

PROTECTING INVESTORS AND THE ENVIRONMENT
THROUGH FINANCIAL DISCLOSURE

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Abstract

Financial markets are increasingly concerned about financial risks resulting from companies' environmental exposures and are demanding greater disclosure and transparency. Despite long-standing securities laws and regulations requiring such disclosures where environmental information is material, companies have not fully complied nor have regulators vigorously pressed enforcement actions. Studies of past disclosures of material environmental information in environmentally sensitive information show a pattern of inadequate disclosure. Greater transparency will promote more prudent environmental management by publicly owned companies by helping to resolve principal-agent problems between management and investors.

Introduction: Increasing Capital Market Attention to Environmental Issues

In virtually all segments of the financial marketplace, the attention to environmental issues has increased rapidly over the past two decades. (Labatt & White, 2002) To some observers, this trend merely reflects underlying fundamentals. Expanding economic output and population have put more stress on environmental quality while rising incomes have strengthened public demands for environmental amenities. (Hawken, Lovins & Lovins, 1999) As an inevitable result of this conflict, environmental issues have gained prominence in the business world and will continue to do so. Leaders in many industries already cite them as important management concerns. (Schmidheiny & Zorraquin, 1996)

Asset managers

Among institutional asset managers these trends are reflected in the rapid growth of environmentally screened or "socially responsible" mutual funds and other portfolios. Such portfolios now hold at least two trillion dollars in assets. (Social Investment Forum, 2001) Their growth has been stimulated by two factors, in addition to the growing investor interest in "ethical" investing. First, the replacement of defined-benefit pension plans by defined-contribution plans in which beneficiaries have greater control over asset allocation has led money management firms to create and offer screened funds as an investment choice. For this reason, among others, almost all major investment houses now have staff responsible for environmental evaluation and research. Second, the demonstration in recent years that screened portfolios often provide risk-adjusted returns superior or equal to unscreened benchmarks has encouraged investors to allocate at least a portion of their assets to the environmentally screened portfolios. (Labatt & White, op.cit. p.151-154)

Many managers of pension funds and other endowments, which together command trillions of dollars in assets, have evolved a heightened interest in the long-term sustainability of entire communities and economies because of their long-term obligations to beneficiaries and the size and breadth of their asset holdings. Broader concerns about sustainability have led managers of large U.S. pension funds such as Calpers and TIAA-CREF to take active interest in corporate governance, including environmental governance. The Connecticut State Employee's Pension Fund, for example, recently led a shareholders' resolution calling on companies to reveal and address the financial risks arising from their greenhouse gas emissions. In the UK, pension funds have been called upon to disclose the way they address social and environmental issues in their portfolio decisions. [REF] Environmental and social considerations have been incorporated into investment decisions by large pension funds in other countries as well.

Insurance Markets

For good reason, environmental issues became embedded earliest and most deeply in property and casualty insurance markets. As early as 1980, the passage of Superfund legislation (CERCLA) in the United States mandating the clean-up of thousands of badly contaminated industrial sites alerted insurers to the possibility that despite policies written to cover only "sudden and accidental" releases, they could be financially liable for huge clean-up costs on

policies that had been written decades ago when such coverage was never anticipated. Despite enormous litigation costs, insurance companies have paid out billions of dollars in such claims. Equally large claims have been upheld related to asbestos liabilities.

As a result, property and casualty insurers as well as commercial banks, the other deeply involved financial institutions, have invested heavily to inform themselves about contamination risks in order to define and limit their liabilities. In response to demands from financial institutions, the Environmental Protection Agency, the Securities and Exchange Commission, the Accounting Standards Board and other oversight bodies have placed heavy emphasis on disclosure and proper recognition of these environmental liabilities. As a result, industrial companies have been forced into much fuller disclosure. Using newly available databases, financial institutions and their consultants now routinely evaluate sites and entire neighborhoods for potential contamination. Such evaluations now are important elements in insurance underwriting, mortgage lending, and project finance. Consequently, contamination risks are priced much more efficiently in insurance and other financial markets. New financial products have even been developed to handle such risks. For example, insurance against the discovery of contamination is again available, as is insurance against cost overruns in site remediation. Another environmental alarm for the property and casualty insurance industry was triggered when Hurricane Andrew hit the Florida Coast in 1992, causing \$16 billion in insured losses, a sum almost 50 percent larger than the premiums collected in Florida over the preceding 20 years. Confronted with a geometrically rising trajectory of insured and total losses from catastrophic natural disasters, the insurance and reinsurance industries came to grips with climate change. They have responded vigorously on several fronts, one of which has been an intensive effort to improve their modeling and estimation of catastrophic risks. (Froot, 1999) Also, insurers have aligned themselves to diversify their exposures and to spread risks more broadly throughout the insurance industry and to broader capital markets. In addition, the insurance industry, particularly European reinsurance companies such as Munich Re and Swiss Re, has taken an active role advocating government and industrial actions to reduce the risk of natural disasters by curtailing greenhouse gas emissions.

New Financial Products to Manage Environmental Costs

Increasing attention from financial institutions has stimulated development of innovative financial products and mechanisms with which to allocate environmental risks efficiently. In order to distribute catastrophic risks to capital markets with more capacity, the insurance sector has successfully marketed catastrophe bonds, which have variable returns linked to the occurrence of extreme weather events. Because of their high-expected yield and low risk correlation with economic variables, these have found buyers among large portfolio managers. Sophisticated weather derivatives, such as swaps and hedges, have also come into existence. An even more revolutionary innovation has been the emergence of financial markets on which emission permits can be traded. Beginning in pilot markets in the United States in the 1980s, emission trading emerged nationwide with the passage of the 1990 Clean Air Amendments mandating trading of permits to emit sulfur oxides. The notable success of that initiative in containing costs while accelerating the schedule for reducing pollution has led to the adoption of emission trading as a policy tool in other countries and for other pollutants. Notably, it has

become a crucial feature of the Kyoto Protocol on reducing greenhouse gas emissions. An entire industry of brokers, exchanges, and market makers, has grown up to facilitate emission trading. Emission futures, options, swaps and other derivatives are now regularly traded on the Chicago Board of Trade and over-the counter. These financial instruments allow companies to manage their environmental affairs with far greater efficiency.

Increased Recognition of Environmental Issues by Mainstream Investors

More slowly but with increasing momentum, mainstream securities markets have begun to incorporate environmental factors into considerations of risk and return. The insight through which mainstream investors and analysts became aware that environmental factors are relevant came through experience, often painful. Investors have suffered severe and abrupt losses when environmental disasters occurred or news of such situations became public. In addition to such notorious calamities as the Exxon Valdez Alaskan oil spill or the Union Carbide toxic release in Bhopal, many other such events have caused investors pain. For example, the stock of Solutia, a company formed when Monsanto spun off its chemical division, plunged by almost 60 percent within a few weeks when an article in the *Washington Post* revealed that Monsanto had dumped tons of PCBs in Anniston, Alabama, and had covered up its behavior for decades. The company's behavior was deemed "outrageous" by an Alabama jury that held the company liable for negligence, suppression of truth, and nuisance, opening Solutia to further lawsuits. In another well-known case, the stock of U.S. Liquids, a Houston waste-management firm, fell 58 percent in one week when employees revealed to government authorities that the company had illegally dumped hazardous wastes and falsified records. Consequently, shareholders filed suit against the company for violation of securities law by issuing false and misleading reports and failing to disclose material information.

Many studies have demonstrated that environmental events can have material financial consequences. Repeatedly, so-called "event studies" have found that stock prices have been affected, often by substantial amounts, by spills and accidents, announcements of new environmental regulations, initiation or settlement of environmental litigation, and other environmental matters. Thus for example, in the five trading days following the 1986 explosion at Union Carbide's Bhopal, India plant, Union Carbide's common stock price lost approximately \$1 billion or 27.9% in value. (Blacconiere and Patten, 1994). After the Valdez accident, Exxon's stock was depressed for six months (Jones, Jones et al. 1994), with a value loss ranging from \$4.7 billion to \$11.3 billion. When Toxic Release Inventory data were first published in 1989 the stock value of TRI-reporting firms dropped by an *average* of \$4.1 million. (Hamilton 1995) (Konar and Cohen 1997a) (Khanna, Quimio et al. 1998) Most environmental event studies to date find a significant negative impact of pollution news on stock prices.

