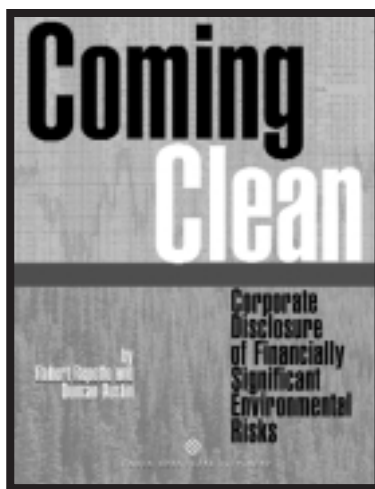


COMING CLEAN: CORPORATE DISCLOSURE OF FINANCIALLY SIGNIFICANT ENVIRONMENTAL RISKS



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FOREWORD

Actions by the private sector have produced most of the environmental improvements achieved over the last three decades. Prompted by successive regulatory measures, public concern, and consumer pressure, companies have made substantial changes to production processes and waste management practices, reduced many of their air and water emissions, and attained higher levels of energy efficiency. Such changes have not come free. Meeting environmental standards has often meant diverting limited capital and management resources away from core business activities. Managing environmental risks has become an important part of modern business.

For all the progress made in recent years, much remains to be done. Some companies still fall short of established standards, even as growing environmental concern and improved scientific understanding forces those standards higher. Demand for less polluted air and cleaner lakes and rivers grow ever stronger, while emerging global issues, most notably climate change, present new challenges for industry and make new regulatory programs likely. Environmental concerns are also affecting companies through other channels. For example, an increasing number of consumer decisions reflect environmental preferences. New policies and pressures will continue to affect business operations for the foreseeable future.

Although many environmental issues have significant financial implications, companies have been slow to disclose how their exposure to prospective environmental issues might affect their future business results. Failure to disclose such information poses a serious threat to the growing numbers of

investors. Without adequate information on the financial risks and opportunities facing companies, securities are likely to be mispriced and investors subsequently misled. This is as true of risks arising from environmental issues capable of affecting the bottom line as it is for risks arising from other business activities.

More seriously, failure to disclose known financially material environmental risks contravenes Securities and Exchange Commission (SEC) rules established to protect investors. In its 70 years of existence, the SEC has sought to fulfill its mandate of protecting investors by pressing for the highest possible level of disclosure from corporations. Many of the SEC's rules, guidelines, and interpretations specify and clarify what information companies are required to disclose. Those requirements include disclosure of any known trends or uncertainties that are likely to have a material impact on a company's financial results.

In *Coming Clean: Corporate Disclosure of Financially Significant Environmental Risks*, WRI economists Robert Repetto and Duncan Austin examine the extent to which one group of companies are failing to disclose their exposure to financially material environmental issues. In a companion WRI report entitled *Pure Profit: The Financial Implications of Environmental Performance*, the authors showed that in the U.S. pulp and paper industry—just one of many sectors for which the environment poses financial threats—many impending environmental issues are likely to affect companies' competitive positions and fundamental shareholder values. This earlier report earned the Moskowitz Prize, awarded annually for outstanding research in the field of socially responsible investing.

Now, in *Coming Clean*, the authors show that the environmental risks confronting the pulp and paper industry have not been adequately disclosed in annual or quarterly filings to the SEC. Such omissions appear to infringe the SEC's own rules and guidelines, endangering investors as a result. The report, thus, raises issues regarding the SEC's enforcement policies as well as companies' reporting practices.

This lack of transparency is at odds with broader trends. In what some have already dubbed "The Information Age," the demand for information and the ability of individuals and investors to make use of it is expanding greatly. Public expectation regarding the information that companies can and should provide is rising and will certainly continue to do so.

Moreover, while information disclosure has always been the bedrock of SEC regulation, it is emerging as a key strategy in other regulatory are-

nas. The introduction of the Toxic Release Inventory and the subsequent reaction of companies, investors, and the public has demonstrated how information disclosure has emerged as an important tool for securing environmental improvements.

This report continues WRI's tradition of identifying and supporting policies that are capable of improving the environment and consistent with broader economic aims. Greater information disclosure not only appears necessary for the long-established goal of investor protection but also promises to be a cost-effective tool for enhancing environmental management efforts. WRI will continue to work with companies seeking to improve their environmental performance in this and other areas.

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JONATHAN LASH
PRESIDENT
WORLD RESOURCES INSTITUTE

EXECUTIVE SUMMARY

This report provides additional evidence that many publicly listed companies do not adequately disclose their financially material environmental exposures in compliance with Securities and Exchange Commission (SEC) rules. Disclosure of environmental risks is limited, despite evidence that information disclosure regarding a company's environmental exposures can affect its management's decisions directly and that disclosure in financial statements is considered relevant by investors and can affect their valuations of the company and its financial risks.

Current Rules and Standards Governing Disclosure

Information disclosure is central to the smooth operation of the capital markets. Unless financial market valuations of risk and return accurately reflect the financial risks that companies face, securities will be mispriced and investors will be endangered. To ensure sufficient disclosure by companies, the SEC has established a comprehensive set of guidelines and rules regarding what companies should report. 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 particular, Item 303 of Regulation S-K requires a Management Discussion and Analysis (MD&A) in which companies are required to disclose known future uncertainties and trends that may materially affect financial performance.

Disclosure requirements of known uncertainties under Item 303 of Regulation S-K could reasonably apply to many environmental uncertainties, including contaminated industrial sites that have not yet

been identified for mandatory remediation; forthcoming EPA regulations; and potential climate policies under the Kyoto Protocol. However, evidence indicates that known financially material risks and uncertainties stemming from such environmental exposures are not being adequately disclosed.

Evidence from Companies in the Pulp and Paper Industry

A previous WRI report, *Pure Profit: The Financial Implications of Environmental Performance*, estimated the impacts of known, impending environmental issues on the capital expenditures and future earnings of 13 leading, publicly listed companies in the U.S. pulp and paper industry. 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. At least half the companies in the group face expected financial impacts of at least 5 percent of total shareholder equity, while several face expected impacts approaching or exceeding 10 percent. The range of potential outcomes also varies greatly from one company to another. 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.

Despite evidence that environmental issues can affect companies' financial performance, review of companies' financial statements reveals that disclosure of such material risks and uncertainties has been inadequate. We reviewed 10K, 10Q, and 8K

filings made by these companies during 1998 and 1999. Although companies differed in the thoroughness of their reporting, few companies adequately disclosed the financial risks or potential competitive impacts arising from their exposures to known environmental uncertainties. This lack of disclosure cannot be adequately explained by a lack of relevant information among companies within the industry. Company representatives participated in identifying important impending environmental trends affecting the industry and in estimating probable outcomes of those issues.

There is no reason to believe that pulp and paper is the only sector in which company reports are incomplete concerning environmental risks and differentials in environmental exposure between companies. Many other sectors are materially affected by environmental issues and regulations and would likely exhibit similar patterns of environmental exposure and nondisclosure.

Enforcement of Existing Rules by SEC

This study also finds that despite explicit statements promising vigorous enforcement of disclosure requirements for financially material environmental risks, the SEC's enforcement efforts in this area have been minimal. Of more than 5,000 Administrative Proceedings initiated by the SEC over the last 25 years, only 3 are based on insufficient disclosure of environmental risks or liabilities. Over the same period, the SEC has brought only one Civil Action against a company on the grounds of inadequate environmental disclosure, and this dates to 1977.

Although the SEC has attempted to induce greater disclosure of site remediation costs stemming from Superfund proceedings, there is little evidence of enforcement of the disclosure require-

ments on material environmental uncertainties in the forward-looking Management Discussion and Analysis. Without such enforcement action, companies' disclosure practices or compliance with existing rules are unlikely to improve.

