Finance and the Environment in North America:

The state of play on the integration of environmental issues into financial research

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Over the last few years we have seen dramatic evidence that international markets are recognizing both the risks and opportunities associated with how companies address and capitalize on the challenges of sustainability. The Carbon Disclosure Project, the Investor Network on Climate Risk in the U.S. and similar initiatives in Europe and Australia, collectively managing tens of trillions of dollars in assets, are pertinent examples of this trend. These and other investors are now calling on companies and securities regulators to provide enhanced disclosure about the financial risks that sustainability issues such as climate change pose to individual companies and what companies are doing to address those risks.

At the same time, North American companies that have demonstrated leadership by integrating sustainability principles into their business practices and strategies have suggested that the value, including the shareholder value, of their enhanced environmental practices and performance is not being recognized by the financial markets. Notwithstanding the proliferation of investor-led initiatives on sustainability issues, there is a concern that the mainstream investment community has, on the whole, simply not integrated environmental information into their investment analysis and decisions.

In order to develop a better understanding of the level to which mainstream investment professionals currently consider environmental issues as part of their valuations, a network of organizations, experts and practitioners from the finance, business, academic and non-governmental sectors, coordinated by Environment Canada and supported by the North American Commission for Environmental Cooperation (CEC), have developed the present project.

This report examines the current state of integration of environmental research into company and sector valuations by the mainstream financial community in Canada, the United States and Mexico. It aims to shed light on the drivers, tools, and understandings that lie behind the financial sector's incorporation, or lack thereof, of environmental factors into financial analysis and provides recommendations for facilitating the integration of these factors into the investment decision-making process. Through this effort, Environment Canada and the CEC hope to contribute to a growing body of research on the connection between environmental performance and financial value and to make this research more relevant to financial sector audiences.

Environment Canada and the CEC would like to thank the Network for its support and review of this report. We would also like to thank the authors, Matthew Kiernan and Sue McGeachie from Innovest Strategic Value Advisors, as well as Eric Kirzner from the University of Toronto Risk Management Institute for their commitment to this report and their nuanced analysis. Finally, we would like to thank the investment professionals who agreed to participate in this project and whose invaluable information and comments have contributed to making this report relevant and insightful.

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Preface

The systematic integration of environmental considerations into the work of the North American financial community has been a slow, difficult, and uneven process. As a general matter, this integration has progressed much further and more quickly in Europe than in North America. While today there is arguably some fresh momentum in this direction in North America, a number of powerful impediments remain, and they continue to hamper the rate and extent of the integration process.

As will be explained in greater detail later in this report, those impediments are both cognitive and practical in nature, and it is the former that have proven to be the more intractable. It should also be noted that there are substantial differences within North America itself: until roughly 18 months ago, Canada and the United States were comparable, with Mexico lagging significantly behind in the degree of attention that environmental matters were receiving from mainstream analysts. Recent positive developments in institutional activism in the United States, however, are likely to leave the Canadian institutional community in a distinctly second-place position.

The cognitive barriers are chiefly those driven by a pervasive yet largely unexamined belief system among professional investors and lenders. The key elements of that belief system have been:

- the firm belief that the integration of environmental considerations into the investment process is either a waste of time or, more likely, actively injurious to financial performance; and
- the corollary view that, for this reason, such integration is incompatible with the legal and other fiduciary responsibilities of the investor.

The practical impediments have included the relative absence of financially relevant environmental reporting by companies and the lack of analytical tools and expertise with which mainstream analysts could process the information, even when it is provided.

On an international level, however, a number of recent events have begun to shift that mindset slowly, and the current trend appears to be towards a greater integration of environmental analysis into mainstream financial and investment thinking and practice.

The most powerful of the forces accelerating this integration are:

- national, regional, and even global regulatory and legislative initiatives designed to promote improved environmental quality; the Kyoto Protocol is arguably the most visible current example of these;

- pension fund legislation in the United Kingdom, continental Europe, and Australia obliging institutional investors to report publicly on whether or not environmental and other "sustainability" factors are being addressed in their investment strategies, and if not, why not?;

- the growing sophistication, credibility, and capacity of environmentally oriented non-government organizations (NGOs). Today's NGOs are equipped with unprecedented access to company performance information through tightened disclosure and reporting requirements. They also have two additional and important assets: a more collaborative relationship with the corporate sector and, through the Internet, a virtually instantaneous two-way global communications platform;

- increased awareness and activism (both individual and collective) among large institutional investors with respect to environmental issues, notably climate change;

- broader awareness among corporate executives of the competitive and financial consequences of companies' environmental performance; and

- a growing body of empirical research evidence supporting the view that integrating environmental factors is highly unlikely to affect financial returns adversely and may well improve them.

Over the past 18 months, there has been a perceptible increase in North American investors' recognition of the financial implications of environmental issues. The formation of the Investor Network on Climate Risk (INCR) in the United States is one of the tangible indications of this shift. Formed in late 2003, the INCR brings together a number of state treasurers, the comptroller of New York City, and several major union pension funds in a coalition to encourage major corporations to integrate climate change considerations into their strategies and operations. To date, the INCR's activities have focused on awareness

raising, filing climate-related shareholder resolutions with companies, and urging the U.S. Securities and Exchange Commission to strengthen disclosure requirements concerning climate risk.

The logical extension of this shareholder activity would be to integrate environmental considerations directly into investment strategies and decisions. CalPERS, the largest and one of the most influential of the U.S. public funds, has already taken concrete steps in this direction. California Treasurer Phil Angelides announced his "Green Wave" initiative in 2004. The treasurer called on the two largest California pension funds, CalPERS and CalSTRS (Teachers), to invest a combined US$1 billion in "environmental investment strategies" focused on publicly traded companies and a further US$500 million in privately held environmental technology firms. He also called on both pension funds to increase the energy efficiency of their own US$16 billion real estate portfolios by 20% over the next five years. In response, CalPERS made a public request for expressions of interest from asset managers able and willing to manage up to US$500 million in "environmental investment strategies" in September 2004. Both CalPERS and CalSTRS are already adjusting their private equity programs to place greater focus on "clean technology," and both have begun to examine their respective real estate programs with a view to maximizing energy efficiency.

Such is CalPERS' visibility and leadership in the U.S. institutional investor community that other large investors can be expected to follow suit. The combined impact of INCR and the Green Wave initiative has the very real potential to bring the mainstream U.S. institutional investor community to a "tipping point."

1 Introduction

The purpose of this report is to determine the current state of integration of environmental research into company and sector valuations by the mainstream financial community in Canada, the United States, and Mexico. The overall aim of the study is to understand if and how the mainstream financial community incorporates environmental sustainability information into stock assessments and to forge a better understanding of how to communicate the business case for superior environmental performance more effectively.

The attitudes, perceptions, and behavior of the investment community have an enormous impact on corporate executives and boards of directors. If environmental factors are known to be affecting investors' assessments of companies, it is virtually certain that they will also become central concerns for the leaders of the company. Since corporations in turn are responsible for a substantial proportion of environmental impacts and outcomes, investor perceptions about the financial relevance (or lack thereof) of environmental considerations become critically important to real-world environmental outcomes. This study represents one of the first systematic efforts to understand and document those perceptions.

This report is part of the first stage of a critically important dialogue within and among three key groups with substantial capacity to consider the integration of environmental factors into the investment process: the investment community itself, corporate executives and directors, and government. It is a dialogue that is increasingly conspicuous by its absence in all three North American countries.

Research for this project began with the identification of key environmental issues and those industry sectors most likely to be affected by the issues. Three companies from each sector were then selected as a focal point for analysis of if and how the financial analysts covering these firms integrated the identified issues into their valuation models for the selected stocks.

There are four key sets of actors in the contemporary investment world. The first group, the investment research analysts, provides the information that the second group, the Portfolio Managers (PMs), need to supplement their own research sources required for their stock selection processes. If PMs are interested in more information on how environmental issues impact specific sectors and/or stocks or if they feel that an attempt

to quantify these issues becomes useful for stock selections, analysts will in turn be more receptive to integrating these considerations into their own work. The third key set of actors is the investment consultants, who advise their clients on overall asset allocations and then conduct manager searches in order to identify the best asset management firms for a particular investment mandate. Similar to the relationship between analyst research and PM stock selection, if the mandate set by the client includes environmental considerations, PMs will be more concerned about them in their stock selections. Most institutional clients depend heavily on the investment consultants for advice.

Each of these three groups of investment professionals, then, was interviewed to determine if or how they acknowledge the relevance of environmental issues to the investment process, as the views of each impact the actions of the other two. The fourth group, one often strangely overlooked in analyses of the investment process, is the pension fund trustees, who bear the ultimate legal responsibility for the funds' activities. According to a recent report by the World Economic Forum and AccountAbility, if trustees were required to pressure agents, and indirectly corporations, to improve governance as well as incorporate environmental sustainability, pension funds would have the potential to be powerful mechanisms of shareholder activism. As a result, the exceedingly competitive financial services industry would be likely to react by providing services that are made specifically for such a mandate.[1]

While conducting the research, it became apparent that countries within North America differed substantially in the extent to which financial professionals integrate environmental considerations into stock valuations and selections. The differences, and possible reasons behind them, are described in greater detail in Section 4. It is also important to note that concern for environmental issues in the financial community is very different in North America compared with Europe, the United Kingdom, and, to a lesser extent, Australia and New Zealand. These differences help shed light on the motivations — or lack thereof — of investment professionals to incorporate environmental issues into stock considerations.[2]

Perhaps the most important single finding of the report is that the overall level of integration of environmental considerations into mainstream investment analysis in North America is currently very low. While comparable research was not carried out in the United Kingdom and Europe for this particular project, existing research leads to a preliminary finding that North American integration lags far behind.

[1] World Economic Forum & AccountAbility, *Mainstreaming Responsible Investment*, January 2005. Available at: http://www.weforum.org.

[2] See also Wheeler, David et al., *Comparative Study of U.K. and Canadian Pension Fund Transparency Practices,* National Round Table on the Environment and the Economy, 2004.

There appear to be at least six overriding reasons for this relatively low level of awareness. The first is currently unique to North America: the absence of express legislation or regulation requiring institutional investors to address environmental considerations. Legislation has been a major driver in other countries, including the United Kingdom, France, Germany, Scandinavia, and Australia. While the research does find that such legislation does not necessarily result in the uptake of environmental considerations in investment decisions, it does result in creating the perception within the investment community that such integration is in fact feasible, which goes a long way in setting the stage for discussion around these issues as they impact investment decision-making. The other five reasons, which are more ubiquitous impediments, follow:

1. "Short-termism": Most environmental and sustainability issues are, by their very nature, long-term ones. With very few exceptions, the dynamics of the contemporary investment world militate powerfully in precisely the opposite direction. Most of the key actors are judged, incentivized, and compensated on their performance on a relatively short-term basis. Factors that are unlikely to affect companies' financial performance within the next 12 (or even 3!) months are simply beyond the time frame relevant to the key actors involved.

2. Externalities: Under today's political and regulatory framework, only a subset of a company's environmental impacts affects its financial performance directly. Environmental fines and inefficient energy use are two examples of environmental impacts that can have a material impact on a firm's bottom line (although only to the extent that they are priced appropriately). Carbon dioxide or sulphur dioxide emissions are examples of environmental impacts whose costs are not currently borne by the emitting company, at least in North America. Instead, any costs associated with these emissions tend to be externalized, i.e. borne by society at large. Since they do not directly affect companies' financial performance or prospects — at least not in the short term — they, too, lie beyond the purview of analysts and money managers with a narrow and short-term focus on the company itself.

3. The "SRI Overhang": It was clear from the research that most analysts, PMs, and consultants do not distinguish between addressing environmental risks/opportunities on the one hand and SRI on the other. As was noted in the Preface, mainstream investment professionals are at best wary and at worst actively hostile to SRI. Rightly or

wrongly, most have concluded that SRI approaches unnecessarily and arbitrarily restrict the set of investment opportunities and therefore jeopardize both financial returns and the money managers' exercise of their fiduciary responsibility. Even when purely financial arguments are made for including environmental information, these tend to be lost or overwhelmed by a general skepticism about its relevance.

4. Lack of Accessible Company Information: This research, along with a few other recent studies[3] have highlighted a disconnect between the environmental information reported by companies and the information that the investors consider relevant or useful to their stock assessments. For that reason, even investors who are inclined to integrate environmental factors into their analysis feel themselves severely handicapped in doing so.

5. Lack of Integrative Tools: This problem is an extension of the previous point. Many of the investment professionals interviewed complained that, even if environmental information were available in an accessible and relevant format, they lacked the analytical tools and/or expertise to use it effectively.

Clearly, these six barriers present a major and ongoing challenge for those wishing to encourage greater integration of environmental and traditional investment analysis. Identifying the barriers is a crucial first step towards surmounting them.

Ultimately, this report is intended for three key audiences, each of which can make a significant contribution to accelerating that integration process:

- the investment community itself;
- corporate executives and directors; and
- public policy-makers.

In making recommendations for accelerating the integration of environmental considerations into the mainstream investment process in future, the report will address:

- the gap between corporate reporting and reporting of relevant environmental information to the financial community;
- the barriers to representing and incorporating environmental information into valuation

[3] World Economic Forum & AccountAbility. *Mainstreaming Responsible Investment*. January, 2005. International Finance Corporation. *"Who Cares Wins:" One Year On*. 2005.

models and corporate financial reporting;

• the possible role of governments in encouraging and promoting best practice;

• how best to communicate the findings of the research project to the financial community; and

• additional research and project work required.

2 Methodology

The two key research objectives are as follows:

1. To provide a high-level assessment of which environmental sustainability issues are currently considered relevant in the stock valuation process by investment professionals in the context of specific industrial sectors: what environmental information is accessed by these professionals (e.g. environmental reports, environmental policies, independent environmental assessments, accreditation, etc.) as part of their research and assessments; at what point environmental information has an impact on a company's financial value according to them; and how they translate these environmental risks into financial terms.

2. To consider the selected environmental sustainability issues in terms of retrospective, current, and prospective perspectives in order to assess a pattern of relevance to investment professionals (e.g. was asbestos ignored as an environmental risk only to prove costly at a later point in time?) and to determine the likelihood of investment professionals examining these environmental sustainability issues in the context of stock valuation/selection process.

The study concentrates on the analysis and valuation of listed companies, with a geographic focus on Canada, the United States, and Mexico. To bring greater focus to the project, the analysis centred around four key environmental issues as they affect four preselected industrial sectors. Both the issues and sectors were selected by the Environment Canada Working Group, in conjunction with Innovest Strategic Value Advisors and the Risk Management Institute at the University of Toronto.

2.1 Sector Selection

The four sectors selected for this study were oil and gas, chemicals, utilities, and mining. These were selected for the following reasons:

- They all have a high environmental impact and so are among the most exposed to risks and opportunities generated by key environmental issues.

- They are highly relevant to the North American economy.

- Firms in these sectors are among the most likely to be affected in a financially material way by a range of environmental issues, making these sectors the most likely candidates for integrating environmental research into a stock's financial assessments.

Market capitalization considerations were also considered to be highly relevant in the selection process. Firstly, sectors had to account for a substantial enough proportion of North American stock exchanges that a broad range of mainstream brokerage research and analyst coverage would be available (e.g. mining). Secondly, the sector's importance in economic terms was considered. The greater the importance a sector has in economic terms, the greater the analyst coverage, such as the case with utilities and, in Canada, oil and gas. The future relevance of environmental issues to the sector in financial terms was also deemed important, such as the rapidly changing environment in chemicals. Specialty chemicals are increasingly becoming of interest to the sector, while many traditional chemicals, found in a plethora of products, are being progressively phased out with significant impacts on chemical firms. Methanex, the world's number one producer and marketer of methanol, for example, saw a decrease in its stock price when the U.S. Environmental Protection Agency (EPA) called for a reduction in the use of methyl tertiary-butyl ether (MTBE). (Concerns over MTBE still linger while the United States considers an outright ban.)

Market capitalization considerations were cross-referenced with environmental sustainability issues that would be most likely to have a financial impact on the companies that these issues affect. The relevant environmental sustainability issues are listed next to the relevant market capitalization considerations for each sector in Table 1.

Table 1: Sector Selection

Sector	Market Capitalization Considerations	Environmental Sustainability Issues
Oil and Gas	• Wider oil and gas subindex is substantial proportion of total market capitalization of TSX, NYSE • Integrated majors are among largest and most widely covered stocks worldwide • Industry has prominent role in Mexican economy	• Contaminated site liability • Air quality • Climate change
Utilities	• Sector characterized by high degree of fragmentation in U.S. market and quasi-monopolies in Canada and Mexico • Analyst coverage of sector is strong due to importance of sector to economy • Large players widely covered by major banks	• Contaminated site liability • Air quality • Climate change
Mining	• Similar to forestry, smaller coverage than other sectors • Aluminium and diversified metals/mining interests were included in order to widen scope • Analyst coverage especially strong in Canada	• Water quality • Contaminated site liability • Localized emissions • Sensitive sites
Chemicals	• Commodity chemicals dominated by smaller number of large players — Dow, DuPont, Praxair, Nova Chem, Potash • Specialty chemicals experiencing growing coverage	• Product liability (asbestos, MTBE) • Contaminated site liability

These sectors are affected by a myriad of forces that are major considerations for the mainstream investment community. Driving forces for each sector are listed in *Appendix A*, followed by data sources.

2.2 Issue Selection

A list was compiled of environmental issues that would enable the research team to take a retrospective, current, and prospective look at how the financial sector considered relevant environmental issues in the stock valuation/selection process. Of all the issues that were compiled, climate change, air quality, water usage/pollution, and contaminated sites were deemed by the research team to be those with the greatest:

- strategic and financial importance to companies in each of the selected sectors;
- environmental impact;
- susceptibility to public policy and regulatory initiatives; and
- expected relevance to financial analysts and investors.

As such, those key environmental issues were selected to be the focus of this study.

2.3 Company Selection

In order to better focus the research, three companies per sector were selected to allow researchers to concentrate on specific environmental issues that fall under the more general descriptions detailed above to determine the extent to which (if any) these issues had an impact on a mainstream stock valuation and/or selection process. The companies were selected based on a combination of market capitalization (large enough to have top analysts following the stock) and substantial exposure to the identified environmental issues. The team considered firms both from an environmental risk and an environmental opportunity perspective, and the list of firms selected for further study reflects this balance of risk/opportunity. The companies selected are summarized in Table 2 and then described more fully below.

Table 2: Company Selection

Sector	Company Market	Capitalization (US$ billion)	Country
Oil and Gas	Imperial Oil	31.4	Canada
	Exxon Mobil	369.3	USA
	Occidental Petroleum	33.2	USA
Chemicals	Potash	7.9	Canada
	Agrium	2.7	Canada
	DuPont	39.8	USA
Utilities	TransAlta	4.2	Canada
	First Energy	0.1	USA
	PG&E	13.8	USA
Mining	Noranda (now Falconbridge)	11.3	Canada
	Barrick Gold	0.05	Canada
	Alcoa	24.6	USA

2.3.1 Oil and Gas

Imperial Oil, with a market capitalization of US$31.4 billion, has had a number of environmental incidents that have had some reputational damage in Canada. Although Imperial Oil is a subsidiary of Exxon Mobil, its environmental issues alone are relevant to analysts. For example, in 2003, up to 160 000 litres of toxic chemicals leaked into the St. Clair River from an Imperial Oil refinery located in Sarnia's Chemical Valley. The spill affected water intake systems south of Port Huron that served tens of thousands of people in the area. A Michigan county environmental committee, the Macomb Water Quality Board, ordered the company to pay nearly US$8 million. Imperial Oil takes the lead of its parent company, Exxon Mobil, with regard to climate change. Imperial Oil measures its greenhouse gas (GHG) emissions and reports directly and voluntarily to Canada's Climate Change Voluntary Challenge and Registry Program. However, Imperial Oil was one of the largest lobbyists against the passing of the Kyoto Protocol in Canada in response to the view that such regulations will greatly harm its future earnings.

After the 1989 oil spill at Prince William Sound by the Exxon Valdez, civil society has become increasingly concerned about Exxon Mobil's inability to engage with stakeholders on environmentally sensitive issues. As one of the largest oil and gas companies in the world, with a market capitalization of US$369.3 billion, the legacy of the Exxon Valdez spill still lingers today. As recently as January 2004, Exxon was ordered to pay US$6.5 billion (US$4.5 billion in punitive damages and US$2 billion in interest) to those most affected by the spill. Exxon has delayed payment since the original verdict was handed down in 1994 and has appealed the most recent ruling. The continued strength of Exxon's share price has been attributed to its ability to deal with the consequences of the disaster as a whole. As noted in a study by Dr. Rory Knight in 1996, Oxford Executive Research Report, which analyses 15 corporate catastrophes that did not influence share price performance in the long term, corporate catastrophes do not always influence share price. However, Dr. Rory Knight noted that the larger the human death toll incurred, the larger the markets penalized the corporation involved (as noted in the Bhopal disaster). Indeed, it is surmised that because the death toll from the Exxon Valdez was on wildlife, the markets simply did not react to the potential devastation of the oil spill, as it was simply too difficult to ascertain a damage amount.

