Green Business and the Importance of Reflexive Law: What Michael Porter Didn't Say

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I. Introduction[1]

These days, green seems to be popping up everywhere. Green cars.[2] Green buildings.[3] Green energy.[4] Green appliances.[5] The popular television show Extreme Make-Over even devoted an entire episode to the "green home."[6] The largest companies are getting into the act with enthusiasm:[7]

- General Electric's "Ecomagination" initiative commits the company to investing $1.5 billion in environmental technologies, and to increasing its sales of environmentally-beneficial products by $10 billion in five years.[8]

- 3M Corporation's Pollution Prevention Pays (3P) program encourages employees at all levels of the organization to rethink processes and products so as to reduce pollution.[9] It has resulted in nearly 5000 projects that have eliminated 2.2 billion pounds of pollutants

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[2] *See, e.g.* Dana Hedgpeth and Scott Wilson, *Grants Steered to Green Car Research; $2.4 Billion for Battery Makers*, WASH. POST, August 6, 2009, at A12.

[3] *See, e.g.*, Francisco Vara-Orta, *South L.A.'s first 'green' building debuts; Exposition Park library branch gets gold rating from environmental group*, L.A. TIMES, August 19, 2008, at B4.

[4] *See, e.g., Feds boost state's green energy plans*, DETROIT NEWS, June 23, 2009, at A5.

[5] *See, e.g.*, Mark Harrington, *A sweeping new 'green' LIPA plan*, NEWSDAY, April 30, 2008, at A2 (discussing "'green' appliances.")

[6] Starre Vartan, *Extreme Makeover: Green Edition, as "Eco" Movement Goes Mainstream, Experts are There to Help*, emagazine.com, *available at* http://www.emagazine.com/view/?3015 (discussing episode) (last visited August 8, 2009).

[7] *See generally*, DANIEL C. ESTY & ANDREW S. WINSTON, GREEN TO GOLD (2006) (review and analysis of green business activities); Environmental Defense Fund, *Innovations Review: Making Green the New Business as Usual* (2008) (describing green business innovations); Joel Makower, *State of Green Business 2008* (describing green business developments in 2008); NEIL GUNNINGHAM, ROBERT KAGAN & DOROTHY THORNTON, SHADES OF GREEN (2003) (review and analysis of green business activities); William L. Thomas, *Rio's Unfinished Business: American Enterprise and the Journey Toward Environmentally Sustainable Globalization*, 32 Env. L. Reporter 10873 (Aug. 2002) (review of business sustainability strategies with comprehensive citations to literature).

[8] ESTY & WINSTON, *supra* note ___, at 138.

[9] *Id.* at 107.

and saved the company $1 billion counting only the savings from the first year of each project.[10]

- Home Depot evaluates the environmental characteristics of products sold in the store and applies an "Eco Options" label to over 2,500 of the best performing products, from insect repellants to washing machines.[11]

- IKEA has instituted the "IKEA Way on Purchasing Home Furnishing Products" (IWAY), a program in which it identifies where all the wood that it uses is coming from, and then evaluates each supplier based on eighteen criteria that range from environmental compliance, to emissions and waste, to child labor, to forest sourcing.[12]

- Chiquita Corporation has reached out to the Rainforest Alliance and other stakeholder groups. Together with them, it has developed a set of guidelines on how to grow and process bananas in a more environmentally and socially responsible way.[13]

These initiatives are examples of "green business," defined as voluntary actions by a private firm that seeks to achieve better environmental performance and, simultaneously, to make the company more competitive.[14] Until recently, many have assumed that corporate expenditures on environmental performance inevitably impose costs on the company, leading to a trade-off between environmental performance and competitiveness.[15] "Green business" turns this idea on its head. It posits that investment in environmental performance can enhance, rather than detract

[10] *Id.* In another example, when Dupont's CEO learned that his company was spending over $1 billion each year on waste treatment and pollution control, he insisted that the company reduce these costs. Since that time, Dupont has reduced its waste treatment and pollution control costs to $400 million. The company estimates that, but for this initiative, these costs would have grown to $2 billion by now. See *Id.* at 111.

[11] Makower, *State of Green*, *supra* note ___, at 7.

[12] ESTY & WINSTON, *supra* note ___, at 203-203.

[13] *Id.* at 182-183.

[14] DANIEL FIORINO, THE NEW ENVIRONMENTAL REGULATION 91 (2006) (greening involves a constant and verifiable effort to do better than compliance.")

[15] Environemental Law Institute, *Innovation and Regulation, Innovation, Cost and Environmental Regulation: Perpsectives on Business, Policy and Legal Factors Affecting the Cost of Compliance* 1 (May 1999) ("traditional economic theory . . . indicates that regulations imposing additional environmental requirements on industry would tend to reduce profitability and competitiveness).

from, business competitiveness. Some have described this as a fundamental departure from past conceptions of the business-environment relationship, and as opening a new chapter in the history of corporate environmentalism.[16] President Obama, among others, has opined that green business could lead to a cleaner, leaner, more competitive future for American industry.[17] New York Times columnist Thomas Friedman says that "green is the new red, white and blue."[18]

Yet legal scholars have paid little attention to the connections between law, policy and green business. Important questions present themselves. Is the market sufficient to promote green business, or is there a role for law and policy? If there is a role for government, are the existing environmental statutes and regulations up to the job, or would other regulatory strategies work better? With a few exceptions,[19] legal academics have not attempted to analyze these questions.[20] The area is "woefully" under-theorized.[21]

Part of the reason for this reticence may be that, early on, Professor Michael Porter of the Harvard Business School set out a broad and compelling theory that seemed to address the

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[16] *See* ANDREW HOFFMAN, FROM HERESY TO DOGMA: AN INSTITUTIONAL HISTORY OF CORPORATE ENVIRONMENTALISM (2001) (describing four stages of corporate environmental behavior).