Recommendations

The study therefore recommends:

- The SEC should issue a general guidance document reinforcing and clarifying existing rules regarding disclosure of financially material environmental exposures under Item 303, Regulation S-K, and informing registrants that these rules will be enforced.
- The SEC should clarify its guidance regarding the reporting of uncertain financial risks posed by prospective environmental regulations and liabilities.
- The SEC should honor its previous commitments by allocating additional enforcement resources specifically to ensure that companies comply adequately with these environmental disclosure requirements.
- The SEC should cooperate more closely with the EPA and other environmental protection agencies to share information about pending legislation, regulation, and other policy measures, about their estimated financial and economic impacts on particular industrial sectors and subsectors, and about environmental issues affecting specific companies.
- Without waiting for SEC action, registered companies should begin to disclose more fully their known, financially material environmental risks and uncertainties.

1

THE RISKS OF INADEQUATE DISCLOSURE OF FINANCIALLY MATERIAL ENVIRONMENTAL INFORMATION

Disclosure of financially material information is essential for the protection of investors against fraud, and for the efficient functioning of financial markets. “At its core, the primary policy of the federal securities laws today involves the remediation of information asymmetries” (Seligman, 1995; p. 604). Disclosure is the dominant regulatory mechanism underlying the Securities Act to promote capital market efficiency, as emphasized in a recent review article by Cynthia Williams. 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).

The idea that capital markets accurately incorporate all relevant publicly available information has become enshrined with wide and influential support (Fama, 1970). Its basic justification lies in investors’ demonstrated difficulty in consistently achieving abnormally high returns through any trading strategy. Its obverse, that capital markets will not accurately incorporate information that is not publicly available, is central to the SEC’s extensive disclosure requirements.

To ensure sufficient disclosure by companies, the SEC has established a comprehensive set of guidelines and rules regarding 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 nonfinancial 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 has 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). Failing 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. Item 303 of Regulation S-K requires a Management Discussion and Analysis (MD&A) in which companies are required to

disclose known future uncertainties and trends that may materially affect financial performance.

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.

Information disclosure is central to the smooth operation of the capital markets. 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. 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). Similarly, 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.

The case for greater information disclosure is becoming stronger over time because external capital markets are exerting more and more influence over corporate managers' decisions. Half of all listed shares are held by institutional investors who compete on performance and whose portfolios are subject to rapid turnover (Conference Board, 1998). Companies that fall out of favor with investment professionals because of adverse news can suffer rapid losses in market value. Large institutional investors increasingly also influence corporate gov-

ernance and policy through direct dialogue with corporate management (Smith, 1996; Carleton, Nelson and Weibach, 1998; Karpoff, 1998).

The influence of external capital markets on management decisions is reinforced by the increasing share of stock options and ownership rewards in executive compensation. Ownership by managers has increased among publicly listed companies from 13 percent in 1935 to 21 percent in 1995 (Holderness, Kroszner, and Sheehan, 1999), reversing a trend decried by Berle and Means in the early 1930s (1932). Stock options and related forms of compensation are the fastest growing components of executive compensation. While total CEO compensation rose rapidly during the 1990s, stock options grew from 36 percent of the average compensation package among S&P500 corporations in the late 1980s to 46 percent in 1997 (Murphy, 1997). These ownership stakes give managers direct incentives to be concerned about financial market judgments, because their compensation has become much more sensitive to their companies' stock market performance. On average, if a large-cap stock moves from a median price performance to the seventieth percentile in performance, its chief executive's compensation rises by more than 50 percent, amounting to an average gain of \$1.8 million dollars (Hall and Liebman, 1997). Even where pay is not tied explicitly to stock price, a company's market value is increasingly seen as a report card on management's efforts.

The case for greater information disclosure is becoming stronger over time because external capital markets are exerting more and more influence over corporate managers' decisions.

These trends only strengthen the need for more thorough disclosure of material risks and uncertainties, including those arising from a company's environmental performance and positioning. The stronger external investors' influence over management decisions, including decisions about environmental risk, the more important it is that external investors be fully informed about the financial implications of those risks.

Information disclosure has been proven a fundamental regulatory tool not only in financial markets but also in the control of environmental pollution. Providing information to the public regarding companies' environmentally damaging behavior has been demonstrated to cause the companies sufficient reputational losses that their behavior has been affected. The public release of EPA's Toxic Release Inventory induced many of the largest emitters to make public commitments and take action to reduce their releases of toxic chemicals (Konar and Cohen, 1994; Khanna, Quimio, and Bojilova, 1998). Experience in other countries has also shown that public disclosure of pollution is effective in inducing improvements in environmental performance (Teitenberg and Wheeler, 1998; World Bank, 1999). The falling costs of information dissemination through the Internet make information disclosure an increasingly powerful policy tool.

Both the self-reported information in annual and quarterly financial disclosures (10K and 10Q reports, respectively) as well as information from the Environmental Protection Agency (EPA) and other outside sources have impacts on capital markets. However, as might be expected, firms that practice fuller financial disclosure themselves suffer fewer adverse market impacts when outside information becomes available (Blacconiere and Patten, 1994; Blacconiere and Northcut, 1997; Patten and Nance, 1998).

Therefore, increased disclosure can be in a company's best interest because it may reduce market uncertainty and volatility. Consequently, more and more companies are issuing stand-alone environmental reports, although rarely, if ever, are they integrated with financial reporting (KPMG, 1999). Research in Canada, where firms have more discretion in adopting environmental disclosure standards, has found that large capitalization firms with greater reliance on external capital markets and whose securities are more actively traded are more likely to disclose environmental information; closely held firms and firms in poor financial condition are less likely to do so (Cormier and Magnan, 1999; Li and McConomoy, 1999).

This report presents evidence that environmental risks that are both material and known to companies are not being disclosed to investors. Disclosure of environmental risks is limited, despite evidence that information disclosure regarding a company's environmental exposures can affect its management's decisions directly, and that disclosure in financial statements is considered relevant by investors and can affect their valuations of the company and its financial risks. This problem may stem from the SEC's limited enforcement of rules governing disclosure of material environmental risks, and lack of clear guidance from the SEC or accounting standard bodies about the reporting requirements. Such guidance has been provided only for disclosure of contingent liabilities for remediation of contaminated industrial sites.

2

ENVIRONMENTAL DISCLOSURE AND FINANCIAL MATERIALITY

A strong case has been made 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); italics added).

The SEC has determined that economically material environmental issues must be disclosed under existing disclosure requirements.

This case was put forward in a petition to the SEC by the Natural Resources Defense Council (NRDC) in the early 1970s, 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 exist-

ing disclosure requirements, such as Regulation S-K, which require disclosure of material information so that financial statements will not mislead investors. These disclosure requirements include forward-looking information regarding future risks and opportunities that might significantly affect the business.

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. Today, it is 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 ago (Social Investment Forum,

1999). 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. "Event studies" have identified definite market reactions to such environmental news, confirming that stock market investors consider such environmental information relevant (Barth and McNicholls, 1994; Hamilton, 1995; Campbell, Sefcik, and Soderstrom, 1998).
- Several financial research services that sell environmental performance information to investors have emerged. These include Kinder, Lydenburg, and Domini; the Investors' Responsibility Research Service; and Innovest, among others. 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; Williams, 1999). 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.

3

CURRENT RULES AND STANDARDS GOVERNING DISCLOSURE OF ENVIRONMENTAL EXPOSURES

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.)

The SEC has further 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. Thus, SEC disclosure requirements for the protection of investors and for the efficient functioning of capital markets emphasize management's obligations to reveal information about known future risks to the business as well as to report accurately current financial conditions.

SEC disclosure requirements for the protection of investors and for the efficient functioning of capital markets emphasize management's obligations to reveal information about known future risks to the business.

