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Environmental Reporting of Global Corporations: A Content Analysis based on Website Disclosures

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ABSTRACT. Today, more corporations disclose information about their environmental performance in response to stakeholder demands of environmental responsibility and accountability. What information do corporations disclose on their websites? This paper investigates the environmental management policies and practices of the 200 largest corporations in the world. Based on a content analysis of the environmental reports of Fortune's Global 200 companies, this research analyzes the content of corporate environmental disclosures with respect to the following seven areas: environmental planning considerations, top management support to the institutionalization of environmental concerns, environmental structures and organizing specifics, environmental leadership activities, environmental control, external validations or certifications of environmental programs, and forms of corporate environmental disclosures.

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Introduction

Over the years, societal expectations of corporate performance have changed considerably. At the heart of this change is the call for greater environmental sustainability. Different stakeholder groups, especially the regulatory and corporate watchdog groups, are putting great pressure on corporations to become more environmentally responsible. There has been an increase in the number of countries that have passed regulations requiring some sort of public disclosure of corporate environmental information. Examples of such countries include Japan, Denmark, New Zealand, and The Netherlands (Kolk, 2003). As environmental sustainability became an important concern for organizations and environmental disclosure became a stakeholder requirement, organizations tried to institutionalize environmental concerns through policies, procedures, and systems (Jones et al., 1998; Russo and Fouts, 1997).

The corporate environmental movement is comprised of two distinct stages characterized by different driving forces. During the early stage, the movement was driven by the compliance-based paradigm in which legal and regulatory considerations were the primary driving forces behind corporate environmental responses (Li, 2001; Rosen, 2001). This phase was characterized by law-obedience behavior, driven by command and control or regulatory regime-based considerations, and internally justified by cost considerations. During

this phase, corporate environmental responses were more reactive to external pressures, primarily regulatory pressures (Hart, 1995; Li, 2001).

The second stage is driven by the competitive advantage-based view, which argues that economics and ecology are compatible and superior environmental performance leads to above-average industry profits (Rosen, 2001; Russo and Fouts, 1997). According to this view, corporations with proactive environmental programs have a competitive advantage because their better reputation resonates favorably with stakeholder groups such as customers, employees, and the public in general (Dechant and Altman, 1994; Russo and Fouts, 1997; Starik and Rands, 1995). Other factors that contribute to the competitive advantage based on environmental sustainability are better technology (Groenewegen and Vergragt, 1991; Shrivastava, 1995a) and sharper political acumen to influence public policy (Starik and Rands, 1995). The underlying premise of the second stage is that stakeholders expect companies to be environmentally responsible and hence there is a market premium for this improved environmental performance.

Stakeholder pressure acts upon companies in two different forms – not only are companies expected to effectively manage their environmental performance, but they are also to be accountable for this performance (Schaltegger and Burritt, 2000). As a result, there has been an increase in the number of companies providing environmental disclosures (Deegan and Gordon, 1996) and many of these disclosures have been in the form of environmental reports (Koehler and Chang, 1999). However, two major problems have plagued these reports in the past. One, there was no ''standardization or uniformity'' in terms of what various companies reported. Hence, these reports varied widely from company to company in terms of their content (MacLean and Gottfrid, 2000; Wright, 1995). Two, as corporations started to use environmental reports to communicate to stakeholder groups regarding their environmental performance, the dissemination of these reports became an issue as it was not practical to distribute hard copies to all interested parties (Jones et al., 1998).

While organizations grappled with the above-mentioned problems, non-governmental organizations (NGOs) and technological advances seemed to offer them innovative solutions to solve these problems. The problem of content standardization and uniformity was addressed by a number of associations and NGOs. International Standards Organization's ISO 14001 guidelines and European Union's Eco-Management and Audit Scheme (EMAS) were introduced as a way to standardize corporate environmental practices. In order to provide a consistent guideline to disseminate environmental information, some standards for environmental reporting were created. Such popular standards include the Public Environmental Reporting Initiative (PERI), the CERES Report from the Coalition for Environmentally Responsible Economics (CERES), the ICC Business Charter for Sustainable Development (ICC), and the Global Reporting Initiative (GRI) (Buchholz, 1998; Skillius and Wennberg, 1998).

It is beyond the scope of this paper to elaborate on all the principles set for these standards. However, there are many common denominators in terms of their recommendations for corporate environmental management. These commonalities include having an environmental policy to govern operations, an environmental system to translate the policy into practice by integrating environmental concerns throughout the different organizational and functional area processes, a commitment to improve environmental performance by continuously researching best practices and reassessing operations, a requirement that contractors and suppliers conform to environmental standards, and an open communication channel to foster dialog with different stakeholder groups (ISO 14001, CERES, ICC, GRI).