Balancing these negative experiences, investors have found that companies with good environmental performance often outperform others in their industries. (Dowell, Hart, et al., 2000) Such companies may be more efficient in their use of materials and energy and more technologically advanced, leading to higher operating margins, but are also likely to have better management systems in place. Superior environmental management may signal superior overall management efficiency. In addition, companies that develop and commercialize solutions to

environmental problems have found favor with investors, especially venture capitalists. For example, two highly successful companies in the rapidly growing organic foods sector have been Horizon Dairy, which supplies organic dairy products throughout the United States, in Europe and Japan, and Whole Foods Market, which has achieved a commanding presence as an organic foods retailer. Many other "solution-oriented" firms have been successfully established and brought to market in the energy sector, including firms dedicated to the commercialization of fuel cells, wind energy and waste-to-energy converters. Mainstream investors have come to realize that there is money to be made and money to be lost on account of environmental issues.

The Key Role of Information Disclosure

Mandatory Disclosure of Environmental Information

These developments have underscored the key role of informational transparency in bringing financial markets to bear on industry's environmental performance. When environmental risks could be hidden behind a veil of corporate secrecy until unfortunate occurrences revealed their extent, investors incurred significant unforeseen losses. When mandatory reporting and disclosure rules required companies to reveal to the public and to investors the extent of their environmental exposures, financial markets reacted in ways that priced those risks more efficiently and allocated them to willing, rather than unwitting, risk-bearers.

Mandatory disclosure has become a widespread public policy instrument, employed to protect the public and to improve the performance of businesses and government in fields as diverse as food safety, fuel efficiency, management of toxic substances, sales of financial securities and many others. (Graham, 2002) Disclosure is a policy tool that has appealed to both liberals and conservatives because it relies on informed consumer and public choice rather than direct regulation. Disclosure typically increases market efficiency by eliminating informational asymmetries between sellers and potential buyers. Such asymmetries often distort market prices and sometimes deter market transactions altogether. (Stiglitz, Akerlof) Publicity provides strong incentives for business and government managers to improve performance by eliminating the possibility of shielding inferior or excessively risky products and services behind a veil of secrecy.

The effectiveness of mandatory disclosure as a policy instrument has been reinforced in the last two decades by several ongoing trends. The development of the Internet and of communications technology has dramatically improved the ease and speed of communication and has lowered its costs. Citizens and consumers can now diffuse information across the globe through decentralized linkages within hours or minutes. Complementing these trends, in many sectors of the economy more and more of a company's market value consists of intangible assets, including its brands and business reputation. The market value of many companies has become an increasing multiple of the book value of its tangible capital. Since strategic alliances, supplier networks, complex chains of financial relationships and other networks have become an increasingly prominent aspect of the business world, impairment of a firm's reputation can be a

devastating loss. Reputational losses can also undermine consumers' brand loyalty and make it more difficult for a company to recruit and retain high-quality employees.

In the environmental realm, mandatory disclosure programs have been notably successful as tools to promote environmental protection. In the United States, the EPA's Toxic Release Inventory has not only informed the public about potential hazards in their communities, it has also provided a strong stimulus to companies generating reportable quantities of toxic substances to reduce their generation and release (Fung & O'Rourke, 2000). Subsequent to the publication of TRI data and the adverse impact on public and investor opinion, prominent companies such as Dupont and Dow Chemicals, among many others, have entered into voluntary commitments to achieve major reductions, largely through pollution prevention initiatives. Explaining these commitments, CEO's of these companies have cited the need to protect their firms' reputations. In Canada, the National Pollution Release Inventory (NPRI) has had a similar success, prompting many companies to embark on accelerated pollution prevention and reduction programs, especially when also under some regulatory threat. (Harrison & Antweiler, 2003) Emissions reporting requirements such as the TRI and NPRI stimulated managers in some companies to quantify emissions on a plant and company-wide basis for the first time. On the principle that "You manage what you measure", this expanded measurement by itself encouraged better environmental control. In addition, greater transparency discouraged management from pursuing unduly risky environmental policies that might save money in the short-run but would expose the company and the public to excessive potential damages in the longer run. European countries have typically taken a broader view of corporate social responsibility than has the United States. Consequently, a large number and variety of corporate reporting systems are in place, most of them voluntary, by which companies make themselves accountable to stakeholders. In an effort to make such reports more comparable across companies, the Global Reporting Initiative and others are attempting to achieve more standardized reporting frameworks. However, since these are not integrated with financial accounting and reporting systems, they have so far been of limited usefulness to investors and financial analysts.

Public disclosure can be an even more advantageous policy tool in countries in which the government's administrative capacities to operate an efficient environmental regulatory system are less fully developed. In such settings, publicity can serve as a powerful instrument with which to mobilize public opinion against those companies with lax environmental practices. A recent World Bank publication has documented the effectiveness of disclosure programs in influencing industrial polluters in countries throughout South and Southeast Asia. (World Bank, 2000)

Mandatory Disclosure in Financial Markets

Disclosure of all financially material information is essential for the protection of investors against fraud, and for the efficient functioning of financial markets. When the Securities and Exchange Acts of 1933 and 1934 enshrined disclosure as the principal means for regulating financial markets in the United States, Justice Brandeis said, "Sunlight is the best disinfectant." Disclosure is the dominant regulatory mechanism underlying the Securities Act to

promote capital market efficiency, as emphasized in a recent law review article (Williams, 1999). She quotes the House Report on the Securities Act of 1933:

"The idea of a free and open public market is built upon the theory that competing judgements of buyers and sellers as to the fair price of a security brings about a situation where the market price reflects as nearly as possible a just price. Just as artificial manipulation tends to upset the true function of an open market, so the hiding and secreting of important information obstructs the operation of the markets as indices of real value" (Williams, 1999; note 59, p. 1210).

Reinforcing this perspective, a leading scholar of securities law states: "At its core, the primary policy of the federal securities laws today involves the remediation of information asymmetries" (Seligman, 1995; p. 604). The recent revelations in the United States of accounting irregularities, executive self-dealing, and other corporate scandals dramatically revealed the risks to financial markets of informational asymmetries between insiders and outside investors. These scandals have reduced investor confidence in corporate management to a minimum and, if anything, have increased the potential damages to companies and investors when hidden information becomes public.

To ensure sufficient disclosure by companies, the SEC has established a comprehensive set of guidelines and rules governing what companies should report. In addition to rigorous accounting rules for reporting financial results, the SEC holds firms to demanding standards regarding the disclosure of qualitative non-financial information that is needed lest current financial statements be misleading. According to Seligman, *"The past two decades have witnessed a significant expansion of what must be disclosed by all registrants . . . in their 10K annual reports . . . This expansion can be termed the 'soft information revolution' in the mandatory disclosure system"* (Seligman, 1995, p. 610). These requirements include not only information about current conditions affecting the firm that investors would consider relevant but also any known risks and uncertainties that might have future material financial effects. In general, in addition to disclosures specifically required, registrants must disclose any material information needed to prevent statements from misleading investors (17CFR, 240.10b-5(b) 1998; SEC Release Nos. 33-6130, 34-16224, Sept. 27, 1979; 44FR56924-56925). The SEC and the courts have eschewed any numerical measure of materiality such as a fixed percentage of assets or earnings, instead defining it as information that a reasonable investor would be likely to consider important in the context of all the information available. Moreover, SEC guidance states that facts can be considered material if they bear on the ethics of management, its integrity, or its law compliance record, irrespective of the financial sums involved (SEC Staff Accounting Bulletin 99). Omitting to disclose material information is equivalent to making false or misleading statements and is subject to serious penalties. These disclosure requirements explicitly include forward-looking statements.

The emphasis on transparency in financial markets is by no means restricted to the United States, of course, although disclosure requirements are more detailed in the U.S. than in other major financial markets. The principle that all material information should be promptly disclosed is widespread in countries with developed financial markets and, indeed, has played a significant role in their development. Experiences over the past two decades in international capital markets

have also pointed up the importance of transparency. By reducing uncertainty and perceived risk, greater transparency reduces financial volatility and lowers the cost of capital. An important reason for the home-country bias that impedes international investment in particular is the disadvantageous informational asymmetry that investors perceive in venturing outside their own borders. The contagion that aggravated past international financial crises stemmed mainly from investors' inability to differentiate between one emerging financial market and others, largely because of lack of transparency. Therefore, virtually all programs to reduce international financial market volatility and increase its efficiency have included strong recommendations for improved disclosure.