Disclosure requirements of known uncertainties under Item 303 of Regulation S-K could reasonably 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

Disclosure requirements of known uncertainties under SEC regulations could reasonably apply to many environmental uncertainties.

owner. Ownership of such contaminated sites might be considered a known uncertainty.

- EPA regulations, to take another example, 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 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. Some uncertainties, of course, could result in significantly better future financial conditions for a reporting company, if its business involves the solution or mitigation of known environmental problems.

Thus, Item 303 of Regulation S-K would seem to require a significant increase in the disclosure of forward-looking environmental information. Such

information, if financially material, 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 “Super-

fund” 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.

4

ENFORCEMENT OF EXISTING ENVIRONMENTAL DISCLOSURE REQUIREMENTS

Although the SEC took the position in the NRDC case that its enforcement powers would be used to ensure full and adequate disclosure of material environmental matters, inspection of the public record since that time shows that enforcement action on environmental reporting has been very limited. Of more than 5,000 Administrative Proceedings initiated by the SEC over the last 25 years, only 3 are based on insufficient disclosure of environmental risks or liabilities. (See Box 1.) Over the same period, the SEC has brought only one Civil Action against a company on the grounds of inadequate environmental disclosure, and this dates to 1977. Indeed, only one of these cases was filed after 1980.

Such a small number of enforcement actions does not suggest vigorous enforcement activity. Even limited efforts to evaluate corporate reporting have revealed instances of substantial nondisclosure of material environmental facts, as the following examples show.

Examples of incomplete disclosure brought to the SEC's attention have not resulted in any discernible enforcement action. A 1998 study offered detailed evidence of inadequate disclosure of environmental risks by Phelps Dodge in its 1997 Annual Report (Lewis, 1998). In addition to documenting general obfuscation and omission of a number of environmental matters, the report reveals that the company's estimate of its clean-up liabilities at a remedial site was between 10 and 30 times smaller than estimates made by a federal district court. Besides the direct implications, the discrepancy between the company's and the court's estimates raises questions about the financial provisions the company may have made to cleanup 39 more sites where it is

BOX 1 | SEC ENFORCEMENT ACTIONS ON ENVIRONMENTAL MATTERS, 1975-2000

Administrative Proceedings

- In the Matter of United States Steel Corporation, September 27, 1979 (Admin Proc. File No. 3-5819).
- In the Matter of Occidental Petroleum Corporation, July 2, 1980 (Admin Proc. File No. 3-5936)
- In the Matter of Lee Pharmaceuticals, Henry L. Lee, Jr., Ronald G. Lee, Michael L. Agresti, CPA, April 9, 1998 (Admin Proc. File No. 3-9573)

Civil Actions

- SEC v Allied Chemical Corporation, March 4th, 1977

a potentially liable party, but about which the annual report gives even less information.

Similarly, in 1997, Friends of the Earth (FoE), Citizen Action, and the Sierra Club brought the SEC's attention to insufficient disclosure by Viacom of its Superfund liabilities. Identified as a Potentially Responsible Party at dozens of contaminated sites, Viacom stated that it did not believe that environmental claims would "have a material adverse effect on its results of operations, financial positions or cash flows" although publicly available information suggested a total liability in excess of \$300 million from just a subset of the relevant sites—this against 1995 annual profits of \$162 million (FoE, 1997).

Enforcement activity in the environmental arena has been weakest with regard to MD&A disclosure of prospective issues and trends. The cases in Box 1 reflect infringements of reporting guidelines regarding general antifraud and deception provisions, description of the business, and involvement in legal proceedings, not rules governing forward-looking statements. In a 1994 statement, former SEC Commissioner Richard Roberts commented:

[A]n environmentally related MD&A enforcement case is always a possibility. The Commission's 1992 MD&A action against Caterpillar, reinforced by the 1994 MD&A enforcement action against Shared Medical Systems, should have delivered the message that the Commission considers MD&A disclosures to be a very serious matter (Roberts, 1994).

To our knowledge, no such environmentally related case has arisen.

5

EVIDENCE FROM COMPANIES IN THE PULP AND PAPER INDUSTRY

A study of companies in the paper industry, just one of the many industrial sectors in which environmental issues can significantly affect financial performance, found that material environmental information is not being appropriately disclosed in the MD&A sections of the companies' filings. The study estimated the impacts of known, impending environmental issues on the capital expenditures and future earnings of 13 leading, publicly listed companies in the U.S. pulp and paper industry (Repetto and Austin, 2000).¹ 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 adequacy of MD&A disclosure of known, financially material environmental information, because senior representatives of the companies studied participated in identifying potentially significant environmental issues. Through the cooperation of the American Forests and Paper Association (AF&PA), the authors and members of the AF&PA's Regulatory Policy Committee participated in a full-day, scenario-building exercise. Participants included senior environment executives of leading companies in the industry. These executives managed their companies' environmental programs and were knowledgeable about environmental issues. They identified impending regulatory and other environmental issues facing the industry and categorized them into Tier I (potentially financially significant) and Tier II (not likely to be financially significant).

Company representatives also reviewed scenarios regarding Tier I issues for plausibility and provided their estimates of the probabilities that should be assigned to each scenario. Their estimated probabilities demonstrated significant uncertainty regarding the outcomes of most Tier I impending regulatory and other environmental issues.

In another session organized by the AF&PA, members of the same committee were presented with, and invited to comment on, the study methodology and results, including the estimated financial impacts on all the companies. Company representatives were offered opportunities to examine, and discuss in detail, the study results for their individual companies. The report referenced above was also peer-reviewed by industry representatives prior to publication. The findings with regard to potential financial impacts were not challenged.

A. Exposure of Pulp and Paper Companies to Pending Environmental Issues

Table 1 provides examples of pending environmental issues judged to be potentially financially significant and scenarios developed around each of them.

The study found that companies in the industry were differentially exposed to most of the environmental issues. Were a particular scenario to come true, it would affect companies quite differently.

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 environmental issues impinging on the industry are likely to create competitive advantages and disadvantages that should be discussed as known risk factors.

Several examples confirm this point. In September 1998, the EPA issued a final rule regarding the reduction of nitrogen oxides (NO_x), a potent smog precursor (U.S. EPA, 1998a). The rule applies to major emission sources in a 22-state region upwind of major ozone nonattainment regions along the Eastern seaboard. Sources within the region would have to reduce summertime NO_x emissions by up to 75 percent, necessitating expensive additional controls in most cases. The exact details of compliance have been left in the hands of the states, which must develop their own State Implementation Plans. Though challenged in court in May 1999, the rule was upheld on appeal in March 2000.

The final rule is the end result of a public process of investigation and consultation that began in May 1995, and of an assessment of ozone transport conducted by the EPA in partnership with various groups including industrial representatives (U.S. EPA, 1997). Final rule making was further prompted, in August 1997, by eight states (Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Pennsylvania, Vermont) filing petitions under Section 126 of the Clean Air Act. The petitions asked that the EPA make a finding that certain utilities and other sources of nitrogen oxides significantly contribute to ozone problems in the eight states, and that the EPA take steps to reduce the transport of ground-level ozone pollution. The petitions targeted sources in the Midwest, but also in the South, Southeast, and Northeast. Thus, for some time, rule making on NO_x has represented a known environmental uncertainty for companies with manufacturing capacity in the eastern United States.