The issue of dissemination has been resolved as the Internet and the World Wide Web provided organizations with a cheap, fast, and easy information dissemination tool (Jones et al.1998; Marken, 1998). Given the ever-increasing number of Internet users, companies have turned to it from more traditional mass media as their preferred communication channel (Snider et al., 2003). The 2002 KPMG Survey of Corporate Sustainability Reporting also shows that more and more companies are using the Internet as a tool to communicate their environmental performance.

The purpose of this paper is to investigate the environmental management policies and practices of the world's 200 largest companies as disclosed on

their corporate websites. More specifically, this study analyzes the content of corporate environmental disclosures with respect to the following seven areas: environmental planning considerations, top management support to the institutionalization of environmental concerns, environmental structures and organizing specifics, environmental leadership activities, environmental control, external validations or certifications of environmental programs, and forms of corporate environmental disclosures.

This paper contributes to the literature on corporate environmental reporting in two unique ways. First is its comprehensiveness; we investigated seven areas comprising of 34 specific environmental parameters, which are derived from a number of environmental reporting guidelines, including the ICC and GRI guidelines. Table I in the research methodology section presents the variables that we use in this study. Second is our large sample size, which consists of a cross-section of the world's largest companies. Unlike many studies that have a limited sample size or are industry or country specific, we have a relatively large sample size of 200 companies from different industries and different countries.

Literature on environmental reporting

Over the last decade, there has been an increase in the number of companies providing environmental information (Deegan and Gordon, 1996; Kolk, 2003; KPMG, 1999, 2002; Peck and Sinding, 2003). A literature review of corporate environmental disclosures shows four major streams of research. The first stream deals with who reports environmental information and how this reporting has benefited the reporters (e.g., Meek and Roberts, 1995; Nieminen and Niskanen, 2001; Russo and Fouts, 1997). In other words, the emphasis here is on the characteristics of the companies that report environmental information and the relationship between such reporting and financial performance.

The next stream of research is about the content of the reporting, or what is actually being reported (e.g., Guthrie and Parker, 1990; Niskala and Pretes, 1995). The third stream, which is relatively new, deals with the "how" or the medium of reporting. Most of the studies under this stream look at the

TABLE I

Categories of environmental communication

Categories	Measures[a]
Environmental planning considerations	
Policy	Presence of environmental policy
Philosophical underpinnings	Sustainable development Life-cycle approach Integrated management
Strategic rationale and driving forces	Compliance Competitive advantage Openness to stakeholder concerns Proactive approach or strategy Contributing to global sustainability
Planning approach	Risk management Corporate priority or not Continuous process improvement Pre-determined targets and objectives Environmental research and development
Top management commitment to the institutionalization of environmental practices	Foreword (of environmental reports) by a top-level executive, such as the CEO
Environmental structures and organizing specifics	
Departmental affiliation of corporate environmental function	Separate (Independent) function Combined with other departments, such as HR and safety & health
Management priority	Top-level executive in charge
Structural integration of environmental concerns	Presence of environmental management systems
Prevalence of environmental practices	Office and site practices
Stakeholder involvement	Employee training Customer training Supplier or contractor training Community involvement

TABLE I

Continued

Environmental leadership activities	Promotion of environmental issues at the micro (industry) level Promotion of environmental issues at the macro (national) level Partnerships with NGOs
Environmental control	
Control measures	Compliance data Historical trends Progress towards goals Explanation of variances Explanation of corrective actions
Audits	Internal audits External or independent audits
External certifications	EMAS, ISO 14001
Environmental communications	
Medium of environmental disclosure	General external report Environmental annual report

[a]The 16 components of the ICC Business Charter are incorporated into the measurement variables and surrogates.[3]

issues relating to the use of Internet as a medium of environmental reporting (e.g., Jones et al., 1998). The final stream deals with the assessment of environmental performance, mostly for the benefit of the investment community, to rank/rate such performance (e.g., Dow-Jones Sustainability index; Fortune Environmental Scorecard; ECCO-Check Index; Investor Responsibility Research rating; and Morhardt et al., 2002).

One question that must be addressed is which companies report environmental information and what characteristics they share with other companies that do the same. Empirical studies show that characteristics, such as company size, industry type, and geographic location are the three variables that have the greatest impact on voluntary environmental disclosures (Meek and Roberts, 1995). There is a strong relationship between corporate environmental disclosure and industry type (Deegan and Gordon, 1996; Nieminen and Niskanen, 2001). In contrast to the past, where voluntary environmental reporting was mostly restricted to firms from high environmental impact industries in industrialized countries, the recent reporting practices show that environmental communication is becoming common in non-industrial sectors and different regions in the world (KPMG, 2002). However, environmental reporting still continues to be the highest in countries, such as U.S.A., Japan, Germany, and U.K. and in industries, such as chemicals, pharmaceuticals, electronics, and automotive (KPMG, 2002). Similarly, company size is also found to be a determinant of environmental disclosure (Nieminen and Niskanen, 2001).