Disclosing Environmental Information in Financial Reporting

Within this framework, the requirement that companies disclose to the investment community the material financial implications of their environmental exposures has become increasingly important. Unless financial market valuations of risk and return accurately reflect the financial risks that companies incur through their environmental management decisions, investors will be endangered and an important market incentive for prudent environmental management will be lacking. Rational investments to reduce future environmental costs, liabilities, or risks may be undervalued in the capital markets and thus discouraged. Because managers who position their companies to gain competitive advantage by virtue of their superior ability to cope with impending environmental challenges might not be rewarded by investors, such strategies might be discouraged.

Asymmetric information about companies' environmental exposures creates principal-agent problems. If external investors cannot accurately value companies' investments in pollution control, managers may have an incentive to inflate stock prices for short-run gain by neglecting such investments (Milgrom and Roberts, 1992). As managers' compensation is more closely tied to stock market performance through stock options and performance-linked bonuses, and as financial analysts focus ever more closely on quarter-by-quarter earnings, the temptation to manage earnings through short-sighted strategies has become more powerful. Though in recent years this has been seen most obviously in accounting irregularities and financial engineering by such companies as Enron and Worldcom, the temptation to pursue short-sighted environmental practices may be no less strong. The Solutia and U.S. Liquids experiences also illustrate the dramatic damages that can be suffered by companies and investors through lack of transparency regarding environmental risks and exposures.

A case has been made by corporate activists and some academics that the SEC should require disclosure of information on environmental performance and other social issues—irrespective of financial materiality—because of its mandate to promote corporate accountability (Williams, 1999). The Securities and Exchange Acts were designed to influence corporate governance by increasing management accountability to other stakeholders and the general public as well as to shareholders. Section 14(a) of the Securities Exchange Act empowers the SEC to issue necessary or appropriate rules regulating proxy solicitations “in the public interest or for the protection of investors.” (Exchange Act 14(a), 15U.S.C. 78n (1994); emphasis added). Similar language pervades the acts. Moreover, the National Environmental Protection Act

(NEPA) authorizes all federal agencies, including the SEC, to include environmental protection as a policy objective when not inconsistent with their primary missions.

This case was first put forward in a petition to the SEC by the Natural Resources Defense Council (NRDC) in the early 1970s, shortly after NEPA was enacted, proposing that listed companies should have to report on pollution, environmental practices, and the environmental impacts of their products and operations (NRDC v. SEC, 389 F. Supp. 689, 693-94 (D.D.C 1974)). After lengthy hearings, appeals, and reconsiderations, the SEC decided, with judicial concurrence, that it would continue to rely on an economic criterion of materiality in judging environmental disclosure requirements. The SEC determined that, to the extent that environmental issues are economically material, they must be disclosed under existing disclosure requirements. At the time, Harvey Pitt, who later became Chairman of the SEC, argued that much environmental information would be material under a strict definition and would have to be disclosed. (Sonde and Pitt, 1971)

In those proceedings, the SEC argued that its enforcement activities would be applied to elicit disclosure of environmental information in specific cases when appropriate on materiality grounds (Williams, 1999). Thus, as far back as the 1970s, the SEC has committed itself to active enforcement of its general and specific disclosure requirements concerning financially material environmental information. As the following pages will indicate, that commitment has not yet been fulfilled. Disclosure remains incomplete despite considerable evidence that the materiality of environmental information has increased substantially since the early 1970s. For example:

- Companies have to spend more and more to comply with environmental regulations. Between 1972 and 1994, expenditures by business on pollution abatement and control more than doubled in real terms (Vogan, 1996).
- In the NRDC proceedings, the SEC demonstrated that only a trivial fraction of institutionally managed assets were in socially screened funds or portfolios. By 1999, it was estimated that more than \$1.5 trillion resides in socially and environmentally screened portfolios, while the number of screened mutual funds has risen to 175, from just 55 five years earlier. By 2001, the asset base had grown to \$2 trillion. Socially responsible investing can no longer be considered a negligible phenomenon. .
- It has been demonstrated repeatedly that companies' stock prices have been influenced by disclosure of information regarding emissions (even if legal), or failure to comply with environmental regulations, or potential liability to environmental remediation requirements.
- Several financial research services that sell environmental performance information to investors have emerged. Most large investment houses also employ environmental managers and undertake in-house research on environmental issues affecting companies. The fact that the generation and sale of environmental information has become an economic activity in the investment community indicates that professional investors consider such information relevant to their decisions—and thus financially material.

However, the availability of information on environmental issues has not kept pace with this growing materiality. According to the research firms that sell information to screened fund managers, environmental information is among the hardest to obtain. Many EPA and state

government databases, even those theoretically in the public domain, are hard to access, often inaccurate, inconsistent, or out of date, and not formatted in useful ways for financial or company-specific analysis. Moreover, companies' own environmental reports are typically selective, unstandardized, and unrelated to financial statements (Birchard, 1996). Therefore, the information available through stand-alone environmental reports, from government agencies, or from environmental research services is not a substitute for adequate disclosure by companies of financially material environmental information.

Specific Requirements in the United States

Disclosure of environmental exposures is governed both by the SEC's core rules on materiality and by specific requirements regarding environmental liabilities and compliance with federal and state environmental regulations.

General disclosure requirements explicitly include forward-looking statements. Item 303 of Regulation S-K requires a Management Discussion and Analysis (MD&A) of "*material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results or future financial condition.*" (17 CFR 229.303.) The firm shall disclose "*where a trend, demand, commitment, event or uncertainty is both presently known to management and reasonably likely to have material effects on the registrant's financial condition or results of operations.*" (SEC Release Nos. 33-6835, 34-26831, May 24, 1989; 54FR22427.) Disclosure of known trends, risks, and other uncertainties affecting future business results is particularly important to investors because asset markets are themselves inherently forward-looking. The value of any financial security is derived from the stream of returns it is expected to bring and the riskiness of those returns.

The SEC has strengthened these requirements by narrowing a company's ability to avoid disclosure on grounds of uncertainty. In its release on MD&A requirements, the SEC indicated that disclosure of uncertain events is necessary unless the registrant "*determines that a material effect on the registrant's financial condition or results of operations is not reasonably likely to occur*" (54FR22427). In the same release, the SEC warned companies that, if a registrant's future filings reveal a material effect from an event that was a known uncertainty in a prior period, the SEC enforcement staff will "*inquire as to circumstances existing at the time of the earlier filings to determine whether the registrant failed to disclose a known . . . uncertainty*" (54FR22427, n.28). Moreover, forward-looking disclosure is further encouraged by a "safe harbor" rule that protects companies from applicable liability provisions of federal securities laws that might otherwise be relevant (SEC Release Nos. 33-6084; 34-15944). Companies cannot be penalized for making "reasonably based and adequately presented" projections that subsequently fail to materialize.

Disclosure requirements of known uncertainties under Item 303 of Regulation S-K apply to environmental uncertainties. While the SEC has recognized Superfund liabilities as known uncertainties requiring disclosure, the requirements of Item 303 of Regulation S-K could reasonably apply to many other environmental uncertainties.

- Many firms own contaminated industrial sites that have not yet been identified for mandatory remediation, although contamination might well be discovered through future investigation, particularly if the site is transferred to another owner. Ownership of such contaminated sites might be considered a known uncertainty.
- EPA regulations are first issued in proposed forms before final promulgation. Affected industries typically submit extensive comments on proposed regulations through their industry associations or sometimes individual companies submit comments directly. Not infrequently, these submissions complain of financial impacts ranging from serious to dire. Many final regulations are challenged in court, with billions of dollars in compliance costs resting on the judicial outcome. Thus, many proposed environmental regulations are known uncertainties with potentially material financial consequences.
- The Kyoto Protocol to the United Nations Framework Convention on Climate Change, signed by the President in November 1998 though not yet ratified by the Senate or in force, could be considered a known uncertainty. Detailed economic studies commissioned by several industry associations have come to generally pessimistic conclusions about the impacts of implementing the protocol's provisions on the U.S. economy and affected industrial sectors. Individual companies have joined business coalitions that oppose implementation of the protocol, largely on grounds of economic cost. The possible future ratification of the Kyoto Protocol and adoption of policies to curb greenhouse gas emissions could be considered a known uncertainty with potentially material consequences for some companies.