Occidental Petroleum has made positive strides in improving its environmental footprint. For 2001, which is the most recent Toxics Release Inventory (TRI) report year, total releases and transfers were 25% less than in the prior year. Occidental has not been involved in major spill events, and typical oil spills were less than 10 barrels. Six facilities will be subject to the U.S. EPA's State of Texas Implementation Plan, which requires nitrogen oxide and volatile organic carbon reductions of 80% and 60%, respectively, by 2007. Compliance costs at Occidental are estimated at between US$71 million and US$120 million. Since implementation of reduction measures (2001), air and land releases have diminished substantially. The company is slowly implementing actions to reduce its GHG emissions and is a member of the Global Environmental Management Initiative. Occidental Petroleum has a market capitalization of US$33.2 billion.

2.3.2 Chemicals

Potash, with a market capitalization of US$7.9 billion, and Agrium, which has a market capitalization of US$2.7 billion, have quite different profiles in terms of production of nitrogen/urea/potash and therefore different exposures to the environmental risks that these chemicals present. The firms were reviewed based on their relative performance against each other to see if analysts are valuing this difference. Agrium, for example, produces large amounts of nitrogen, which is extraordinarily energy intensive and requires considerable amounts of natural gas for production. Energy required for nitrogen accounts for approximately 80% of operating costs. Agrium (along with any company that makes nitrogen fertilizers) faces significant challenges in obtaining low-cost natural gas.

DuPont will pay US$340 million to settle a class action lawsuit brought by residents living near DuPont facilities in West Virginia and Ohio who fear exposure to a chemical, ammonium perfluorooctanoate (known as C8), widely used in consumer products ranging from non-stick cookware to stain-resistant carpets. The status of legal action being taken by the U.S. EPA against DuPont for allegedly failing to notify regulators regarding the toxicity of the chemicals is still pending, but it may also cost the company an additional US$300 million should the U.S. EPA decide to pursue the issue to the fullest extent of the law. The most pressing concern from an investment perspective remains the possibility of a product ban by the U.S. EPA. Although it is impossible at this time to make an accurate estimate of the market loss related to a phase-out, C8 and related upstream chemicals are used in everything from textiles to household cleaners, representing the widest possible potential

for product liability. Approximately US$235 million of the settlement is contingent on the results of independent health studies being conducted to determine the connection, if any, to related adverse health effects. DuPont has a market capitalization of US$39.8 billion.

2.3.3 Utilities

TransAlta is the only significant utility on the TSX, with a market capitalization of US$4.2 billion. Despite its excellent environmental record (relative to the sector), it was felt that, as a significant player, TransAlta was an important element of the study. Considerations include how the analysts are allowing for the possibility of a dividend cut due to maintenance expenditures and the fact that earnings growth over the next couple of years is dependent on TransAlta's ability to recontract coal-fired generation in the United States at higher prices.

First Energy has a relatively high fossil fuel mix (55% coal, 28% nuclear, 12% oil and gas, and 5% hydro), and above-average emissions increase this company's regulatory exposure to emissions-related regulations. The company's one-third coal capacity exceeds 41 years, indicating higher operating and capital costs. First Energy's climate strategy lags behind that of its competitors, and the company operates in states with GHG and/or fuel mix disclosure regulations. The company is currently being scrutinized for a number of health and safety regulation infractions, including nuclear exposure at four plants. Other infractions noted include refueling outages, waste disposal problems, and radiation leaks. First Energy was also tagged as being partially responsible for the northeastern U.S. blackout of 2003; the company has increased pressure for transmission and distribution upgrades. First Energy has a market capitalization of US$100 million.

PG&E's payout to residents of Hinckley, California, was made into a Hollywood blockbuster (Erin Brokovich) and became the symbol of many corporations' unethical lack of commitment to the communities in which they operate and that they serve. With a market capitalization of US$13.8 billion, PG&E has only recently come out of bankruptcy protection after a snowball effect of mismanagement that began with Hinckley. PG&E was forced to pay what was at that time the largest settlement to private residents.

2.3.4 Mining

Noranda (now Falconbridge) may face charges following a leak of toxic gas that drifted into Montreal on August 9, 2004, and sickened some of the city's residents, according to the federal environmental authority. The company apparently failed to notify Environment Canada, as required by law, or any other officials before the cloud reached Montreal, with the result that authorities did not know that the cloud was heading for the city until people began calling to complain that a noxious cloud was making them sick. According to news sources, Environment Canada is reviewing the evidence and may seek charges against Toronto-based Noranda. The company has a market capitalization of US$11.3 billion.

The second and third mining companies selected for this study do not have a particular event that would allow the researchers to follow a specific time frame for analyst valuations, but were selected because they are significant players in the mining sector. Barrick Gold, North America's number two gold producer, with a market capitalization of US$50 million, continues to lag behind its Canadian rivals, including Alcan, in proactive environmental measures, and it made an interesting study to determine whether financial analysts and/or PMs consider this a riskier stock for this reason. With a market capitalization of US$24.6 billion, Alcoa is one of the largest producers of alumina and aluminum in the world and, as such, has gone to great lengths to improve its environmental performance. It has distinguished itself as a leader through its sophisticated approach to identifying and managing the material sustainability risks that it faces as a company. From GHG emission reduction programs to engaging stakeholders over controversial hydropower projects, Alcoa has the requisite sustainability strategies in place to meld its profitability objectives with society's larger goals of environmental protection, wealth creation, and social stability.

2.4 Research Process

The analysis was conducted via primary research methods involving, inter alia:

- interviews with North American investment professionals; 41 individual interviews were conducted;
- review of research reports (e.g. analyst brokerage reports) and other literature produced by the mainstream financial community; and
- discussions with other individuals and organizations that have direct experience with

the confluence of environmental sustainability and financial analysis. These include analysts with socially responsible firms, socially responsible asset managers, research organizations, and academics.

Interviews with mainstream professionals were divided into three key groups: analysts, PMs, and investment consultants, as depicted in Table 3.

Table 3: Breakdown of Investment Professionals Interviewed

Country	Analysts	Portfolio Managers	Investment Consultants
Canada	11	5	5
United States	12	1	2
Mexico	3	2	0

Responses were allocated to country of origin to determine country-specific patterns relating to integration of environmental issues into stock considerations. Once these patterns were identified, various reasons for them were assessed in an attempt to discover drivers for environmental integration, such as country-specific legislation.

Analysts targeted for interviews were originally selected by using third-party rankings (e.g. Institutional Investor magazine) and informal commentary/suggestions from peers. The goal was to determine, through a retrospective look at the issues, whether or not analysts caught environmental concerns before they resulted in a negative material impact on firms' bottom lines. However, as a number of analysts did not return calls or declined to be interviewed, researchers began focusing on analysts who were most accessible, primarily those who were referred to the researchers by previously interviewed professionals.

Analyst interviews were supplemented by a multiyear examination of past brokerage reports, followed by requests for subsequent interviews to address information specific to these reports. The analysts chosen for both brokerage reports and subsequent interviews came from lists found in two well-respected sources. The American analysts were derived from Institutional Investor: All-America Research Team, 2003. This publication lists top analysts in each mainstream financial sector on a yearly basis. The Canadian analysts were identified through Brendan Woods International — 2003 Canadian International Equity Research, Sales & Trading Performance Report. The Brendan Woods publication is

considered the most prestigious in Canada for reviews of financial analysts. The top three analysts in each sector selected reporting these reports were contacted for interviews in both Canada and the United States. Unfortunately, of the 24 analysts contacted, only 3 responded, limiting the extent of the analysis of brokerage reports.

The brokerage reports analyzed cover the sectors and companies selected for this report. It is not coincidental that some emphasis on the environment came about after the Exxon Valdez disaster in 1989; before this date, little, if any, information was provided on environmental management. Once ISO 14000 was released in 1996, further information about corporations' environmental systems was standardized, creating a level playing field for corporations. Brokerage reports are from the following research houses for the following years:

- Merrill Lynch — 1988–1989, 2002–2004;
- Morgan Stanley — 1989, 2001–2004;
- Lehman Brothers — 2003–2004;
- BMO Nesbitt Burns — 2001–2004; and
- Goldman Sachs — 2002–2004.

Portfolio managers and investment consultants were contacted through referrals from various sources. Due to the fact that all of these professionals were referred to the research team, the team experienced a 100% callback rate.

2.5 Analysis of Data

The approach to organizing the data was to catalogue it into three themes:

1. Timelines, which consider all data relevant to the challenges associated with assigning short-term valuation numbers to long-term environmental issues. This theme includes the question of whether analysts consider environmental management and risks from a prospective or historical point of view.

2. The methodology analysts use to incorporate environmental issues into stock valuations. If environmental issues were considered at all, the research sought information on whether these issues were considered from a qualitative (broad discussion on how

these issues might affect a sector and/or specific company) or quantitative (whether these issues are actually incorporated into a financial stock valuation model) point of view.

3. The communication/information challenge, and the extent to which environmental information is provided by companies in a format that can be used by financial analysts. This addresses the question of whether or not companies are giving financial analysts the environmental information that they want or the data that they would need in order to incorporate such information into the valuation model.

The information was amalgamated into an assessment of the extent to which different categories of investment professionals integrate environmental issues into the investment mandates (investment consultants), stock selections (PMs), and stock valuations (analysts). The relevance of each issue to the stock valuation process was then assessed, followed by the challenges that environmental issues present to the investment community.

2.6 Challenges to the Research Process

It immediately became clear that environmental issues are not yet on the radar screen in any significant way among investment professionals, as was demonstrated by the relatively small number of professionals willing to be interviewed on the subject. The results of this study, therefore, must be interpreted with some caution. Ultimately, only 41 interviews were undertaken, despite repeated and persistent efforts to increase that number substantially. The study's authors believe that there were several reasons for the muted response and that the response level is in itself an important finding of the study.

Perhaps the chief reason for the limited response was the prevailing belief among investment professionals that environmental concerns are not especially material to stock valuations. This was particularly the case in Mexico, although this challenge was prevalent, albeit to a lesser extent, in Canada and the United States as well. There were a number of reasons for this. Firstly, analysts for the most part felt that an environmental issue that may have been relevant in a stock decline would have been only one cause among many of this eventual stock downturn. Investment professionals appeared to feel that these causes, or overall management-related risks, could be captured using their traditional valuation methods.

Secondly, the currently dominant interpretation of fiduciary responsibility is relatively narrow and generally views consideration of environmental issues as at best a distraction and at worst injurious to investment returns. Pension plan sponsors are, therefore, generally wary of what they believe to be potential adverse legal ramifications should they later be judged to have abrogated their fiduciary responsibilities by addressing "non-financial" factors.

Finally, environmental issues were considered a long-term problem and therefore not relevant to investment professionals whose performance is almost invariably measured by looking at quarterly returns.

3 Mainstream Approaches to Environmental Issues: A North American Perspective

The research suggests that environmental issues, as they relate to investment decisions, are considered more in the United Kingdom and Europe than in North America and more in the United States than in Canada. Professionals in the United Kingdom, for example, are more willing to address the issue and overall have a better understanding of its potential relevance to their work. There is a general consensus in the U.K. investment community that while environmental concerns may fade slightly with downturns in the market, they will not disappear altogether due to their growing importance in the public policy arena. The same sentiment did not appear to be echoed in Canada and the United States, with Canada falling behind the United States with regard to thinking ahead on this issue.

Reasons for this discrepancy appear to be twofold, and it is difficult to say which one would be the greater driver for change. The first is lack of SRI-related legislative support in North America to the same extent that exists in Europe and the United Kingdom, and the second, more relevant for Canada and Mexico, is a lack of investment interest in such issues from the private side. Both policy-makers and institutional investors in the United Kingdom and Europe have driven the demand for greater disclosure on corporate long-term performance issues, including environmental performance. Recognizing the gap between Europe and North America with regard to incorporating long-term or extra-financial issues into the investment process, a 2003 United Nations Environment Programme report concluded that "Policy makers and investors may be the most effective catalysts for North American research firms to incorporate social, environmental and corporate governance indicators into

their work."[4] It is due to this conclusion that the recommendations at the end of this report are directed primarily to public policy-makers, as the primary body capable of improving the "framework conditions" that determine which changes are and are not possible within the investment value chain.

Legislative changes in Europe and the United Kingdom have been found to be directly correlated with an increased interest in developing a longer-term focus in the investment agenda. In cases where legislation has forced institutional investors to, at the very least, address social and environmental issues in their investment policies, principles, or statements, regulators are in effect sending signals to the investment community that it is important to look at these so-called "extra-financial" factors. The subtext from such legislation is that the financial community can integrate environmental factors (along with other "softer" issues) into their investment decisions and that environmental considerations are not necessarily in conflict with fiduciary duty. While such legislation has perhaps not actually changed the regulatory framework (investment professionals are still not required to consider these extra-financial issues, but merely make transparent whether or not such issues are addressed), it has been noted that it has changed the perception of the regulatory framework. This results in an increased awareness of these types of "extra-financial" issues within the investment community.

In addition to legislation's major impact in driving a longer-term investment agenda, individual investors themselves also play a major role. Environmental disclosure improvements in company reports are being sought worldwide, not just in regions with a strong historical interest in environmental issues, such as the United Kingdom and Europe. This is due to multistakeholder pressure for better disclosure on sustainability-related issues. Investors have joined what was largely the domain of civil society groups in the pressure for improved sustainability reporting, as evidenced by a number of collaborative investor initiatives such as the Carbon Disclosure Project, the Investor Network on Climate Risk (INCR), and the Enhanced Analytics Initiative, described further in ***Appendix B***. The Enhanced Analytics Initiative, in particular, represents a concrete initiative to drive demand for environmental analysis by addressing the focus on short-term financial research at the expense of a longer-term, more capacious assessment of corporate performance. This effort will be greatly facilitated by the €4–5 million that this group of institutional investors plans to allocate to brokers who excel at integrating what they term extra-financial analysis into their mainstream research process.

[4] United Nations Environment Program Finance Initiative, *The Materiality of Social, Environmental and Corporate Governance Issues to Equity Pricing*, Geneva, 2004

Pressure from civil society, meanwhile, is more organized today than it was even just a few years ago, with increased activity in such initiatives as the Global Compact and the Global Reporting Initiative (***Appendix B***). It is worth noting, however, that investor initiatives are more prominent in those geographical regions with legislative support for disclosure of what were traditionally termed intangibles, such as environmental performance. ***Appendix C*** provides a snapshot of SRI- or disclosure-related legislation and events around the world.

The presence of explicit disclosure-related legislation on intangible issues appears to be a primary driver for the preponderant interest in environmental issues, or at least an acceptance for a longer-term view in measuring investment performance, in the investment community in the United Kingdom and Europe compared with North America. This has resulted in increased activity among mainstream asset management firms in the United Kingdom and Europe, many of which are building large SRI teams in an attempt to proactively capture the environmental risks and opportunities associated with their investments. These SRI professionals are increasingly working with their mainstream colleagues on demonstrating a link between share price performance and corporate social responsibility, although this internal "integration" process is far from complete.

It should be noted, however, that a variety of tools to integrate environmental considerations into the stock selection process do exist and are being used by many mainstream investors. These include a screening "overlay," which investors will use in addition to their traditional financial analysis. Other investors will use environmental performance reports by independent research firms as engagement tools for managers with the companies they hold. Some asset managers use these firms to conduct portfolio audits to assess their overall environmental risk exposure, while the more aggressive managers will completely divest of firms that receive a below-average environmental performance rating compared with sector peers.

A more detailed discussion of the extent to which environmental issues factor into stock valuations in Canada, the United States, and Mexico is provided below.

3.1 Canada

As noted above, Canada lags slightly behind the United States when it comes to the integration of environmental issues into stock considerations. This may be partly due to the fact that Canada has less choice in terms of investment products than the United States, as there is less investment capital to merit such a range of choices. However, this may change in Canada, with the recent elimination of the foreign property limitations in Canadian investments.

Despite an apparent lack of interest in discussing environmental issues, analysts covering the four sectors examined in this report appeared in interviews to be extremely aware of the specific environmental issues that impact their sectors, although unsure of how to incorporate these into stock valuation models. Any analysis on these issues, they felt, is always qualitative, except perhaps for "one-off" specific examples of an event that has a quantifiable effect on a company's cash flows (defined in Section 5.1). The analysts stated that they keep an eye on environmental regulations, and some even stated that they will conduct scenario analysis to see how changing regulations might affect their stocks, although not to the same extent as their European counterparts. Some stated that they are frustrated with the government's lack of clarity on changing regulations and feel, therefore, that scenarios based on regulatory changes are a waste of time due to the uncertainty. These analysts felt that they would have plenty of time to revise stock assessments if/when any new legislation passes.

According to the research, both analysts and PMs in Canada often feel that environmental legislation does not have teeth in this country — i.e. legislation does not have an immediate impact on a firm's bottom line. Either environmental fines are immaterial (too small or easy to contest), or increased costs due to changing legislation can be recovered through government grants.

Most of the analysts did say that they would take a slightly more generous view of a company's performance if the company were developing something new that could be appealing to a target or niche market, such as renewable energy.

PMs in Canada do not appear to be impressed with the notion that tilting a portfolio to favor environmental performance can lead to enhanced returns, although most of those

interviewed did appear to be open to examining environmental management as part of an overall assessment of company management. The research indicates, however, that neither the consultants nor the managers have much knowledge of environmental issues or of how these could affect individual companies, other than through reputational damage.

Investment consultants in Canada have, by and large, not considered the relevance of environmental issues for investment strategy. It should be noted, however, that investment consultants do not manage assets and so do not undertake direct corporate analysis that could involve environmental assessment. Rather, they research and assess the quality of investment managers. Their role with regard to environmental issues, therefore, could include assessing the ability of investment managers to incorporate environmental criteria into stock selection for clients that are particularly concerned in this area.

The primary concern in Canada with addressing environmental issues is that, for many in the investment community, integrating environmental issues into stock considerations is tantamount to screening "out" companies or even entire industry sectors, which mainstream Canadian investment professionals are particularly reluctant to do. Many investment managers are already limited by available investments, especially pension funds, mutual funds, and other institutional managers with specific mandates and investment constraints. There does not, as yet, appear to be significant uptake in some of the tools suggested above, which would allow managers to monitor environmental risk without completely changing their investment strategies.

3.2 The United States

The research finds the investment community in the United States to be more open to the idea of incorporating environmental criteria into investment strategies, but only as part of an SRI niche, as opposed to its broader application in regular stock selections and valuations. Insofar as the investment strategy is perceived to be mainstream, investors in this country, for the most part, do not integrate environmental considerations into their investment decisions. U.S. investment professionals do appear to be more open to environmental restrictions in stock selections, although several stated that, in actual practice, they are not aware of many clients who request it in their investments. In this respect, the extent to which environmental issues are incorporated into stock selections and valuations is more likely to be addressed in the United States than in Canada, but only insofar as it is

relegated to its "SRI niche."

One factor in raising awareness of social and environmental issues in the United States is the increased efforts behind improving the tracking and transparency of corporate information, so that there are fewer surprises — including, but not limited to, environmental disasters — for investors. This effort is legitimized by its support from both the public and private sectors. The Government Accountability Office, for example, produced a major report stating that the SEC should explore ways to improve the tracking and transparency of information. The Government Accountability Office's report addresses:

- key stakeholders' views on how well the SEC has defined the requirements for environmental disclosure;
- the extent to which companies are disclosing such information in their SEC filings;
- the adequacy of SEC's efforts to monitor and enforce compliance with disclosure requirements; and
- experts' suggestions for increasing and improving environmental disclosure.[5]

As in Canada, U.S. analysts are aware of how these environmental issues might affect their sectors. Like Canadian analysts, they appear hesitant to conduct scenario analysis based on changing regulations, as they feel that this would be a waste of time. They are, however, interested in the profit opportunities that "clean tech" ventures may provide.[6] Although such ventures may be difficult to assess quantitatively, this is not dissimilar to any venture that may or may not achieve a profitable opportunity to generate increased revenue. A notable difference between Canadian and U.S. analysts is that U.S. analysts did feel that the Clean Air Act (CAA) has had significant impacts on production processes and, therefore, financial performance (although the costs, they stated, are as yet unknown), while Canadian analysts did not find conclusive evidence for incorporating the costs of any parallel Canadian regulations, including the implementation of the Kyoto Protocol, on stock valuation. (Canadian regulations are discussed further in Section 4.4 below.)

Investment consultants interviewed in the United States, like their peers in Canada, are keen to avoid a discussion on environmental issues, believing perhaps even more strongly that such issues are either irrelevant or harmful to their clients' investment performance. As above, it again should be noted that investment consultants do not manage assets and so do not undertake direct corporate analysis that could involve environmental assessment.

[5] United States Government Accountability Office Report to Congressional Requesters, *Environmental Disclosure: SEC Should Explore Ways to Improve Tracking and Transparency of Information*, July 2004.

[6] Clean tech investments could theoretically fall under the SRI umbrella or a venture capitalization umbrella. Considering the "anti-SRI-ism" in North America, the latter may be a more strategic opportunity to present such funds.

3.3 Mexico

Research on the Mexican financial community is less conclusive, as many of the targeted investment professionals declined to be interviewed. Those who did respond to an interview request stated that the environment had no impact on stock valuations in Mexico. They did cite examples of environmentally related reputational damage to firms, but these, according to the interviewees, do not have enough of an impact on stocks to make it worth their time to proactively address these issues. They do not have examples of cases where environmentally related liabilities were material and therefore feel that these are not relevant. Kyoto and its possible effect on shareholder value do not appear to be an issue for Mexican investment professionals at this time.