In terms of what is being reported and how this has changed over the years, perhaps the best source is the various reports of KPMG, which has undertaken periodic surveys of the environmental and sustainability practices of multinational corporations since 1993. The KPMG International Surveys show that companies report the details of their environmental policies, future plans and targets, and features of their environmental management systems (EMS). The number of companies providing such information has increased steadily over the years (KPMG, 1999, 2002). Kolk's (1999) meta-analytic review of environmental reports yields similar results in terms of the common denominators of corporate environmental reports. In its survey of 88 corporate environmental reports of Japanese companies, the Investor Research Responsibility Center (IRRC) found that approximately 90% of the companies provide information about environmental objectives, achievements, and costs (Metrick, 2001).

Business Today (Anonymous, 2001) conducted a comprehensive survey of the environmental practices of India's largest companies. They found that 42% of the companies had ISO 14001 certifications, 60% had separate environment departments, 94% had environmental targets in place, 70% had internal environmental audit systems, and 60% had facility level environmental reporting systems. In 40% of the companies, the senior environmental officers reported directly to the chief executive officers.

Corporations have changed how they report environmental information. Although in the past, corporations used annual reports to impart such information (Nieminen and Niskanen, 2001), now

increasing numbers of companies are publishing separate environmental and sustainability reports. For example, only 15% of the companies in the 1993 KPMG survey had published separate environmental reports, whereas the 1996 survey found that 17% had environmental reports. This number had risen to 35% in the 1999 survey and 45% in the 2002 sustainability survey (KPMG, 1999, 2002). The popularity of the Internet and the World Wide Web has encouraged more and more companies to use them for environmental disclosures (Jones et al., 1998).

Research methodology

We collected data regarding the environmental policies and practices of the Global 200 companies. Every year, *Fortune* publishes a list of the world's 500 largest companies. Our sample consists of the largest 200 multinational companies for 2002. We decided on multinational companies as research shows that, because of their size and presence in many countries, they have a huge impact on the ecologies of the economies in which they function. In addition, ''the globalization of commerce has increased the public's awareness of the social and environmental impacts of large corporations'' (White, 1999). Data collection involved gathering published information regarding the environmental disclosure practices of the companies. We relied on corporate websites for gathering environmental information.

Content analysis was the primary tool used for analyzing the published information. It is a ''technique for making inferences by objectively and systematically identifying specified characteristics of messages'' (Holsti, 1969). As a research tool, it is used to investigate if certain words and concepts are present within texts. Content analysis has been widely used in corporate social and environmental responsibility research (Gray et al., 1995). Examples of studies that use this methodology include Guthrie and Parker (1989, 1990), Mathews (1993), Nieminen and Niskanen (2001), and Maignan and Ralston (2002).

The content analysis method that is used in this research is conceptual analysis, which involves choosing certain concepts for examination and analysis and then quantifying and tallying their presence in the chosen texts (http://www.writing.colostate.edu/references/research/content/pop2a.cfm). We used the priori coding method,[1] which requires a strong theoretical foundation for the coding categories, to code the data. We followed the guidelines of the Writing Center at Colorado State University in performing the content analysis. First we identified our research questions and chose our sample of 200 companies and collected information about their environmental management policies and practices from their websites. Then we used the literature, especially the principles set forth in different guidelines, such as ICC Business Charter, WICE, and GRI, to formulate our codes. Afterwards, we analyzed corporate environmental information and placed them into our different content categories. In order to ensure reliability and validity, one of the researchers acted as the primary coder. The other researcher spot-checked a few reports randomly to ensure reliability. Please see Table I for the codes.

Findings[2]

Presence of environmental information

Of the 200 corporate websites that we visited, only 140 yielded any environmental information as 52 companies lacked the needed information on their websites, seven companies did not have information in English and one company had merged with another company. Table II presents the country and industry profile of the sample. An analysis of the sample profile yields some noteworthy patterns. First, it seems that the voluntary dissemination of corporate environmental information is more common in Western European countries and Japan than in the United States. This is in line with prior studies, such as Kolk (2003), which show that governments in Western Europe and Japan have mandated certain corporate environmental disclosures. Second, it appears that companies in industries that have a large environmental footprint, such as automotive, utilities, and other manufacturing, provide more environmental disclosures than companies in less sensitive industries such as finance, securities, and insurance and communication and media. This is also consistent with the literature, as noted in the literature review section.