Thus, Item 303 of Regulation S-K would seem to require a significant increase in the disclosure of forward-looking financially material environmental information that is essential to protect investors.

In addition to these general requirements, SEC rules and Generally Accepted Accounting Practice (GAAP) impose specific requirements on companies for environmental disclosure. Item 101 of Regulation S-K, governing the general description of the business, states:

Appropriate disclosure shall be made as to the material effects that compliance with Federal, State, or local provisions which have been enacted or adopted regulating the discharge of materials into the environment may have on the capital expenditures, earnings, and competitive position of the registrant and its subsidiaries. The registrant shall disclose any material capital expenditures for environmental control facilities for the remainder of the current fiscal year and its succeeding fiscal year and for such future periods as the registrant may deem material [17 C.F.R. 229.101 (c) (xii)].

This requirement evidently covers regulations that have been enacted but not yet adopted because of court challenge. It requires that the registrant apply existing materiality guidelines to financial impacts beyond the one- or two-year expenditure horizon. Many regulations include compliance deadlines several years in the future, such that planned capital expenditures to comply with them are initiated only after considerable time has elapsed.

Item 103 of Regulation S-K, governing disclosure of legal proceedings (civil and criminal suits), requires reporting of “*any material pending legal proceedings, other than*

ordinary routine litigation incidental to the business, to which the registrant or any of its subsidiaries is a party or of which any of their property is subject” (17 C.F.R. 229.103). Environmentally related proceedings must be disclosed if: they are material; they involve a claim for more than 10 percent of current assets; or they involve the government and potential monetary sanctions greater than \$100,000.

During the 1980s, the discovery of many contaminated industrial sites requiring remediation under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)—the “Superfund” statute—or under the Resource Conservation and Recovery Act (RCRA), and the rapid escalation of clean-up costs, led to an elaboration of disclosure requirements for contingent liabilities. GAAP, as enunciated by the Financial Accounting Standards Board (FASB), requires companies to accrue a contingent liability for future remediation costs if the loss is probable and reasonably estimable (SFAS 5). SEC and FASB guidance added clarification that if a loss is probable, the firm must recognize its best estimate of the loss, despite uncertainty, and cannot wait until only one estimate is likely. New information should be recognized in later disclosures (SEC Staff Accounting Bulletin 92, June 1993; FASB Interpretation 14). Together, these rules impose extensive obligations on corporate management to disclose financially material environmental costs, liabilities, and future risks.

Beginning in the 1980s, financial reporting of Superfund liabilities attracted the SEC's enforcement attention, in part because of attention drawn to the issue by public interest groups and shareholders. A 1998 report revealed that Phelps Dodge had estimated clean-up costs at a contaminated site to be 10 to 30 times smaller than had a federal court, and also questioned the company's disclosure of remedial costs at 39 other of its sites. (Lewis, 1998). A coalition of public interest groups drew the SEC's attention to the fact that Viacom had stated in a filing that it did not believe its clean-up obligations were financially material, even though it had been identified as a Potentially Responsible Party at dozens of Superfund sites, implying a total liability of more than \$300 million as against a 1995 total profit of \$165 million. (Friends of the Earth, 1997).

In addition to accounting guidances and releases mentioned above and a flurry of articles by environmental lawyers, it became known that the EPA was sharing information with the SEC about companies' potential liabilities. Consequently, a few SEC letters of enquiry were sufficient to put companies on notice that improved disclosure of site remediation liabilities was expected. By and large, U.S. corporations have responded. Disclosure of potential Superfund liabilities is by far the most complete and detailed of all environmental information to be found in corporate financial reports. As a result, banks, insurance companies, and other financial sector actors can now evaluate such risks more accurately. This experience indicates that a modicum of enforcement attention is sufficient to produce a fairly high degree of compliance with disclosure obligations.

Unrealized Opportunities to Make Use of Financial Disclosure

Inadequate Disclosure of Known Environmental Exposures

Despite this success in stimulating improved disclosure of material site clean-up costs and the constructive results in financial markets, until now there has been little effort to enforce disclosure of other financially material environmental information. In the United States, over the period 1975-2000, the SEC has initiated only three administrative proceedings and one civil action over inadequate environmental disclosures. In other countries, the enforcement record is even scantier. Enforcement has not been vigorous in years past because environmental issues were not salient among all the securities regulatory issues that the responsible agencies were faced with. Moreover, at least in the United States, those agencies have typically been understaffed and under-funded to the extent that they were able to deal with only the most urgent and egregious issues. (U.S. General Accounting Office, 2002) In addition, the securities and accounting supervisory bodies have resisted attempts to enlist them in environmental causes, seeing their sole mission the protection of investors and financial markets.

In the absence of enforcement efforts, compliance with existing disclosure requirements by the private sector has been scanty. Many companies have not even complied with the letter of the law, failing to reveal environmental legal proceedings or failing to disclose an accurate estimate of their environmental obligations and liabilities. More conscientious companies have typically complied with the letter of the law, but have revealed as little as possible. Very few companies have complied with the spirit of existing securities law that require disclosure of all material information and material risks known to management that would significantly affect the financial conditions or results of the enterprise. (Repetto and Austin, 2000) Reports typically discuss in any detail only those regulations that have already been issued in final form and have survived court challenges, while mentioning legal actions in which the reporting companies are involved. If companies mention other pending environmental regulations, legislation, litigation or other issues at all, they usually take refuge in uncertainty, claiming inability to estimate likely or possible financial outcomes, even within a range.

a. Evidence from the U.S. pulp and paper industry

Recent research has provided strong evidence that U.S. corporations in environmentally sensitive industries have not been adequately disclosing known financially material environmental exposures and risks in their Management Discussion and Analysis, as required by Item 303d of Regulation S-K. The first of these studies examined thirteen of the largest publicly listed companies in the U.S. pulp and paper industry, a sector with a wide range of environmental issues, including air and water pollution, toxic releases, and land use practices. The study estimated the impacts of known, impending environmental issues on the capital expenditures and future earnings. (Repetto and Austin, 2002). It found that those impacts were likely to materially affect the value of stockholder equity, the firms' competitive position within the industry and their financial risks. The study found that these exposures and financial impacts were not disclosed or adequately discussed in the firms' 10Ks or other financial reports. The study was unique in that the companies themselves participated in identifying important impending environmental issues affecting the industry and in estimating probable outcomes of those issues.

The methodology of the study involved the following steps:

1. Impending environmental issues affecting companies in the industry were identified and categorized with respect to their potential financial impacts on those companies.
2. For issues deemed to have potentially significant financial impacts, scenarios were developed regarding their evolution and outcomes. For impending regulatory issues, for example, scenarios were developed regarding final regulatory designs.
3. Through consultation with industry and environmental experts, likelihoods were estimated and assigned to each scenario.
4. Each company's exposure to each scenario was assessed through a facility-by-facility investigation of location, product mix, installed technology, input use, emission rates, and other relevant parameters.
5. The financial impact of each scenario on each company was estimated by applying estimates of regulatory compliance costs, impacts on input prices, site remediation costs, and the ability of firms in the industry to pass along higher costs through output price increases.
6. The likelihoods previously estimated were applied to all scenarios in order to construct a probability distribution of potential financial outcomes for each firm, including the mean impact on the discounted present value of earnings over a 10-year horizon and the variance of discounted future earnings.
7. Those measures of financial impact for each company were normalized by dividing the change in the discounted present value of future earnings by the market value of stockholder equity.
8. The financial statements of companies whose material financial impacts were estimated from known, impending environmental issues were examined to see whether such impacts had been disclosed in the Management Discussion and Analysis.