Companies range from zero to 100 percent in the share of their production capacity contained within the 22-state region. (See Figure 1.) Companies with mills outside the region would not have to install

TABLE 1. PENDING ENVIRONMENTAL ISSUES WITH POTENTIALLY MATERIAL FINANCIAL IMPLICATIONS FOR THE PULP AND PAPER INDUSTRY

Pending Environmental Issue	Implications for Companies	POSSIBLE SCENARIOS	
		High Cost	Low Cost
Long-range transport of smog precursors	Will require facilities located in 22 eastern states to reduce NO _x emissions by 50 to 75 percent.	Large reductions in NO _x emissions are required of pulp and paper mills, at an approximate cost of \$4,000 per ton of NO _x removed.	Regionwide cap and trade program lowers compliance costs to about \$2,300 per ton of NO _x by allowing mills to substitute purchased permits for more costly internal options.
Total maximum daily loads	May require effluent reductions beyond currently permitted levels to remediate impaired waterbodies.	Further effluent reductions demanded from large point sources requiring enhanced waste treatment systems and/or additional water recycling and spill-control measures.	States set up cap and trade programs involving non-point sources, and allowing mills to purchase discharge reductions at a small fraction of their own incremental pollution abatement costs.
Sediment remediation	Could require clean-up of polluted aquatic sediments causing water pollution downstream of mills in designated Areas of Potential Concern.	EPA calls for extensive and careful removal of contaminated sediments, requiring dredge material to be treated and disposed of as hazardous wastes.	EPA decides to eliminate sources of further contamination and either to leave sediments undisturbed or to rely on low-cost biological treatments on site.
Endangered Species Act	Could require effluent reductions to protect endangered aquatic species in specific locales. Could limit harvests or raise logging costs in specific regions.	ESA reauthorization limits harvest and raises management costs on private lands.	ESA reauthorization is delayed, enforcement is flexible, and financial impacts are small.
State and local forest regulations	Stricter state and local forest regulations may limit harvests from private timberlands.	Many new state and local regulations are enacted, raising costs of timber operations and reducing timber supply from private forest lands.	Few new local regulations are passed, and state forestry codes largely conform to industry's Sustainable Forestry Initiative.

Source: Repetto and Austin, 2000.

additional NO_x controls and could benefit in higher profits if industrywide cost increases were passed along in higher output prices. In addition, companies' mills inside the region differ substantially in their NO_x emission rates. (See Figure 2.) This rule could impose material expenditures on many of the companies. Moreover, because expenditures will vary by company, this will be a source of competitive advantage.

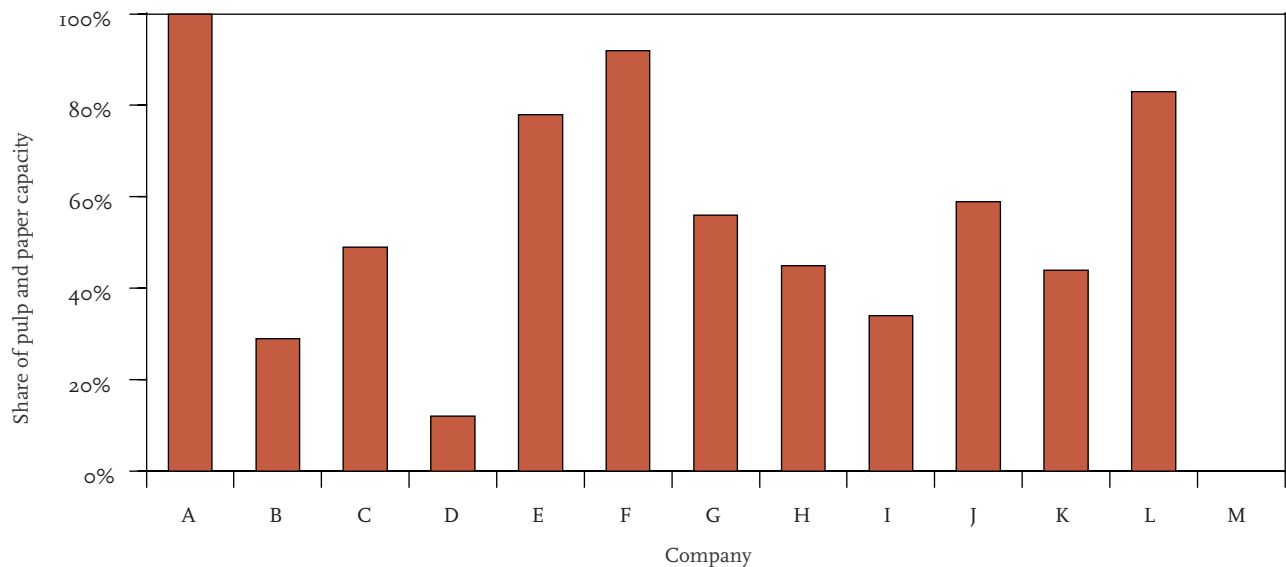
Similarly, EPA's rule under section 303(d) of the Clean Water Act requires states with waterways within their borders that do not meet water quality standards to revise outstanding effluent permits or take other actions to reduce effluents sufficiently to meet the standards. Again, revisions under this rule have been public knowledge for some time. In November 1996, the EPA set up a TMDL (Total Maximum Daily Load) Federal Advisory Committee, drawing on a wide spectrum of interests that included industry. The July 1998 final report contained more than 100 recommendations, several of them requiring regulatory changes (U.S. EPA, 1998b). These recommendations were duly trans-

lated into proposed rules in August 1999 (U.S. EPA, 1999) and are currently under debate. Because states have options regarding the allocation of effluent reductions, the rule is a known uncertainty for effluent sources potentially subject to it.

Moreover, a steady flow of legal actions at state level over the last several years had significantly raised the likelihood of regulatory action under rule 303(d). Lawsuits have been filed in more than two dozen states seeking to compel the EPA to establish TMDLs where states fail to do so themselves. These lawsuits date back as early as 1986, with more than half filed before 1998 (U.S. EPA, 2000). In addition, states' public listings of their impaired waters has enabled companies to gauge their exposure well in advance of actual rule making.

The rule potentially applies to pulp and paper mills located along impaired waterways. Companies differ substantially in the percentage of their production capacity so located and also in their effluent rates per ton of final output. (See Figures 3 and 4.) If regulations require each offending mill to cut efflu-

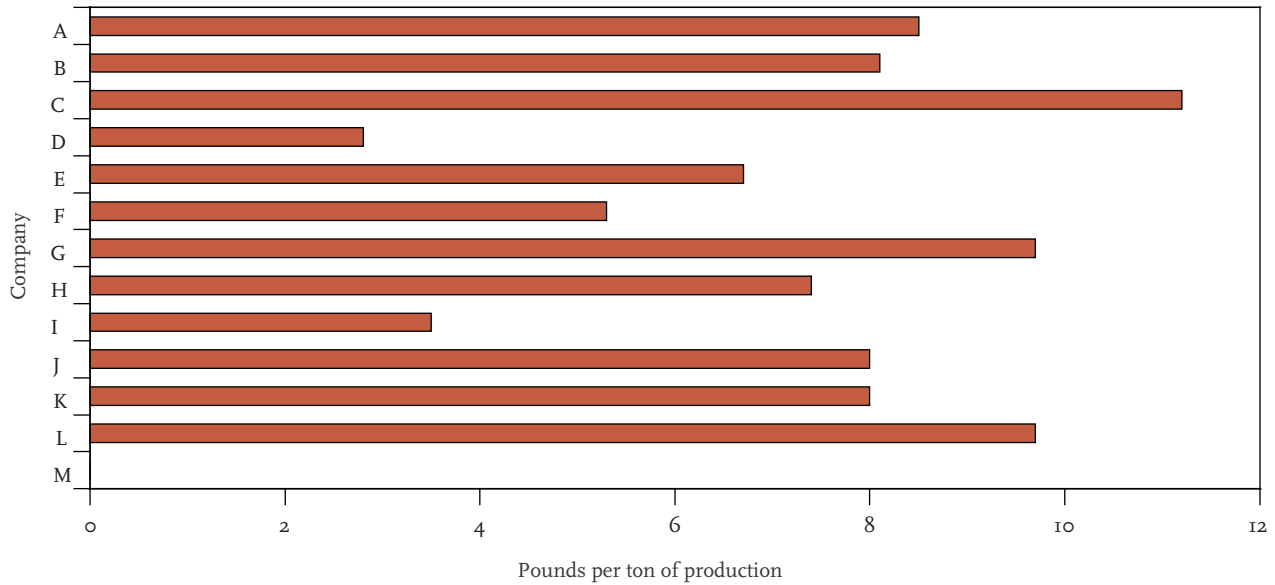
FIGURE 1. SHARE OF PULP AND PAPER CAPACITY LOCATED IN 22 STATES FACING NO_x REGULATIONS



Note: Company M has no capacity in these states.