TABLE II

Country and industry profile

Variable	Total (I)	With report (II)	With report (%) (II/I)
Country			
United States	87	55	63.22
Japan	32	24	75.00
Germany	19	14	73.68
France	15	9	60.00
Britain	12	10	83.33
Netherlands	6	5	83.33
Italy	5	3	60.00
Switzerland	5	5	100.0
Others (Finland, Norway, Spain, etc.)	19	15	78.95
Industry			
Finance, securities, and insurance	54	22	40.74
Trade and retailers	28	22	78.57
Electronics and computers	20	17	85.00
Oil and gas	18	15	83.33
Communication and media	17	11	64.71
Automotive	15	15	100.00
Utilities	15	13	86.67
Other services	10	5	50.00
Others (Metals and other manufacturing, chemicals, forest and paper products, etc.)	23	20	87.0

Environmental planning considerations

The first category of information that we sought regarding corporate environmental disclosures was about corporate environmental planning considerations. As management theory posits, planning is the first management function and it is essential for the success of any endeavor (Daft, 1995). We looked for four elements with respect to environmental planning: the presence of an environmental policy, the value base or philosophical underpinnings of environmental efforts, the strategic rationale and driving forces of environmental plans, and the environmental planning approach.

Presence of environmental policy

Corporate environmental policies, which generally act as guidelines, outline companies' environmental principles as well as the rationale and philosophical underpinnings of these principles. Almost 60% of the Fortune 200 companies have a corporate environmental policy. If we base our analysis only on the 140 companies that have any environmental information on their websites, then this number jumps to 84%.

Environmental policies of some companies, such as General Electric (GE) and Mitsubishi Electric (ME), tend to be short, simple, and straightforward; however, the policy statements of many companies tend to be much more elaborate. Our analysis of the environmental policies shows that most contain the following two ingredients: an articulation of the companies' commitment to environmental issues and how this commitment is translated into action through environmental policies. Our analysis also shows that the main reason for the differences in the length of policy statements is that while most companies combine the two ingredients, some break them down into two elements – commitment and principles.

After presenting its environmental, safety, and health (EHS) vision of ''making the world a better place,'' GE states the following under its ''EHS Policy:''

> ''We pursue our EHS vision with a no-excuses policy and a process of continuous improvement. Our expectations are simple and clear
>
> (1) Compliance with the EHS laws and regulations that apply to our operations;
> (2) Providing a safe working environment;
> (3) Minimizing the use and emission of toxic chemicals or materials; and
> (4) Applying GE's global tools and programs consistently everywhere we do business'' (GE, 2002).

After stating the ''Core Environmental Policy'' of ''under the international principle of sustainable development, the ME group is committed to protecting and improving the global environment through all business activities and employee actions

utilizing knowledge accumulated in the past as well as technologies yet to be developed,'' ME highlights the essentials of its environmental plan and its environmental code of practices. A similar approach is taken by companies, such as Altria and Mitsui.

Companies with much longer environmental policy statements, such as Nokia, Merrill Lynch, Citigroup, and Conoco, combine their commitment and principles in one policy statement. For example, Nokia, after articulating its commitment ''to the pursuit of environmentally sustainable development,... by leveraging its resources including technological know-how, market-position, and the continuous building of competencies,'' follows through with its principles of environmental policy and its implementation guidelines. In addition, some of these companies give more detailed explanations of their environmental principles and practices in their policy statements. For example, Merrill Lynch's environmental policy statement includes details of its waste minimization programs, greenhouse gas emission goals, its charitable contributions to environmentally sustainable organizations, and its educational initiatives to promote environmental awareness.

Why do companies engage in environmental management? We analyzed the *strategic rationale and driving forces* of corporate environmental management policies and efforts. Our analysis shows that 46% of the companies use their environmental policies to show that they are open to stakeholder concerns and 41% believe that they are contributing to global sustainability to preserve the environment for humanity and future generations. About 55% of the companies use their environmental efforts as part of their risk management strategy. About 33% of companies implicitly indicate this by stating that their environmental efforts are part of a proactive strategy to minimize environmental harms of the future and 22% of them explicitly state that their environmental efforts are driven by risk reduction considerations. As mentioned earlier, the two stages of corporate environmental movement offer compliance and competitive advantage as the two driving forces of the movement. Our analysis shows that 27% of the companies state that their corporate environmental management is driven by competitive advantage-based considerations, whereas 21% stated that it is driven by compliance issues.

We investigated the value base or the *philosophical underpinnings* of corporate environmental management efforts. Our analysis of the environmental philosophy that underlies corporate environmental policies shows several interesting findings. About 45% of the companies equate environmental performance with sustainable development, where economics and ecology coexist and the current generation meeting its needs without compromising the needs of future generations. About 41% of the companies take an integrated approach to the management of their environmental concerns where these concerns are incorporated throughout the organizations' functions and processes. However, only 28% of the companies approach their environmental functions with a ''life-cycle'' or ''cradle-to-grave'' philosophy, which assumes that organizations have a responsibility for their products from the product inception to their final dissipation in nature.