This methodology is particularly revealing of the inadequacy of MD&A disclosure of known, financially material environmental information, because senior representatives of the companies studied participated in identifying environmental issues with potentially significant environmental impacts, through the cooperation of the American Forests and Paper Association's Regulatory Policy Committee. Company representatives also reviewed scenarios for plausibility and provided their estimates of the probabilities that should be assigned to each scenario. The study found that companies in the industry were differentially exposed to most of the environmental issues. Differences among companies in exposure stemmed from many causes: the location of their facilities, the extent of their present and past pollution releases, the technologies installed in their mills, their energy and fiber sources, and other factors. As a result, the issues impinging on the industry are likely to create competitive advantages and disadvantages that should be discussed as known risk factors.

Overall financial risks across all issues were estimated by weighting each scenario by the likelihood assigned to it by industry representatives and other experts. These probabilities were used to estimate the joint probability of a "worst case" outcome, in which all the most costly scenarios for a company would come about, and the probability of a "best case" outcome, in which all the least costly scenarios would come about. Other scenario combinations were used to generate the probabilities of all intermediate outcomes. In this way, probability distributions of financial outcomes were generated for all companies in the study.

A summary of these findings, comparing the financial exposures of all companies in the study, shows material financial risks. The mean values indicate that at least half the companies in the group face expected financial impacts of at least 5 percent of shareholder equity and that several face expected impacts approaching or exceeding 10 percent. These magnitudes are impressive because the expected effects of environmental issues on earnings in the pulp and paper segment are being compared to the total market value of the companies, which for many firms includes the value of their other business segments, including wood products and converted paper products. Even relying on the most likely outcomes, estimates show that companies' environmental exposures involve them in significant financial risks.

TABLE 1. Probability of a Reduction in Company Shareholder Value by more than 10 percent or 5 percent

FIRM	Expected (Mean) Impact (percentage of market value)	Variance of Expected Impact (percentage of market value)	Probability of loss greater than 10% of market value	Probability of loss greater than 5% of market value
A	-10.2	3.6	64	90
B	-0.6	0.5	0	0
C	-3.4	0.8	0	37
D	-2.7	4.4	0	33
E	-6.9	2.8	24	87
F	-10.8	9.3	63	86
G	-8.4	6.1	44	88
H	-0.9	0.8	0	0
I	-6.8	6.9	34	69
J	-4.2	3.4	0	60
K	-10.8	9.1	61	80
L	-6.3	2.4	24	79
M	2.9	3.2	0	0

Source: Repetto and Austin, 2002.

The estimated variances of financial outcomes tell an even stronger story. Several companies are virtually immune to environmental risk: their earnings will be relatively unaffected, whatever the outcome of the salient impending issues. At the other extreme, other companies face significant probabilities that impending environmental issues will be resolved in ways that will reduce the value of their companies by as much as 15 or 20 percent. Table 1 shows the estimated probabilities from the study that each company's shareholder value will be reduced by 10 percent or more. Three companies are more likely than not to suffer a 10 percent loss. In total, 7 of the 13 companies have a greater than 20 percent chance of experiencing a loss of this magnitude.

The environmental statutes and regulations analyzed in the study would be likely to have quite different financial impacts, individually and collectively, across companies in the same

industry, and these differential impacts can have material consequences on firms' competitive positions. They should have been disclosed in Management's Discussion and Analysis. However, only three of thirteen companies even mentioned in their SEC filings any of the issues that were deemed significant by their senior environmental officers.

Some companies, while disclosing little information about the financial impacts of impending regulations, minimized their likely effects on their own competitive positions. For example, according to one company: *"In the opinion of . . . management, environmental protection requirements are not likely to adversely affect the company's competitive industry position since other domestic companies are subject to similar requirements."* Or, according to another company, *"[Company X] does not anticipate that compliance with environmental statutes and regulations will have a material effect on its competitive position since its competitors are subject to the same statutes and regulations to a relatively similar degree."* A third company stated: *"[S]ince other paper and forest product companies also are subject to environmental laws and regulations, the company does not believe that compliance with such laws and regulations will have a material adverse effect on its competitive positioning."* In view of the differences revealed in Table 1, these statements are quite inaccurate and could be considered misleading. According to the results of the study, all three of these companies have above-average financial exposure to pending environmental issues and will probably suffer adverse competitive impacts.

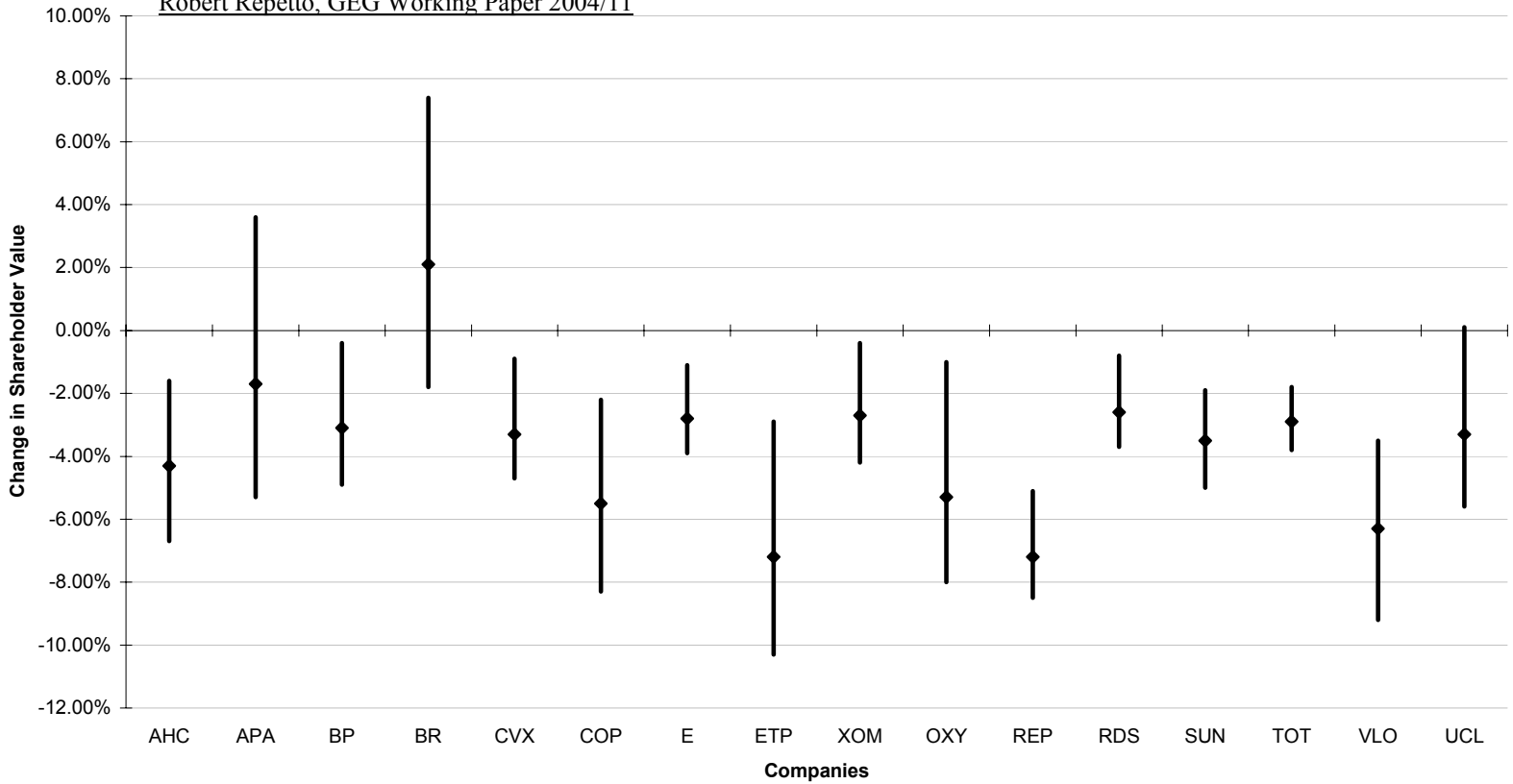
b. Evidence from the Oil and Gas Producing Industry

A second recent study used a similar methodology to examine the exposures of 16 oil and gas producing companies to policies to reduce greenhouse gas emissions and to potential future restrictions on access to areas holding petroleum resources. (Austin, 2002) Climate policy scenarios assumed either ratification of the Kyoto Protocol, alternatively with and without U.S. participation, or non-ratification of the Protocol, alternatively with and without other restrictions on the use of carbon fuels. Sub-scenarios explored alternative approaches to implementation, especially with regard to the disposition of "rents" arising from restrictions on fossil fuel availability.