[17] *See* Interview with Barack Obama, President-Elect, United States of America, in Washington D.C. (Jan. 11, 2009); *see also* Barack Obama, President, United States of America, Address at the NAACP Centennial (July 16, 2009); Judd F. Sneirson, *Green is Good: Sustainability, Profitability, and a New Paradigm for Corporate Governance*, 94 IOWA L. REV. 987, 989 (2009).

[18] Thomas L. Friedman, *The New Red, White and Blue*, N.Y. Times, Jan. 6, 2006.

[19] *See* FIORINO, *supra* note ___; GUNNINGHAM, ET AL., *supra* note ___; Joseph F. DiMento & Francesco Bertolini, *Green Management and the Regulatory Process: For Mother Earth, Market Share and Modern Rule*, 9 TRANSNAT'L L. 121 (1996); *cf.* Kurt Strasser, *Cleaner Technology, Pollution Prevention and Environmental Regulation*, 9 FORDHAM ENVT'L L. REV. 1 (1997) [hereinafter Strasser, *Cleaner Technology*] (discussing how regulation can promote corporate pollution prevention efforts).

[20] In a helpful contribution to the general area, the Boston College Environmental Affairs Law Review recently held a symposium on "The Greening of the Corporation." *See* 35 B.C. ENVT'L AFF. L. REV. (2008). However, none of the papers offered such a comprehensive analysis.

[21] GUNNINGHAM, ET AL., *supra* note ___, at 39.

issue.[22] As will be explained more fully below, Porter argued that traditional technology-based standards, which push companies to adopt specific pollution control technologies, deter green innovation and so are "bad."[23] By contrast, outcome-based standards, which specify the environmental result but let companies figure out how to get there, encourage such innovation and are "good." [24] Porter concluded that the key to promoting green business is to substitute outcome-based rules for technology-based standards, good regulation for bad. While some have taken issue with Porter's empirical claims, few question his endorsement of outcome-based regulation as a way to promote environmental innovation.[25] Many economists,[26] legal academics,[27] and policymakers (including President Clinton and Vice-President Gore)[28] have

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[22] *See* Michael Porter, *America's Green Strategy*, 264 SCIENTIFIC AMERICAN 168 (April 1991) [hereinafter Porter, *Green Strategy*]; Michael E. Porter & Claas van der Linde, *Green and Competitive: Ending the Stalemate*, HARV. BUS. REV. 126 (Sept. - Oct. 1995) [hereinafter Porter & van der Linde, *Green and Competitive*]; Michael Porter & Claas van der Linde, *Toward a New Conception of the Environment-Competitiveness Relationship*, 9 J. ECON. PERSP. 98 (Issue 4, Autumn, 1995) [hereinafter, Porter & Linde, *New Conception*.]

[23] Porter & van der Linde, *Green and Competitive*, *supra* note ___, at 129 (comparing "good" regulation with "bad").

[24] *Id.*

[25] *See* Karen Palmer, Wallace E. Oates & Paul R. Portnoy, *Tightening Environmental Standards: The Benefit-Cost or the No-Cost Paradigm?* 9 J. ECON. PERS. 119, 120 (1995) (questioning empirical claims but concurring with regulatory theory).

[26] *See* Environmental Law Institute, *supra* note ___, at 9 ("economists and writers have agreed strongly with [Porter's] views"); A. Jaffee, S. Peterson & P. Portnoy, *Environmental Regulation and the Competitiveness of U.S. Manufacturing: What does the Evidence Tell Us,* 33 J. ECON. LIT. 132, 152 (March 1995) (agreeing with Porter's ideas on regulation).

[27] *See, e.g.,* FIORINO, *supra* note ___, at 119 ("In thinking about what greening means for public policy, Porter and van der Linde's distinctions between good and bad regulations are critical"); David M. Driesen The Societal Cost of Environmental Regulation: Beyond Administrative Cost-Benefit Analysis 24 ECOLOGY L.Q. 545, 575-576 (1997) (discussing and accepting Porter's idea that properly-designed environmental regulations can enhance business competitiveness); Barton H. Thompson, Jr., *Panel: Synergy or Conflict: the Roles of Ethics, Economics and Science in Environmental Policy Decisions: What Good is Economics*, 27 ENVIRONS ENVTL. L. & POL'Y J. 175, 183 (2003) (accepting Porter's view that "mandatory regulation may also spur improvements that simultaneously benefit the environment and bottom lines"); Kirk W. Junker, *Tax Exemption for Pollution Control Devices in Pennsylvania*, 34 DUQ. L. REV. 503, 530 (1996) (accepting Porter's ideas with respect to technology-forcing regulations).

[28] President William J. Clinton & Vice-President Al Gore, *Reinventing Environmental Regulation* (Mar. 16, 1995) (endorsing "performance-based" regulation).

embraced this aspect of his theory. Porter's views on how environmental regulation can promote green business have been highly influential.[29]

Yet Porter's thesis has a problem. Outcome-based regulations will not work to motivate many green business activities. Drawing on Professors Coglianese and Lazer's work on regulatory governance,[30] this article will show that the transaction costs involved in setting an appropriate outcome-based target, and in measuring and monitoring the environmental results, make outcome-based standards an ineffective tool for promoting all but a subset of green business practices.[31] To illustrate this, we need only return to the examples with which this article began and inquire as to whether an outcome-based standard which specified numeric outcomes for specific pollutants would be an effective way to promote such behavior. An outcome-based standard would not work well in trying to get companies to duplicate Chiquita's stakeholder involvement initiative or IKEA's auditing of its wood products supply chain. The search costs involved in figuring out the amount of pollution or waste reduction that such initiatives would yield would be astronomical, if the feat were possible at all. Without such knowledge, how could such an official hope to set a workable outcome-based standard that could motivate these behaviors? The same can be said for 3M's Pollution Prevention Pays (3P) program. This initiative involves many small projects that involve different pollutants and take place in different parts of the company. Even 3M could not predict in advance the source, nature and extent of these reductions. Moreover, the cost of measuring and monitoring the reductions,

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[29] *See* FIORINO, *supra* note ___, at 92 (describing the "oft-cited" Porter theory); GUNNINGHAM, ET AL., *supra* note ___, at 23 (discussing the "particular influence" of Porter's theory).