Source: Dyer, 1997; U.S. EPA, 1998a

FIGURE 2. NO_x EMISSIONS PER TON OF PRODUCT FOR FACILITIES WITHIN THE 22 REGULATED STATES



Note: Company M has no capacity in these states.

Source: IRRRC, 1996a

ents substantially by upgrading water treatment plants, the financial impacts would be material for some companies. This environmental issue can also create competitive advantages and disadvantages that affect companies' competitive positions.

Other material environmental issues, such as the impact of the Endangered Species Act and other logging restrictions, also have markedly differential impacts across companies in the sector. Companies differ in their ownership of timberland, the proximity of their forests to critical wildlife habitat, and their reliance on wastepaper as a fiber source. In general, the same environmental regulations, requirements, or forces will affect companies differently, depending on their specific exposures and response options (Leone, 1986; Reinhardt, 1999). These differential impacts can be a source of competitive advantage or disadvantage.

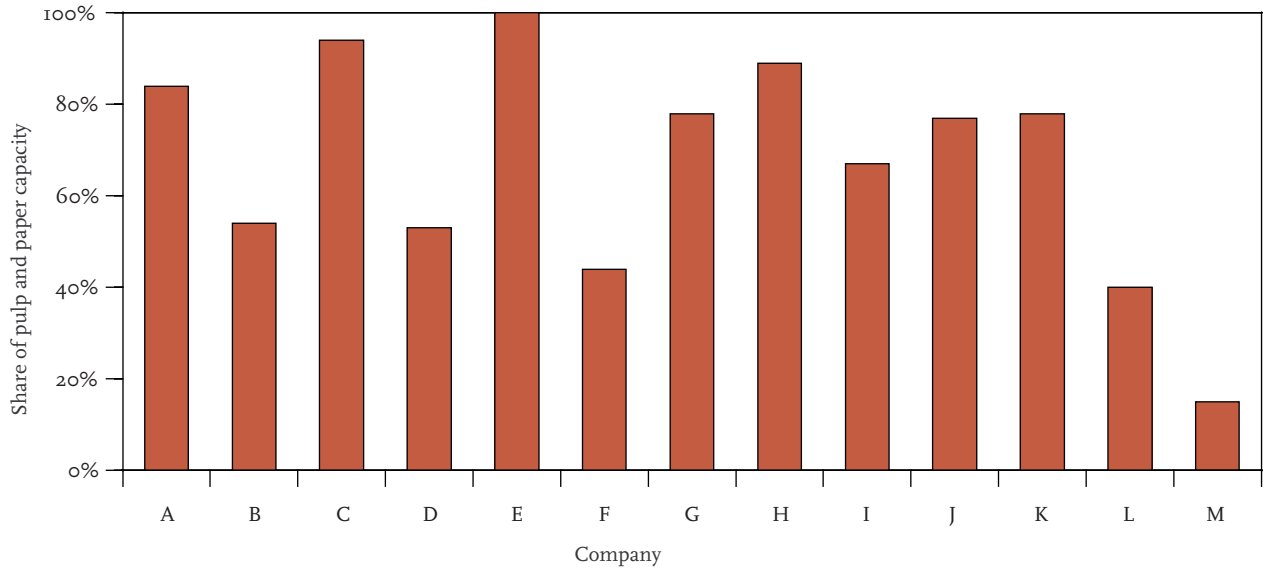
B. Financial Impacts for Companies

The study estimated the financial implications of these environmental issues for each of the 13 paper

companies, for example, the costs of complying with the NO_x reduction regulation, taking into account the location of its mills, their NO_x emission rates, and their emissions control options. Estimates were made on the assumption that a NO_x emission-trading program would be put into operation and on the alternative assumption that compliance would have to be achieved individually, mill by mill. Opportunities to recapture some compliance costs through industrywide price increases were estimated, using high and low estimates of paper product demand price elasticities.² When expressed in discounted present value dollars and related to companies' market values, these estimates show that this regulation will create financial winners and losers and alter companies' competitive positions.

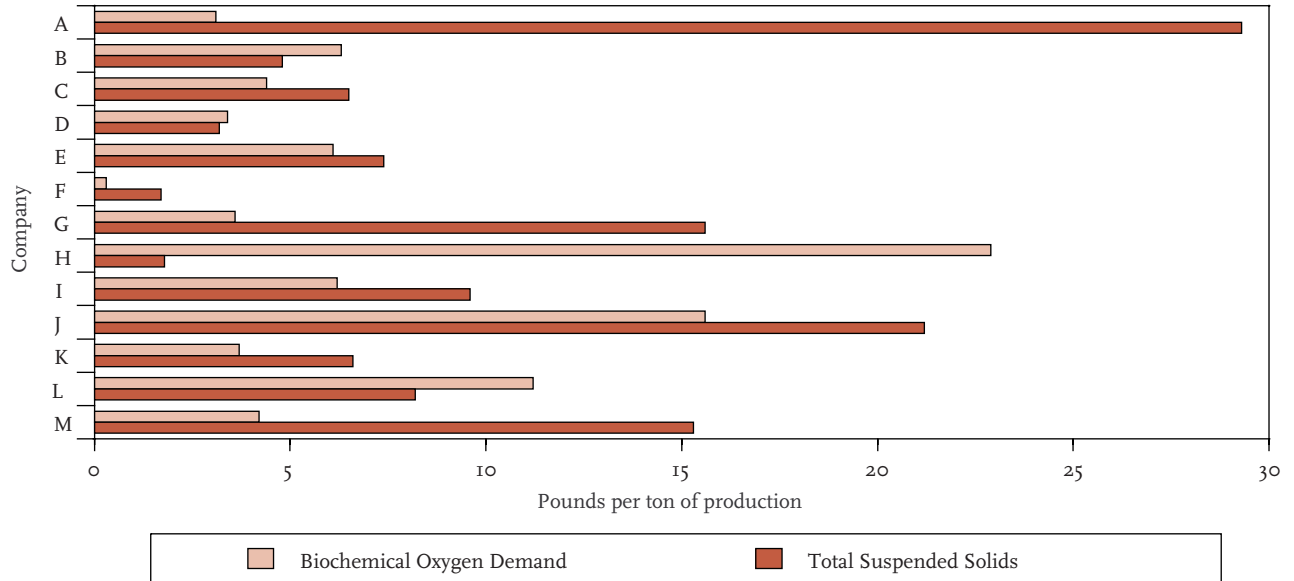
Using a particular scenario assuming no emission trading and high price elasticity to illustrate these results, Figure 5 shows that the rule is likely to improve the market value of two firms while reducing the value of other companies by up to 8 percent. A similar analysis revealed that, under a scenario involving no trading and high price elastic-