The results of the analysis are strikingly similar to those found in the pulp and paper study. Companies differed widely in their financial exposures to these environmentally related risks. Exposures varied due to differences among companies in the composition and geographical location of their reserves, their reliance on earnings from exploration and production, vs. earnings from refining and distribution, and other factors. For the most exposed firms, the most likely financial impacts were found to be highly material. Figure 1 plots these impacts for all 16 companies. The central "dot" for each company represents the probability-weighted mean, or expected, financial impact across all scenarios, expressed as a percentage of shareholder's equity in the company. The vertical lines represent the range of outcomes, from worst-case to best-case. For seven companies, expected impacts exceed 5 percent of shareholder value and for four companies, worst-case impacts approach 10 percent.

Figure 1: Oil & Gas Company Exposures

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As in the pulp and paper industry, few companies made any reference to these financial exposures in their SEC filings. Only 2 of the 16 mentioned climate change as a known risk to future operations of financial conditions, indicating that the financial impacts could be substantial. Three others mentioned the issue in their annual reports, but did not elaborate on any possible business implications. The other 11 made no mention of the issues.

c. Evidence from the Electricity Generating Industry

A more recent study of a third environmentally sensitive industry, the electric power-generating sector, strongly confirmed the findings of these two earlier reports. (Repetto and Henderson, 2003) Forty-seven of the largest investor-owned electric utility holding companies in the United States were analyzed to estimate the potential financial impacts of environmental legislation now before the U.S. Congress.

The methodology followed the same approach used in the two studies described above. It estimates the least-cost option to comply with pending air quality regulations, for each of the companies. The least cost option is defined as the minimized, discounted present value of adopting least-cost controls on all generating units owned by each utility holding company to bring them into compliance. The compliance options include a suite of combustion controls, post-combustion pollution controls, and permit trading. Available compliance options and associated costs are tailored to the specific technological characteristics of each generating unit, and take into account pollution control equipment already installed. Least-cost combinations of emissions controls and permit trading are derived by minimizing discounted estimated capital and operating costs over a twenty-five year horizon.

This methodology is used to analyze the following scenarios:

- the financial impacts of a three-pollutant cap-and-trade bill that imposes stricter future controls on emissions of nitrogen oxides, sulfur oxides, and mercury;
- a four-pollutant cap-and-trade bill that adds restrictions on future emissions of carbon dioxide to the preceding environmental requirements;
- a third hybrid scenario constructed on the assumption that controls on carbon emissions would be announced belatedly, after decisions to comply with the three-pollutant caps had been finalized, with a later compliance deadline.

These policy scenarios were chosen to resemble proposed legislation submitted to the current and the previous Congresses, but do not exactly replicate these bills' provisions. Under one set of scenarios, financial impacts were estimated under the assumption that permits would initially be grandfathered to utilities in proportion to their historical 1998 emissions, the most likely outcome.

In order to facilitate comparison of environmental exposures among companies, the present value of future compliance costs in constant year 2000 prices, discounted at 8 percent per year to the year 2000, were benchmarked to each company's revenues in the year 2000. These benchmarks indicate the financial materiality of the companies' environmental exposures to pending environmental issues and allow their exposures to be compared.

Two limitations of this analysis should be acknowledged. First, the approach does not allow for adjustments by companies in the dispatch of their various generating units in order to achieve compliance. In reality, companies may reduce the hours operated by particular units rather than installing pollution control equipment if the former is the least-cost option. Second, the calculation does not allow for the fact that companies may recover some or all of their environmental costs if market or regulatory processes pass through these cost increases to electricity product prices. However, under current securities laws financially material costs of compliance with environmental regulations, such as those estimated through this methodology, must be disclosed in financial statements without netting these costs against possible future cost recovery.

If a three-pollutant cap-and-trade policy similar to that endorsed by the current US administration and submitted in proposed legislation is adopted, many large US electric utility holding companies will face significant financial impacts. The required cuts in emissions would ensure that utilities would be forced to install expensive internal controls and that permit prices in an allowance trading market would remain high.