[30] Cary Coglianese and David Lazer, *Management-Based Regulation: Prescribing Private Management to Achieve Public Goals*, 37 L. & SOC. REV. 691 (2003).

[31] *See infra* notes ___-___ and accompanying text.

essential for any outcome-based standard,[32] would be excessive. Outcome-based regulation, as Porter has defined it, does not fit and could not motivate many activities that lie at the core of the green business movement. While Porter has made a valuable contribution to the question of how regulation can promote green business, something important is missing from his theory.

Reflexive law is that missing piece. As coined by the German social theorist Gunther Teubner, reflexive law is law that fosters self-regulation.[33] It consists of laws and policies that push private firms to: (1) internalize social goals (e.g. environmental performance goals) and adopt them as their own,[34] and (2) creatively self-manage their operations so as better to achieve these goals.[35] Reflexive law requires neither the specific technologies of traditional regulation,[36] nor the specific environmental results of outcome-based rules.[37] Instead, it uses tools such as information disclosure, stakeholder involvement, or planning requirements to motivate companies to undertake their own, self-directed improvement efforts, while leaving it up to the

[32] Coglianese & Lazer, *supra* note ___, at 701.

[33] *See* Gunther Teubner, *Substantive and Reflexive Elements in Modern Law*, 17 L. & SOC. REV. 239, 275 (1983) [hereinafter Teubner, *Elements*].

[34]Richard Stewart, *A New Generation of Environmental Regulation?*, 29 CAPITAL U. L. REV. 21, 127 (reflexive law's "aim is to promote the internalization of environmental norms by firms and other organizational actors as opposed to directly controlling their external conduct;"); Michael C. Dorf, *The Domain of Reflexive Law,* 103 COLUM. L. REV. 384, 395 (2003) (essay reviewing Jean L. Cohen, Regulating Intimacy) ("[r]eflexive law is thus the best tool for the society in general to influence the individual social subsystems with which the law interacts, because it encourages actors within subsystems to internalize the general norm"); JEAN L. COHEN, REGULATING INTIMACY: A NEW LEGAL PARADIGM 155 (2002) (purpose of reflexive law is "to foster internal reflection: to force the organization to internalize outside conflicts in its own decision structure, so as to become socially sensitive" to the externalities caused by its own behaviors and so "to develop effective internal control structures.")

[35] *See* Teubner, *Elements*, *supra* note ___, at 246 (goal is to instill "self-reflective processes within different social subsystems); Eric Orts, *Reflexive Environmental Law*, 89 NW. U. L. REV. 1227, 1339 (1995) ("[t]he idea is to create a climate in which businesses voluntarily adopt procedures to encourage environmentally sound decisionmaking and to monitor environmental progress."); COHEN, *supra* note ___, at 155 (reflexive law "make[s] possible the internal reflexion of external implications of future actions.")

[36] Stewart, *supra* note ___, at 130.

[37] *Id.*

firms to determine both the means and the ultimate environmental outcomes.[38]

As will be explained later, reflexive law has deep roots in the Continental "systems" theory of Jurgen Habermas and Niklas Luhmann.[39] For introductory purposes, however, it is best to illustrate reflexive law through an example. The Emergency Planning and Community Right to Know Act requires facilities that use toxic substances to report annually the amount of such substances they have released or transferred off-site.[40] Each year, the EPA compiles this information and publishes the Toxics Release Inventory (TRI) which ranks companies by the amount of toxic substances they released.[41] News reporters and environmental groups put together additional rankings–by industry, state, and zip code.[42] No company wants to appear near the top of these lists. The TRI rankings accordingly provide a substantial incentive for firms to reduce their use, transfer and release of toxic substances. Studies credit TRI with causing a forty-five percent drop in the toxic releases.[43] The Toxics Release Inventory does not push facilities to adopt particular technologies, as traditional regulation would do; nor does it mandate a specific environmental outcome, as outcome-based regulation would do. Instead, it uses *information disclosure* to create incentives that lead *firms themselves* to decide to reduce their toxic emissions and to manage their operations to this end. TRI is thus a law that promotes self-

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[38] *Id.* at 130-134.

[39] *See infra* notes ___-___ and accompanying text.

[40] STEPHEN M. JOHNSON, ECONOMICS, EQUITY AND THE ENVIRONMENT 197-199 (2004).

[41] *See* http://www.epa.gov/triexplorer/introduction.htm (TRI Explorer tool that can be used to construct rankings) (last visited July 20, 2009).

[42] For example, Environmental Defense uses the TRI data to build its Scorecard website which allows users to construct "a detailed report on chemicals being released from any of 20,000 industrial facilities, or a summary report for any area in the country. Scorecard spotlights the top polluters in the U.S., and ranks states and counties by pollutant releases." *See* http://www.scorecard.org/env-releases/us-map.tcl (Last visited July 20, 2009).

[43] JOHNSON, *supra* note ___, at 211.

regulation. It is a reflexive law.

Reflexive law's emphasis on self-regulation dovetails nicely with green business's focus on self-initiated efforts to improve environmental performance. As we will demonstrate below, reflexive law can motivate many of the green behaviors that outcome-based regulation is unable to address. This does not mean that reflexive law should be the only means of promoting green business, replacing the market, technology-based standards and outcome-based regulation. To the contrary, each of these mechanisms also has a role to play in promoting green business. But reflexive law should supplement these other strategies. It is the missing piece that rounds out the regulatory theory and addresses aspects of green business that the others do not. To date, the scholarly literature has largely failed to recognize the important contribution that reflexive law can make to this area.[44] This article seeks to remedy this gap.