FIGURE 3. SHARE OF PULP AND PAPER CAPACITY LOCATED ON 303d WATERWAYS



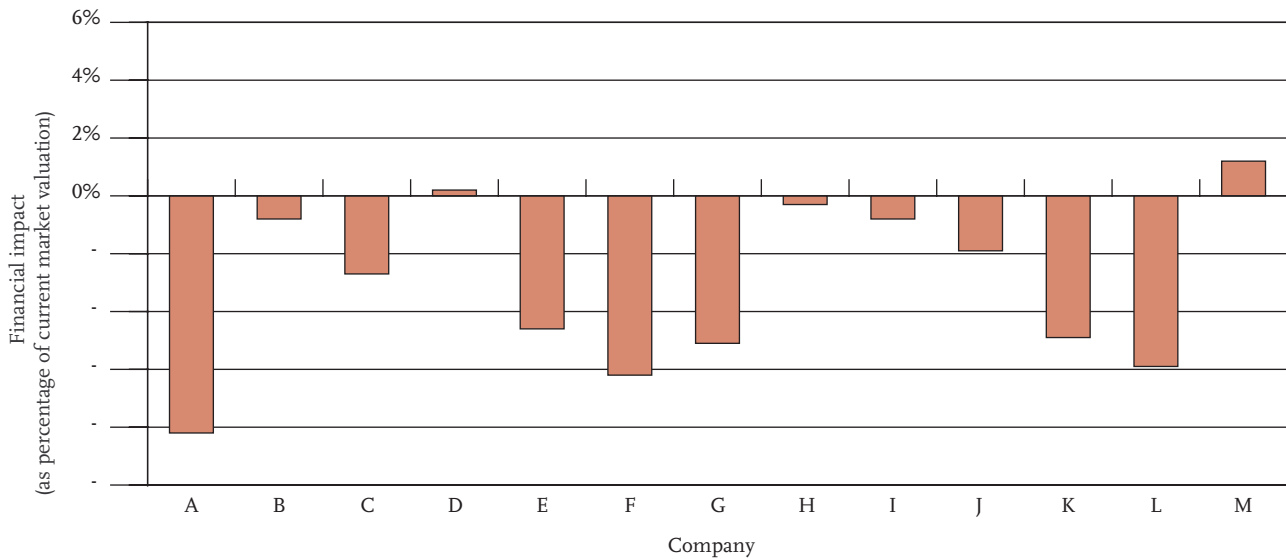
Source: Dyer, 1997; State Submissions, various years.

FIGURE 4. DISCHARGE OF CONVENTIONAL WATER POLLUTANTS PER TON OF PRODUCTION



Source: IRR, 1996b

FIGURE 5. ONE SCENARIO FOR THE POTENTIAL FINANCIAL IMPACT OF PENDING NO_x REGULATIONS



Source: Repetto and Austin, 2000

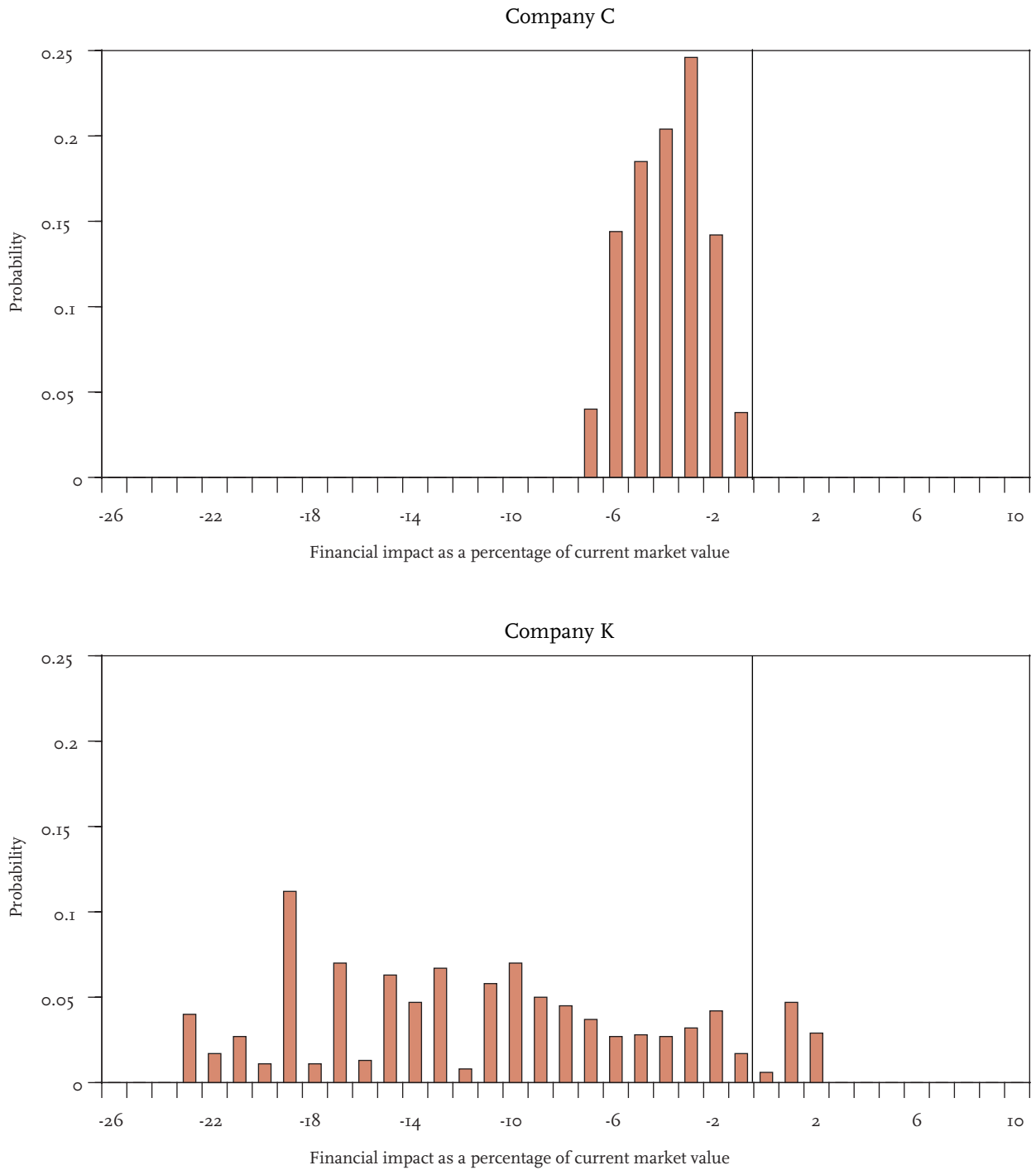
ity, the water quality regulation could reduce the value of five companies by 4 percent or more.

Many more companies face material financial risks from their overall exposure to environmental issues. Overall financial risks 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. Figure 6 illustrates these probability distributions for two companies. Clearly, the same environmental issues and the same likelihood estimates hold markedly different financial implications for different companies within the same industry. The probability distribution for Company K reveals that it faces a 61 percent probability that discounted

future earnings will be reduced by 10 percent of shareholder equity or more, by known environmental uncertainties. Current SEC rules require disclosure of these financial risks.