Planning approach

We examined the specific planning approaches that corporations engage in the crafting of their environmental management policies. In 38% of the organizations, environmental management is a corporate priority. About 50% of the organizations use the continuous process improvement approach to their environmental practices whereby these practices are considered not as a one-shot deal, but as an on-going process of making improvements. About 33% of the corporations use pre-determined environmental targets, plans, and objectives to guide their environmental strategies and measure their progress. In 20% of the corporations, the environmental targets and objectives are based on prior assessment of how these targets ought to be modified based on previous company experience. In 45% of the companies, ''environmental research'' – research into how to be more environmentally responsible – is part of their environmental planning approach.

Top management commitment to the institutionalization of environmental practices

In order for any institutionalization of environmental practices to succeed, there has to be top management support of such institutionalization (Enarsson, 1998;

Post and Altman, 1992; Shrivastava, 1995b). The CERES 2001 reporting requirement asked CEOs or equivalent senior management personnel for a formal statement as a foreword to the corporate environmental reports. In accordance with this, we analyzed environmental reports of companies for indications of top management commitment to the environmental function by investigating whether the reports included a foreword by a senior executive. We saw this commitment only in 27% of the companies. Our findings regarding the various environmental planning considerations and top management commitment are presented in Table III.

TABLE III

Environmental planning considerations and top management commitment

Variable	Frequency	Percentage (Out of 200)	Percentage (Out of 140)
Environmental policy	117	58.50	83.57
Strategic rationale			
Openness to stakeholder concerns	92	46.00	65.71
Contributing to common effort	81	40.50	57.86
Precautionary or proactive approach	65	32.50	46.43
Competitive advantage	55	27.00	39.20
Risk reduction	44	22.00	31.40
Compliance	42	21.00	30.00
Environmental philosophy			
Sustainable development	89	44.50	63.57
Integrated management	81	40.50	57.86
Life-cycle approach	56	28.00	40.00
Planning approach			
Continuous improvement	99	49.50	70.71
Research	89	44.50	63.57
Corporate priority	76	38.00	54.29
Pre-determined targets	66	33.00	47.14
Targets based on prior assessment	39	19.50	27.86
Top management commitment			
Foreword by a senior or executive level person	54	27.00	38.57

Environmental structures and organizing specifics

Another ingredient that is necessary for the successful implementation of any plan is an appropriate organizational structure (Daft, 1995; Hall, 1999). What do corporate environmental disclosures point out about how corporations follow through on their planning? We analyzed the structures, positions, systems, and practices to answer this question. With respect to the details of where the environmental function is housed, half of the companies do not explicitly address the issue. Only 50% of the companies have disclosed the *departmental affiliation* of their environmental functions. In 30% of the companies, the environmental function is housed as a separate department. In 18% of the companies, it is housed with the safety and health function. In another 2% of the companies, it is housed within their human resources function.

We investigated the *management chain of command* regarding the reporting relationship of the chief environmental officers. We assumed that the higher the chief environmental officer is placed within the organization, the higher the value the organization places on the environmental function. It appears that only in 27% of the corporations, there is a top-level – vice presidential level – position to oversee environmental concerns. Usually, this person reports directly either to the CEO or the board committee on environmental affairs.

Structural integration of environmental concerns

We investigated whether companies have EMS to translate their environmental policies into actions by integrating environmental concerns into different functions, processes, and activities. As mentioned earlier, 41% of the companies indicate in their environmental policy that they believe in such systems. However, when we investigated the presence and details of EMS, only 29% of the

companies have disclosed the details of their EMS on their websites.

Prevalence of environmental practices

Are multinational companies specifying how they are carrying out their environmental function in their various offices and sites in different countries? We examined corporate environmental disclosures for the answer to this important question. Approximately only one-third of the companies have addressed office and site practices.

Stakeholder involvement

As the stakeholder theory of environment posits, environmental concerns affect a wide variety of stakeholders and these stakeholders in turn affect corporate environmental practices (Neu et al., 1998; Roberts, 1992). Involvement of primary stakeholder groups, such as employees, suppliers, and customers, is especially important for the success of corporate EMS as these groups are an integral part of the production and consumption cycle where waste is generated (Buchholz, 1998). We investigated the stakeholder involvement patterns in the environmental management practices of the companies. About 42% of the companies have employee training or education programs where employees are specifically educated about environmental concerns and how to minimize environmental harm in production. About 26% of the corporations advise their customers how to minimize the environmental harm of their products by proper handling, recycling, and disposal of their products. About 38% of the companies involve their suppliers and strategic partners in their EMS by engaging in activities such as supplier education and environmental audits of suppliers.

