

FINANCIAL ANALYSIS OF POLLUTION PREVENTION ACTIVITY

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Abstract: The concept of pollution prevention, or “P2,” is emblematic of a new, proactive environmental mindset that promises more sustainable industrial management. By targeting the causes, rather than the consequences, of polluting activity, P2 seeks to eliminate pollutants at their source and thereby avoid the need to treat or dispose of those pollutants later. The P2 concept has given rise to talk of win-win opportunities in which innovation and new ways of thinking will lead to waste reduction and, at the same time, make firms money by reducing costs or stimulating new products. Unfortunately, the vision of pollution prevention as a set of win-win opportunities is somewhat at odds with actual corporate experience. While anecdotal evidence from a number of studies suggests that such opportunities exist and that many firms have pursued them, proponents say the pace of P2 is too slow and that the private sector is somehow failing to see opportunities in front of it.

Key words: pollution prevention, reducing costs, profit, ecoprofit

Pollution prevention is a challenge for the private sector because it requires diverse forms of innovation. Pollution prevention can require the redesign of products, the reconfiguration of manufacturing processes, and the realignment of supplier and customer relationships. Because innovation is difficult, often costly, and inherently uncertain, firms must also find new ways of integrating environmental concerns into the corporate planning process.

Pollution prevention, cast as both a corporate and an environmental benefit, has ignited hope in less adversarial environmental regulation. It has also created optimism in the private sector’s ability to come up with low-cost solutions to their environmental problems. Unfortunately, the vision of pollution prevention as a set of win-win opportunities is somewhat at odds with perceptions of actual corporate behavior. While anecdotal evidence suggests that win-win opportunities exist, and have been pursued by many firms, there is some frustration that the pace of change is inadequate.

The idea that pollution prevention can save firms money, but that they nevertheless neglect these opportunities, colors debate over regulatory reforms geared toward pollution prevention. For some, it calls into question the desirability of regulatory reforms often associated with pollution prevention, such as regulatory flexibility. If firms cannot be counted on to make environmental improvements that save them money, the argument goes, then only the blunt instrument of command and control regulation can be counted on to get the job done. Others undoubtedly consider failures to invest in profit-making pollution prevention a further example of corporate environmental intransigence.

Another line of thinking holds that “organizational barriers” account for firms’ failure to be aware of and pursue win-win investments. Organizational barriers may arise, for example, due to information barriers, accounting-based distortions, or inappropriate. For their part, corporate environmental managers tend to be more skeptical of pollution prevention’s profitability. They point to regulatory barriers that reduce the financial incentive to change production processes or introduce new products with uncertain regulatory mandates. Much of this debate hinges on whether pollution prevention can actually be counted on to save firms money.

Consider the implications of evidence that companies fail to pursue pollution prevention opportunities that would profit them. First, this evidence would lend credence to the argument that regulations should mandate pollution prevention. Second, it would point toward the need to reform private sector capital budgeting, accounting, and environmental management techniques to overcome organizational barriers to P2. If, on the other hand, pollution prevention’s economic benefits are overstated, a different set of issues arises for regulators and firms. If firms do not pursue pollution prevention because it is simply not profitable to do so, attention should be focused on factors that contribute to the difficulty, cost, and benefit

of implementing P2 innovations. Perhaps environmental costs are not being adequately imposed on the firms creating them. Perhaps technical assistance and government R&D could be used to lower technical barriers. Or perhaps regulatory reforms should be used to lower regulatory barriers to P2 product and process changes. These issues are of central importance to the future of environmental regulation. Unfortunately, very little is known about why - in the real world - firms pursue or do not pursue pollution prevention opportunities.

First, the investment or product marketing effort had to involve a pollution prevention opportunity. Pollution prevention was defined as a new product or process that allowed for pollutant source reductions or that involved in-process recycling. Environmental benefits had to come from these types of innovations, not from new disposal or treatment methods.

Second, the investment or marketing opportunity had to be promising enough to be evaluated by the firms themselves. More specifically, the opportunity had to involve not only technical, but also financial, analysis. The financial analysis is critical. Even if a pollution prevention technology passes muster in engineering labs or environmental health and safety meetings, it will not succeed in a practical sense unless it survives a firm's strategic analysis and capital budgeting process. Strategic and financial analysis is the key corporate decision making nexus. It is the decision-making activity during which the widest variety of internal corporate expertise is brought to bear to evaluate costs, rewards, and risks. What types of information are collected? How is the information used? Since investment analysis is the principal information-processing function of a corporation, firms' investment analysis are the best place to look for answers.

Third, the investments or product had to be in some way "unsuccessful." That is, the firms chose to not invest in the product or process changes, or investment was significantly delayed, pending the resolution of market, technical, or regulatory uncertainties.

Finally, the analysis required the participating firms to provide detailed, often proprietary, data on the investments considered. Only with this level of detail was a full portrayal of the decisions possible.

One of the primary challenges to pollution prevention is the need to define and quantify the benefits of such investments. An emerging literature emphasizes the desirability of methods such as environmental cost accounting as a means to improve corporate decision making. With the identification and quantification of environment-related financial benefits, firms can be expected to make better private, and environmental, decisions. For instance, environmental accounting can highlight the way in which changes in a production process reduce future environmental compliance costs. This reveals a benefit to investment from a process change, a benefit that may not otherwise have been captured in a capital budgeting decision. The quality of environmental accounting is of clear importance, and not least to firms themselves. Are financial benefits being captured adequately?

As we evaluate firms' accounting of environment-related financial benefits and costs, it is important to distinguish between two types of questions. First, to what extent are financial benefits and costs *quantified*? Second, are environment-related financial benefits and costs, even if not quantified, being given sufficient *weight* relative to non-environmental benefits and costs? Note that the first question deals with the detail and numerical sophistication of quantitative estimation techniques - the way in which the firm determines the bottom-line impact of activities that affect the environment. The second question deals with the impact of accounting techniques on the firm's decisions. Failure to accurately quantify benefits and costs could bias investment decisions against pollution prevention.

The analysis of financial evaluation procedures has highlighted significant information barriers faced by firms. This underscores the continued importance of improved environmental cost accounting methods to better estimate environment-related financial benefits. Improved data collection, estimation, and evaluation techniques can only improve corporate decision-making. The important, and open, question for future research is: what forms of environment-related information are likely to be most valuable to the private sector?

The firms can be expected to do a relatively good job of evaluating the environmental and financial characteristics of P2 opportunities, once those opportunities are identified. Perhaps the greatest challenge for firms, however, is the initial identification of those opportunities. The technical identification of P2 opportunities may be well served by greater efforts at basic R&D and firm-specific "materials accounting." Mandated accounting requirements are of questionable value, given the idiosyncratic needs of specific

firms and facilities. And confidential business information issues undermine the practicality of mandatory and publicly-disclosed P2 planning.

However, government promotion of state of the art accounting practices, including materials accounting, is likely to concretely benefit firms that are increasingly concerned with environment-related costs and opportunities.

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