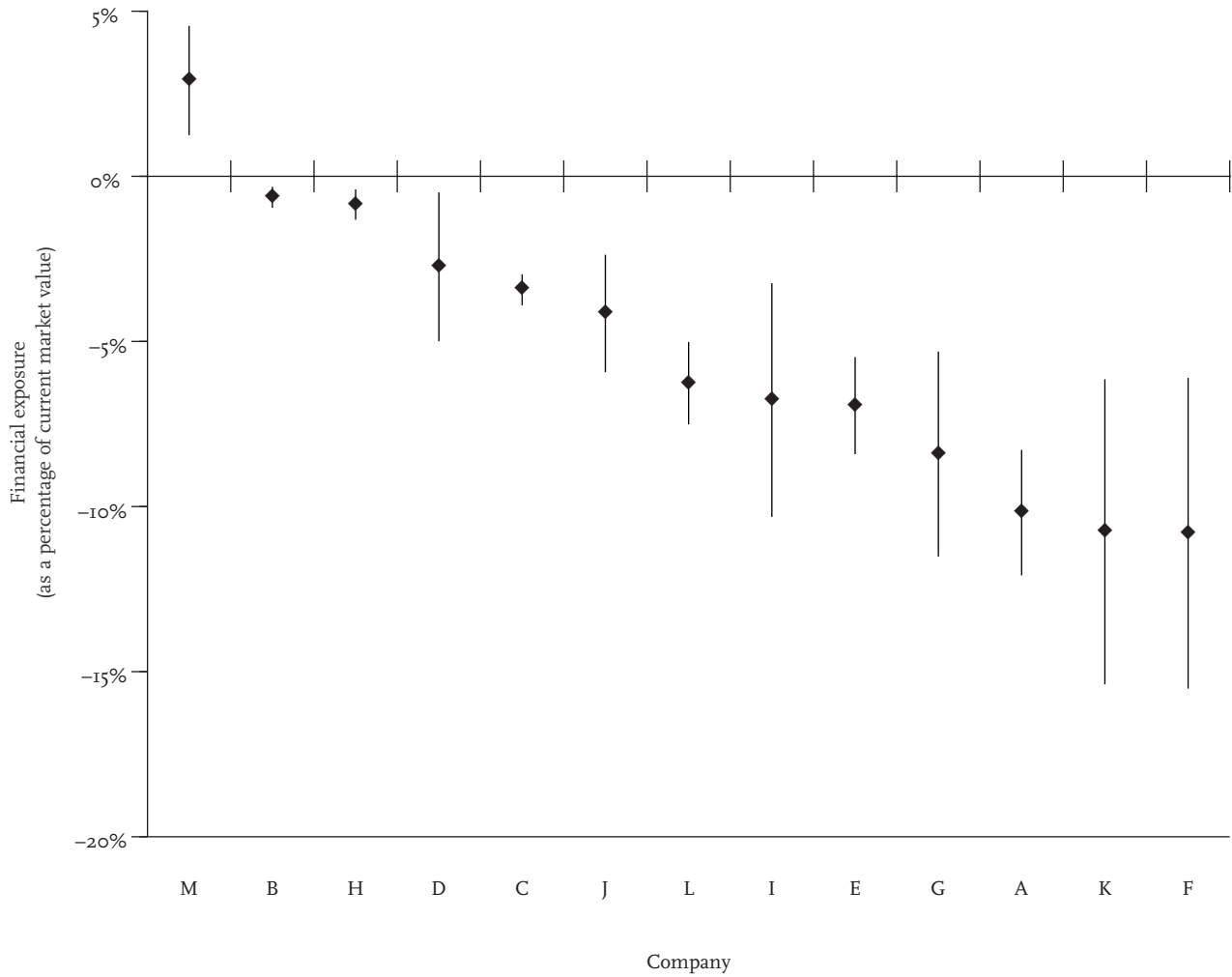
A summary of these findings, comparing the financial exposures of all companies in the study, shows material financial risks. Figure 7 depicts the mean values of the probability distributions of financial outcomes as dots and the variance of those distributions as bars. The mean values indicate that 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.

FIGURE 6. PROBABILITY DISTRIBUTIONS OF FINANCIAL EXPOSURE TO ENVIRONMENTAL ISSUES FOR 2 COMPANIES



Source: Repetto and Austin, 2000

FIGURE 7. COMPANIES' AGGREGATE FINANCIAL EXPOSURE TO PENDING ENVIRONMENTAL ISSUES



Source: Repetto and Austin, 2000

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 2 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.

In the foregoing examples, the companies' financial exposures were estimated by the authors from EPA and other research studies, but estimates

TABLE 2. PROBABILITY OF A REDUCTION IN COMPANY SHAREHOLDER VALUE OF MORE THAN 10 PERCENT OR 5 PERCENT

FIRM	Expected 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, 2000

made by the pulp and paper industry itself of potential financial impacts of known environmental issues also show material undisclosed risks.

Implementation of the Kyoto Protocol through U.S. regulation of fossil fuel use might have material effects on the pulp and paper industry, one of the most energy-intensive industrial sectors. The National Council for Air and Stream Improvement (NCASI), an industry-sponsored research organization, did a study, with cooperation and data from individual companies, to estimate the impacts of implementing the carbon dioxide reduction targets within the pulp and paper sector (NCASI, 1999). Those targets imply a 7 percent reduction below 1990 levels by 2010. The study examined all feasible investments to improve energy efficiency or reduce carbon-intensive fossil fuel use within representative pulp and paper mills while meeting projected product demand. It estimated the costs of meeting the Kyoto targets, assuming that only cost-effective measures would be implemented. The study's main conclusion was that "the capital costs

for reducing overall industry emissions from projected 2010 levels to the Kyoto Protocol target are estimated to be at least \$6 billion" (NCASI, 1999, p.i). To benchmark this figure, average annual net income after depreciation and taxes for the entire U.S. paper and forest products industry profits over the period 1995-99 were \$2.4 billion a year (Value Line, 2000). Therefore, \$6 billion in additional capital expenditures over a 10-year period can be considered a financially material impact.

The NCASI study also found wide cost differences among mills within the same category (e.g., bleached kraft mills; unbleached kraft mills; mechanical pulp mills; recycled paperboard mills). These differences far overshadowed differences in average costs across mill categories. According to study findings, the main factors explaining cost differentials among mills of the same category were:

- (a) the types of fossil fuels being used, (b) the costs (or savings) associated with converting to lower emitting fuels (natural gas or biomass), (c) differences in

energy efficiency between mills in a given sector, and, most importantly (d) the projected feasibility of installing gas turbine combined cycle [cogeneration] technology and selling excess power to the grid. (NCASI, 1999, p. 39).

This conclusion by an industry research organization reinforces our own finding that companies have vastly different exposures to significant environmental issues and face risks of competitive advantage or disadvantage. Had the NCASI study also factored in differences among companies in timberland holdings that might be managed for carbon sequestration in forest biomass, the cost differentials would have been wider still.

C. Company Reporting of Environmental Issues

These findings contrast strongly with the companies' lack of reporting on the underlying environmental issues. We reviewed 10K, 10Q, and 8K filings made by these companies during 1998 and 1999. Although companies differed in the thoroughness of their reporting, few adequately disclosed the financial risks or potential competitive impacts arising from their exposures to known environmental uncertainties.

Little or no mention was made in annual reports or other filings of impending regulations that are likely to have material financial impacts in the near future. No company mentioned TMDL or contaminated sediment regulations, and only 1 out of 13 referred explicitly to pending NO_x regulations. Demonstrating what is possible, however, this company not only disclosed how many of its facilities are exposed to the rule but also presented a range of estimated compliance costs that reflected uncertainty about the rule's final shape.

There is a clear gap between the potential financial impacts of impending environmental issues and the almost total absence of any meaningful discussion or disclosure of those risks. This gap cannot be adequately explained by a lack of relevant information among companies within the industry. The industry devotes considerable attention to estimating the potential impacts of significant environmental issues it faces.

In contrast to the information provided in the industry study, no individual company estimated the potential impact of carbon emission reduction policies on its future capital expenditures or production costs. In reports filed over the last two years, only one company made any reference to the climate change issue, and that only to describe its participation in a voluntary program run by the Canadian federal government. None of the companies mentioned at all the prospective financial impacts of complying with potential domestic and international climate policies.