About 45% of corporations involve the ''community'' in their environmental management efforts. This involvement takes a variety of different forms: (1) donations to local community organizations (e.g., Glaxo Smith Kline, Toshiba, Toyota); (2) educational initiatives to promote environmental awareness (e.g., Disney, Walgreen); (3) partnerships with environmental NGOs (e.g., Johnson & Johnson and the National Audubon Society and the World Wildlife Fund; Ford and the Conservation International); (4) initiatives for ecological preservation (e.g., Samsung's Adopt-A-River/Mountain program); (5) programs for environmental clean-up (e.g., Bayer AG in Japan); (6) encouragement of employee volunteerism (e.g., Marathon); and (7) contributions to environmental public policy through partnerships with governments and community organizations (e.g., Royal Bank of Scotland, HP). All the companies that sought ''community involvement'' stressed the need for dialog and open communication with the community. Table IV presents the information regarding the organization of corporate environmental function.

Environmental leadership activities

What do global companies disclose about their environmental leadership activities? Are they engaging in activities to promote environmental concerns? We also investigated how global 200

TABLE IV

Departmental affiliation and organizing specifics of corporate environmental function

Variable	Frequency	Percentage (Out of 200)	Percentage (Out of 140)
Departmental affiliation			
Separate department	60	30.00	42.86
Safety and health	36	18.00	25.71
Other	2	1	1.43
Management priority			
V.P. level responsibility	53	26.50	37.86
Integrated nature of environmental systems			
Specific environmental management systems	57	28.50	40.71
Prevalence of environmental practices			
Office and site practices	63	31.50	45.00
Stakeholder involvement			
Community	89	44.50	63.57
Employees	83	41.50	59.29
Suppliers and contractors	75	37.50	53.57
Customers	51	25.50	36.43

companies engage in environmental leadership. Some largest corporations actively promote their environmental concerns politically. About 38% of the corporations engage in the active promotion of environmental issues politically in a macro (national or international) forum, whereas 35% of them are active in their industries. About 32% of the companies partner with NGOs to sponsor or promote environmental projects. This information is given in Table V.

Environmental control

We examined how corporations engage in environmental control to track progress towards the achievement of their environmental goals and targets. We specifically analyzed two categories of information: types of environmental control disclosures and types of environmental audits. Table V presents the results of corporate environmental control practices.

With respect to the *types of environmental control disclosure*, we investigated whether corporations report compliance data, historical trends of their environmental efforts, progress towards stated goals, explanation of variances between actual results and stated goals, and explanation of any corrective actions to realign their efforts and goals. We found that when disclosing information, 37% of the companies report on progress regarding the achievement of their specific targets and objectives, whereas 31% report compliance information regarding legal standards.

Some companies contextualize their progress measurement so that the stakeholders have a better sense of the context in which they are achieving their environmental targets. For example, 28% of the companies provide historical information regarding their environmental progress so that readers can see how their current performance stacks up against their historical performance. Similarly, 21% of the companies provide some explanation of the variance between their actual performance and their targeted performance. Only 16% of the companies explain the corrective actions they are taking to correct their variations from their targeted goals.

TABLE V

Environmental leadership and control variables

Variable	Frequency	Percentage (Out of 200)	Percentage (Out of 140)
Environmental leadership			
Active political promotion of environmental issues at the macro (national or international) level	75	37.50	53.57
Active political promotion of environmental issues at the micro (industry) level	69	34.50	49.29
Partnerships with NGOs	64	32.00	45.71
Environmental control			
Types of environmental control disclosure			
Compliance data	61	30.50	43.57
Historical trends	55	27.50	39.29
Progress towards goals	73	36.50	52.14
Explanation of variances	41	20.50	29.29
Explanation of corrective actions	32	16.00	22.86
Types of environmental audits			
Internal audits	73	36.50	52.14
External or independent audits	47	23.50	33.57

TABLE VI

Other relevant factors: certifications and forms of communication

Variable	Frequency	Percentage (Out of 200)	Percentage (Out of 140)
External certifications			
External certifications such as the ISO 14001 and EMAS	47	23.50	33.57
Forms of environmental communication			
General external report	97	48.50	69.29
Environmental annual report	64	32.00	45.71

How do corporations engage in environmental control? We investigated corporate disclosures on *environmental audits*. As given in Table V, we found that 37% of the companies engage in internal environmental auditing to ensure that they are on track to achieve their environmental targets. About 24% of the companies have independent audits from external sources. The majority of these companies, however, did not provide any details about their independent audits other than merely mentioning that they had independent audits and/or the names of their external auditors. It seemed that many of these external audits were part of a certification such as ISO 14001. A few companies, such as Sony and Bayer, enclosed letters from their auditors regarding their environmental performance.