3.4 North America in a Global Context

A conclusion that environmental issues are not as much of a factor for the North American mainstream financial community as they are for their British and Continental European counterparts would not be complete without some consideration as to why this is the case. As noted above, legislation in the United Kingdom and Europe introduces the notion that environmental issues may be important to stock valuations and selections. While the investment community in the United Kingdom and Europe may still be unsure of how to incorporate this additional information and may indeed still be facing the same barriers as their North American colleagues, the fact that legislation stipulates that these issues may be important lends credence to the fact that integrating environmental issues into stock consideration processes is, in fact, possible, and even desirable. Australia goes even further, in that any fund purporting to offer a product that takes into consideration social and/or environmental issues must state specifically the methodology behind this. Canada does have some recent legislative changes as well (more fully described in ***Appendix D***), most notably changes to the National Instrument 81-106 Investment Fund Continuous Disclosure, which include proxy voting disclosure requirements for securities. Such changes, however, did not appear to have had the impact of those mentioned above in the United Kingdom and Europe.

The 2005 report by the World Economic Forum and AccountAbility,[7] mentioned in the Introduction, also supports the above view that weak regulations can impede the integration of environmental (and social) issues into mainstream investment considerations. The report

[7] World Economic Forum & AccountAbility, *Mainstreaming Responsible Investment,* January 2005. Available at: http://www.weforum.org.

uses the example of the U.S. SEC's failure, first, to require companies to disclose material environmental liabilities and, second, to redefine what is and should be material for investors. The report goes on to point out that as long as investors do not know how to properly value an environmental opportunity, risk, or liability, they will continue to dismiss such extra-financial information.

The legislative changes in the United Kingdom, Europe, and Australia have had a greater effect on two very important groups of investors, leading to a request for more information on environmental issues from PMs and investment consultants. The first group is shareholders in general, who have greatly increased their proxy voting activity in recent years following the introduction of such legislation. This was demonstrated by the increase in shareholder resolutions at companies' annual general meetings with regard to environmental issues, such as climate change, as well as a myriad of other issues, such as tobacco and human rights abuses. The growth in firms offering proxy voting–related services is another example of the proliferation of this trend.

The second group is composed of corporate pension fund trustees, who want the sustainability efforts of their own corporations to be reflected in their pension fund selections. One U.K. investment consultant, for example, spoke of a public services client who requested more environmental considerations in the stock selections of its final salary pension fund scheme. This particular firm takes its own environmental responsibility very seriously and, indeed, receives an AAA rating from Innovest with regard to environmental performance. However, it must be noted that corporations and their pension funds are generally two separate legal entities, and so, even if the corporation has sound environmental management processes in place, this does not necessarily translate into complementary initiatives by its pension plan.

4 Environmental Issues in the Mainstream Professional Community

Before assessing the impact of environmental issues on stock valuation and selection, it is important to address the primary objective of investment managers: maximized risk-adjusted returns on their clients' investments. This function is an integral component of fiduciary duty, which refers to an obligation to act in the best interests of another party. A fiduciary obligation exists whenever one person, the client, places special trust and confidence in

another person and relies on that person, the fiduciary, to exercise his/her discretion or expertise in acting for the client. For example, a corporation's board member has a fiduciary duty to the shareholders, a trustee has a fiduciary duty to the trust's beneficiaries, and an attorney has a fiduciary duty to a client.

In the investment world, fiduciary duty refers to the trust that the fiduciary (the trustees) undertakes to act on behalf of the client in serving the client's best interests, and it has generally been accepted that these interests relate solely to the maximization of returns. As trustees risk legal challenges if their fiduciary duties are not observed, and as these duties are currently narrowly defined (or perceived to be defined) by financial returns, investment professionals are wary of intangible and "non-traditional" issues that may not enhance returns and, in some cases, may even be detrimental to them.

On the other hand, there are numerous environmental risks facing companies today that could hurt returns. There are also many environmental opportunities that, if realized, could enhance stock returns. An investment professional, therefore, could very well be in breach of his/her fiduciary duty by not considering environmental issues[8]. Influences highlighted in investment literature as those that can have a financial impact on companies with respect to environmental concerns are new regulations, changing consumer preferences, fluctuating raw material prices, toxic torts, and environmentally motivated legislation.[9] A study of investment literature, however, appears to indicate that environmental issues remain difficult for investors to properly assess:

Until now, however, investors have found it very difficult to quantify in financial terms the implications of a company's environmental performance. According to one survey, this difficulty is the main barrier setting environmental issues apart from other business and financial concerns. Consequently, investors have been unable to factor environmental issues into their decision-making process, even though these issues may be financially significant. And, when the capital markets do not accurately reflect the financial risks incurred through environmental management decisions, an important market incentive for prudent environmental management is forgone.[10]

Table 4 presents findings from Goldman Sachs U.K. oil and gas analysts, which highlight the various risks that companies face by not addressing specific environmental issues, in this case climate change, as well as the opportunities available to them by investing in climate change mitigation strategies.

[8] In 2005, international law firm Freshfields Bruckhaus Deringer addressed the legal framework for integrating environmental and other non-traditional analysis in the investment process. The firm's results were produced by the United Nations Finance Initiative in a report entitled *A Legal Framework for the Integration of Environmental, Social, and Governance Issues into Institutional Investment*, October, 2005.

[9] Repetto, Robert & Austin, Duncan, Quantifying the financial implications of corporate environmental performance, *Journal of Investing*, 11(3):77 (2002).

[10] Ibid.

Table 4: Climate Change Risk

Timeline	Incentive	Corporate Action
Now	Companies must endure "one-off" failures	• Climate change impact on production • Rise of NGOs and SRI funds
	Low incremental return on investment, but effective penalty for not spending	• Product quality • Environment protection
	Effective penalty for not spending, but limited choice in investment for companies	• Abandonment costs • No flaring of gas • Reduction of GHG emissions
0–5 years	Using environmental threat as an opportunity	• Emissions trading • Gas trading • Next-generation legacy assets • Piped gas
5–10 years	The longer-term growth of the industry	• Liquefied natural gas • Gas to liquids
	Higher potential longer-term return opportunities (spending on research and development [R&D] now drives competitive positioning)	• Hydrogen fuel cells
15+ years	Government tax incentives required to ensure economics (R&D spending now drives competitive positioning)	• Wind • Solar • Biomass

Source: Goldman Sachs, Energy Environmental and Social Report, February 24, 2004.

Goldman Sachs' Energy Environmental and Social Report provides a wealth of information and analysis for oil and gas analysts on environmental (and social) concerns. The firm's oil and gas analysts in the United States, however, are completely unaware that such a report even exists. (This report was produced out of the U.K. office.) Most financial literature that addresses environmental issues covers these in the aggregate — i.e. advice to investors on how to properly value all issues that relate to environmental concerns in general, as opposed to how specific issues can affect specific stocks. It is worth noting, however, that

many European sell-side firms such as Goldman Sachs (London), ABN AMRO, and BNP Paribas have also recently contributed to sustainable development–type reports through the United Nations Environment Programme Finance Initiative.[11]

The Goldman Sachs research team examined the issue of stock price devaluations following environmental catastrophes. Although the team concluded that "one-off" events and/or disasters had minimal impact on stock valuations, it believed that environmental and social management are increasingly important factors in securing new business opportunities, which they believe to be the key driver of future performance and valuation.[12] Again, however, it must be noted that the Goldman Sachs report is the first of its kind at the firm and has attracted very little attention, even within Goldman Sachs itself.

Most of the mainstream literature that specially addresses environmental issues concludes that if a company has proactively managed all of its environmental risks, it is more likely to respond positively to an environmental catastrophe than one that has not properly evaluated all alternative strategies for risk minimization. In the words of Jean Frijns, Chief Investment Officer of the $180 billion Dutch pension fund ABP: "There is a growing body of empirical evidence that companies which manage environmental, social and governance risks most effectively tend to deliver better risk-adjusted financial performance than their industry peers."[13] The Goldman Sachs research team links this specifically to management ability: "Environmental and social issues count… In an increasingly complex world, we believe such issues are part of the relative quality of overall management performance needed to compete successfully."[14]

As noted above, it is the analyst's job to value a firm in financial terms, paying specific attention to factors that could impact a company's bottom line. This paper's primary focus, therefore, is on the analysts, who are the sector specialists and conduct the most research into each stock. Discussions on and examination of the analysts' research comprise the bulk of the report. The secondary level of focus is on PMs, who actually make the stock selections and, as users of the analysts' research, drive much of what an analyst will focus on. A third key group in this survey is the investment consultants, who are hired by the investment clients to determine a policy for their investment structures and set a mandate for, as well as select, investment managers. PMs are largely constrained in their stock selections by their clients' investment mandate. Investment consultants are highly influential, both in helping design mandates and in choosing managers to run them. As a general

[11] Available at http://www.unepfi.net.

[12] Goldman Sachs, *Energy Environmental and Social Report*, February 24, 2004.

[13] The Global Compact, *Who Cares Wins*, Financial Sector Initiative, June 2004.

[14] Goldman Sachs, *Energy Environmental and Social Report*, February 24, 2004.

rule, consultants are extremely conservative, and this contributes to the broad lack of environmental considerations in the mandate to begin with. How each of these three groups of investment professionals views environmental considerations impacts the other two.

4.1 Analysts

Interviews with financial analysts established that environmental issues were considered, to varying degrees, in the analysts' company predictions and sector outlooks, although "considered" often meant simply a brief qualitative discussion of the issues and their potential impact on the sector. As mentioned above, one limitation to the research is that those analysts agreeing to an interview were the ones most likely to consider these issues in the first place. This "selection bias" is especially true of the U.S. analysts, since, as this is a project driven from the Government of Canada, Canadian analysts were more open to an interview. This, then, leads to an artificially large percentage of U.S. analysts evaluating environmental issues, which must be considered when reviewing the conclusions of this report.

The question for analysts regarding the debate on environmental issues' materiality to stock selection is whether environmental performance has a positive correlation to share price performance and other financial metrics. A 2002 report by Lois Mahoney and Robin Roberts suggests that environmental performance is more relevant for institutional investors than for retail investors, as institutional investors are more interested in the long-term strategies of the stocks they hold due to their inability to move in and out of investments as quickly as retail investors.[15] The study found that a firm's social and environmental performance had a positive correlation with its return on assets and the number of institutions owning its shares. Specifically, the results of Mahoney and Roberts indicated a significant, positive relation between a firm's environmental performance and accounting measures of financial performance for a multiyear sample of TSE 300 firms. The study's results also found that institutional investors pay attention to how Canadian firms manage environmental and social issues and that companies with higher environmental and social performance ratings were not less attractive to institutional investors. The authors did find, though, that there might be a detrimental impact or penalty on firms that allocate additional resources towards environmental performance.

[15] Mahoney, Lois & Roberts, Robin, *Corporate Social and Environmental Performance and Their Relation to Financial Performance and Institutional Ownership: Empirical Evidence on Canadian Firms*, University of Central Florida, 2002.

A more recent (2003) study out of New Zealand by Marc Orlitzky, Frank Schmidt, and Sara Rynes, entitled "Corporate Social and Financial Performance: A Meta-analysis,"[16] found that corporate environmental performance affects corporate financial performance to a lesser degree than the various other measures of corporate social performance, such as, for example, corporate reputations for minority hiring. The paper, which performs an analysis of all known studies on the relationship between corporate social performance and corporate financial performance, was awarded the 2004 Moskowitz Prize by the Social Investment Forum. The study analyzes over 50 published studies on corporate social performance and corporate financial performance and finds an unambiguous positive relationship. Interestingly, a key finding of the study is that corporate social performance correlates more strongly with corporate financial performance when using accounting measures for analysis rather than market-based measures, such as stock price.

A 2003 report entitled *The Eco-Efficiency Premium in the U.S. Equity Market* examined two hypothetical equity portfolios that differed in environmental responsibility and assessed the overall investment performance of each. After controlling for risk and investment style, the authors discovered that their environmentally high-ranked portfolio outperformed the low-ranked counterpart. The authors saw this as evidence of an "eco-efficiency premium" in the U.S. equity market.[17] The report cites arguments that "active policies to improve environmental performance can lead to a competitive advantage resulting from more cost-efficient use of resources."[18]

Most of the financial analysts interviewed felt that environmental information could not be properly quantified. This is despite recent work on an approach that would allow investors to translate pending environmental issues into financial terms using scenarios regarding environmental developments.[19] All of the financial analysts interviewed said that they considered various scenarios (mainly on non-environmental factors) and that in certain cases very specific environmentally related criteria could be quantified. Overall, however, no analyst felt that he/she could provide a precise discounting or valuation on environmental issues because of constantly changing rules. Environmental issues at this point, therefore, are relegated by most of these analysts to, at best, a qualitative analysis, which is more difficult to include in the valuation process, although of course not impossible. Qualitative analysis is a very important dimension for PMs in the stock selection process. A wide variety of important factors are considered under a qualitative analysis. This part of the stock consideration process is described in more detail below, based on interviews with PMs.

[16] Orlitzky, Marc, Schmidt, Frank L. & Rynes, Sara L., Corporate social and financial performance: A meta-analysis, *Organization Studies* 24(3):403–441 (2003). Available at http://business.auckland.ac.nz/newstaff-net/profile/publications_upload/000000556_orlitzkyschmidtrynes2003os.pdf.

[17] Derwall, Jeroen, Gunster, Nadja, Bauer, Rob & Koedijk, Kees, *The Eco-Efficiency Premium in the U.S. Equity Market*, Erasmus University, Maastricht University, and ABP Investments, October 27, 2003.

[18] Ibid., p. 3.

[19] Repetto, Robert & Austin, Duncan, Quantifying the financial implications of corporate environmental performance, *Journal of Investing*, 11(3):77 (2002).

One of the most important factors flagged in qualitative analysis was an assessment of the company's product (or service). The product had to be something that made sense to the people evaluating the stock and had to be either commodity-driven (world market) or an innovation that was unique to the geographical area. Analysts would ask themselves if it was an exciting product and do their best to predict how much money this product would make. Analysts and PMs were also very concerned with management issues. In their view, a company's future was limited if they felt it lacked strong management, and vice versa. This was largely about the relationship between management and the company itself (how involved management appeared to be) and management and the investment professionals.

This last point was particularly important: what might appear in an analyst report about the company is the analyst's perception of this company, which is not always a reflection of reality, depending on how accurately management portrays the firm. Stock considerations can also be largely intuitive and reflect an analyst's or PM's overall sense of a company, in addition to hard facts.

Other qualitative considerations included how the company treated its employees, how the product or service would be marketed, and the possibility of changing legislation. With regard to the last point, it is important to note that North American analysts do not generally perform scenario analysis on how different legislative changes might affect their stocks to the extent that U.K. and European analysts do. North American analysts simply feel that this is not worth their time. From information elsewhere in the report, one could speculate that a possible reason for this discrepancy is that North American legislation has traditionally had little teeth — i.e. minimal impact on firms.

Finally, analysts and PMs conceded that environmental issues would be considered in qualitative analysis, but only after specific questions on how environmental criteria specifically might affect their stocks. From an analyst's perspective, environmental misdemeanors are not overly important, especially if the company is insured or can otherwise afford the fines. Government regulation on an environmental issue likewise, in the analysts' experience, does not have the ability to move a stock unless a regulation is legislated with huge fines. This does not mean that analysts are not aware of talks around possible changes in legislation — they are very aware and ready to alter stock ratings if legislation is passed and they feel that this will impact their stocks.

Environmental concerns, for the most part, are a long-term issue, and, as we have seen, analysts generally take a short-term view. In other words, according to the analysts, they can change a stock rating when there is a concrete reason to do so. They tend not to speculate on a stock's success or lack of success based on tentative legislation. Nor do they worry about "one-off" environmental disasters, which, in their view, cannot be properly predicted (despite the increasing prevalence of firms researching those stocks that are particularly at risk for such "one-off" disasters).

Having said this, there are a number of environmentally related concerns that are quantified by analysts on a more or less regular basis when relevant to a stock. The measure of whether or not an environmental issue is relevant to a stock valuation is how it might affect the company's cash flows. The most common cash flow model is the discounted cash flow model, in which analysts first make projections of expected future cash flows for the company and then discount these cash flows back to the present. Analysts develop detailed projections of potential earnings and expenses for the company based on information in publicly available documents, financial statements, and meetings with company management. If an environmentally related concern were expected to either positively or negatively impact a firm's future cash flows, it would be included in the discounted cash flow model. A simplified version of the model states:

$$\textit{The value of a firm's equity} = \frac{\textit{Expected future cash flows to equity}}{\textit{Discount rate}^{20}}$$

Environmentally related factors that could affect cash flow are:

- mergers and acquisitions — does the contract protect the acquiring company from passing through burdens that may become apparent when regulatory changes occur?;
- catastrophic disasters, especially for income trusts, as these historically do not have limited liabilities;[21]
- provisions for asset retirement — i.e. cost to retire assets;
- looming capital expenditures required in response to changing legislation; and
- (possibly) benefits that can be traded — e.g. a company that is in compliance early could sell some emissions credits or renewable energy credits, if it were better understood how much these credits are worth and how the value of these varies from country to country. (Companies that may have to buy credits due to late compliance can also be

[20] The discount rate is a certain interest rate that is used to bring a series of future cash flows to their present value in order to state them in current or today's dollars. Use of a discount rate removes the time value of money from future cash flows. The discount rate used in the discounted cash flow model incorporates a measure of risk. If there is significant risk associated with a company's operations, analysts are likely to increase the discount rate.

[21] The Canadian federal 2004 budget launched a preemptive "shot across the bow" of the deep pool of pension fund capital by restricting pension funds to not investing more than 1% of their plan assets into "business trusts" (i.e. other than resource — oil and gas, timber, and minerals — and real estate investment trusts). The Department of Finance's concern was to create this limitation prior to legislation that would grant limited liability, which would permit cautious/prudent pension funds and insurance companies, which have been up to now sitting on the sidelines, to begin investing in income trusts. An income trust holds investments in the operating assets of a company. Income from these operating assets flows through to the trust, which in turn passes on the income to the trust unitholders.

considered, but this is a qualitative risk that is difficult to put in a valuation model.)

Asset valuations are also highly influenced by trends in the economy, changing supply and demand for various asset classes, as well as momentum due to technical factors in the market. The focus of this paper is on "fundamental" analysis, but a school of thought in finance emphasizes technical analysis, which includes price-level triggers and the influence of human psychology on prices and trading decisions separate from fundamental characteristics of companies.

The ultimate influence of environmental issues on stock price may be marginal, given the multitude of factors affecting the stock or bond prices, and therefore may not justify the cost of research. This, in turn, makes it also very likely that many companies are not yet being rewarded for better than average environmental performance due to current valuation models not taking these issues into account, which may encourage them not to spend resources on environmental performance if other types of performance are more recognized. According to analysts, companies must also bear some of the blame for not adequately measuring or communicating the financial value of their environmental initiatives.

Analysts stated that researching environmental issues in an effort to quantify them is a major challenge, due in part to the fact that they are not experts in this field and do not feel that they can become so. They also feel that the economic cost of these issues shifts in connection with political decisions in the United States and Canada. Economic costs are, for example, currently being affected by the Kyoto agreement, but the analysts believe that because Kyoto is politically driven and susceptible to change, it is difficult to accurately assess or predict the financial impact of Kyoto on companies. The analysts say that predictions by experts do help quantify the information, but they are still unsure as to whether it will be the customer or the supplier who will ultimately be obliged to pay any increase in costs. One analyst stated that a major factor was assessing the companies' abilities to address regulatory costs and to pass these costs on to customers, but, again, this is a largely qualitative discussion. The majority of analysts still feel that most environmental topics are too difficult to quantify and therefore cannot be included as inputs into financial models requiring quantifiable data. The result is that environmental topics appear to have little direct impact in the financial community's analysis.

Further exacerbating the challenge with regard to environmental integration is the fact that company reports on environmental performance appear to be largely irrelevant to analysts. Most of the analysts interviewed stated that they do not read companies' sustainability reports because they are, in their opinion, useless without an independent expert's opinion on these issues. The analysts said that they themselves do not have enough background information on what the companies are tracking and reporting with respect to their environmental performance.

Although, in general, the main consensus among Canadian and U.S. analysts is that environmental issues are still very qualitative, one U.S.-based Dreyfus Corp. analyst stated that environmental issues are a major factor in picking companies to invest in, given the industries she covers (electric utilities, water utilities, and natural gas). She went on to say that her approach, unlike that of her peers, is very quantitative, with the use of sell-side research to consider political and regulatory trends and assess the costs of compliance to the company. For example, if new water standards will cost the sector US$100 million, this is added into the quantitative valuation of the company based on market share and company interview information regarding compliance readiness. A Canadian-based Scotia Capital analyst argued, however, that there were no solid cost estimates on compliance for companies, and a U.S.-based analyst from SSgA, covering the electric utilities and energy sectors, stated that environmental information is almost impossible to quantify and therefore does not really appear in valuations and analyses.

The common belief among mainstream analysts stipulates that, because a formalized method to quantify environmental issues does not currently exist, these issues would not immediately affect stock valuation. With reference to this argument, though, it should be noted that "management quality" is considered among analysts as the most important determinant of companies' financial performance, and yet it is arguably even more difficult to quantify.

In keeping with current trends, many analysts focus on traditional corporate governance.[22] According to these analysts, governance may not have the same dollar and cents impact as environmental issues, but they believe that it colors people's perceptions more. There is currently more shareholder awareness around governance than around the environment. Governance, analysts stated, also has a measurable, public, real-world impact; people are paying fines, companies have been destroyed, and whole sectors have been tarnished.

[22] In this context, governance refers to pay issues, board size, issues of independence, and accounting irregularities.

Unless an industry has been targeted with a hard set of regulations, the environment is simply not a front-page issue.