The article is structured as follows. Part II will describe what firms do when they "go green" and what motivates them to do so. This description is more complete than any in the law review literature to date. Having laid this foundation, Part III will evaluate the three main mechanisms that scholars have argued could promote green business: the market, traditional technology-based standards and, Professor Porter's choice, outcome-based regulation. It will

[44] In 1995, Professor Eric Orts published an illuminating piece on reflexive law and environmental regulation but did not focus the question of whether such an approach could promote green business. *See* Eric W. Orts, *Reflexive Environmental Law,* 89 NW. U. L. REV. 1227 (1995). In 2003, Professor Sanford Gaines published an essay in which he argued that reflexive law could contribute to sustainable development. His central point was that environmental regulation should focus more on "democracy and social discourse" as a means of promoting communication between subsystems. Sanford Gaines, 10 BUFF. ENV. L. J. 1, 23-24 (2003). In his 2006 book Daniel Fiorino suggested that reflexive regulatory strategies are among a handful of approaches that can contribute to the greening of industry. FIORINO *supra* note ___, at 188-224; *see also* Daniel J. Fiorino, *Rethinking Environmental Regulation: Perspectives on Law and Governance*, 23 HARV. ENVT'L L. J. 441 (1999). Fiorino's views on this topic are a major contribution to the field. While Fiorino makes the general point that reflexive law concepts can prove useful in promoting green business, the argument is but one piece of his broader thesis and he does not attempt to develop the topic fully. The current article is able to explore reflexive law, and its implications for green business, in greater depth. It explains the theoretical underpinnings of reflexive law, identifies the three regulatory mechanisms on which reflexive law relies, analyzes the extent to which these mechanisms can promote green business, compares these reflexive law approaches to the market and to other regulatory approaches, and explains how reflexive law fills the gaps in Porter's regulatory theory. In these ways, it seeks to contribute to the scholarly exploration of how reflexive law can promote green business.

show that while each of these has an important role to play, each is ultimately insufficient. In particular, it will show that the transaction costs involved in setting an appropriate outcome-based target, and in measuring and monitoring the environmental results, make outcome-based standards an ineffective tool for promoting many green business activities. Part IV will argue that reflexive law is a better regulatory tool for fostering these activities. It will explain in more detail Teubner's theory of reflexive law, including its connection to Continental systems theory. It will then describe reflexive law's three, principal methods: information-based regulation, communication-based regulation, and procedure-based regulation. It will demonstrate that these regulatory mechanisms can motivate the very aspects of green business that outcome-based standards cannot. It will conclude that the best strategy is one that combines all four approaches—the market, technology-based standards, outcome-based standards, *and* reflexive law methods—while remaining sensitive to the strengths and weaknesses of each. That is what Michael Porter did not say.

II. What is Green Business, and Why are Firms Pursuing It?

Before exploring how environmental regulation can foster green business (or, as some call it, "beyond compliance" business behavior),[45] we must first describe green business itself. What do firms do when they "go green," and why are they investing scarce resources in such efforts?

[45] CARY COGLIANESE & JENNIFER NASH, BEYOND COMPLIANCE: BUSINESS DECISION MAKING AND US EPA'S PERFORMANCE TRACK PROGRAM (2006). Others call it "environmental stewardship." *see, e.g.*, Paulette L. Stenzel, *Can the ISO 14000 Environmental Management Standards Provide a Viable Alternative to Government Regulation?* 37 AM. BUS. L. J. 237 (2000) (using term). Whatever the label, the concept remains the same. Private companies, for reasons that make sense to them and in the absence of regulatory requirements, take affirmative steps that yield positive environmental results.

A. What is Green Business?

Our definition of green business, set out above,[46] is broad and encompasses many different types of activities. We identify nine principal categories of green business behavior. When firms "go green" they exceed legal requirements by:

- Directly reducing their own regulated, or unregulated, environmental impacts.
- Reducing their customers' environmental impacts and decrease their customers' exposure to unhealthy substances.
- Increasing their reuse and recycling of materials used in the production process.
- Improving their energy efficiency, or that of their customers.
- Improving their resource productivity, or that of their customers.
- Implementing systems to identify waste reduction, pollution prevention, energy efficiency and/or resource productivity opportunities throughout the company of facility.
- Collecting and disseminating more information about the firm's environmental impacts and performance than the law requires.
- Providing more opportunities for stakeholder input into corporate decision making than the law requires.
- Financing and investing in green products and business models, such as those described above.

Here, we describe these common approaches to corporate greening and provide illustrative examples.

1. *Reduce regulated or unregulated environmental impacts*

One way that companies go green is by reducing their own environmental impacts. Sometimes, regulation already governs these impacts. For example, 3M used to employ solvent-

[46] *See supra* note ___ and accompanying text.

based coatings. The Clean Air Act required the company to reduce its solvent emissions by 90 percent.[47] Rather than simply comply, 3M came up with a water-based solution for coating its products. This allowed it to eliminate solvents, and their emissions, from its production process altogether[48] thereby avoiding the need for regulatory approvals and shortening the company's time to market for new products.[49] In other instances, companies reduce impacts that are not yet regulated. For example, in 2008, Xerox announced that it had met its 2012 goal of a ten percent reduction in greenhouse gases as compared to 2002 levels, and set a new goal of a 25 percent reduction.[50] SC Johnson, acting on its own initiative, decided to reformulate some of its most popular products such as Windex, Drano, and Pledge, to reduce the amount of potentially dangerous chemicals.[51]

2. *Provide products or services that reduce customer's environmental risk or impacts*

Other firms go green by developing new products or services that are safer than comparable products, or that reduce customers' environmental impacts.[52] Perhaps the best-known example is Toyota Corporation's Prius, the first commercially successful gasoline-electric

[47] Porter & van der Linde, *Green and Competitive*, *supra* note ___ at 126.

