Rating of the disclosures was based on the presence or absence and the degree of specificity of each of the information items.

Van Niekerk (1998) considered the methods of work of researchers who wanted to judge the information in annual financial statements objectively, including that of Ingram & Frasier, and Wiseman. She compiled a control list based on a control

list developed by Bogiages & Vorster (1993) to evaluate the environmental information that companies disclose in their annual financial statements. Van Niekerk developed a scale to judge the quality of the environmental information that was gathered by using the control list.

The measures used by Van Niekerk were developed to judge the disclosure of environmental information in annual financial statements by companies listed on the Johannesburg Stock Exchange (Van Niekerk 1998: 63). As this study will also use annual financial statements of companies listed on the Johannesburg Stock Exchange and the measures are objective, these measures appear most appropriate for the purposes of this study.