The research also suggests that analysts felt that environmental performance is reflected in other indicators — for example, good management or decreasing cash flows. Companies may not perform well environmentally due to cash or financial problems, and this, the analysts felt, can be assessed using traditional valuation methods. This is because environmental management is lower on the totem pole with regard to daily operating activities. If a company's finances are sound, it is more likely to have good environmental management systems in place. If the company is struggling financially, environmental systems are one of the more likely programs to be downscaled in favor of cost savings. Finally, the environment is considered by many analysts to be only one of a company's many societal obligations; others include such factors as having no major deficits and pension requirement funding, which may be considered more important from an analyst's perspective.

4.1.1 Brokerage Reports

The research also included an assessment of sector brokerage reports to supplement the interviews. Overall, the results revealed some evidence of the issues highlighted in Section 2.2, but not as much as could be expected given their increasing magnitude. What was mentioned was relegated to a qualitative discussion, which somewhat differs from analysts in the United Kingdom and Europe, who are more likely to conduct quantitative scenarios based on the various ways in which these environmental issues can impact their stocks, generally through legislative changes. A discussion of those issues that received attention, as well as notable gaps, is presented below.

Environmental catastrophes in analyst brokerage reports were generally presented as risks to net income, the magnitude of which is determined by the firm's insurance coverage. If companies are insured for environmental liabilities, analysts in the reports examined for this study appear not to be overly concerned with the possibility of such liabilities posing much of an investment risk. This attitude on the part of analysts, however, raised some concerns for Knight and Pretty, who produced a report out of the University of Calgary that suggests that, although a catastrophe's impact on cash flow may be cushioned by insurance recoveries, catastrophes also result in a reevaluation of management, which in turn results in a reassessment of the firm's future cash flows, with significant longer-term

implications for shareholder value. The authors believe that there are two elements to the impact of a catastrophe: one is the economic loss that the catastrophe incurs, while the other is management's ability to deal with the consequences.[23]

Since most of the analysts interviewed believed that an assessment of management quality was enough of a lead indicator for any environmentally related risks and/or advantages, the research team first assessed whether management assessments in the brokerage reports were able to predict possible risks relating to environmental issues. This proved not to be the case in a number of instances. For example, brokerage reports leading up to the Exxon Valdez spill did not contain any indication that Exxon faced management issues that could lead to the catastrophic environmental disaster in 1989. According to an article published in 1989,[24] however, some analysts did state after the accident that Exxon's enormous cutbacks in the 1980s had most likely contributed to the accident. The article questions Exxon Corp. and a number of oil analysts about the cutbacks and their possible link to the spill. Bill Smith, Exxon's spokesman at the time, said that the cutbacks did not play a role in the disaster and that the ship actually had more crewmen than the Coast Guard required. Smith went on to say that the company was able to respond to the spill in a timely manner with experts from all over the world.

Oil analyst William Randol of First Boston Corp. (and a former Exxon planner), however, implied in the article that the cutbacks might indeed have led to the spill. In his opinion, the ships operated with skeleton crews that were overworked. Randol also stated that Exxon had cut a large number of its environmental staff preceding the spill.

Some current environmental issues, particularly air quality and water usage, have been noted in more recent brokerage reports, although these were not quantified in the valuation process, but rather discussed in a qualitative way. Remarks made by an analyst for Morgan Stanley provide an example of such a discussion. In his assessment, the analyst notes the environmental position of Exxon Mobil based on new air emissions regulations as stipulated by the Clean Air Act:

> This is especially true given the strong environmental position of the plants, which are prepared to meet the new US gasoline (2003) and diesel (2006) mandates of 30 and 15-ppm sulphur. Each refinery is equipped with cogeneration plants, which will not only lower operating costs as older, more expensive facilities are replaced, but will also lower

[23] Knight, Rory F. & Pretty, Deborah J., T*he Impact of Catastrophes on Shareholder Value*, The Oxford Executive Research Briefings, 1996

[24] Mauler, Richard, Blueprint for disaster: The spill that didn't have to happen, *Anchorage Daily News*, May 5, 1989..

CO2 and NOx emissions, enhancing the environmental position.[25]

There are not, however, any qualitative conclusions about the environmental position of Exxon in relation to its competitors or the financial impact that this information could have on the corporation as a whole.

In a report published on February 25, 2003, by Goldman Sachs on Exxon Mobil, analysts did in fact compare U.S. refining environmental spending across six different refining and marketing companies. Noting that capital expenditures would rise in the coming years due to environmental regulations, Goldman Sachs' analysts estimated and noted Exxon Mobil's placing among its peers in relation to this type of capital expenditure. This would correspond with the findings noted above in Section 5.1, which state that environmental issues are not a concern unless they have a direct impact on cash flow, such as environmentally related capital expenditures.

Despite Occidental Petroleum's significant efforts towards environmental performance improvements in recent years, information on these improvements cannot be found in any of the reviewed reports on this company. Such information does not appear to be a relevant component in a mainstream financial review of the firm.

A review of the metals and mining company reports demonstrated, on the whole, more emphasis on environmental issues through discussions on relevant environmental information. Merrill Lynch's 2004 report on Alcoa's operations in Australia, for example, contained quite a knowledgeable discussion on environmental issues, although, once again, there is no evidence that this information was formally integrated into the financial analysis of the company. An example of a discussion on an environmental issue relevant for this sector is provided below:

> The Portland smelter is known as the smelter in the park because of all the vegetation surrounding the facility. A real effort has been made to prove that a smelter can operate in an environmentally friendly manner. Also an effort to enact Alcoa's sustainability principles was clearly in place. The merger of environmental, health & safety, and community with financial, customer, and supplier goals has contributed to a very profitable smelter with a future. Even though the Portland smelter is not on the list of projects shown above, we believe that there exists an opportunity for significant expansion of the

[25] Terreson, Douglas, *XOM — Exxon Mobil*, Morgan Stanley, March 3, 2004.

> facility over time. It is believed that there is power available, but the cost of the power is the key issue to be overcome.[26]

The analysts in this particular report were quite outspoken, positively, about Alcoa's environmental initiatives. There is also some mention of the capital costs of these projects, although further investigation into these expenses, and expected savings or returns from them, is limited.

It is perhaps not surprising that analysts would view reclamation costs in their analysis of mining operations. Such analysis appears on corporate balance sheets as part of "operating activities" in the companies' annual reports. Analysts therefore find this information relatively easy to quantify.

Although the Kyoto Protocol was the major driver prompting discussion on environmental issues, there was still surprisingly little found on this subject compared with other factors, given its global magnitude. (As discussed in more detail below, however, this has been evolving over time.) For the most part, mainstream financial analysts are either not especially concerned about how the Kyoto Protocol will affect their stocks or, more likely, not sure how to integrate this information into their valuations, largely due to the fact that, in the opinion of analysts, no hard numbers currently exist. Kyoto is, however, discussed qualitatively, although not consistently, in all reports across the sector. For example, there was no mention in any Canadian brokerage reports about how the Kyoto Protocol might affect Imperial Oil weeks after the Canadian government ratified it. Some analysts see the Kyoto Protocol as a risk only; for example, Scotia Capital Equity Research noted in January 2002 that "In our opinion, climate change has already negatively affected the valuation of coal-based utilities." BMO Nesbitt Burns reports at year-end 2002, on the other hand, were speculating on the risks and rewards of ratification — for example, that renewables could benefit, that electricity prices could increase, and that coal projects could be delayed or cancelled — and citing specific companies that could be affected.

Most telling is that, despite the fact that some companies, such as TransAlta, have gone beyond the requirements of the Kyoto Protocol (and in TransAlta's case become the first Canadian company to engage in emissions trading), these initiatives are not documented at all in any of the reports reviewed.

[26] Rolling, Daniel, Alcoa, Merrill Lynch, 2004.

Analyst sector reports are, however, demonstrating that attention to environmental issues (largely due to Kyoto, as mentioned above) has increased over time. As indicated above, reports at year-end 2002 were briefly mentioning Kyoto, and by early 2003 Kyoto became more of a focus, with information on such factors as share impact, valuations, and carbon credit trading. This trend continued until, by year-end 2003, carbon alternatives and emission reduction strategies were discussed in most analyst reports for the sectors most likely to be impacted by these. In January 2004, a BMO Nesbitt Burns natural gas review was especially detailed, with a profile of new liquefied natural gas terminals, economics, and forecasts.

Recent reports (April 2004) incorporate more environmental information in the analysis than their predecessors. For example, a BMO April 2004 gas and electric utilities outlook report contained sections on renewables, strategies to reduce emissions, and Kyoto observations, to name a few. A number of subsections also addressed environmental issues, such as Kyoto, Ontario green commitments, and fuel cells. Finally, the report contained tables with the following data: Largest CO2 Emitters in the World; Hydrogen as Fuel; Some of the Largest Industrial Emitters of CO2 in Canada; and U.S. 2003 Electricity Generation from Renewables. As a sector overview, these sections were deemed important enough to include alongside the financial outlooks. It is important to note that these items, which many analysts feel are not quantifiable, are relevant enough to review for sector impact. There is a significant difference in the analysts' approach to environmental issues with regard to the valuation of an individual firm and issues with respect to the sector as a whole. Environmental issues feature much more prominently in a discussion on the sector than in discussions on individual companies.

Some recent long-term investment reports, such as annual company overviews or equity research annual sector conference reviews, do seem to note environmental concerns. The recognition that environmental issues may, in fact, play a role in price forecasts is becoming more widespread. In the January 15, 2004, review of the integrated oil/exploration and production/refining and marketing sectors, analysts at Goldman Sachs noted several environmental issues during the company's annual energy conference. Concerning the refining sector, for example, analysts suggested that although the sector looked bullish for the coming year, the impact of new environmental regulations on low-sulphur gasoline and MTBE removal would likely slow supply growth and imports, as noted in the quote below:

> It is worth noting, however, that Ashland CFO Marvin Quinn reminded investors that the requirement for 120 ppm sulfur gasoline is an AVERAGE for 2004. Refiners can still produce 330 ppm gasoline over the course of the year, so long as average gasoline production over the year is not more than 120 ppm. Logic would suggest that in the near term, if refining margins are high, as is the case now, there is nothing to stop refiners from producing large quantities of gasoline. The squeeze from the 120 ppm requirement could instead come in the latter portion of the year, when refiners are forced to "average down" gasoline sulphur levels. We believe this critical point may not be fully understood by all investors.

Despite noting that initial interviews with analysts demonstrated a high level of knowledge about environmental issues as they impact stocks and sectors, research on the analyst brokerage reports has discovered that, in general, such reports generally do not explicitly link environmental and financial performance at a company-specific level. In some cases, the reports will qualitatively discuss environmentally related risks to the sector as a whole. They may also address which companies in their universe are more at risk or are better positioned according to the key environmental issues affecting their sectors.

Brokerage reports are, in essence, an extension of the analysts' views on sectors and companies. The information that analysts provide in these reports is dominated by demand. That is, analysts will not include information that the mainstream investment community does not already understand or desire. Analysts will include items relating to the environment that they feel can be adequately quantified in a cash flow model, as recognized in Section 5.1. This is evident in the examples noted above.

While the reports might not yet link environmental and financial performance, all of the analysts interviewed stated that they continue to monitor environmental factors because they believe that these will eventually become an issue. These analysts believe that, although currently environmental issues do not affect value at the margin, this could change quickly if standards change, but the analysts will begin "doing the math" only when such standards become a reality. The analysts also said that an increase in competition in the utilities sector is also likely to lead to an increase in the importance of environmental issues, because competition breeds innovation, which leads to more diversity in technology and approach. This would give consumers the option of choosing environmentally friendly power. Now that the Russian Federation has signed on to Kyoto, it is reasonable to suggest that

analysts will be inclined to study the effects of the Kyoto Protocol at the margin.

An attempt at follow-up interviews with those analysts whose reports were examined was no more helpful. The purpose of these interviews was to give analysts the opportunity to further explain their reports with regard to environmental issues — i.e. if these issues are examined and disseminated in other forums besides the written reports (e.g. PM personal discussions or conferences) and, if these issues are not examined, possible reasons behind this. The response rate, however, was not encouraging and lends credence to the thesis that mainstream analysts are largely disinterested in environmental concerns. For example, one analyst from BMO Nesbitt Burns stated that, with regard to Imperial Oil, he does not specifically factor any environmental issues into his view of the company. An analyst from Scotia Capital stated that, while he does not incorporate environmental analysis into either Potash Corp. or Agrium, he does pay attention to their terminal reclamation cost estimates for their phosphate and potash mining operations. Although this analyst provides greater detail about these issues in several publications, he states that he is unable to release them due to internal policies and copyright infringement. The third response was from a Lehman Brothers analyst who saw no benefit to participating in this study and so declined to be interviewed.

Interviews conducted by Innovest staff with oil and gas analysts for a Natural Resources Canada study[27] carried a similar tone. When answering questions about sustainable development, analysts noted that sustainable development issues tend not to be of relevance over short-term investment horizons. Analysts also concurred that because, in their view, there are very little significant differences between Canadian oil and gas companies in their social and environmental performance, there is little justification for in-depth analysis and comparison.

A number of research directors at British and European asset management firms tell a different story, according to the United Nations Global Compact Study: “The consideration of material social and environmental issues should be part of every financial analyst’s normal work. Not only does this make sense from an investment risk perspective; institutional clients are increasingly asking for better integration in fund management.”[28]

[27] Innovest Strategic Value Advisors, *A Forward-looking Analysis of the Financial Impact of Corporate Sustainable Development in a Natural Resource Industry*, 2005.

[28] The Global Compact, *Who Cares Wins*, Financial Sector Initiative, June 2004.

4.2 Portfolio Managers

Interviews with PMs demonstrate that they employ a number of investment strategies that, according to these managers, will consider environmental issues as one factor among many in stock valuations. It should be noted that the interview sample is extraordinarily small, which limits conclusions about PM thinking on this issue. It should also be noted that the PM interviewed from the United States is currently involved in SRI. This is not, however, the case for Canada and Mexico.

It was found that the importance of environmental factors varies, depending on both the sector and the fund manager. This study experienced a range of responses from PMs, from the environment having no impact at all to placing the environment in an explicit scorecard of investment decision-making attributes. A more proactive investing policy, typically one that focuses on the long term, might consist of a scorecard with 10 key attributes, similar to ***Appendix E***.

The more common strategy, however, is one that utilizes an ad hoc approach to considering environmental issues. The investment professional who would use a similar scorecard as found in ***Appendix E*** would be the exception and would require a long-term focus and mandate that can hold on to stocks for a longer period, say 5–10 years. This type of professional looks for growth at above-average rates and looks to buy at a discount to intrinsic value. This process is free cash flow oriented; free cash flow is considered by some experts to be a better indicator of a company's financial health, as it ascertains the amount of cash a company has left over after it has paid all expenses, including investments.

The interviews reveal that, in general, managers try to buy companies that are selling for less than what they are worth using a present value of future cash flow assessment and a Porter model[29] to consider industry dynamics — i.e. is the company number one in its industry? The interviews also revealed a significant preference for engagement with corporate management, rather than outright divestment. Managers told us that they had two options if displeased with a company's management: they can either sell the stock or actually work with the management team to encourage a change of strategy. Fund managers that were more long-term focused had a general policy of working with the management team.

[29] Porter's model outlines the primary forces that determine competitiveness within an industry and illustrates how those forces are related. The model suggests that, in order to develop effective organizational strategies, managers must understand and react to those external forces that determine an organization's level of competitiveness within an industry.

Where environmental issues become relevant, PMs told us that their first instinct is to call the firm and speak to the appropriate person or to quiz management during meetings. For the more proactive mainstream PMs, environmental issues appear on the company scorecard, considered along with legal and regulatory issues. PMs will generally avoid firms if there are many legal issues. Environmental issues factor into predictions of cash flow, usually in the form of risks to cash flow. Generally, managers do not focus on opportunity factors associated with environmental issues unless these are directly traceable to cash flow.[30]

PMs stated that it is difficult to test a hypothesis that states that an environmental factor caused a stock decline, unless the particular factor refers to a major disaster. In most cases, however, PMs felt that an environmental issue that may have been relevant in a stock decline would have been only one cause among many of this decline. PMs tended to feel that these various "causes of decline," or overall management-related risks, could be caught using their traditional methods. As for the major disasters, PMs felt that they cover themselves with their standard written caveats, such as a financial analysis that should stand barring any "Act of God" (which could include such a "one-off" disaster). PMs either were not interested in differentiating between those firms that were more likely to experience an "Act of God" or, as mentioned above, felt that these risks would be covered in an assessment of other factors.

A recent study by State Street Global Advisors, however, presents an interesting examination into enhancing portfolio returns by better managing environmental risks (or opportunities). The study set out to investigate whether environmental information could provide an independent non-correlated source of excess return on the company's active portfolios. The results show that, for the entire testing period, the correlation between environmental performance and stock performance is positive, indicating that, on average, being environmentally responsible is consistent with superior stock returns.[31] Gluck and Becker conclude that "Companies that mitigate their environmental liability are less likely to be the subject of lawsuits and consumer boycotts than companies that are labeled poor stewards of the environment. Further, strong environmental controls could be an indicator of a company that has the foresight to plan a longer term strategy, and not just worry about the next few quarters, [and that] may be more likely to make sound strategic decisions."[32]

[30] Innovest, Interviews with PMs, March 2003 – April 2004.

[31] Gluck, Kimberly & Becker, Ying, *The Impact of Eco-Efficiency Alphas on an Actively Managed U.S. Equity Portfolio Performance*, State Street Global Advisors, 2003.

[32] Ibid., p. 7.

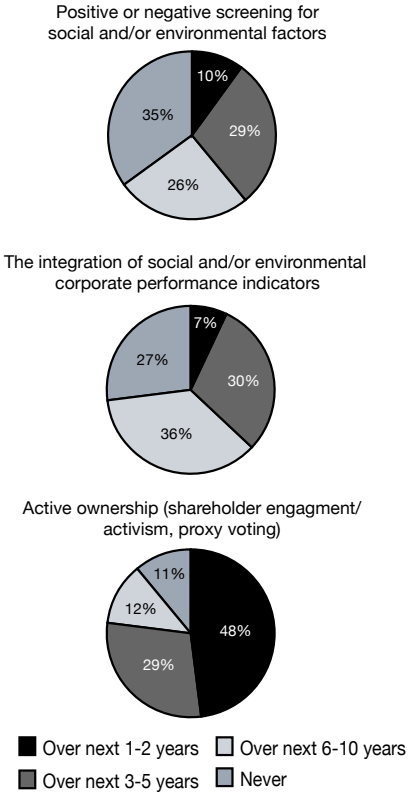
There is certainly a regional bias regarding environmental integration in mainstream investing practices. According to Mercer's 2005 Fearless Forecast survey of investment managers worldwide, managers' responses to whether certain SRI practices (the act of including environmental and social considerations in mainstream investments) would become a common component of mainstream investment processes in the near and long term varied according to region. According to the report:

> US managers were the least convinced, with over 60% of them believing that screening and the integration of social and/or environmental factors will never become a mainstream investment practice. The Asian and Australian managers, on the other hand, seem to be the most convinced, with over 85% of them predicting that all three SRI-related practices will become mainstream within 10 years. European managers predict the most short-term activity in relation to the integration of social and/or environmental criteria, and positive and negative screening.[33]

The survey finds that managers, on the whole, are becoming convinced that social and environmental issues will become part of mainstream investment strategies and practices, in some form or another, as demonstrated in Figure 1.

Mercer concludes that managers overall do expect social and environmental issues to become relevant in the mainstream investment decision-making process and states that its own manager research will now include a consideration of how investment managers account for these issues in their mainstream strategies.

Figure 1: Practices Relating to Social and Environmental Issues Predicted To Go Mainstream



Source: 2005 Fearless Forecast, ©2005 Mercer Human Resource Consulting LLC and Mercer Investment Consulting, Inc.,

4.3 Investment Consultants

Investment consultants are hired by institutional investors (e.g. pension funds) to help structure the investment mandate and the parameters for the financial management company that is making the investment decisions. The investment mandate stipulates rules for the investment manager on the investment selection process. These could include percentage maximums (e.g. individual company maximum amounts), geographic focus, the benchmark to be measured against, investment style, and/or particular stock restrictions. If investment managers violate in any way the investment mandate, they can face serious consequences (this is often adhered to with even the smallest item, e.g. buying a bond for slightly longer than the maximum term allowed).

[33] Mercer Investment Consulting, *2005 Fearless Forecast*. Available at: http://www.merceric.com/knowledgecenter/reportsummary.jhtml?idContent=1174905.

Without exception, the investment consultants interviewed all stated that (with the possible exception of specific screening requirements), when it came to defined benefit (or final salary) plans, environmental concerns or even outright restrictions are not addressed within the investment mandate. Investment mandates did not include any type of "non-traditional" analysis unless specifically stated. This was the case even for clients such as church groups, traditionally a sector with strong ties to SRI. This may be due to the fact that because the investment mandate is so rigorously monitored and the investment manager's performance and compensation are so directly linked to it, mandate stipulations must be as clearly defined as possible. The investment consultants tended to feel that most people were still feeling their way with regard to environmental risks and opportunities, which made it difficult to include environmentally related criteria in something as concrete as the investment mandate.

Again without exception, the investment consultants interviewed left the management of environmental issues up to the PM. Clients tend to defer to, delegate to, and trust their investment managers to address any material factors. Only rarely do they impose restrictions on that discretion. There may be hesitation to interfere too much with an investment manager's stock selection process, as it is believed that too many restrictions hinder returns and/or add levels of risk (through loss of diversification opportunity). This, in turn, might prevent consultants from selecting the best managers to run their clients' funds.