[48] *Id.*

[49] *Id.*

[50] Makower, *supra* note ___, at 4. Nike announced that it would be carbon-neutral company by 2011 when it comes to its facilities, retail stores, and business travel practices. *Id.* Along similar lines, Dole Food Co. announced plans to make its banana and pineapple supply chain carbon neutral. *Id.*

[51] ESTY & WINSTON, *supra* note ___, at 118. Taking this concept in another direction, Whole Foods has committed to stop using plastic bags at all of its 270 stores. To replace the plastic bags, the company has expanded its sales of reusable bags and supplied paper bags where requested. Environmental Defense Fund, *supra* note ___, at 26.

[52] ESTY &WINSTON, *supra* note ___, at 123-24; *see also* Forest L. Reinhardt, *Bringing the Environment Down to Earth*, HARV. BUS. REV. 149, 150-51 (July-August 1999) (discussing how firms can enhance their competitiveness through "environmental product differentiation.")

hybrid vehicle.[53] General Electric developed a new generation of jet engines that uses fifteen percent less fuel, emits thirty percent less nitrous oxide, and costs less to operate.[54] In 2008, Target Corporation initiated a voluntary campaign to reduce the amount of toxic substances in its products, focusing on the elimination of polyvinyl chloride from products and packaging, including products intended for children.[55] Sears, Kmart, and Wal-Mart followed suit.[56]

3. *Increase re-use and recycling*

Some companies have increased their re-use and recycling of materials. HP set a 2007 goal of recycling 1 billion pounds of e-waste, and exceeded it.[57] Staples accepts used computers and associated equipment free of charge and recycles them,[58] a program that the company says increases valuable foot traffic in its stores.[59] Some firms go beyond the standard recycling model. Chaparral Steel and TXI Cement engaged in "by-product synergy"[60] in which the

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[53] ESTY &WINSTON, *supra* note ___, at 10-11. The Prius contributed to Toyota's record $11.8 billion in profits in 2006 and helped it to pass Ford as second-largest auto maker in the world. *Id.*

[54] *Id.* at 138. Many other companies have also sought to compete by developing more environmentally-friendly products. For example, Ciba Specialty Chemicals came up with a dye that could be fixed to fabric without the use of as many salts. Reinhardt, *supra* note ___, at 150-51. When Ciba's customers, the textile manufacturers, used the new dye they were able to save on their costs for salt, as well as reduce their costs for wastewater treatment since their discharges no longer contained as much salt. *Id.*

[55] Makower, *supra* note ___, at 7.

[56] *Id.* Other retailers have also sought to distinguish themselves by marketing more environmentally-friendly products. As was mentioned above, *see supra* note ___ and accompanying text, Home Depot has instituted its Eco Options program for labeling such products on display in its stores. Makower, *supra* note ___, at 7.

[57] *Id.* at 8. Similarly, Dell set a goal of recovering 275 million pounds of computer equipment, and then announced that it was ahead of schedule in meeting this goal. Makower, *supra* note ___, at 8.

[58] Environmental Defense Fund, *supra* note ___, at 25.

[59] *Id.* Along similar lines, Hewlett-Packard initiated its Planet Partners initiative for the reuse of used toner cartridges which has resulted in the reuse of over 11 million cartridges per year. ESTY & WINSTON, *supra* note ___, at 156. Xerox has embarked on a program to reuse and recycle parts and imaging supplies that has diverted more than 2 billion pounds of e-waste from landfills. Makower, *supra* note ___, at 8.

Chaparral's steel slag by-product became a raw material for TXI's cement production process. Pategonia employs a "closed loop" process in which it takes back its used apparel, breaks the garments down into fibers, and then uses the material to make new garments.[61] Eight General Motors facilities have been certified as "zero waste" plants that re-use or recycle all excess material, thereby saving both on raw material and disposal costs.[62]

4. *Enhance a firm's own energy efficiency, or that of its customers*

Firms are also benefitting the environment by becoming more energy efficient, or by taking steps that enable their customers to do so. At its Reno, Nevada facility, Patagonia uses a night-flush to get hot air out of building, bring cooler air in, and then use that air to cool the building during the day. The facility does not employ any artificial air conditioning despite average 95 degree heat during the day.[63] Dupont met its goal of keeping its energy use constant even as the company grew substantially. The company accomplished this by finding "a hundred ways to get leaner and meet its energy targets."[64] Wal-Mart surpassed its goal of selling 100 million compact fluorescent lightbulbs.[65]

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[60] *See* http://www.usbcsd.org/byproductsynergy.asp (describing By-Product Synergy initiative) (last visited July 22, 2009).

[61] Environmental Defense Fund, *supra* note ___, at 13.

[62] Makower, *supra* note ___, at 12.

[63] Environmental Defense Fund, *supra* note ___, at 9. In other examples, Sun Microsystems "open work" program allows employees to decide whether they would like to work primarily at home, thereby avoiding the use of fuel for commuting and reducing the need for office heating and cooling systems. This initiative has reduced the company's carbon dioxide emissions by 29,000 tons and saved the it $68 million in real estate costs. *Id.* at 20

[64] ESTY & WINSTON, *supra* note ___, at 105.

[65] Makower, *supra* note ___, at 9.

5. *Improve a firm's own resource productivity, or that of its customers*

A firm improves its resource productivity when it reduces the amount of resources needed to produce one unit of a given product or service.[66] This can benefit the environment by decreasing resource extraction and waste disposal, while simultaneously reducing the firm's resource and waste disposal costs. For example, Stoneyfield Farm changed from using plastic lids with inner seals for its yogurt containers to a single-layer aluminum foil lid. The foil tops used less energy and water to produce, were lighter and easier to ship, and saved the company $1 million per year.[67] Wal-mart arranged to sell only concentrated laundry detergent, thereby saving 400 million gallons of water, 95 million pounds of plastic, and 125 million pounds of cardboard, and considerably reducing its shipping volume.[68]

6. *Systematic initiatives to improve environmental performance*

Sophisticated firms seek to enhance their environmental performance, not by setting their sights on a few discrete goals, but by putting into place management and planning systems that search for improvement opportunities throughout the company's operations. These systematic approaches can take various forms: comprehensive environmental management systems (EMS) in which firms establish policies and procedures to track environmental results and seek

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[66] ESTY & WINSTON, *supra* note ___, at 102-103.