Figure 2: 3 Pollutant Cap&Trade, Permits

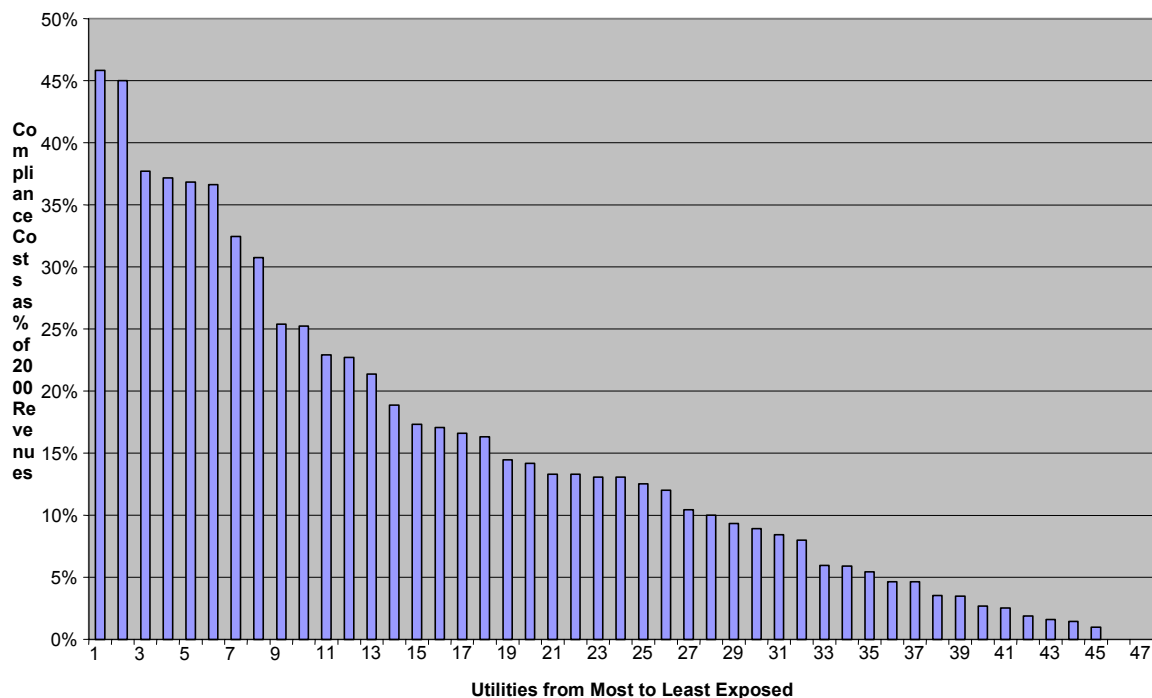


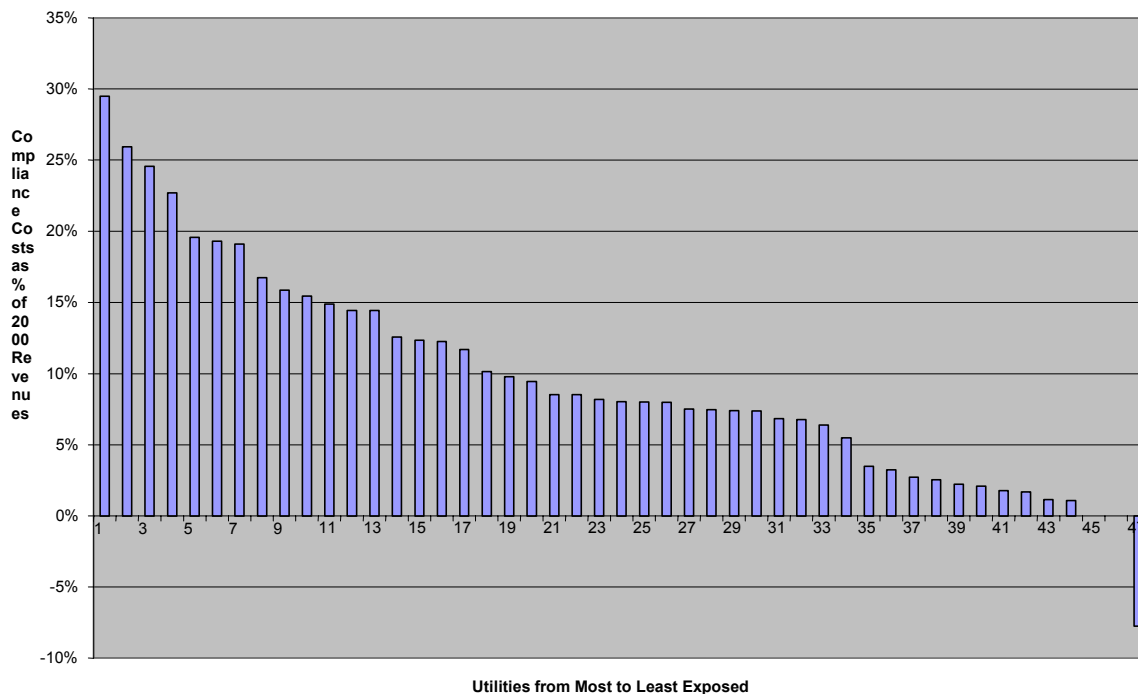
Figure 2 illustrates the finding that more than half of the 47 major utility holding companies included in the study would face compliance costs with a discounted present value greater than 10 percent of their total year 2000 revenues. Over a quarter would face costs in excess of 20 percent of year 2000 revenues. Total revenues include not only revenues from sales of generated electricity, but also revenues from distribution, transmission, and unrelated business activities. To put these magnitudes into perspective, operating profits among these companies average only 4 or 5 percent of operating revenues.

Figure 2 also shows that different companies within the electric power sector are exposed in markedly differing degrees to future environmental restrictions of this kind. Differences in exposure to impending environmental restrictions stems from several factors that reflect past investment decisions:

- The importance of generating revenues in total revenues;
- The fuel mix used in generating electricity, especially the degree of reliance on coal;
- The effectiveness of emission controls already in place;
- The efficiency of the company's generating operations in converting fuel to electricity;
- The ease of retrofitting additional emission controls onto existing plants.

The analytical results representing the impacts of a four-pollutant cap-and-trade policy show striking differences compared to the three-pollutant results. Figure 3 shows that if a requirement that carbon emissions be reduced seven percent below a 1990 baseline, with a compliance deadline of 2015, and if permits were grandfathered to utilities, then under the assumptions of the scenario, compliance costs would be *lower* for many companies than in the three-pollutant scenarios. The explanation lies in the assumed carbon permit price. If it is as high

Figure 3: 4 Pollutant Cap & Trade, Announced Carbon, Permits



as \$32 per ton of carbon dioxide (\$100 per ton of carbon), utilities that re-power to natural gas would make considerable money by selling excess carbon permits, since re-powering would reduce carbon emissions by far more than necessary to meet the requirement. Moreover, in reducing carbon dioxide emissions by switching plants to run on natural gas, companies will avoid the need to install expensive equipment to control emissions of mercury, sulfur, and (to some extent) nitrogen emissions. Since the natural sulfur or mercury content of natural gas used as power plant fuel is low, switching to natural gas not only reduces carbon emissions, it also, as a side benefit, helps meet other emission constraints. In fact, adding a carbon constraint would induce so many companies to make the fuel switch that the prices of nitrogen and sulfur permits would fall precipitously.

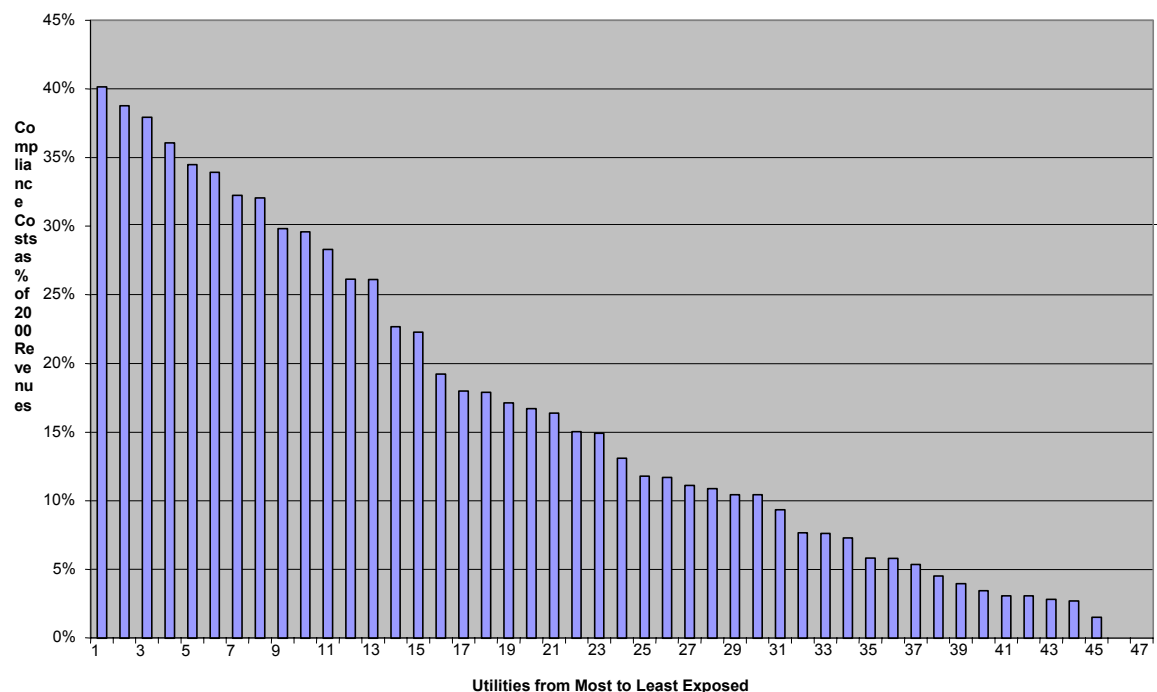
Companies differ greatly in their exposures to a four-pollutant regime. For most companies, the prospect of a four-pollutant cap-and-trade policy that includes carbon constrains represents a material financial risk and a potential source of competitive advantage or disadvantage. One or two companies face negative compliance costs in some scenarios, because of their potential revenue gains in selling permits. More broadly, for some companies with relatively small compliance burdens, profits would likely increase as electricity prices rose in response to higher industry operating costs.

Figure 4 shows that for most companies, the worst of all worlds would be one in which they make least-cost decisions to comply with a three-pollutant cap-and-trade policy regime but are then faced, a few years later, with a new carbon reduction requirement. The ability to defer carbon control expenditures would not make up for the wasted costs of pollution control

equipment for the other three pollutants and the loss of potential revenues from selling excess carbon permits. The costs of dealing with this situation would be higher for most companies than the costs of dealing with an integrated four-pollutant cap-and-trade regime.

At this point few companies among the 47 large investor-owned electricity generating companies have disclosed in their financial reports the implications of proposed three-pollutant

Figure 4: 4 Pollutant Cap&Trade, Carbon Later, Permits



or four-pollutant cap-and-trade policies, particularly in any quantitative detail. Though some companies have provided fuller disclosure than others, a perusal of SEC filings would be of little help to investors and analysts in understanding the distribution of exposures of electric utility companies to these environmental risks. In the case of a proposed government regulation, the registrant is required to make two determinations in deciding what to disclose. First, it must determine that there is not a reasonable likelihood that the regulation or provision will be enacted. If it cannot make that determination, it must disclose the impacts on the firm's financial conditions under the assumption that the law or regulation will be adopted, unless it can make a second determination that, if enacted, the provisions will not have a material financial effect. In the case of the three-pollutant or four-pollutant policies, most firms in the electric utility sector would find it difficult to reach the latter conclusion. Nonetheless, there is currently little information in many companies' financial reports regarding these issues. Moreover, there is little evidence that companies with the least exposures have tried to set a higher standard of transparency for the industry, though it would seem to be in their interests to do so. No systematic differences in the completeness of disclosure are evident between the reports of the least and most exposed companies. Investors get little help from financial reports in

understanding the complicated financial exposures of companies in this sector to pending environmental legislation.