About half of the consultants interviewed did have clients who brought up environmental concerns, but in each case clients eventually backed away from the discussion. One consultant stated that what he often found in practice was that an investment manager will address any sensitivity around the issues with clients, but will often still invest in the more environmentally risky stocks and not talk about it. This highlights the tremendous amount of trust that clients have in the investment managers. Occasionally the consultants will see clients push more strongly the issues that are of concern, although these types of exceptions are generally reserved for social issues — for example, union representatives sitting on a board of trustees concerned with the employee relations record of a firm.

All of the consultants interviewed pointed out that they work solely on defined benefit (DB) plans and that their comments may not refer to defined contribution (DC) pension schemes.[34] When a U.S.-based head of research at one of the major consulting firms was asked about this, however, he said that he was not aware of any employees at his clients'

[34] DB plans refer to pension plans that promise the employee a specific pension payment (such as 65% of final salary). DC schemes define the contribution that employees and/or employers make up front (such as 5% of salary). In DB schemes, it is the employer who bears the promise (or risk) of having the funds available to finance eventual pension payments. With DC plans, the risk is borne by employees — generally they must make do with whatever money has accumulated in the DC savings account (although some employers might provide a minimum guarantee or offer a DB/DC hybrid scheme).

firms with specific environmental restrictions for their own pension plans, even with DC plans. In the United Kingdom, however, the availability of SRI funds is considered a prerequisite for many DC fund platforms, although one U.K. firm noted that actual investment in these funds remains low. Although the U.S.-based head of research did state that employees might have "SRI-type" restrictions, these are more broadly stated as general social concerns. He has not come across specific funds designed to select only environmentally friendly companies. Converse to what the other consultants stated, this head of research said that clients with explicit written provisions on SRI do have these provisions included in the investment mandate, but his only examples are socially oriented — for example, health care companies specifically stipulating the screening out of tobacco stocks.

Many of the consultants interviewed suggested that perhaps a DC pension plan structure would be more appropriate for this subject, as this type of plan theoretically has more decision-making involvement from beneficiaries. In DC schemes, investors can choose their own asset mix and their own funds. While DB plans have historically been the norm, the pension environment is rapidly switching to a DC environment. Currently in the United Kingdom, about 10% of pension funds are DC and 90% DB. Europe and North America, however, are closer to a 50:50 split between DB and DC.

A DC consultant, however, refuted this, stating that investors can choose only from the range of options laid out for them by the plan sponsor; in other words, they do not create an investment structure from scratch, and most pension plan sponsors do not look at environmental (or social) factors. In terms of a DC structure, choices are from mutual or pooled funds, so it may actually be harder for plan sponsors to integrate extra-financial factors (such as environmental considerations). Beneficiaries choose a whole pooled product as opposed to individual stocks/sectors, although theoretically a plan sponsor could choose to include an SRI option in the lineup of fund options.

According to the DC consultant, it is actually easier to manage environmental issues in a DB environment where a smaller group of people (i.e. company management and trustees) has a voice over a larger pool of assets. Whereas DB consultants felt that a DC structure would be more accessible to investors' own choices and concerns, according to the DC consultant, this was not yet the case, for the following reasons:

- Pension committees are made up of plan sponsor representatives, with very few, if any, employee representatives. These employee representatives are in the minority and therefore have less voice. This, however, may be changing. Five years ago, there were no employee representatives, whereas today there is about 15% employee representation on pension committees.

- In the opinion of consultants, unions have historically been most likely to take social and/or environmental factors into consideration and are most likely to have the loudest voice on a pension committee, but they are very opposed to DC. This is because the risk to returns is assumed by the beneficiaries as opposed to the company, and unions are interested in protecting the employees (in this case, the pension fund beneficiaries).

- Plan sponsors (i.e. companies and public sector pension plans) can be sued by beneficiaries and so are shy about integrating extra-financial considerations. While this also means that they have to manage risks such as those presented by environmental mismanagement, they have not yet seen whole portfolios performing poorly due to stock blowups on environmental issues alone (there are many reasons a stock can blow up). If they saw, say, five cases in a row where environmental issues were the cause of stock devaluation, they would likely require managers to more stringently assess environmental risks and the company's environmental management. Otherwise, it is felt that environmental risks are minimized through diversification (as with other types of risk).

In the experience of each of those interviewed, environmental issues have always been left up to the manager, whose job is to assess a stock's risk and decide whether or not such an assessment should include environmental concerns. These concerns are not, in their view, a question for consultants.

A Canada-based head of research at a global investment consulting firm noted that client interest in SRI has historically been cyclical, which may be why the firms tend not to bring these issues up to the strategic level. SRI, she said, has a positive correlation with market returns and experiences high visibility during social or environmental scandals, such as Talisman. She also noted that Kyoto has not yet appeared to cause a similar reaction in the marketplace in Canada.

Several of the consultants noted that, while they have some large clients that proactively manage their environmental issues within their own organizations, they have not actually made the connection (or not to the consultant/investment manager) between their understanding of how an environmental chain of events can impact a company and their own investment choices. As was noted above, however, there is a significant degree of separation between a corporation and its pension plan. Legally, the pension plan is a separate entity, so even if a corporation is performing well in terms of its own environmental management, this does not necessarily translate into their pension plan's investment strategy. As the pension plan is technically a separate legal entity, there are no straightforward mechanisms to pull the firm's own environmental considerations across into its investment mandates.

One head of research at one of the major consulting firms felt that mainstream investors are unlikely to become proactive in this area until one of two things happens:

1. It becomes clear that incorporating these factors will generate a better return (or effectively mitigate risk). Unfortunately, the level of awareness among consultants of the growing body of empirical research in this area is extraordinarily low. (One senior consultant at a leading North American firm recently observed publicly that he was not aware of a single study making the link between financial with environmental performance, despite the plethora of studies that address both environmental and social performance, which were conducted by reputable organizations with sophisticated methodologies.[35]

2. The investment community is forced to consider these factors through legislation.

A United Kingdom–based consultant's view supports the second point, in that he believes that environmental issues receive more attention today in the stock valuation process due to legislation that required public pension plans and charities to make a formal statement

[35] A report released in November 2004 assesses all of the studies that address the link between financial and environmental performance: Innovest Strategic Value Advisors, *Corporate Environmental Governance — A Study into the Influence of Environmental Governance and Financial Performance*, United Kingdom Environment Agency, 2004. Available at: http://www.environment-agency.gov.uk/business.

on how they manage social and environmental issues. He added, however, that there is less attention to environmental issues now than when the legislation first came out, saying that everyone in the investment community has now moved on to different agendas. The key drivers currently, he said, are shareholder activism and governance, which might detract from environmental considerations. This statement is supported by an update from a United Kingdom–based SRI research team at Mercer Investment Consulting, which stated that shareholder engagement and activism are receiving more attention in the press and that client interest in SRI remains limited. The Mercer team suggested that SRI might still be perceived as exclusionary, which will hinder interest in the mainstream.

There are, however, a number of trends worth noting in the consulting arena that may influence the above discussion[36]. First, "extra-financial" issues are becoming more relevant in the pension environment because 1) more people are asking for further clarification around these issues and 2) managers are acknowledging that they may have been missing social/environmental-related risks in these discussions. Although, in the opinions of those interviewed, changing legislation or the threat/promise of changing legislation has not been a major driver in Canada thus far, the one change that might move this agenda forward is legislation protecting plan sponsors who consider the "softer" issues. This could mean formalizing the definition of fiduciary duty to allow for the inclusion of such issues, as Manitoba's trustee legislation has done. [37]

There is also greater pressure for plan sponsors/trustees to increase the range of options available to members in terms of both risk/return characteristics (e.g. hedge funds) and what are still considered to be "softer" issues, including environmental concerns. Although this pressure is currently greater in the United Kingdom than in North America, the fact that it is happening sets a precedent that may be followed by other nations in due course.

Furthermore, there is more room for the beneficiaries of a DC plan to either follow a trustee- defined strategy or move into a self-selected strategy. It is in this latter strategy that social and/or environmental considerations are more likely to be found. Trustees can feel safe from being sued in this case, as they only offer an option for plan members to select or discard as they see fit. This is actually more difficult in a DB scheme, in which trustees are allowed to introduce such strategies only if they believe them to be in the best financial interests of the fund (and thus its members) or else are in line with the trustees' reasonable expectations of members' wishes. (For example, trustees of the World Wildlife Fund's

[36] In October 2005, Mercer Investment Consulting released a report in the U.K., in collaboration with the U.K.-based Institutional Investors Group on Climate Change and the Carbon Trust entitled *A Climate for Change: A trustee's guide to understanding and addressing climate risk*.

[37] *Trustee Act*, S.M. 1995, c.14, s. 3.

(WWF) pension plan may reasonably take environmental considerations into account, even if these cannot be quantified, or a medical industry scheme may disallow tobacco stocks. It was noted by one asset management representative, however, that one of their clients, a Canadian hospital pension scheme, still included tobacco stocks in its investment portfolio.)

One last trend, and ultimately perhaps the most important, is a relatively recent focus on longer-term mandates for managers in an effort to alleviate some of the problems that accompany short-term (e.g. quarterly) monitoring and measuring of managers' performance. Papers published by Watson Wyatt Investment Consulting Practice[38] speak to the issue of longer-term investment strategies that move the emphasis from short-term investment decisions often associated with excessive trading activity to long-term investing activity, which concentrates on the medium- to long-term prospects of the companies invested in. The firm suggests that the short-term focus in investments has led to an increase in equity turnover, which actually reduces returns due to increased trading transaction costs resulting from broker commissions, market impact of trades, buy/sell spreads, etc. Trustees are encouraged, in the Watson Wyatt report, to not focus on the short term and not terminate managers for reasons of underperformance (as measured against a specific investment index) alone, but to implement a longer evaluation period that would encompass a wider variety of measures.

5 Relevance of Key Environmental Issues to Stock Valuations

Although most of the analysts interviewed feel that environmental information can be assessed qualitatively only, they all acknowledged that there are case-specific examples of situations where environmental information regarding risks and opportunities should be examined. These become a concern only when they are judged to be "material" to the company, and the most quantifiable ones tend to be "one-off" events that have a specific impact on the company and are taken into account to the extent that they are quantifiable. Analysts acknowledged, however, that there are many factors that may in the future become quantifiable and are keeping an eye on these issues as well. In addition to the forces affecting the sectors described in Section 3 above, there are a number of sector-specific environmental concerns and (to a lesser extent) opportunities related to each of the issues described below that can impact sector and stock valuations.

[38] 2004 reports can be found at http://www.watsonwyatt.com/europe/pubs/globalinvestment/.

This paper focuses on four major environmental issues with respect to their relevance to the stock valuation process. These are contaminated site liabilities and environmentally sensitive areas, air quality, water usage and pollution, and climate change. The issues provide three different temporal perspectives: contaminated land can be considered a "retrospective" issue, air quality and water pollution can be viewed as contemporary, and climate change is a more forward-looking, prospective issue.

Figure 2: Key Environmental Issues and Time Frames

Retrospective	Current	Prospective
Contaminated Land / Environmentally Sensitive Sites	Water Usage / Pollution Air Quality	Climate Change

5.1 Contaminated Site Liabilities and Environmentally Sensitive Areas

Contaminated sites remain a significant source of long-term liability and expense for all four sectors examined in this report. Mine decommissioning and reclamation are major cost items for some mining companies, while the industry as a whole faces varying degrees of tightening regulation and significant image problems resulting from perceived environmental transgressions. Similarly, given the resource-intensive nature of the petroleum industry, most companies in that sector have significant involvement in remediation of hazardous waste sites. Remediation reserves for some companies were greater than $750 million. Equally important are the reputation risks at stake: hazardous waste sites can be major lightning rods for community and NGO action, and poor management can severely tarnish a company's public image.

PMs, however, feel that, rightly or wrongly, these environmental risks are medium- to long-term issues as opposed to short-term issues that would take an investor by surprise. The manager would therefore have the opportunity to fully analyze the intangible value of environmental research and also have time to sell a stock should some of the problems envisaged arise. Regulatory changes requiring expensive cleanups would be discussed long before changes took effect. Companies should also factor in these liabilities, and, according to PMs, it is in their best interest to give the higher estimated number rather than the lower, allowing investors to be surprised later on the upside rather than the downside. (It is

worth noting, however, that Robert Repetto's 2004 report, Silence is Golden, Leaden and Copper, found that just the opposite was occurring, i.e. companies were underestimating environmental liabilities.[39]) An investor will be concerned with an issue such as environmentally sensitive sites only if the issue has the potential to have a significant impact on the company. For example, the delay factor in the Mackenzie Valley project was not significant to portfolio performance, according to one PM. Another example is Imperial Oil's operations in the Beaufort Sea; this was not deemed to be an issue because it was judged to be of potential significance only 5 or 10 years down the road.

These results are somewhat surprising, considering that there are examples of events that do suddenly result in the unexpected drop in share price, such as the 12% decrease in ABB's[40] share price after a U.S. court threw out its $1.3 billion plan to resolve more than 135 000 asbestos lawsuits. Similarly, auto parts manufacturer Federal-Mogul filed for bankruptcy as a result of heavy asbestos litigation costs. Research into which companies were more exposed to potential asbestos claims would have kept investors out of these riskier stocks before the claims became a "material" issue.

The PMs' position above differs, however, for pension funds, due to the quantity of stocks these fund managers purchase, particularly for smaller, illiquid companies. Significant amounts of a company's stock are not as easy to buy or as easy to dispose of when trading volumes are low, one of several factors that make pension fund managers more concerned with long-term issues. Pension funds therefore need their own research, which goes beyond the more short-term-oriented analyst reports, examining management quality from a long-term perspective, as well as analyzing trends. A trend towards longer-term mandates, as described more fully in Section 5.3, speaks to the need to eliminate the unnecessary turnover of portfolios, as would occur with the shorter-term investment strategy described above. This would lead to increased costs to the pension fund and increased rewards for the brokering community. In particular, longer-term investing allows fund managers to capture the extra value generated by the intangible value drivers, which are not readily apparent from their financial statements.

Overall, the problem at this point is that analysts and PMs feel that they do not really know how to accurately value environmental liability — for example, what the economic cost of a possible cleanup would be — despite the fact that decent estimates can be and often are made. Analysts state that, when a cleanup is required, the analysts will immediately assess

[39] Repetto, Robert, *Silence is Golden, Leaden and Copper: Disclosure of Material Environmental Information in the Hard Rock Mining Industry*, Yale, 2004.

[40] ABB is the world's largest maker of electricity transformers. Asbestos-related claims have resulted in an ABB subsidiary filing under Chapter 11 bankruptcy protection.

the exact cost, as well as its impact on the company's financial performance. The analysts interviewed stated that, in general, the market incorporates environmental costs broadly into stock market prices. These analysts do not believe that predictions for short-term incidents are feasible, and so costs related to these incidents are more often incorporated after the fact. The majority of analysts also feel that issues such as Noranda's toxic gas leak that made the news for drifting into Montreal in August 2005 and sickened some residents is a "one-off" event and therefore would not be overly concerned with it. Of greater concern might be an issue like soil contamination, because this is more ongoing. Soil contamination is a key source of regulatory pressure and reputational risk and therefore an increasingly critical management issue for high-impact companies. Both the metals and mining and chemicals sectors face varying degrees of tightening regulation and significant image problems resulting from perceived environmental transgressions. At this time, however, poor environmental performers are not yet punished, nor are top performers rewarded in the capital markets.

5.2 Air Quality

Air quality is a growing concern for consumers as well as both the public and private sectors. Electric power companies, for example, are confronted with the challenge of generating and delivering electricity to consumers with minimal negative impacts on public health. Studies showing the negative impacts of power company emissions are placing greater pressure on the sector to reduce pollution. The U.S. Clean Air Task Force reports that fossil fuel emissions in the United States are responsible each year for about 30 000 premature deaths, 21 000 hospitalizations, and 600 000 additional asthma attacks[41] The U.S. EPA reports that these emissions are also responsible for up to a 50% reduction in summer visibility, an increase in acid rain, and substantial nitrogen loadings to state water bodies.

Environmental regulations in both the United States and Canada are legislated by federal governments. The U.S. EPA is the federal body responsible for environmental protection. Each state may have its own laws with regard to environmental regulation, but they must never be less than what is federally mandated. The state governments automatically update their own state environmental laws with each change to the federal laws and regulations. The U.S. EPA is the lead agency responsible for implementing Clean Air Act Amendments requirements, but it has delegated the bulk of regulatory responsibility to the states. Each state, through its State Implementation Plan, has developed geographic air quality

[41] Abt Associates, Inc., The Particulate-related Hea*lth Benefits of Reducing Power Plant Emissions (October 2000) and Clean Air Task Force, Death, Disease, and Dirty Power: Mortality and Health Damage Due to Air Pollution from Power Plant*s (October 2000).

control regions and set emission reduction requirements for various sources in each region to achieve compliance.

In Canada, the National Ambient Air Quality Objectives are updated periodically under the Canadian Environmental Protection Act, 1999 and by various committees, including a working group with representatives from provincial, federal, and territorial departments of health and environment. Each provincial/territorial government, however, may decide how to implement the objectives, thereby creating differences in each province or territory.

Communities and other stakeholders' ability to obtain information on corporate performance regarding air quality has increased dramatically over the past decade. In the United States, the TRI is a comprehensive database of information about releases and transfers of toxic chemicals from manufacturing facilities. The TRI's primary function is to inform communities, citizens, employees, and chief executive officers of potential chemical releases and environmental waste generated by facilities in their communities. The Canadian equivalent is the National Pollutant Release Inventory (NPRI) — a federally legislated, public database whereby most sectors (i.e. commercial, industrial, government) that meet the reporting thresholds of certain pollutants must report releases to the air, water, land, etc. All four of the sectors examined in this report are required to report to TRI and the NPRI. In Mexico, the Registro de Emisiones y Transferencia de Contaminantes is now a formal regulatory required database of information on Mexican companies.

Another easily accessible database in the United States is the Enforcement and Compliance History Online website, which contains a searchable, facility-level enforcement and compliance information database for more than 800 000 regulated facilities nationwide. This database has potential ramifications, since rapid compliance assessments can be undertaken efficiently to demonstrate a consistent pattern of non-compliance.[42] The actual impacts of the information provided here, however, have not yet been adequately addressed in current literature.

To the mainstream financial community, particulate matter emissions are not yet a big factor, as investment professionals believe that these do not have a significant impact on a company's finances. Analysts do, however, want to know about capital equipment requirements and provisions for technologically outdated asset retirement. So far, significant concern over fines and penalties is not apparent, although analysts acknowledge that this

[42] The Enforcement and Compliance History Online database, *Pollution Engineering*, 35(2):41–42 (2003).

could change in the near future, once the full impact of the Kyoto Protocol on companies is realized. For this reason, they would be more concerned about heavy emitters, although they also say that even "clean" companies can be affected by limits on emissions of nitrogen oxides, sulphur oxides, and particulate matter. Analysts also feel that air quality issues are not relevant to a quantitative analysis since, according to them, companies receive government subsidies to fulfill regulatory requirements related to air quality issues, which therefore would have a zero impact on the balance sheet.

Opportunities exist in clean technology, and analysts will look for companies that might be leaders in improving air quality, as these leaders are the most likely to receive the subsidies and grants that may not be available to industry laggards. Investing in clean air technologies is risky, however, as the analyst cannot know at this point if the technology will work, if there will indeed be a market for it, and if it will be profitable.

Analysts in the United States said that the Clean Air Act (CAA) did have significant impacts on production processes, and they are therefore now closely monitoring the situation for impacts on financial performance, which are as yet unknown. Unclear issues are merely tracked as opposed to incorporated into the valuation process while the analysts await clarity. Tracking involves watching the political situation and trying to determine what the outcome will be for particular industry sectors.

Companies heavily exposed to particularly risky chemicals would not be recommended for investment, although assigning an exact stock valuation on this remains challenging. For example, the impact of regulations requiring the elimination of MTBE (a gasoline additive) will be incorporated into the stock price, and an assessment of the company's market exposure to this chemical will be completed. If the company's market for MTBE is 50% or more in sales, the company's prospects would be severely damaged as far as analysts are concerned.

5.3 Water Usage and Pollution

Water usage and pollution are significant environmental issues for all of the sectors discussed here, meriting much further attention from analysts and PMs than what is apparent now. Although analysts for these sectors and, for the most part, PMs are highly aware of these issues, they are still employing a "wait and see" strategy with regard to changing

regulations before determining stock values. Some companies, however, are much better positioned in managing these issues than others and so would benefit in the long term in the very likely event that regulations shifted to provide quantifiable incentives for those companies able to minimize environmental risks. Longer-term mandates, as discussed a number of times above, would allow managers to hold stocks that could perhaps be unpopular in the short term, but end up generating superior returns in the long term. The current focus on short-term mandates often leads to managers holding stocks whose medium-term prospects they believe to be poor, since these same stocks might yield superior returns in the short term. This is extremely important for a PM who is evaluated on a quarterly basis.

There are a number of key long-term issues and risks faced by each of the sectors that are not yet fully realized by the investment community. These are summarized below [43]:

Oil and Gas:

Resource Usage and Efficiency: The energy-intensive nature of oil and gas operations places a premium on the ability to conserve resources and pursue a more integrated energy management strategy. Companies can generate substantial reductions in operating costs through better conservation of resources, although the extent to which firms quantify the financial benefits is still limited. Although access to data is patchy, we have benchmarked the oil and gas firms according to efficiency in water usage, waste generation, flaring emissions, and energy intensity.