Other relevant disclosures

In any study on corporate environmental management policies, practices, and disclosures, two other relevant factors deserve attention. The first is about the number of companies that have *externally validated environmental management practices*. As mentioned earlier, external validations, such as ISO 14001 and EMAS, are gaining popularity. In our study, we found that 24% of the corporations have external certifications. The second factor is about the *form of environmental dissemination*. We found that 49% of the companies have some form of environmental reports, which are used to communicate environmental performance to different stakeholders. About 32% of the companies have environmental annual reports detailing corporate environmental performance. This information is presented in Table VI.

Conclusions & implications

Our research found several interesting facts and patterns regarding the disclosures of environmental management practices of the largest companies in the world. Our conclusions and their implications are the following.

First, the majority of the companies today consider environment as an important strategic planning consideration as evidenced by the fact that almost 60% of the world's largest companies have environmental policies and 41% of the companies disclose the need for EMS, which help to institutionalize policies by translating them into actions. However, it is interesting to note that these policies are not always followed by such systems. Only 29% of companies disclose the specifics of their EMS.

Second, there is some evidence that there is a paradigm shift taking place with respect to the strategic drivers and philosophical underpinnings of corporate environmental management practices. Corporate disclosures show that companies, instead of driven primarily by laws and regulations, are driven by non-legal factors. Many companies in our study associate environmental considerations with corporate sustainability and stakeholder responsiveness, and most of them justify their environmental programs based on competitive advantage reasons (27%) than for compliance reasons (21%). How can corporations translate their environmental management policies to sources of competitive advantages? In his article on how environmental responsiveness brings corporations cost savings and benefits, Carey (2004) gives some practical examples. One such example shows that British Petroleum had materialized a 10% reduction in carbon emissions and a $650 million savings in 3 years by some simple measures such as identifying and plugging leaks.

Third, our analysis of the corporate environmental planning approaches suggests areas of improvement. Our results show that fewer than 40% of the companies explicitly state that environmental planning is a top corporate priority. Similarly, only one-third of the companies use predetermined targets and objectives to guide their environmental management efforts and only one-fifth of the companies base their targets on their previous experiences. This needs to change. Corporations need to consider environmental planning not only as a top priority, but also use specific targets and objectives to guide their environmental planning efforts. These specific targets should result from assessments of their previous experiences. Companies seem to be adopting some of the principles of total quality management to the management of their environmental policies and systems. For example, half of the corporations in our sample consider their environmental management practices as requiring continuous process improvements, not as one-shot deals. One-shot approaches always miss the mark, as they are short-term quick fixes, whereas continuous process improvements provide long-term solutions. Corporate disclosures show that currently only 45% of the companies conduct environmental research to produce more environment friendly future products and processes. More effort is needed in this area.

Fourth, the importance that some corporations are attaching to their EMS is being reflected in their corporate structures. In many of these companies, the environmental affairs function is being housed in a separate department (30%) as opposed to being with the employee safety and health department (18%). Similarly, there seems to be an increase in the number of high-level executives who are in charge of the corporate environmental affairs function and many of these executives report directly to their CEOs (27%).

Fifth, environmental practices are not prevalent across all the divisions of multinational corporations as they should be, as evidenced by the fact that only one-third of the companies have disclosed how their various offices and sites in different countries are adopting or adapting the environmental practices of the headquarters.

Sixth, many corporations seem to get the message that in order to be successful at managing environmental performance, they need to include their different stakeholders in their EMS. Although some companies are involving their local community residents, suppliers, employees, and customers in such systems, more stakeholder involvement is necessary as our results suggest that less than half of the companies pay attention to stakeholder involvement.

Seventh, some companies are engaging in various types of environmental leadership activities. More than one-third of the companies in our study are actively working on different environmental concerns both at the macro (national or international) and micro (industry) levels. In addition, they are also partnering with different NGOs to work on specific environmental concerns, which are tied to industry specific issues.

Eighth, although environmental control is becoming more popular among multinationals, more needs to be done in this area. With respect to environmental control disclosures, the most popular type of disclosure is about the progress towards the achievement of environmental goals, followed by the reporting of compliance information. Only one-fifth of the companies explain variances between their actual performance and targets and only 16% disclose the corrective actions that they have taken with respect to their variances. With respect to the disclosures about environmental audits, one out of three companies has internal controls and almost one out of four has independent external audits of its environmental program.