[67] Environmental Defense Fund, *supra* note ___, at 16.

[68] *Id.* 17. Similarly, the computer chip maker AMD reinvented its "wet processing" tool for cleaning silicon chips so that it employed one-third the amount of water, thereby reducing the facility's water bills. ESTY & WINSTON, *supra* note ___, at 106. Nike has redesigned its athletic shoes so as to reduce the amount of wasted material, decrease the use of toxic adhesives, and integrate more recycled materials. Environmental Defense Fund, *supra* note ___, at 10. General Mills changed the shape of the noodles in its Hamburger Helper product. This allowed it to reduce packaging volume 20 percent and so to save 890,000 pounds f fiber per year and reduce shipping volume by 500 truckloads per year. *Id.* at 16.

opportunities to improve them;[69] pollution prevention initiatives in which firms seek to change their processes or raw materials in ways that will decrease their pollution or waste;[70] life cycle assessments in which companies examine the their products' entire life cycle from resource extraction to disposal, to search for ways to reduce environmental impacts;[71] "design for environment" initiatives in which firms seek to design products and processes so as to minimize pollution and waste, rather than simply cleaning up the pollution at the "back end" of the production process;[72] and attempts to "green the supply chain" by demanding that suppliers provide more environmentally-friendly products, or that they improve their own environmental performance.[73] They can yield dramatic results. For example, 3M's Pollution Prevention Pays (3P) initiative called upon employees throughout the organization to search for opportunities to improve energy and resource efficiency and to reduce pollution and waste. As was mentioned briefly above,[74] the program has yielded nearly 5000 projects that have decreased pollution by 2.2 billion pounds and saved the company roughly $1 billion considering only the first year of project implementation.[75] Johnson & Johnson's Enhanced Best Practices program requires each of its facilities to work through a ten-stage checklist to identify energy-saving measures. Between 2003 and 2006, the company increased its sales by 27 percent, while increasing its

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[69] FIORINO, *supra* note ___, at 101-102.

[70] *See generally,* Kurt Strasser, *Preventing Pollution*, 8 FORDHAM ENVT'L L. J. 1 (1996) [hereinafter Strasser, *Preventing Pollution*].

[71] ESTY & WINSTON, *supra* note ___, at 170.

[72] *Id.* at 198.

[73] *Id.* at 154-55.

[74] *See supra* notes ___-___ and accompanying text.

[75] ESTY & WINSTON, *supra* note ___, at 106-107.

energy use by only 0.5 percent.[76]

7. *Collecting and disseminating environmental performance information*

Some companies demonstrate environmental responsibility by collecting and disseminating more information about their environmental performance than they are legally required to disclose. Such disclosures can allow the public to compare the firm's performance with that of its peers. For example, after "benchmarking" its environmental performance against the best in its industry, Bristol-Meyers Squib announced a 2010 goal of reducing by 10 percent (from 2001 levels) its energy use, greenhouse gas (GHG) releases, and water use. It then began to report annually on its performance in these areas, as well as on its air and water releases, generation of waste, and supplier environmental performance. [77]

8. *Stakeholder input into corporate environmental decision making*

Some companies invite more stakeholder input into environmental decision making than the law requires. As was mentioned above,[78] Chiquita Corporation partnered with the Rainforest Alliance to develop environmental and social guidelines for the company's banana growing

[76]Environmental Defense Fund, *supra* note ___, at 12. In other examples Louisiana-Pacific realized through its EMS that it could turn its wood-product shavings, which it had previously thrown away, into fiber board products. CARY COGLIANESE & JENNIFER NASH, REGULATING FROM THE INSIDE: CAN ENVIRONMENTAL MANAGEMENT SYSTEMS ACHIEVE POLICY GOALS? 3 (2001). In 2008, Wal-Mart announced plans to require that its suppliers source 95 percent of their products from factories that have scored the highest in audits of environmental and social practices. Stephanie Rosenbloom, *Wal-Mart to Toughen Standards*, N.Y. TIMES Oct. 22, 2008. Ford requires its suppliers to institute an environmental management system if they want to continue selling to the company. David Monsma & John Buckley, *Non-Financial Corporate Performance: The Material Edges of Social and Environmental Disclosure*, 11 U. BALT. J. ENVTL. L. 151, 164 (2004).

[77] In 2005, fifty-two percent of Fortune Global 250 firms issued a separate corporate environmental report. FIORINO, *supra* note ___, at 99 (citing KPMG, *International Survey of Corporate Environmental Reporting* (1999)).

[78] *See supra*, note ___ and accompanying text.

operations.[79] McDonalds Corporation worked closely with Environmental Defense in deciding to move away from the Styrofoam "clamshell" to alternatives that resulted in less waste disposal.[80]

9. *Financing and investing in green products and activities*

Some firms make green investment and financing decisions. For example, Google announced that it would invest hundreds of millions of dollars in the development of renewable energy.[81] In 2008, Bank of America and Citibank stated that they would direct $31 billion and $20 billion, respectively, towards investments in clean energy, alternative environmental technologies and sustainable business practices.[82]

B. Why are Companies Going Green?

The reasons that firms pursue green business are relevant to the design of laws and policies that seek to promote such behavior. We must therefore understand not only what green business is, but *why* companies are engaging in it. For the purposes of this analysis, we will focus exclusively on reasons that relate to the bottom line and company competitiveness. It is true that the people who work in corporations are social beings subject to the values of their

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[79] ESTY & WINSTON, *supra* note ___, at 182-183.