Offshore Facility Decommissioning: Global decommissioning costs for offshore platforms are estimated to be $20–40 billion. More stringent decommissioning requirements are raising costs. For example, by requiring onshore dismantling, the new Convention for the Protection of the Marine Environment of the North-East Atlantic could raise North Sea platform decommissioning costs (currently about $2–10 million) by as much as 500%.

Utilities:

Changes to New Source Review: In 2003, the U.S. EPA proposed a new rule related to routine maintenance, repair, and replacement under the New Source Review (NSR) air

[43] Data sources are provided in *Appendix A*.

permitting programs under the CAA. This rule was designed to provide the industry with more flexibility to make plant changes without triggering NSR. A coalition of 14 states (California, Connecticut, Illinois, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New Mexico, New York, Pennsylvania, Rhode Island, Vermont, and Wisconsin) and the District of Columbia filed a motion in federal court to block the proposed change to the CAA's NSR. It is still unclear how NSR will be resolved, which illustrates the increasing uncertainty that investors face in the electric utility sector. Meanwhile, the U.S. Court of Appeals for the District of Columbia blocked the implementation of the "expanded exemption" for routine maintenance projects of past potential NSR violators. As a result, the U.S. EPA continues to enforce actions against companies in violation of NSR, which requires companies to install modern pollution control equipment when they make plant modifications that significantly increase air emissions.

Chemicals:

Superfund Sites: The health and ecological impacts associated with hazardous waste sites are a major concern for the general public, and site management can be a substantial financial burden. Contaminated sites in the United States that are classified under the Comprehensive Environmental Response, Compensation and Liability Act, so-called Superfund sites, remain a significant source of long-term liability and expense for the majority of the chemical companies reviewed here. Equally important are the reputation risks at stake: hazardous waste sites can be major lightning rods for community and NGO action, and poor management can severely tarnish a company's public image.

New Understanding of Health Impacts from Chemicals: Two aspects of chemical toxicity, endocrine disruption and bioaccumulation, are rapidly changing the risk profile of the petrochemical industry. Endocrine disruption refers to the ability of certain chemicals to mimic hormones, which can lead to cancers and irregularities in the reproductive system. This can happen at parts per trillion levels, implying that "eco-efficiency" will not solve this problem; rather, companies will have to eliminate products with such characteristics. Bioaccumulation results when chemicals, such as polychlorinated biphenyls, break down very slowly in the environment, which allows them to migrate up the food chain. This concentrates pollutants in animals at higher levels of the food chain. Humans are exposed to bioaccumulating toxins through avenues such as fish and milk

consumption. Again, chemical concentrations at very low levels can still aggregate to dangerous levels through this process, making remediation and prevention difficult for manufacturers.

Mining:

Resource Consumption: Consumption of energy, water, and other resources is becoming increasingly critical to both environmental and financial performance. Energy costs relating to smelting can be high, rising to over 15% of total operating costs in some cases.

Toxic Legacy and Pollution: As a key source of regulatory pressures and risk to reputation, long- and short-term environmental effects are increasingly critical management issues. Mine decommissioning and reclamation are significant cost centers for some companies, while the industry as a whole faces varying degrees of tightening regulation and significant image problems resulting from perceived environmental transgressions.

5.4 Climate Change

Climate change is by far the most relevant issue to the mainstream financial community in Canada, due largely to the Canadian government's ratification of Kyoto. Still, a significant issue for Canada and the United States is whether or not reducing harmful GHG emissions will cause a decline in gross domestic product (GDP) for both countries. A report by the World Resources Institute examines the most widely used economic models and identifies the key assumptions that account for more than 80% of the differences in economic predictions about the various impacts that GHG reduction strategies will have on the economy. The report concludes that, under the most unfavorable assumptions, the models predict a 2.4% decrease in GDP by the year 2020 and, under the most favorable assumptions, a potential 2.4% increase in GDP by 2020. The authors' final consensus is as follows: "with sensible public policies and international cooperation, carbon dioxide emissions can be reduced with minimal impacts to the economy."[44]

One of the major sectors affected by climate change is the integrated oil and gas sector. Companies in this sector are sizeable emitters of GHGs and, depending on where their

[44] Repetto, Robert, & Austin, Duncan, *The Costs of Climate Change Protection: A Guide for the Perplexed*, World Resources Institute, 1997.

refinery and production operations are situated, may face requirements to reduce emissions in the near future. Perhaps even more of a strategic concern is the possible disruption to future fossil fuel markets caused by any societal shift towards cleaner energy and fuel types. Thus, the carbon embedded within fuel products may also become a strategic management issue. Both trends pose a direct threat to the bottom line, although the effects will impact companies in different ways, in part because corporate strategies to manage climate change risks also vary considerably.

In November 2003, treasurers and comptrollers from California, Connecticut, the District of Columbia, Iowa, Kentucky, Maine, Maryland, Massachusetts, New Mexico, New York, North Carolina, Oregon, and Vermont and other leading investment stakeholders with almost $1 trillion in assets under management met for the first time to assess their responsibilities in light of the financial risks posed by climate change. A new investor forum called the INCR emerged as a direct result. Signatories to the 2005 Carbon Disclosure Project, which currently has combined assets under management of over $21 trillion, have requested that the chairmen of the 500 largest quoted companies in the world disclose the nature and extent of the financial risks created by climate change to the companies and their investors. The Inuit Circumpolar Conference (representing more than 155 000 Inuit) has stated that it will petition the Inter-American Commission on Human Rights. “The petition will seek a declaration in international law that the erosion and potential destruction of the Inuit way of life brought about by climate change resulting from emission of greenhouse gases amounts to a violation of the fundamental human rights of Inuit.”[45] The case stipulates that as the United States is one of the largest emitters of GHGs and has taken little action to reduce emissions (i.e. has not joined Kyoto or passed any regulatory measure beyond the CAA), the United States has in fact violated human rights.

At the time of interviewing, many analysts still doubted Kyoto’s impact, due to the fact that the United States has not ratified the accord. The fact that the Russian Federation has now ratified Kyoto, however, makes the pact very relevant for Canada. Russian ratification implies a significant shift in the regulatory environment that will impact both the valuation of companies and the risk exposures of investors. Depending on the degree to which they have prepared for this outcome, many companies may find themselves playing catch-up to position themselves appropriately in this new environment. While mainstream financial professionals may not all adhere to this position, it is the opinion of many SRI professionals, venture capitalists, and environmentalists that climate change will remain an influential

[45] Watt-Cloutier, Shiela, *Climate Change and Human Rights*, Carnegie Council on Ethics and International Affairs, Spring 2004.

force that changes the underlying dynamics of the energy markets, technology development, and risk/return equations across a wide spectrum of investment classes.[46] This latest development may signal a new era in which carbon liabilities will be formalized in the rule of law, competition for low-cost carbon offsets will increase, and investors, for their part, will have to more fully consider their own carbon risk exposures.

Even without U.S. ratification, however, there are still initiatives under way in the United States to address the issue of climate change. Most initiatives are at the state level — i.e. over a dozen states have passed or are actively considering GHG emission–related legislation. At the federal level, the U.S. Energy Secretary's 2004 statement regarding U.S. leadership in this area indicates that regulations favoring environmental improvements are certainly feasible:

> The Bush Administration is committed to a comprehensive, innovative program of domestic and international initiatives to reduce greenhouse gas emissions. Those who question the Administration's commitment to addressing global climate change do not fully appreciate the global benefit of the scientific and technological investments the U.S. has made and is making through a variety of programs. The U.S. takes the issue of global climate change very seriously and is leading the world in investments, several billions of dollars each year, to understand and address it.[47]

Furthermore, U.S. policy development is supporting zero-emissions energy technologies that are designed for longer-term emissions reduction while maintaining economic growth.[48]

Most of the analysts interviewed were, to varying degrees, concerned with predicting in advance the financial impact that Kyoto will have on the companies that they cover. In anticipation of former Prime Minister Jean Chrétien's resolve to ratify the Kyoto Protocol by year-end 2002, two pipelines and utilities analysts at BMO Nesbitt Burns prepared a report for their institutional investor clients in December 2002 entitled Clearing the Air. The report presented a definition of GHGs and other key pollutants, environmental initiatives in Canada and the United States, and a delineation of the philosophies and GHG emission strategies of the companies in the Canadian pipeline and energy utility sector.

[46] Innovest Strategic Value Advisors, *Carbon Disclosure Project Report 2005*, Carbon Disclosure Project, 2005.

[47] Abraham, Spencer, *Statement of Energy Secretary Spencer Abraham Regarding United States Leadership on Global Climate Change*, February 13, 2004.

[48] Goldman Sachs, *Energy Environmental and Social Report*, February 24, 2004.

A year and a half following the report's release, one of its authors stated in an interview that at this point the analysis is still purely qualitative, as analysts do not know the costs that will affect the companies regarding this issue and therefore do not know exactly how it would affect value. Scenarios, however, were prepared for all of the companies that she covers to see how they would do if regulations were implemented because of Kyoto. According to analysts in this sector, a number of challenges remain in terms of quantifying the effects of Kyoto:

- Canadian utilities are allowed to recover costs incurred due to regulatory changes. If this were not the case, Canadian analysts would then consider how the company can/will recover costs, but at this time such analysis is moot. Currently, according to analysts, government guidelines on emissions are lax and therefore have no material effect on cost.

- The market currently does not penalize companies that use "dirty" power, nor does it pay a premium for clean power.

- Reputational damage due to environmental mismanagement has historically had little or no effect on share price in Canada.

The analysts did state, however, that environmental risks and opportunities remain very much a component of their research. For example, one analyst from BMO Nesbitt Burns has indicated to clients that Canadian-based TransAlta, as the second largest industrial emitter of GHGs in Canada (based on 2000 submissions to the Voluntary Registry Challenge), is theoretically the most at risk from the implementation of Kyoto. Renewable electric power operator Canadian Hydro Developers is possibly one of the few companies in this analyst's universe that could potentially benefit from the ratification of Kyoto, without the need to otherwise offset higher costs.

Analysts in Mexico were less enthusiastic about climate change and its possible effects on shareholder value. One interviewee had never even heard of the Kyoto Protocol, while another explained that environmental liabilities are not material for Mexican equities and therefore not relevant in the economic/financial analysis.

Some Canadian analysts are looking at environmentally related opportunities, such as the growth potential of renewable energy. An analyst from Scotia Capital, for example, seconded his BMO peer's opinion on Canadian Hydro Developers, saying that he would adopt a more favorable view of the company's financial performance because it is developing wind power. Analysts like growth and believe that there is growth in renewables.

Carbon credits may also represent a significant investment opportunity during the implementation of the first Kyoto commitment period in 2008–2012, and Canadian and U.S. analysts are monitoring this emerging trend in Europe and Canada to assess potentially profitable opportunities. Although market size assessments differ due to the variance in the underlying model assumptions, the most widely accepted forecasts of market size look as follows:

- World Bank: >US$10 billion of carbon trading funds transfer by 2005;
- U.S. Council on Foreign Relations: US$2.3 trillion of carbon-related funds flow by 2012;
- Energy Policy (v. 27, 1999): US$24–37 billion per year global trading market during 2008–2012;
- Resource and Energy Economics (v. 21, 1999): US$90.4 billion (1995 dollars) per year traded (by 2010) for restricted market; $46.6 billion per year traded for global trading; and
- The Economist (October 1999): US$60 billion per year traded; (soft) $1 trillion global trading market if clear rules are established.

Due to differences in the national policy approaches to the development of GHG markets, the carbon credit opportunities differ substantially between the United States, Canada, and Mexico. First, Canada and Mexico are Kyoto signatories and ratifying parties, whereas the United States is not. Moreover, Canada belongs to the club of net carbon credit buyers, while Mexico belongs to the group of sellers. Finally, Canada has a GHG emissions reduction obligation (i.e. an emissions ceiling), while the United States and Mexico do not.

However, in the United States, many individual states disagree with the federal GHG emissions reduction policies. A number of northeastern and western jurisdictions have put forward a plethora of emissions reduction programs ranging from new transportation standards in California to GHG emissions caps for power plants in Massachusetts. A careful

review of the emerging American GHG market would, therefore, be a prudent step for any fiduciary.

In February 2005, the Government of Canada unveiled Project Green, a plan to honour Canada's Kyoto commitments. The plan sets GHG emission targets for large final emitters (LFEs), which represent large, energy-intensive Canadian industries, which account for just under 50% of Canada's total GHG emissions. The plan also introduces a domestic offset credit system, which is designed to encourage cost-effective domestic reductions or removals of greenhouse gas emissions in activities that are not covered by federal greenhouse gas regulations. Through the Offset System, individuals, businesses, and organizations will be able to earn tradeable offset credits when they implement projects that result in incremental emission reductions or removals beyond what they would have done under normal business activities. A key feature of the plan is the Climate Fund, a one billion dollar envelope that will finance the purchase of emission reduction and removal credits on behalf of the Government of Canada. The Climate Fund will purchase domestic emission reductions and, when in the national interest, international reductions that are recognized under the Kyoto Protocol, including carbon units generated through Joint Implementation (JI) and the Clean Development Mechanism (CDM) projects. Other major components of the plan include partnerships with provinces and territories, an agreement on emissions reduction with the automotive industry, and funds for renewable energy and technologies that provide for carbon sinks.

While it is too early to assess Project Green's potential impact on stock performance, the offset credit system combined with emission targets for large emitters lays a foundation for pricing carbon and hence for assessing its materiality for specific companies and sectors. However, the government's decision to cap the price of GHG credits to $15 per ton for the 2008-2012 period will likely limit the potential scope of carbon related market risks and opportunities and, hence, investor interest in these markets.

Although the plan is still in its infancy, it does now allow Canadian investors in high environmental impact stocks to at least begin the process of more accurately assessing the additional costs to these firms incurred through the Canadian Kyoto commitment, something analysts were not considering systematically a year ago.

A number of Canadian companies have, however, already volunteered emissions reduction initiatives to mitigate the market risk exposure. For example, Suncor committed to lowering GHG emissions (net of offsets) to 6% below 1990 levels by 2010, while planning to invest $100 million by 2005 in alternative and renewable energy projects.

In addition, as mentioned above, under the climate change plan, Canadian renewable assets developers and other companies possessing emissions reduction innovations could generate carbon emissions offsets, which could then be sold domestically to the LFEs or to the Climate Fund. Emissions reduction units could also be purchased through the Clean Development mechanism, which could include projects in Mexico. Investors covering firms that are expecting to qualify for carbon credits, including the venture capital community, are now able to start quantifying the financial impact of the offset strategy.

The remaining challenge for the Canadian investment community is the stability of the Canadian government, and whether or not this current Kyoto plan will hold. If the plan is abandoned, it could have significant repercussions on the analysts' stock assessments and the managers' selection choices. Before the plan was announced, the Canadian financial community, for the most part, stated that they were in a "wait and see" pattern with regard to Kyoto and the impact it could have on stocks. After the plan, due largely to the currently unstable political situation, investors appear to still be finding themselves delaying final assessments.

As mentioned above, under the provisions of the Kyoto Protocol, Mexico is a non-capped carbon credit exporter. In 2004, Mexico significantly advanced in the creation of transparent emissions trading institutions, permitting investors to develop, finance, and operate emissions reduction projects in that country. Mexico already has a number of biogas emissions reduction projects financed by U.S. and European interests, while potential for generating significant emissions credits was identified in the domain of energy efficiency, power plant retrofitting, agriculture, waste management, solar energy, wind power, and other areas. In light of this, it is surprising then that the research noted that credit-rating agencies and investor groups have not yet comprehended the size of the Mexican carbon exporting potential, although a possible explanation for this is the slow progress of the Kyoto process in general and the even slower Mexican policy-making, particularly in the domain of emissions reduction strategies.

The largest carbon credit trading potential currently exists in the European market. On January 1, 2005, the European Union (EU) launched its continent-wide emissions trading scheme, which covers all energy-intensive manufacturing processes: heat and steam production; mineral oil refineries; the production and processing of ferrous metals; the manufacture of cement, bricks, and ceramics; the pulp and paper sector; and power generation. Due to some controversy with regard to the overallocation of emissions permits to the affected industries, the EU scheme will be reviewed by the European Commission in 2006. With the exception of a number of countries, such as Italy and Greece, which have been slow in developing national legislation guiding emissions reduction/carbon trading protocols, carbon trading has been well under way in Europe since the early 2000s.

6 Summary: Challenge of Integrating Environmental Issues

Current gaps in environmental information pose a significant challenge for most analysts. The majority of those interviewed feel that the companies could provide better information of greater use to analysts. As mentioned above, many stated firmly that they do not read companies' sustainability reports because the reports mean nothing to them. Analysts generally do not have the technical background to understand the data that companies are reporting, and the information being provided is not in a form that resonates with analysts' thinking.

Analysts would like to see environmental targets that allow them to compare performance across the sector. They would also like to know what these improvement targets are being measured against — for example, whether this target is good enough to make a difference to the planet and, if not, whether it is useful at all, even if it might be industry standard. Currently, companies measure data differently, which makes all of the data irrelevant to financial analysts, as they are unable to compare performance. Finally, there is the issue in Canada of companies not actually having to provide this information if investors will invest without it. In a country with relatively few large capitalization firms (compared with the rest of the developed world) and regulated limits on foreign content in retirement investments, investors likely find that they have limited negotiating capacity due to limited investment choices. Discussions around regulated disclosure requirements similar to those in the United States may help Canadian corporations improve in this regard.

As stated above, some analysts believe that there are no cost estimates on companies related to compliance. Others feel that companies focus on certain aspects of environmental performance, but they do not tell analysts what the ultimate goal is. Having a better sense of what the ultimate environmental goals are (e.g. if the company is trying to meet a certain emission standard to be under the regulatory threshold) would help determine investments. Companies that exceed goals would probably be better valued, as analysts could then tell if the company was wasting money or gaining competitive advantage. Some assume that companies are not sharing this information because management does not know whether or not it can meet the goals, further nullifying the importance of environmental targets. For analysts, forming conclusions on environmental performance values is predicated on the need for better knowledge as to what the baseline performance has to be for people to be "safe" from environmental impacts specific to the industry. For example, if corporate targets for arsenic levels are set at 10 parts per billion (ppb) but 5 ppb is required to meet best available standards and regulations, prior knowledge of this would help determine the true extent of corporate performance. Expert opinion on these matters is, however, thought to be somewhat divided at best, and, to reiterate a previous point, analysts themselves do not feel that they have (nor should they be required to have) firsthand knowledge on all of these matters.

Analysts also noted a dearth of credible third parties, which could provide independent validation of company-provided performance data. Environmental auditing is conducted either by reputable accounting firms with less well-established environmental expertise or by environmental accounting firms with environmental expertise, but with relatively short track records and therefore less credibility. Analysts, therefore, do not always know who or what to believe when it comes to interpreting environmental data.

Analysts and PMs also note that there are few market-based incentives for integrating environmental issues into stock valuations and selections. For example, companies like TransAlta, which are considered to be sustainable, are not currently earning a premium for this in the market. (This provides another example of the tension between short- and long-term perspectives and incentives structure.) According to analysts, many companies do not provide proper environmental information to enable analysts to judge, for example, whether a particular company can survive within the constraints of new emissions regulations.

The investment community in North America appears to feel that currently there is no incentive to consider environmental issues, particularly if the rewards for doing so are minimal and the resources required for adequate assessments so vast. Changes in legislation that make it more financially attractive for firms to improve their environmental performance and financially detrimental to ignore environmental commitments might make environmental issues a significant consideration in stock valuations. "Softer" regulatory requirements, such as those that currently exist in the United Kingdom, will, at the least, raise awareness of these issues for investors and allow them to feel that these could be relevant in their investment choices. They will also open the door to a broader understanding of fiduciary duty to include the notion that environmental concerns may be important with regard to investment considerations. Indeed, it could be argued that to fail to assess such concerns could actually be to ignore one's fiduciary duty rather than be in compliance with it. There is, as well, the significant challenge of "short-termism," as discussed throughout the report.

Finally, although there are numerous studies (Appendix F) suggesting the validity of an "environmental premium" when it comes to investment returns, as noted previously in the report, many will dismiss studies that link environmental performance to financial returns, saying that just as many exist to refute them. Such studies, however, remain a viable method for proving the hypothesis that superior environmental performance could indicate superior financial return. As the number of these studies increases, the methodology for the next one improves by building on the last. Each new study on the issue also has the potential to increase engagement. Case studies with pension fund involvement, for example, have the potential to bring investment consultants and trustees in at the ground level. One such study could be an audit of environmentally related risks in an existing portfolio.

Additional challenges include:

- the lack of pressure from the analysts' institutional clients to address environmental issues;
- the prevailing belief that environmental factors are either irrelevant or even harmful to returns, despite some hard evidence to the contrary;
- the emphasis on peer or benchmark-relative investment performance rather than absolute returns, which leads to "benchmark hugging" by asset managers and a homogenization of approaches;
- the fear of "maverick risk" — analysts and PMs' natural disinclination to "break ranks"

and adopt strategies markedly different from those of their peers;
• the general disinterest in — and even hostility to — "environmentally enhanced" investing from many pension fund consultants advising the pension fund trustees; and
• the current view of the environment as a reputational issue for companies, not a stock issue.

7 Conclusions and Recommendations

7.1 Conclusions

The most important conclusions emerging from the research were the following:

1. The level of actual integration of environmental factors into mainstream financial analysis in North America is both low and ad hoc.