While it is encouraging to see that companies are using third party external audits to establish the credibility of their commitment to environmental management practices, several problems remain. Unlike the financial auditing systems in the U.S., which are governed by the Securities and Exchange Commission, there are no governing bodies to regulate environmental performance auditors. In addition, while financial audit results are required to be disclosed in public financial reports, results of environmental audits are not. Furthermore, the fact that many companies choose auditors that they use for other environmental consulting projects creates serious conflicts of interest (Mazurek, 2004). As mentioned earlier, of the companies that used external audits, many of them did not provide details of their audits or provide an independent verification

report or letter from their auditors. This implies that corporate efforts to ensure the reliability of their environmental reporting have a long way to go.

Ninth, our findings also suggest that voluntary environmental disclosures are becoming popular among companies. These voluntary disclosures take either the form of environmental progress reports or full-fledged environmental annual reports. We found that many of the companies that have started to publish environmental annual reports have done so in the last 3–4 years.

Tenth, our results show that approximately one-fourth of the companies have externally validated environmental management practices. ISO 14001 and EMAS are the popular types of environmental certifications. This number is going to increase in the future as companies seek external validations of their efforts.

Eleventh, we found that the form of external reporting of corporate environmental performance information has changed. About 45% of the global 200 companies are using specific environmental annual reports to disclose such information, as opposed to relying solely on regular annual reports.

Twelfth, corporate disclosures of environmental performance vary by country of origin and industry type, as described below.

Among the top five countries that represent the global 200 companies, U.S. (63.22%) is behind U.K. (83.33%), Japan (75%), and Germany (73.68%) in terms of the percentage of companies that have disclosed environmental management practices on their websites. Kolk (2003) examined the trends of sustainability reporting by the Fortune Global 250 companies from 1998 to 2001 and reported that ''the U.S. is the only country where the publication of sustainability reporting did not increase, but remained constant instead.'' As summarized by Kolk (2003), there is a direct link between companies' involvement in environmental issues and the level of government regulatory requirements. Our findings reinforce the fact that the U.S. companies are somewhat lagging behind their European counterparts with respect to environmental disclosures. It could be speculated that this is in part because of the fact that the U.S. regulatory requirements are less stringent than the European and Japanese requirements.

It is not surprising to find that there is a direct relationship between industry type and environmental reporting. Companies in environmentally sensitive industries, such as automotive (100%), Oil & Gas (83.33%), and utilities (86.67%) are more inclined to disclose environmental performance information than companies in less sensitive industries, such as finance, securities, and insurance (40.74%) and other services (50%). Given the fact that almost one-fourth of the global companies are in the finance, securities and insurance industry and 60% of them have not disclosed any environmental information, it would go a long way to help to achieve global sustainability if more financial institutions start paying attention to environmental concerns. One of the few environmental leaders in the finance industry is the Credit Suisse Group. According to its 2002 environmental report, this company became the world's first bank to introduce an EMS certified under ISO 14001 in 1997.

A note of caution is warranted in a study such as this that relies on published information from corporate websites. As mentioned in the section on research methodology, our study focuses only on information on websites. There might be companies that have environmental programs, but have not used their websites to disclose such programs. Our research does not capture this information. In addition, we are not providing any ''judgments'' on corporate environmental performance. Since we rely on company self-reports for our information, we report ''as it is'' as opposed to verifying the accuracy of what companies are reporting. Are companies really doing everything they are reporting? Or are environmental reports a part of the corporate ''green-washing agenda?'' We cannot answer these questions with absolute certainty; however, we conclude that companies are trying to make real progress and are heeding stakeholder calls for greater business sustainability. This conclusion is primarily based on our impression about the changes in corporate environmental policies and practices over the last 15 years, the approximate time horizon that we went back to for our literature review. However, the only way to really answer the question is through independent audits of corporate environmental performance.

In summary, the evidence from the websites of some of the world's largest companies shows that multinational companies are being more environmentally sensitive today than they have been in the past. However, more needs to be done. Responding to stakeholder concerns and regulatory requirements, many companies are drafting environmental policies, creating systems and structures, and measuring and controlling their environmental performance. Many have come a long way; however, most have a much longer way to go.

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Notes

[1] For more information on a priori coding, please refer to Stemler, Steve (2001)'s An Overview of Content Analysis in Practical Assessment, Research & Evaluation, 7(17).

[2] It should be noted that all the percentages given in the narrative are based on all 200 companies (total sample). However, in the tables we have given percentages not only based on the total sample of 200 companies, but also based on the effective sample of 140 companies so that readers can make side-by-side comparisons.

[3] For more information on ICC's Business Charter for Sustainable Development, please refer to *From Idea to Action: Business and Sustainable Development* (1992) by Williams, J. and Goluke, U. Oslo, Norway: ICC Publishing and Ad Notam Gyldendal.

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