Growing Shareholder Demand for Environmental Information

Financial markets are now asserting a growing demand for transparency, in part because of these experiences. According to a recent Standard and Poor's Transparency and Disclosure Study (Standard & Poors, 2003) ,

"Public companies around the world are increasingly under pressure from the ongoing 'corporate governance revolution' in which large institutional investors are intensifying the pressure on management to disclose all material information."

A corroborating study by the accounting and consulting firm Ernst and Young found, after a study of share performance in 1000 largest global companies, that poor investor relations was the third most frequent cause of sudden and major drops in share value. Companies that are lax on disclosure are more vulnerable to share price volatility than those that provide qualitatively good information. Moreover, investors have shown that they are willing to pay a premium for companies with superior disclosure records. (Investor Relations on the Net, 2002)

The demand for more disclosure extends to environmental information. An increasing number of shareholder resolutions are being filed asking management for disclosure of material environmental information. These resolutions are often organized by coalitions of socially responsible investors and environmental activists but are increasingly being supported by mainstream institutional investors.

In the United States, earlier this year an investor coalition that includes the State of Connecticut's [Retirement] Plans and Trust Fund filed resolutions with five of the largest U.S. electric power companies requesting that they disclose to shareholders the economic risks associated with emissions of carbon dioxides and other air pollutants and the business benefits associated with reducing those emissions. In an important recent development, Institutional Shareholder Services, an organization that advises pension and mutual fund managers on how to vote their proxies, endorsed these shareholder resolutions.(Ball, 2003) This endorsement potentially adds institutional money managers controlling hundreds of billions of dollars in assets to those demanding more environmental transparency. Partly as a result, the resolution commanded 27 percent of the vote of American Electric Power's shareholders, a very high percentage for resolutions not backed by management, even though AEP has one of the best disclosure records in the industry. The Carbon Disclosure Project, an even larger initiative backed by thirty-five of the world's largest institutional investors, has been urging companies to disclose their greenhouse gas emissions and the risks they pose to the companies, and the extent of their emission reduction programs.

In the oil and gas sector, a similar climate resolution submitted to Exxon Mobil captured 20 percent of the vote. In Canada, shareholders of Imperial Oil recently submitted a resolution

requiring the company to spell out potential financial liabilities associated with its greenhouse gas emissions and to put in place a plan to reduce those liabilities.

Government Responses

In the United States, in the wake of corporate scandals, new requirements have been adopted requiring CEOs and CFOs to certify the accuracy and completeness of their financial statements, requiring more independence of corporate directors from management, requiring corporation lawyers to take action if accounting or reporting irregularities are discovered and not corrected, and requiring separation of auditing and advisory functions. In addition, the administration and Congress have markedly increased appropriations of funds to strengthen the enforcement capabilities of the Securities and Exchange Commission, which itself has taken steps to tighten disclosure standards, particularly of off-balance sheet arrangements and contingent liabilities.

Last year the U.S. Senate requested the General Accounting Office to investigate the adequacy of environmental disclosure by corporations publicly listed on U.S. securities markets, and of the SEC's enforcement of its own requirements. (SriMedia, 2003) This request followed the release of a 1998 study by EPA that found that 74 percent of the companies subject to environmental legal proceedings that should have been disclosed under SEC rules had failed to do so.

A report recently made public by the Securities and Exchange Commission on their review of financial statements filed by the Fortune 500 largest US companies stated:

"We found that we issued more comments on the MD&A discussions of the Fortune 500 companies than any other topic. Item 303 of Regulation S-K requires ... [a discussion of] known material events and uncertainties that would cause reported financial information not to be necessarily indicative of future operating results or of future financial conditions. ... Our comments addressed situations where companies simply recited financial statement information without analysis or presented boilerplate analysis that did not provide any insight into the companies' past performance or business prospects as understood by management."

The SEC review of Fortune 500 company disclosures found specifically that information on environmental exposures and liabilities was frequently deficient. (U.S. Securities and Exchange Commission, 2003)

In Europe as well, the European Commission issued stricter non-binding guidelines in 2001 for disclosure of environmental costs and liabilities, in response to a finding that unreliable and inadequate information about environmental performance "*makes it difficult for investors ... to form a clear and accurate picture of the impact of environmental factors on a company's performance or to make comparisons between companies.*"(Sutherland, 2001)

Despite these steps, further governmental action is needed. If financial markets are to evaluate financial risks arising from companies' environmental exposures accurately and thereby to exert a useful influence on corporate management, further disclosures must be encouraged, especially of known environmental exposures and financial risks. Fortunately, relatively small actions can bring substantial results. Corporations are advised by legal counsel whose function is to protect the company from legal difficulties, prominent among which would be difficulties with securities regulators. If a government notification or an action taken against a single company signals that new emphasis is being placed on environmental disclosure, those signals reverberate powerfully through corporate boardrooms and executive suites. Therefore, a signal from the SEC that environmental disclosures will be scrutinized more carefully would have substantial effects. This might take the form of a speech by an SEC Commissioner or Enforcement Chief, a Staff Release reinforcing existing disclosure obligations, or a well-publicized enforcement action taken against one or a few companies. The increased budget for enforcement should make such an action feasible.

There are also relatively simple and low-cost initiatives that environmental ministries and agencies can take. For example, in October 2001, following release of its study showing inadequate compliance, the U.S. EPA issued an enforcement alert emphasizing the obligation of publicly listed companies to disclose environmental legal proceedings and other material environmental information. (U.S. Environment Protection Agency, 2001) In that document the EPA revealed that it had begun notifying companies subject to certain enforcement actions of their potential duty to disclose and had established informational links to the SEC's enforcement division.

Further steps to strengthen liaison with securities regulators could be taken. Securities regulators are often handicapped by lack of information about environmental matters that are not disclosed but perhaps should be. They have scant resources with which to deal with their growing and increasingly complex responsibilities. Without assistance, they often experience difficulty in finding out what regulated companies are not disclosing. Environmental ministries and agencies can help in providing this needed information. As a start, they could establish a small liaison office to facilitate contacts with securities regulatory agencies. This liaison office can be responsible for facilitating the flow of information from the environmental agency to the securities regulator and for redirecting questions from the former to the appropriate branches of the latter. Certain kinds of information could be shared between the two agencies on an ongoing and regular basis. Such information might include

- 1) texts of proposed major new regulations, and timetables for finalization, promulgation, and compliance;
- 2) accompanying regulatory impact analyses, including analyses submitted by industry groups, estimating compliance costs and economic impacts on significantly affected industries and sub-sectors;
- 3) emissions and waste generation inventories organized by company;
- 4) non-confidential information regarding ongoing litigation, enforcement actions, etc.

Information of this kind would be helpful to securities regulators in enabling them to form judgements regarding the kinds of disclosures that should be expected from companies within an industry.

In addition to inter-agency cooperation of this kind, environmental agencies can greatly enhance their role as an information resource to investors and investment analysts. At present, investors and analysts typically do not see the environmental agency as a potentially useful source of information, and most within these groups lack any knowledge of how information from the environmental agency might be accessed.

To some extent, analysts' perceptions regarding the paucity of useful information available from environmental agencies has been justified. Many databases maintained by these agencies, though ostensibly public, have been difficult to access and to manipulate. On some, the data can be outdated or of questionable accuracy. On some, the data are formatted in ways that are not useful to investors or analysts. For example, emissions data should be readily aggregated by company but often cannot be. To remedy this situation, the environmental agency could review their publicly available databases and attempt to make them more accessible and more useful. This effort, of course, would be of benefit to many users, not only to the investment community.

A step in this direction would be to establish within the agency an Internet website for investors and analysts containing links and directories to potentially useful information. Such information would likely include materials in the categories 1) through 4) above. Direct Internet access to relevant information would be a valuable resource for investors and analysts, who often must make decisions under time pressure. A website would be even more useful if it contained a search engine capability that enabled users to search for information by industry, company, or environmental issue.

Steps such as these merely illustrate the possibilities of closer cooperation between environmental agencies and securities regulators and the investment community. The benefits would be substantial: greater protection for investors, increased efficiency in financial markets, and stronger incentives for responsible environmental management.

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