2. Despite this, there is a significant level of awareness of environmental issues; what is missing are both the motivation and mechanisms for translating that awareness into concrete investment decisions and strategies.

3. There are a number of powerful reasons for this gap between awareness and action:

i. the lack of demand from institutional investor clients;

ii. the considerable tension between the long-term nature/impact of environmental issues and the short-term time horizons on which investment professionals are evaluated and compensated;

iii. a pervasive skepticism about the financial relevance of environmental factors;

iv. the widespread belief that integrating environmental considerations is incompatible with fiduciary responsibility;

v. the general lack of "fit" between the type of environmental information pro-

vided by companies and that which would be required by investment professionals; and

vi. the lack of analytical tools with which mainstream analysts could integrate environmental information, even if it were provided in a useful format.

4. Until and unless institutional investor clients begin demanding the integration of environmental factors, it is highly unlikely that the other key actors in the mainstream investment world will pursue it spontaneously.

5. Pension fund trustees are effectively the decision-making proxies for the institutional clients. Until and unless the depth and extent of their awareness, and "comfort factor," increase significantly, that client demand is unlikely to materialize on a wide scale.

The review of brokerage reports and feedback from mainstream analysts from the United States and Canada demonstrates a consciousness of environmental issues but a seeming lack of awareness on how environmental issues impact the valuation of corporations. It follows, therefore, that there is little willingness to integrate these into a financial analysis. The analysts are knowledgeable about the issues, know that many of them can be key issues for their sectors, and are even for the most part aware that these issues may in the future translate to quantifiable impacts on their firms' financial performance. They are not, however, interested in integrating these in stock valuation models until they are more readily quantifiable.

The brokerage reports did, however, reveal a slight difference with respect to how analysts in Canada and those in the United States view environmental issues. While there was limited evidence of even a qualitative discussion on environmental issues in Canadian brokerage reports, there has been, over the past three years, a more significant discussion in American reports. The brokerage report review shows U.S. analysts to be more cognizant of environmental issues, and U.S. companies appear to be more proactive in response to environmental issues within their sectors. This was not found to the same extent in the Canadian reports.

There may be a number of reasons for this disparity. Clearly, the recent rise of interest in environmental issues by institutional investors in the United States could be expected to

lead to a greater demand for this analysis. The formation of both the INCR and the Carbon Disclosure Project is an important manifestation of this increased interest from institutional investors. INCR, an American-based organization, does not have an equivalent in Canada (or Mexico). Also worth noting is that, of the over 155 institutional investors signed to the Carbon Disclosure Project, only thirteen mainstream Canadian institutional investors became signatories. Until Canadian investors demand such information, analysts are unlikely to be proactive in integrating environmental issues into corporate valuation models.

It was also noted that PMs are not requesting an analysis that incorporates quantitative considerations of environmentally related risks and opportunities. There are a number of suggested reasons for this. PMs may be already significantly constrained in their stock selections, and, since PMs are compensated on performance, any additional constraint would be unwelcome. This could be especially true for constraints posed by environmental considerations, which tend to be convoluted and difficult for those without environmental expertise to understand. This is not to say that PMs do not consider environmental issues and the risks that they may pose; indeed they do. They simply consider them as one factor among many, with the weight varying significantly depending on the stock. They are unlikely, however, to choose not to invest in a stock solely on the basis of environmental concerns, unless these concerns are the equivalent of a Talisman-like situation, which involved reputational damage that was significant enough to force the company to eventually withdraw from its operations in the Sudan, despite the fact that the site was profitable. The rise in shareholder activism, however, particularly in the United States, may ensure that asset managers consider environmental concerns in stock selections to a greater degree than at present. More activism would be further encouraged by longer-term mandates, which would allow investment professionals greater latitude to consider environmental issues.

Investment consultants for now appear content to leave such issues as environmental risks and opportunities associated with a stock up to the investment managers, who are ultimately the ones actually picking the stocks. There is, however, an opportunity here for pension fund trustees to influence consultants towards the more systematic integration of environmental issues into portfolio creation when creating the investment mandate.

If enough investors require their investment choices to become environmentally responsible, this in turn will generate the business case for firms to take action, as they will lose investors if they do not. However, it will also oblige shareholders to increase their involve-

ment with their own investments and trustees to take more control over the investment mandate for such a situation to occur.

To that end, the increasingly influential concept of "the universal owner" may provide some additional impetus.[49] Briefly, the concept of the universal owner argues that, by virtue of both their sheer size and the long-term nature of their payout obligations, institutional investors, such as pension funds, have a direct interest in the long-term viability of the economy as a whole. Their financial holdings are in so many different asset classes and companies that they essentially "own" the entire economy. Their economic interests, therefore, transcend the fates of individual companies and even entire industry sectors. It therefore follows that institutional investors must, or at least should, concern themselves with "universal" issues that affect the health of the entire economy, such as educational quality or public health. One can think of few more worthy concerns for the universal owner than the environment.

7.2 Recommendations

The recommendations in this report are directed primarily at public policy-makers, with the aim of facilitating the integration of environmental factors into the investment decision-making process. These recommendations are focused on improving the "framework conditions" that determine which changes are and are not possible within the investment value chain. In the absence of material improvements in the framework conditions, it is highly unlikely that change will occur spontaneously among the key actors in the institutional investment process.

Government, however, can only do so much to encourage investors to recognize the inherent long-term environmental risks and opportunities in their investment practices. Investors themselves and the companies that they own must also play a role; therefore, this report directs recommendations to these key constituents as well.

The recommendations below are structured to address the barriers to integrating environmental considerations into investment practices and how each of the three key constituents can begin to overcome these.

[49] Hawley, James P. & Williams, Andrew T., *The Rise of Fiduciary Capitalism*, University of Pennsylvania Press, Philadelphia, 2005.

A. Government

1. Draft legislation requiring institutional investors, mutual funds, and foundations/ endowments to disclose publicly how they consider environmental issues in their investment practices.[50]

The research found that one of the most basic barriers to integrating environmental considerations into investment practices in North America was the absence of legislation or regulation requiring institutional investors to address such issues, such as exists in Europe, the United Kingdom, and Australia. Even if institutional investors choose to state publicly that they do not consider environmental issues, at a minimum, requiring them to disclose this puts the issues on the investment agenda. While the research did find that such legislation does not necessarily result in the uptake of environmental considerations in investment decisions, it does result in creating the perception within the investment community that such integration is in fact feasible, which goes a long way towards setting the stage for discussion around these issues.

A good beginning would be to have government require such disclosure from public pension funds, such as the Canada Pension Plan Investment Board (CPPIB). The government could, for example, encourage other institutional investors by ensuring that the CPPIB includes an explicit policy on "environmental investing" in the plan's formal statement of investment principles. The CPPIB's independent decision to adopt its new Policy on Responsible Investment, a policy that explicitly commits to further research and engagement with companies on environmental, social and governance issues, is likely to draw attention to the issue in the Canadian investment community.

2. Redefine the notion of fiduciary duty to allow for considerations of the so-called "softer" issues. [51]

Legislation similar to that in the United Kingdom, Europe, and Australia would provide trustees and other fiduciaries with the reassurance that they could in fact consider environmental factors without jeopardizing their fiduciary responsibilities, provided that traditional financial factors also receive due emphasis.

[50] The first and second recommendations under "Government" have also emerged as the principal recommendations in a report prepared for the National Round Table on the Environment and the Economy on pension fund disclosure (see Wheeler, David et al., *Comparative Study of U.K. and Canadian Pension Fund Transparency Practices*, National Round Table on the Environment and the Economy, 2004). Following extensive national consultation (now largely completed), these will emerge in fiscal 2005–2006 as principal recommendations of the Task Force on Capital Markets & Sustainability. The recommendations will appear as part of a "State of the Debate" report, which will include an extensive discussion and analysis of current trends and issues as well as specific recommendations to government.

[51] Ibid.

3. Align fiscal and regulatory signals with the real cost of environmental impacts.

Even in the absence of such legislation as described above, it was found that investors would indeed consider environmental issues (and do where they are material) if they felt that such issues had a measurable impact on companies' bottom lines.

According to the research, however, investors did not feel that such issues, for the most part, were material under the current political and regulatory framework in North America. In the current framework, only a subset of a company's environmental impacts affects its financial performance directly. Some examples of how the government might address this are as follows:

i. Conduct a cost assessment to determine the extent to which environmentally related costs are directly related to corporate activities, and price these activities more appropriately through taxation, fines, and incentives. The most obvious example is the increasingly prevalent link between air quality and health care issues.

ii. Align fiscal policy with clear, robust environmental signals throughout the production and consumption value chains through taxation and other market-based instruments.

iii. Create a compliance and enforcement regime that results in material financial risks/opportunities for companies.

iv. Make greater use of market-based instruments, such as a carbon emissions trading system.

4. Work with local securities regulators to ensure that company reporting and disclosure requirements adequately reflect the growing importance of environmental factors in companies' financial performance.

It was found as well that disclosure requirements that should allow investors to recognize environmental risks do exist, but these are not properly enforced. Efforts on

the part of regulators to enforce such disclosure requirements should be increased. Enforcement, therefore, must be seen to be as important as legislation.

5. Implement a comprehensive education and engagement initiative.

Recommendations 1–4, which create a framework for the business case for investors to address environmental issues in investment practices, should be implemented in tandem with a comprehensive education and engagement initiative to facilitate the proper integration of such issues. Education and engagement tools could include the following:

i. Convene a forum where investors, policy-makers, and corporate leaders could meet to share views and insights on the materiality of environmental finance.

ii. Create educational modules to increase the level of trustee education and training on "fiduciary responsibility," the link between environmental performance and profitability, and how to address environmental considerations in investment strategies.

iii. Convene a forum with chartered financial accountants, environmental specialists, investment analysts, and possibly regulators to begin an initiative on processing prospective environmental issues such as climate change and translating this into the effect that it can have on a company's financial position. The end goal is to develop documented guidance on how companies and auditors can interpret environmental information — for example, GHG emissions — and translate this information into the financial statements in a way that is relevant to the investment community. From this, training programs for auditors on the materiality of environmental issues can be created.

iv. Create training modules for auditors. These could focus on raising awareness regarding environmental data in corporate sustainability reports and ensuring that such data, where appropriate, are disclosed in the company's Management Discussion & Analysis (MD&A).

[52] See, for example, Derwall, Jeroen et al., The eco-efficiency premium puzzle, *Financial Analysts Journal* 61(2) (2005); and Gluck, K. & Becker, Y., Can environmental factors improve stock selection, *Journal of Asset Management* 5(4):220–222 (2005).

6. Support and/or conduct additional research to address the remaining gaps in knowledge relating to environmental finance.

Further study into certain key areas would greatly facilitate the education and engagement efforts with the private sector. Areas in which additional research would be useful include:

i. The link between environmental and financial performance. To date, there has been very little empirical research examining the financial impacts of environmental performance on Canadian firms. Such research has been conducted in other countries and has begun to have a discernible impact on mainstream investment thinking and practice.[52] This research would be most effective if it combines the insights of academics, specialist research houses, and investment practitioners;

ii. A study examining precisely what company information would be most useful to investors, and how it could most usefully be presented;

iii. Sector-specific studies that identify the environmental risks and opportunities in each sector and specify what information companies in those sectors should be disclosing to properly account for these risks to investors and other stakeholders; and

iv. A feasibility study on developing and integrating environmental finance modules in investment professionals' training.

B. Corporate Management and Directors

7. Management ought to ensure that environmental information addresses all material risks (and opportunities) in a way that is relevant and useful to the financial sector.

The research found that there is currently a disconnect between the environmental information reported by companies and the information that investors consider relevant or useful. This prevents even those investors who are inclined to integrate environmental

factors into their analysis from doing so.

Those companies that are environmental leaders are, therefore, not seeing their efforts rewarded in their stock price, and this is a significant missed opportunity. It is, then, in their best interests to work with the investment community to devise a system of environmental disclosure that accurately reflects corporate activities. If environmental leaders take this initiative, it would force the laggards to disclose the same information, thereby allowing investors to accurately assess all material risks in a timely manner. The study mentioned above (Section A, 6 ii) could provide a valuable platform to support this work on a widespread basis.

8. Corporate directors ought to be aware of all environmental risks and opportunities facing the company and sector and ensure that management is addressing such risks/opportunities, as well as accurately disclosing these to investors. They should also have access to the education that would be required for them to effectively fulfill their obligations.

Under recent changes to regulations, corporate directors in Canada have to approve all corporate disclosures by signing off on the financial statements and the MD&A. It would befit them, therefore, to learn as much as possible about all environmental risks and opportunities that may have a material impact on the company, as well as how this should be disclosed to investors. Environmental risks should be disclosed in both the financial statements and the MD&A. The National Round Table on the Environment and the Economy has produced a major paper on MD&A disclosure that provides an excellent analysis of these issues.[53]

Educational programs that target directors should acknowledge the environmental risks that companies face that can have a material impact on financial performance. In Canada, these include programs delivered by the Corporate Governance College, run jointly by the Institute of Corporate Directors and Rotman School of Business, and the Directors College, a promising joint venture between the Conference Board of Canada and the De Groote School of Business at McMaster University.

[53] See *Financial Reporting Disclosures about Social, Environmental and Ethical (SEE) Issues*, prepared by the Canadian Institute of Chartered Accountants for the National Round Table on the Environment and the Economy, November 2004.

C. Investors

9. Address the "SRI overhang."

The research found that most analysts, PMs, and consultants in North America do not distinguish between addressing environmental risks/opportunities on the one hand and SRI on the other. This places the North American investment community behind investors elsewhere in the world, who are more open to including environmental information that is financially relevant. In North America, even when purely financial arguments are made for including environmental information, these tend to be lost or overwhelmed by a general skepticism about its relevance, which presents a missed opportunity for generating additional financial performance.

10. Look abroad for best practice tools for integrating environmental considerations into investment practices.

Following Recommendation 9 above, the "SRI overhang" prevents the North American investment community from using a number of tools used elsewhere in the world that will allow them to address environmental issues systematically, with minimal impact on their current investment practices. Such tools include:

i. Incorporating environmental ratings in analytical models from independent environmental research firms. This will at least flag underperformers so that investors can be aware of the existing risks;

ii. Using independent environmental reports on stocks as points on which to engage corporate directors regarding environmental risks; and

iii. Ensuring that investment staff acquire a reasonable level of understanding around the potential for environmental issues to impact financial risk and return and the available implementation options for clients to address this.

11. Review the work from investment consultants regarding longer-term investment mandates.

Reports from leading investment consultants, including Watson Wyatt,[54] have identified the value of awarding investment mandates where the principal investment objectives are defined and measured on a long-term basis, even as much as 10 years. As environmental issues are typically long-term concerns, prudent managers with long-term mandates should consider the inherent risks and opportunities such issues present.

12. Use the current trend towards engagement as an advantage to address environmental issues that pose long-term risk with corporate executives.

Watson Wyatt's Global Investment Review[55] notes that Canada's pension funds have recently become more activist, showing a much greater interest in voting proxies and engaging with company management. In the United States, according to the same review, there is a defined contribution-style transfer of investment risk from the government and plan sponsors to individuals. As individuals become increasingly more engaged in their investments, they may also become progressively more interested in the inherent risks and opportunities, including those presented by environmental issues.

[54] Watson Wyatt, *Short-termism — A Real or Imaginary Problem?*, 2004. Available at: http://www.watsonwyatt.com/asia-pacific/australia/news/docs/RemappingAus.pdf (April 2004)]

[55] Watson Wyatt, *Global Investment Review* 2005. Available at: http://www.watsonwyatt.com/europe/pubs/globalinvestment/.

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Appendix A: Industry Driving Forces and Data Sources

Oil and Gas

Globalization: Global geopolitical and economic liberalization, privatization of state-owned enterprises, and the lowering of trade and investment barriers are leading to the opening up of new markets and regions for operations in the up-, mid-, and downstream all over the world. Firms are doing more and more business in far-flung places and in deeper and more hostile circumstances where environmental, social, and political risks are that much more complex.

Deregulation: As part of a strategy to reduce regulatory loads and stimulate a price-driven, regionally competitive market, governments throughout the world have been actively pursuing a program of deregulation in the energy sector. A major outcome of deregulation has been an industry-wide movement towards larger, more diversified energy companies. The end result is expected to be a realigned industry composed of new "integrated energy providers" that are engaged across the full spectrum of services.

Climate Change: Integrated oil and gas companies are sizeable emitters of greenhouse gases and, depending on where their refinery and production operations are situated, may face requirements to reduce emissions in the near future. Perhaps more of a strategic concern is the disruptions to future fossil fuel markets caused by any societal shift towards cleaner energy and fuel types. Thus, the carbon embedded within fuel products may also become a strategic management issue. Both trends pose a direct threat to the bottom line, although the effects will impact companies in different ways in part because corporate strategies to manage climate change risks also vary considerably.

Energy Security and Infrastructure Safety: This is a crucial social issue in the sector, cross-cutting several important areas, including employee health and safety, reputation among local communities, and relationships with regulators/policy-makers. Catastrophic pipeline breaches have resulted in fatalities and injuries, fines and lawsuits, expensive pipeline shutdowns, image problems, and reduced sales. A second dimension of pipeline safety has emerged after September 11, namely the security of U.S. (and other nations') energy infrastructure from terrorist attack. The major continental transmission pipelines face greater risk of targeted attacks than local distribution companies due to their strategic

importance in energy delivery and characteristics as a physical target.

Oil and Gas Data Sources:

Alexander's Gas & Oil Connections (http://www.gasandoil.com)
American Petroleum Institute (http://api-ec.api.org)
Canadian Association of Petroleum Producers (http://www.capp.ca)
Clean Vehicles (www.ucsusa.org/clean_vehicles)
International Petroleum Industry Environmental Conservation Association (http://www.ipieca.org)
Oilfield Publications Limited (http://www.oilpubs.com)
Oil & Gas Journal
Oilnergy (http://www.oilnergy.com)
United Nations Environment Programme: Offshore Oil and Gas Environment Forum (http://www.oilandgasforum.net)
U.S. Bureau of National Affairs (http://www.bna.com)
U.S. Department of Energy (http://www.energy.gov)
U.S. Energy Information Administration (http://www.eia.doe.gov)
World Bank: Oil, Gas, Mining and Chemicals (http://www.worldbank.org/ogmc)
World Monitors Inc. (http://worldmonitors.com/)

Utilities

Generation and Transmission & Distribution (T&D) Risk Profiles: Under restructuring, it is necessary to distinguish between generators and T&D companies. Most environmental risks are concentrated in the generation sector, and investor risk exposure is increasing in the firms that are buying generation. However, companies involved in T&D, such as Consolidated Edison, also retain some environment-related risks. For example, some T&D companies that still buy power on behalf of their customers face market price volatility. While these companies may be able to pass these increases on to customers, they also face the risk of their customers switching to alternative electric suppliers. Additionally, the substantial investments to upgrade and expand transmission networks may have a significant impact on these companies.

Increasingly Different Risk Profiles of Traditional Electric Utilities and Independent Power Producers (IPP): The Electric Power Supply Association reports that non-utility

generators now account for approximately 30% of U.S. wholesale generation. These non-utility entities, known as IPP or wholesale generators, sell electricity directly to wholesale customers under short-term contracts in competitive markets. Therefore, they are typically exposed to fuel and electricity price volatility risk. Additionally, IPP need to have access to capital markets. Their limited ability to raise capital since the bankruptcy of Enron in 2002 has resulted in nearly a 60% cut in the new capacity additions announced for 2004.

Risk Exposure Being Shifted from Ratepayers to Investors: Risk exposure is also increasing as liberalization shifts the burden of environmental expenditures from ratepayers to investors. Under the historic utility model of monopoly and vertical integration, environmental costs were passed on to ratepayers under cost-plus rate-making schemes. However, this rate-based industry model is increasingly anachronistic. Electricity market liberalization, with the introduction of competition into generation and supply, has fundamentally altered the allocation of risk among lenders, shareholders, fuel suppliers, and customers.

Decreasing Pace of Deregulation: Rising electricity rates in some regions spurred calls for deregulation in the early 1990s. Many states have enacted or are considering electric industry restructuring legislation at the retail level. Despite this, while deregulation in states including Pennsylvania and New York has generally been considered successful, problems with California deregulation have slowed the trend to restructuring, and retail access in the state has been suspended. The bankruptcy of Enron additionally pushed state lawmakers and regulatory officials to reexamine deregulation of electricity markets, postpone restructuring legislation, or even propose a return to more traditional regulated markets.

Increasing Competition in Deregulated Markets: Customer choice of electricity suppliers and the need for competitive differentiation are prompting firms to undertake a new strategic path to provide the most competitive services while simultaneously garnering a reputation as a socially and environmentally responsible corporate citizen.

Increasingly Uncertain Environmental Regulation: To reduce power plant emissions and related environmental impacts, regulations have been proposed that, if implemented, could require significant expenditures by the industry. In the same way that certain investments became uneconomic, or stranded, under increased competition, power plants with large negative environmental impacts may also become uneconomic as regulations increase. Restrictions to recover compliance costs through rates under restructuring (or after

transition plans expire) exacerbate overall potential financial impact.

Environment-driven Effects on Shareholder Value Creation: Increasing competition and movement away from cost-plus rate-making have greatly increased the emphasis on cost minimization but also created new business opportunities. Many of these opportunities are related to the environment. As companies are refocusing on operational excellence rather than on growth to enhance value, operating efficiency, minimization of liabilities, and diversification of revenue streams seem paramount. Given increasing environmental pressures facing the sector, environmental performance is likely to be one of the key drivers of business success going forward.