One exception to the otherwise very limited disclosure of specific environmental issues concerns prospective Superfund liabilities under CERCLA. Ten of the 13 companies refer specifically to their status as Potentially Responsible Parties (PRPs) under CERCLA, and 5 specified the number and/or location of sites concerned. Six of the companies specified either an estimate of the financial implications or the accruals set aside to cover remediation costs. Other companies either indicate that they do not believe that their status as PRPs will lead to any adverse material effects or point out that the total costs of remediation at any site and the company's share of those costs are unclear.

Reporting is much more comprehensive on remediation than on other environmental issues. In part, this is probably due to Superfund's long history, to the notoriety of its financial impacts, and to companies' greater understanding of their own exposure and responsibilities. However, more detailed reporting on remediation may also be a direct response to the SEC's clear and concrete guidelines for Superfund disclosure. In an Interpretive Release dated May 1989, the SEC illustrated required disclosure practices under Item 303 of Regulation S-K with an example about the correct procedures for reporting Superfund liabilities (54 FR 22427, 228-30). The subsequent Staff Accounting Bulletin No. 92 (58 FR 32844) bolstered this statement with guidelines for reporting environmental contingent liabilities. Clearer delineation of requirements not only facilitates the preparation of reports but also heightens enforcement risks for firms that do not comply with the guidelines. This suggests that the SEC can positively influence corporate environmental reporting by offering clearer guidance on the proper treat-

ment of impending environmental issues and regulations.

Finally, 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 Figure 7, these statements are quite inaccurate and could be considered misleading. According to our findings, all three of these companies have above-average financial exposure to pending environmental issues and will probably suffer adverse competitive impacts.

The same environmental statutes and regulations are 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 be disclosed in Management’s Discussion and Analysis.

Notes

1. The companies included in the analysis were Boise Cascade, Bowater, Caraustar, Champion, Fort James, Georgia Pacific, International Paper, Mead, Potlatch, Smurfit Stone, Westvaco, Weyerhaeuser, and Willamette. Companies are not identified by name, nor are they ordered alphabetically in the figures that follow. The study predates Weyerhaeuser’s takeover of Macmillan-Blodel, and International Paper’s acquisition of Champion.
2. In this case, demand price elasticities measure the sensitivity of consumer demand for paper products to increases in those products’ prices.

6

ISSUES RAISED BY THE FINDINGS OF THE PULP AND PAPER STUDY

A. How should probabilities be treated in disclosure statements?

The pulp and paper study revealed that, even with regard to impending environmental issues well known within the industry to pose potentially material risks, considerable uncertainty prevailed about how those issues might evolve in the future. The outcomes of regulatory, judicial, or legislative processes cannot always be predicted accurately. Yet, existing disclosure rules clearly forbid companies to take refuge in uncertainty and disclose nothing about known risks and uncertainties.

How, then, should companies deal with the likelihoods of various outcomes? Should they report only what they regard as the most likely outcome? Should they report a range of possibilities and, if so, should they indicate what they think are the likelihoods assigned to outcomes within that range? Should they disclose the worst case scenario, even if that outcome is considered highly improbable? Making companies report all sorts of improbable disaster scenarios would seem unhelpful to managers or investors, but there probably should be an inverse relation between the gravity of the potential financial impact and the threshold probability that warrants disclosure.

B. How many possible outcomes should be disclosed?

The pulp and paper study indicated that estimating the financial impacts of a company's environmental exposures under several scenarios is possible and useful. In fact, the flatter the probability distribution of future outcomes, the more useful are multiple scenarios. How far should a company go in report-

ing on its financial risks under multiple scenarios? Some issues such as the formulation of policies to reduce greenhouse gas emissions have many plausible evolutions: Will there be a carbon tax or carbon-permit trading? If the latter, will paper companies be awarded free permits or have to buy them? Will permit trading extend internationally? Will paper companies get credit for sequestering carbon in forests? And so on. The financial impacts of plausible outcomes differ substantially. It would be burdensome if companies had to estimate and report on the impacts of a great many possible outcomes, but should they be allowed to wait until only a single scenario is overwhelmingly probable before reporting on the issue? That would imply delaying disclosure until very late in the evolution of an issue. What is the proper balance?

C. To what extent should companies be allowed to disaggregate exposures to minimize financial materiality?

The pulp and paper study shows that companies' aggregate risks rest on the exposures of all their facilities and business units. Although an environmental issue may have a nonmaterial impact on an individual facility in the context of the company's overall finances, the aggregate impacts throughout the company may still be significant. It seems clear that companies should not be able to evade disclosure by slicing an issue thinly across its various units in order to plead nonmateriality.

Yet, companies may be able to achieve a similar effect by disaggregating an issue according to the particular legislative, regulatory, or judicial vehicles that carry it. For example, a company's generation of toxic organochlorides might expose it to air

quality, water quality, site remediation, and hazardous waste regulations as well as to possible private legal actions. Any one of these alone might not rise to a level of materiality, but the overall financial risk created by the company's generation of toxic materials might be quite significant. Similarly, a company's use of coal as a boiler fuel exposes it to

climate protection policies, various air quality regulations, and airborne toxic regulations. Although any one risk of policy or regulation may not be considered material, the overall financial exposure created by its fossil fuel combustion might be significant indeed. Should companies be required to disclose their overall exposure to environmental issues?

7

CONCLUSIONS AND RECOMMENDATIONS

This study of leading companies in the pulp and paper industry demonstrates that known financially material risks and uncertainties stemming from companies' environmental exposures are not being adequately disclosed. Companies' environmental exposures include—but are not limited to—risks and uncertainties stemming from pending or proposed government regulations or legislation with which companies are quite familiar. Other known trends and uncertainties include risks of higher raw material and energy costs stemming from national, state, or local environmental protection policies. These exposures can affect companies' competitive positions within the industry because of the differential impacts of potential regulatory or input price changes across companies. Environmental exposures can also have material effects on future capital expenditures, earnings, and the value of shareholder equity. Finally, environmental exposures create significant financial uncertainties for some companies by making future costs, capital requirements, and earnings dependent on the outcome of pending regulatory processes.

Review of companies' 10K and 10Q financial statements reveals that disclosure of such material risks and uncertainties has been inadequate. In many instances, mention of material risks has been omitted altogether. In some instances, statements regarding their potential impact on companies' competitive position have been inaccurate and potentially misleading. In most instances, investors have not been given enough information to assess the potential impact of these environmental exposures on future costs, capital requirements, or earnings.

There is no reason to believe that pulp and paper is the only sector in which company reports are

incomplete concerning environmental risks and differentials in environmental exposure between companies. Many other sectors are materially affected by environmental issues and regulations and would likely exhibit similar patterns of environmental exposure and nondisclosure.

This study also finds that despite explicit statements promising vigorous enforcement of disclosure requirements for financially material environmental risks, the SEC's enforcement efforts in this area have been minimal. Although the SEC has attempted to induce greater disclosure of site remediation costs stemming from Superfund proceedings, there is little evidence of enforcement of the disclosure requirements on material environmental uncertainties in the forward-looking Management Discussion and Analysis. Without such enforcement action, companies' disclosure practices or compliance with existing rules are unlikely to improve.

The study therefore recommends:

- The SEC should issue a general guidance document reinforcing and clarifying existing rules regarding disclosure of material environmental exposures under Item 303, Regulation S-K, and informing registrants that these rules will be enforced.
- The SEC should clarify its guidance regarding the reporting of uncertain financial risks posed by prospective environmental regulations and liabilities.
- The SEC should honor its previous commitments by allocating additional enforcement resources

specifically to ensure that companies comply adequately with these environmental disclosure requirements.

- The SEC should cooperate more closely with the EPA and other environmental protection agencies to share information about pending legislation, regulation, and other policy measures, about their estimated financial and economic impacts

on particular industrial sectors and subsectors, and about environmental issues affecting specific companies.

- Without waiting for SEC action, registered companies should begin to disclose more fully their known, financially material environmental risks and uncertainties.

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