[80] *Id.* at 186.

[81] Makower, *supra* note ___, at 10.

[82] Environmental Defense Fund, *supra* note ___, at 27. The financial crisis, which hit both of these firms hard, may have caused them to change these commitments. Along similar lines, some lenders have begun offering "location-efficient mortgages" that give borrowers credit for choosing a location that is closer to their jobs and that allows them to walk to stores, schools, parks and public transportation. The premise is that such borrowers can afford more since they will be saving on driving costs. Environmental Defense Fund, *supra* note ___, at 27-28.

communities and that these values can, at times, influence corporate behavior.[83] Nonetheless, consistent with our definition of green business,[84] we will limit this discussion to the ways in which firms can either increase firm revenues and/or reduce costs by engaging in green business.[85] Insofar as green business can achieve these ends more effectively than other opportunities for doing so, it will claim corporate resources and attention.

1. *Opportunities to increase revenues*

Greening can enhance revenues in a number of ways. It can better enable firms to: satisfy customer preferences; build corporate brand and goodwill; meet investor preferences; stimulate innovation; and redefine markets

Satisfy customer preferences. Many customers prefer products that are safer and cause less harm to the environment. Companies that can produce safer and more environmentally benign products can gain a competitive advantage.[86] For example, the market for organic food has been growing despite the fact that it often costs more than comparable non-organic products.[87] Customers also appreciate products that reduce their own consumption of resources

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[83] GUNNINGHAM, ET AL., *supra* note ___, at 22; FIORINO, *supra* note ___, at 108; David B. Spence, *The Shadow of the Rational Polluter: Rethinking the Role of Rational Actor Models in Environmental Law*, 89 CALF. L. REV. 917 (2001)**;** ESTY & WINSTON, *supra* note ___, at 164 (executives report that reason for beyond compliance behavior was that "it was the right thing to do.") In some instances, this motivation may overlap with competitiveness concerns as a company's positive social reputation can often increase its revenues and profits, while a negative reputation can hurt its brand and impose costs. See *Id.* at 14 ("[d]oing the right thing attracts the best people, enhances brand value, and builds trust with customers and other stakeholders.")

[84] *See supra* note ___ and accompanying text.

[85] FIORINO, *supra* note ___, at 93 (distinguishing between greening strategies that "aim for bottom-line value . . . by reducing costs" and those that seek to enhance "top-line value in terms of enhanced market share"); ESTY & WINSTON, *supra* note ___, at 10.

[86] GUNNINGHAM, ET AL., *supra* note ___, at 32 (companies may go green when they compete in markets where "consumers have displayed a market preference for those perceived to be environmentally benign.")

[87] ESTY & WINSTON, *supra* note ___, at 127. By the same token, Melita Corporation markets brown, unbleached

or environmental impacts. As was mentioned above, Toyota Prius, which reduces customers' gasoline usage, has been a market success.[88]

Build corporate brand and goodwill. Some companies pursue greening to enhance corporate brand and goodwill.[89] For example BP, the oil and gas giant, invested over $200 million in a campaign to rebrand itself as a company that was interested in moving "beyond petroleum."[90] As part of this effort, the company made significant investments in renewable energy technologies and achieved meaningful GHG reductions. It increased the value of its brand by $3 billion.[91] This strategy tends to have the greatest impact on firms with well-known names, and on those that seek to market environmentally-friendly products and so need a good overall company reputation in this area (e.g. The Body Shop).[92]

Meet investor preferences. Some investors prefer companies with strong environmental performance and compliance records. They see this as a sign both of decreased environmental risk and of superior management ability.[93] A firm that demonstrates environmental excellence may be rewarded with an increase in its stock price.[94] Some investment advisors use this

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coffee filters on the same shelf as its white, bleached ones. *Id.* at 127.

[88] Similarly, Sun Microsystems has developed a popular "green computer server" that requires less energy to run. *Id.* at 124.

[89] *Id.* at 11, 104; GUNNINGHAM, ET AL., *supra* note ___, at 32 ("Companies with widely recognized consumer brand names often seem especially concerned about their reputation for good environmental stewardship.")

[90] ESTY & WINSTON, *supra* note ___, at 136.

[91] *Id.* at 137.

[92] GUNNINGHAM, ET AL., *supra note* ___, at 32 ("general environmental reputation will be crucial" for those firms that seek to "differentiate [their] products on environmental grounds"); ESTY & WINSTON, *supra* note ___, at 127 (discussing Body Shop brand).

[93] *Id.* at 66; GUNNINGHAM, ET AL., *supra note* ___, at 153.

[94] *Id.* at 153.

criterion as a basis for advising clients.[95]

Stimulate innovation. Environmental imperatives can stimulate engineers and product designers to conceive the company's products or of business in new ways.[96] For example, Hitachi redesigned its washing machines so that it could put them together with only six screws in order to stay ahead of Japanese recycling laws.[97] The newly designed product also reduced manufacturing time by 33 percent and required fewer service calls. "Hitachi's efforts resulted in an environmentally preferable washing machine that's also a higher-value product with improved customer satisfaction, lower production costs and reduced disposal costs."[98]

Redefine markets. In some instances, environmentally-inspired innovation can lead to a unique product that competitors cannot match. For example, IBM decided to change itself from a business that sold office equipment, to one that sold copying services but retained ownership of the machines.[99] This led it so redesign its machines so that they were easier to disassemble and reuse. The company saved hundreds of millions of dollars per year because it was remanufacturing old models rather than building entirely new machines.[100]

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[95] Innovest Strategic Value Advisors specializes in analyzing the environmental and social performance of publicly-traded companies, and in using this information to identify firms that will outperform the market. The company has concluded that, in many sectors, "environmental leaders . . . consistently out perform the stock market by 300 to 3000 basis points (30 percentage points) per year." FIORINO, *supra* note ___, at 98, quoting Innovest Strategic Advisors, *The U.S. Electric Utility Industry: Uncovering Hidden Value Potential for Strategic Investors* 8 (2002). The company attributes this to the fact that "environmental performance turns out to be an excellent proxy for management quality, the primary determinant of stock market returns." *Id.*

[96] ESTY & WINSTON, *supra* note ___, at 11 ("[o]ur research suggests that companies using the environmental lens are generally more innovative and entrepreneurial than their competitors.")