Utilities Data Sources:

Government

Consumer Energy Center, California Energy Commission
Energy Efficiency and Renewable Energy Network, U.S. Department of Energy
Energy Savers: Tips on Saving Energy and Money at Home
Energy Services: Residential Energy Factsheets
Energy Star, U.S. Environmental Protection Agency
Home Energy Saver
National Renewable Energy Laboratory, U.S. Department of Energy (http://www.nrel.gov/)
Oregon Office of Energy Information for Residents
U.S. Department of Energy

Organizations

Alliance to Save Energy
American Council for an Energy-Efficient Economy
American Wind Energy Association
Boulder Energy Conservation Center
Center for Energy Efficiency and Renewable Technologies
Center for Renewable Energy and Sustainable Technology
Consumer Federation of America Foundation
Energy Conservation Enhancement Project
Florida Solar Energy Center
Global Conservation
Interstate Renewable Energy Council
NW Energy Coalition

Planting for Energy Conservation, Colorado State University Cooperative Extension

Rocky Mountain Institute

Urban Options

Products/Services

Ecologically Sustainable Future

Energy Matters

Energy Saver Inc.

Mother Jones - Real Goods Catalog - Energy Efficiency Real Goods - Products for an

MrSolar.com - Your Solar Energy Source

Residential Environmental Design

Solar Energy - Residential & Commercial Solar Products

Solar Roofs.com

Solar Words Inc.

Source for Renewable Energy

The Energy Outlet

The Energy Conservation Bookstore

On-line Publications

BH&G Home Improvement Encyclopedia (search for “energy”)

Carbon Dioxide Information Analysis Centre (http://cdiac.esd.ornl.gov/trends/emis/usa.htm)

Energy Conservation, Weatherizing and Insulation at DoItYourself.com

Energy Information Administration – Voluntary Reporting of GHG (http://www.eia.doe.gov/oiaf/1605/vrrpt/download.html#append)

Energy Information Administration – Electricity (http://www.eia.doe.gov/fuelelectric.html , http://www.eia.doe.gov/cneaf/electricity/page/data.html , http://www.eia.doe.gov/cneaf/electricity/page/eia860b.html)

Electric Power Annual 2000 (http://www.eia.doe.gov/cneaf/electricity/epav2/epav2.pdf)

Home Energy Magazine

Home Power Magazine

IRRC (compliance)

Natural Resources Defense Council (http://www.nrdc.org/air/energy/util/chap4.asp)

NRDC (emissions)

Pain Weber (fuel mix)

Sensible Home: Cut Your Utility Bills

US EPA – The Emissions and Generation Resource Integrated Database (http://www.

epa.gov/AIRMARKET/egrid/index.html)

Deregulation

Energy Information Administration Electric Power Industry Restructuring
(http://www.eia.doe.gov/cneaf/electricity/page/restructure.html)

Mining

Prices: The principal industry driver for the metals and mining sector is the commodity price. Price fluctuations for various metals will largely determine financial outcomes.

Global Sourcing: The discovery of valuable new mineral deposits in many developing countries combined with new technological advances in remote mining are driving metals and mining firms into new geographic regions. Accompanying this will be a host of new and often unanticipated environmental and social risks that have increasing implications for competitiveness and profitability in the sector.

Industry Consolidation: Increasing cost pressures in the capital-intensive mining process, globalization, and commodity price volatility are creating conditions conducive to mergers and acquisitions (Alcan/Algroup, Alcan/Pechiney, Barrick/Homestake, BHP/Billiton).

Equity Capital: Relative to other major industrial sectors, total capitalization of the sector is low. Part of the declining investment interest in this sector is being driven by the availability of more value-added investment options, while many mining majors have also acknowledged that a poor industry reputation is a contributing factor.

Metals and Mining Data Sources:

Global Mining Initiative (http://www.globalmining.com)
International Council on Mining and Metals (http://www.icmm.com)
Mineral Policy Center (http://www.mineralpolicy.org)
Mineral Policy Institute (http://www.mpi.org.au/)
MiningWatch Canada (http://www.miningwatch.ca)
United Nations Environment Program (http://www.uneptie.org/pc/mining)
U.S. Energy Information Administration (http://www.eia.doe.gov)

U.S. Bureau of National Affairs (http://www.bna.com)
World Bank (http://www.worldbank.org/mining)
World Monitors Inc. (http://worldmonitors.com/)

Chemicals

Globalization: Chemical companies are increasingly choosing to create a presence in new global markets through mergers and/or acquisitions rather than creating new, "greenfield" operations. As companies expand their operations in emerging markets, such as China, Latin America, Africa, and other developing countries, which may sometimes be less sensitive to social and environmental issues, companies face potential challenges of ensuring a uniform, worldwide set of performance standards on sustainable development issues. Leading companies in the sector recognize investors' increasing awareness regarding social and environmental issues and have set specific goals to demonstrate their commitment to sustainable development, as well as to ensure consistent standards throughout their worldwide operations.

Commoditization Pressure: As competition between companies increases, even specialty chemicals are becoming like commodities and are exposed to downward price pressure. As it becomes increasingly difficult to compete on price, chemical manufacturers must seek other avenues of differentiation. Specifically in Europe, several companies are incorporating sustainability factors as part of their marketing strategies and new product development processes. This is becoming an increasingly important differentiation factor. Another method to address the threat of commoditization is the growing tendency of chemical companies to add services such as "total chemical management" programs to their product offerings.

Product Development: As more stringent environmental laws and regulations are being proposed, environmental and social issues are becoming increasingly critical to competitiveness and profitability in the chemical sector. Leading companies are going beyond environmental compliance and pursuing sustainable development strategies based on the concept of the triple bottom line. Environmentally responsible products and services are being introduced to the market at an increasing rate; examples include energy efficiency products, biodegradable materials, alternative fuel, and waste treatment chemicals.

Shift in Production to Developing Countries: Many companies are expanding into the Asia/Pacific region, Latin America, and Eastern Europe, where they expect potential growth due to high birth rates, improved standard of living, and industrialization in these regions. According to Standard and Poor's, worldwide chemical trading accounted for approximately one-third of total global chemical production in 2000. On the downside, sustainability issues related to increased production in developing countries include human rights, child labour and forced labour concerns, oppressive regimes, health and safety standards, and weak environmental regulations. Failure to manage these social issues proactively could lead to image problems and reduced access to resources and new markets. Leading companies are adopting international codes such as the United Nations Global Compact to structure a system that closely monitors these operations to ensure that worldwide operations are achieving the same level of environmental and safety performance as their European and North American operations.

Chemicals Data Sources:

American Chemistry Council (http://www.americanchemistry.com/s_acc/index.asp)
Canadian Chemical Producers' Association (http://www.ccpa.ca)
Chemical & Engineering News magazine (http://pubs.acs.org/cen/index.html)
Chemical Industries Association, UK (http://www.cia.org.uk/)
Chemical Market Reporter (http://chemicalmarketreporter.com/home/Default.asp?type=0&liSectionID=12)
Chemical Week (http://www.chemweek.com)
CropLife America (http://www.croplifeamerica.org/)
European Chemical Industry Council (CEFIC) (http://www.cefic.be/)
International Council of Chemical Associations (http://www.icca-chem.org/)
National Paint and Coatings Association (http://www.paint.org/index.htm)
The Fertilizer Institute (http://www.tfi.org)
U.S. Environmental Protection Agency (http://www.epa.gov)

Appendix B: Collaborative Investor Initiatives

In 2003, the United Nations Environment Programme launched its Finance Initiative (innovative financing for sustainability) to identify specific environmental and social criteria likely to be material for company competitiveness and improved reputation in seven industry sectors. Although the report found strong evidence in support of the effective management of sustainability (including environmental) issues contributing to increased shareholder value, it should be noted that the responding brokerage houses all came from the United Kingdom, Europe, and Japan. The one U.S. firm that did actively participate, Goldman Sachs, did so using its London-based European research team. According to the report, those North American firms that declined to participate did so "on the basis of a perceived difficulty in analysis due to barriers associated with inadequate disclosure of these criteria…, internal restructuring, or a lack of research capacity." The report concluded that "Policy makers and investors may be the most effective catalysts for North American research firms to incorporate social, environmental and corporate governance indicators into their work."

The Carbon Disclosure Project's main purpose was to ask all of the Financial Times Global 500 companies what, if anything, they are doing in response to climate change. The discrepancy between signatories to the project, by region, is large. In the inaugural launch of the first report, the percentage of North American signatories was 17% (five from the United States and one from Canada). This appears stark in comparison with the rest of the signatories, 83% of which were from Europe and the United Kingdom. By the launch of the second report in 2004, the percentage of North American signatories had risen to 26%. Europe and the United Kingdom accounted for 59% of all signatories, 5% from Japan, 4% from the Asia-Pacific region, and 1% from South Africa.

Asset management signatories in the United States include Calvert, Dreyfus, Fleet, Neuberger Berman, State Street Global Advisors, Walden Asset Management, and Wells Fargo. In Canada, the asset management signatories include Acuity Investments, CI Mutual Funds, and Teachers Pension Plan.

There were no signatories from Mexico in the first or second report.

The Investor Network on Climate Risk (INCR) is a collaboration of U.S. institutional investors with the mandate to promote better understanding of the risks of climate change among institutional investors. INCR encourages companies in which its members invest to

address any material risks and opportunities to their businesses associated with climate change and a shift to a lower carbon economy. Climate risk includes financial, fiduciary and liability risk ensuing from climate change.

INCR is managed out of Ceres, a coalition of investment funds, environmental organizations, and other public interest groups. Ceres' mission is to move businesses, capital, and markets to advance lasting prosperity by valuing the health of the planet and its people. Ceres' investor members, representing over $400 billion in assets, include state and municipal pension funds, socially responsible investment firms, religious groups, union funds, and foundations.

INCR undertakes activities to increase understanding of climate risk, such as UN Summits, conferences, briefings, meetings, and the publication and distribution of reports. It supports further analysis of climate risk, and coordinates engagement of its members with companies and policy makers on climate risk. It aims to provide a forum in which its members can combine their knowledge of this complex and rapidly changing issue.

The Enhanced Analytics Initiative was established by a group of institutional investors managing approximately €364 billion ($465 billion) to address the focus on short-term financial research at the expense of a longer-term, more capacious assessment of corporate performance. The founders of this initiative plan to allocate approximately €4–5 million during 2005 to brokers who excel at integrating what they term extra-financial analysis into their mainstream research process. The list of founding members is as follows:

- BNP Paribas Asset Management (France);
- PGGM (Netherlands);
- RCM (United Kingdom);
- AGF Asset Management (France);
- Deutscher Investment Trust (Germany);
- Dresdnerbank Investment Management (Germany); and
- Universities Superannuation Scheme (United Kingdom).

On the corporate side, civil society groups continue to put pressure on companies to report on sustainability issues, whether or not investors find these issues relevant. Such initiatives

include the Global Compact and the Global Reporting Initiative.

The Global Compact is a voluntary international corporate citizenship network that was founded with the mission to advance responsible corporate citizenship and universal social and environmental principles within private, public, and civil society sectors to meet the challenges of globalization. The Global Compact requires private sector firms to change business operations so that the Global Compact's principles are reflected in the firms' strategy, culture, and daily operations.

Three of the Global Compact's 10 principles reflect environmental considerations:

- the implementation of a precautionary and effective program for environmental issues;
- initiatives that demonstrate environmental responsibility; and
- the promotion of the diffusion of environmentally friendly technologies.

The Global Reporting Initiative was created to develop and disseminate sustainability reporting guidelines that can be applied on a global scale. The guidelines encompass economic, environmental, and social dimensions of corporate activities with regards to products and services. There are currently 79 companies reporting to Global Reporting Initiative standards in the United States, 23 in Canada, and 3 in Mexico.

Appendix C: SRI-related Legislation and Events Around the World

Region	Current SRI-related Legislation	Expected SRI-related Legislation
Asia except Japan	None	None anticipated
Australia	Superfunds are required by law to disclose to what extent they may have screened for SRI factors. As well, ethical funds are required to set out their criteria for what is and what is not an "ethical" investment.	None anticipated
Belgium	Since 2002, pension legislation has required supplementary retirement schemes to issue an annual report containing information on how social, ethical, and environmental aspects are being taken into account.	None anticipated
Canada	None	Uncertain
Denmark	Required to have a statement disclosing any ethical considerations that are part of the investment policy	None anticipated
Finland	None	None anticipated
France	The Fabius Act requires investors to specify whether they take social and environmental criteria into account in the management of employee savings plans. Companies are required to publish social and environmental information in their annual reports.	None anticipated
Germany	Private (and some occupational) pension schemes must disclose whether and how their investments incorporate social, ethical, and environmental criteria. The German Corporate Governance Code provides guidance to companies in relation to responsible corporate governance and corporate citizenship.	None anticipated
Ireland	None	None anticipated
Japan	None	None anticipated
Latin America	There is no formal legislation on SRI, but the Sao Paulo Stock Exchange has implemented minimum governance guidelines for companies, some in line with SRI principles.	None anticipated
Netherlands	No legislation; however, many institutional investors create their own SRI policies and guidelines. Legislation is not considered necessary or desirable.	None anticipated
Spain	None	A technical experts committee has been formed to address potential SRI-related disclosure.

Sweden	Requirement to have statement regarding ethical considerations in the investment approach as part of investment policy (but enhancing risk-adjusted returns is still the main legislated objective).	None anticipated
Switzerland	Legislative code states that pension funds must implement rules for the exercise of voting rights.	None anticipated
United Kingdom	U.K. pension plans and charities are required to disclose the extent to which they take into account social, ethical, and environmental issues in their investment policies. In 2002, the Institutional Shareholders Committee (ISC) published a Statement of Principles of best practice regarding shareholder engagement, which is meant to serve as an industry guide.	The government has indicated that it expects institutional investors to follow the ISC principles. Otherwise, they may introduce further legislation.
United States	Mutual fund proxy voting disclosure legislation passed in 2003.	Uncertain

This table was compiled by Jane Ambachtsheer, Principal at Mercer's Investment Consulting. It is meant to provide an indication of regional trends. It is not a definitive overview of SRI-related legislation. "Expected legislation" reflects a best guess by regional Mercer consultants, as we have no way of knowing with any certainty what will come to pass.

Appendix D: Overview of Canadian Environmentally Related Legislation

Canada has a number of policies in place, although mostly unregulated, that reflect the changes in the investment community.

The most recent regulatory disclosure changes in Canada were passed in 2004. The Canadian Securities Administrators (a national body of provincial securities regulators whose focus is the harmonization of securities regulations in Canada) released changes to the National Instrument 81-106 Investment Fund Continuous Disclosure. These changes include proxy voting disclosure for securities held by the investment fund. "The Instrument now requires an investment fund to establish policies and procedures it will follow in determining whether and how to vote on any matter for which it has received proxy materials. Investment funds will now be required to disclose, in the AIF [Annual Information Form], a summary of their proxy voting policies and procedures and indicate how a complete copy of these policies can be obtained..."

The Ontario Securities Commission Form 41-501F1 pertains to specific disclosure requirements of environmental information in a prospectus. There must be a description that includes "the financial and operational effects of environmental protection requirements on the capital expenditures, earnings, and competitive position of the issuer in the current financial year and expected effect, on future years."

The Canadian Institute of Chartered Accountants specifies disclosure with reference to the Management Discussion and Analysis (MD&A) as required by National Instrument 51-102. This particular instrument stipulates that all material information that may not be in financial statements (intangibles) must be discussed in the MD&A, and such intangibles may include "environmental, social, or cultural matters...." This particular regulation is very specific in its desire to specify what may be material.

The Canadian Business Corporation Act was recently amended to make it easier for those who do not support management's recommendations to solicit proxies to vote to oppose those recommendations. The Act states that a "person may contact up to 15 shareholders to discuss how they will vote without sending a dissident's proxy circular."

Public Accountability Statements are required by banks and federally incorporated or registered trust and insurance firms with more than $1 billion in equity in Canada. Such statements must be made available, free of charge, no more than 135 days after the end of the institution's financial year. The statements must include such information as detailed involvement in community projects, total dollar value of charitable donations, employee volunteer activity, overview of initiatives to improve access to banking services, tangible bank branches that have opened and closed, amount of taxes paid to federal and provincial governments, initiatives for small business and micro-credit, etc.

Export Development Canada is a public international financial institution whose mandate is to promote Canadian trade internationally by providing loans, equity investment, risk insurance, etc. to Canadian exporters. Although not required, Export Development Canada does encourage companies to which it provides support to disclose environmental information to the public

Appendix E: Investment Strategy Model

Long-term Investment Strategy Scorecard

Company Name	Ticker Exchange	Month Year	Rationale
Key Attributes			
1. Industry – Growth - Organic growth (predictable & visible, relative to GDP) - Benefit from long-term trend/drivers (market size, consolidation) - Pricing – stable and/or improving, degree of elasticity - Volume – demand increasing and non-cyclical			
2. Industry – Dynamics/ Structure - Competitors rivalry (concentration & balance) - Barriers to entry (new entrants/exits) - Bargaining power of customers (leverage/sensitivity) - Threat of substitutes (performance/switching costs) - Bargaining power of suppliers (substitutes/switching costs) - Legal/regulatory/environmental – favourable/improving/changes			
3. Rational Management - Experience, track record, honesty & frankness, accessible - Management's stake (increasing/decreasing) - Sound strategy & targets (achievable/realistic) - Compensation (incentives, bonuses, options-expensed) - Succession planning, training, corporate culture			

4. Competitive Advantage/ Leadership - Market leadership, toll bridge, brand equity, low cost - Value-added products, superior products (innovation) - Long product cycles (low risk of obsolescence) - Strong long-term client relationships			
5. Concentration/Business Model Risks - Embedded business/ franchise/easily understood and modelled - Concentration – suppliers/ customers/products - Opportunities – partner-ships/alliances, use of technology - Distribution platform – sales process/incentives - Threats/risks – entering new areas, risk of obsolescence			
6. Operating Strength - Revenue diversification & predictability – backlog, % recurring - Conservative revenue and expense recognition (stock options) - Operating leverage – high & improving margins - History (min. 5 yr) of profit-ability – ROA, ROE & ROIC (DuPont and extended DuPont model) - One-time gains/losses/ charges (gains from sale of assets)			

7. Capital Allocation/Investing - Ability to investment/ reinvestment (productive use of FCF) - Acquisitions/divestitures (criteria/track record/ charges) - Hurdle rates (ROC, WACC, cost of equity/debt) - Debt repayment – target credit rating - Share repurchase program, dividend policy			
8. Sources of Free Cash Flow - Ability to maintain normal operation and grow via FCF - Cash conversion cycle (days) – A/R, inventory, & A/P - Key sources of cash flow (operations/borrowing), disclosure - Trend in CFO/net income – CFO > net income - Capital intensity of the business			
9. Financial Flexibility - Leverage (D/Assets, D/Equity, optimal capital structure) - Interest coverage (EBIT/ interest, EBIT/fixed charges, bank covenants) - Credit rating (5 yr trend/ current/improving both longitudinal and relative to competitors) - Off B/S (leases, pensions, seller financing, contingencies) - Soft assets (prepaid expenses, other assets, new accounts)			

10. Corporate Governance - Board of directors (independent, experience) - Accounting changes (auditors, principles, assumptions) - General disclosure – concise, consistent & specific - Committees – Audit (Chair), Compensation (Chair) - Complex/dual share structure			
TOTAL			
Additional Comments			

A/P = Accounts Payable; A/R = Accounts Receivable; B/S = balance sheet; CFO = Chief Financial Officer; D = debt; EBIT = earnings before interest and tax; FCF = free cash flows; GDP = gross domestic product; ROA = return on assets; ROC = return on capital; ROE = return on equity; ROIC = return on invested capital; WACC = weighted average cost of capital.

Appendix F: List of Studies Linking Environmental and Financial Performance

Bauer, Rob et al. *The Eco-Efficiency Premium Puzzle*. Financial Analysts Journal, Volume 61, Number 2; 2005.

Bauer, Rob et al. *The Economic Value of Corporate Eco-Efficiency*. Academy of Management Conference Paper; 2005.

Bauer, Rob et al. *The Eco-Efficiency Premium in the US Equity Market*. ABP Investments; 2003.

Blank, Herbert D. and Carty, Michael C. *The Eco-Efficiency Anomaly*. QED International; 2002.
Crowe, Roger. Risks, *Returns and Responsibility*. Association of British Insurers; 2004.

Global Compact, *The. Who Cares Wins: Connecting Financial Markets to a Changing World*. The United Nations; 2004.

Gluck, Kimberly et al. *The Impact of Eco-Efficiency Alphas on an Actively Managed U.S. Equity Portfolio Performance*. State Street Global Advisors; 2004.

Innovest Strategic Value Advisors. *New Alpha Source for Asset Managers*. Innovest; 2003.

Mahoney, Lois & Roberts, Robin. *Corporate Social and Environmental Performance and Their Relation to Financial Performance and Institutional Ownership*. University of Central Florida; 2002.

Nadeau et al. *Estimating the Value of Participating in EPA's ENERGYSTARTM Program*. Eastern Research Group; 2003.

Taylor Nelson Sofres. *Investing in Responsible Business*. CSR Europe, Deloitte & Euronext; 2003.

White, Andrew & Kiernan, Matthew. *Corporate Environmental Governance: A Study Into the Influence of Environmental Governance and Financial Performance*. UK Environment Agency; 2004.

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