[97] *Id.* at 199; Porter & van der Linde, *Green and Competitive*, *supra* note ___, at 127.

[98] ESTY & WINSTON, *supra* note ___, at 199.

[99] Reinhardt, *supra* note ___, at 156; *see also* ESTY & WINSTON, *supra* note ___, at 134-35 (discussing "servicizing" which is "the idea of recasting a product as a service.")

[100] Reinhardt, *supra* note ___, at 157.

2. *Opportunities to decrease costs*

Corporate greening can reduce costs by: enhancing eco-efficiency; reducing regulatory costs, employee turnover, environmental risk, and community opposition; anticipating or pre-empting regulation; and by reducing costs relative to competitors.

Eco-efficiency. A company that can produce its product with fewer raw materials and/or less energy, or that can find ways not to waste as much of these resources, will reduce both its costs and its environmental impacts.[101] Dan Esty and Andrew Winston refer to such efforts as "eco-efficiency."[102] The energy and resource efficiency strategies mentioned above[103] illustrate eco-efficiency. The opportunity to achieve such savings is one of the most important drivers behind industrial greening.

Reduce regulatory costs. Firms that reduce pollution or waste beyond legal requirements can also decrease the costs of pollution control and waste disposal.[104] For example, SC Johnson's pro-active decision to remove dangerous substances from its most popular products[105] allowed it to adapt more quickly than its rivals to European regulations, passed some years later, that set stringent limits on these substances.[106] Such initiatives can also promote a more trusting

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[101] *See* Porter & van der Linde, *Green and Competitive*, *supra* note ___, at 120 (produce with less materials); ESTY & WINSTON, *supra* note ___, at 101 (reduce waste).

[102] *Id.* at 13; *see also* Reinhardt, *supra* note ___, at 154.

[103] *See supra* notes ___-___ and accompanying text.

[104] GUNNINGHAM, ET AL., *supra* note ___, at 23 (discussing how firms can save money by "preventing pollution and thereby cutting costs and avoiding waste directly"); ESTY & WINSTON, *supra* note ___, at 112.

[105] *See supra* note ___ and accompanying text.

[106] ESTY & WINSTON, *supra* note ___, at 118-19. In other examples, 3M company's "3P" program, mentioned above, with its nearly 5000 projects, eliminated 2.2 billion pounds of pollutants and saved the company $1 billion. ESTY & WINSTON, *supra* note ___, at 107. When Dupont's CEO learned that his company was spending over $1 billion each year on waste treatment and pollution control, he insisted that the company reduce these costs. Since that time, Dupont has reduced its waste treatment and pollution control costs to $400 million. The company estimates that, but for this initiative, these costs would have grown to $2 billion by now. *Id.* at 111

and cooperative relationship with regulators[107] and create a margin of safety with respect to regulatory requirements so that operational malfunctions do not cause violations.[108]

Reduce employee turnover. Corporations that go green are often more able to retain employees who value such improvements.[109] This saves on the costs of recruiting, hiring and training new employees.[110] For example, BP found that after launching its "beyond petroleum" initiative it became better able to attract engineers, many of whom wanted to work in the area of renewable energy and sustainability.[111]

Decrease environmental risk. Firms can reduce overall costs by investing in pro-active environmental risk management.[112] For example, Kellogg Corporation's Spidey Signals toy, included in cereal boxes, turned out to contain toxic mercury, causing three state attorneys general to complain and the company to have to offer a major recall.[113] By contrast, McDonalds Corporation put in place an "anticipatory issues management" system that identified mercury in toy batteries as a potential problem and removed this toxic substance before the company ever faced an issue.[114] A company that violates legal and social values too severely may provoke boycotts or calls for government officials to deny permits, increase enforcement or even shut the

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[107] GUNNINGHAM, ET AL., *supra note* ___, at 21, 31-32; FIORINO, *supra* note ___, at 114.

[108] GUNNINGHAM, ET AL., *supra note* ___, at 24, 149 (study of pulp and paper industry shows that some of beyond compliance measures were motivated by "margin of safety" concerns)

[109] ESTY & WINSTON, *supra* note ___, at 66.

[110] *Id.* at 13.

[111] *Id.* at 137.

[112] GUNNINGHAM, ET AL., *supra* note ___, at 23 (discussing firms' ability to reduce costs through "more effective risk management (including minimizing the risk of accidents, costly cleanups, and environmental liability.")

[113] ESTY & WINSTON, *supra* note ___, at 114.

[114] *Id.* at 114-115.

plant down.[115] For example, the leak of toxic gases at Union Carbide's Bhopal, India plant that killed several thousand local residents so damaged the company that its competitor, Dow Chemical, was able to acquire it.[116] Thus, environmental and other social missteps can pose existential threats to even the largest companies. Environmental actions that bolster a firm's reputation and decrease the possibility of serious violations protect against this.[117] Such management approaches can also serve to bring down the cost of capital and insurance.[118]

Reduce community opposition and project delays. Firms that go green can reduce public opposition to their projects and the delays associated with such objections.[119] For example, Alberta-Pacific Forest Industries faced stiff opposition to a new pulp mill.[120] The company developed a plan that would significantly reduce clear cutting and lower pollution from the mill. This improved community relations and allowed the project to move forward more quickly.[121]

Anticipate or pre-empt future regulation. Some firms go beyond current pollution control requirements in order to prepare themselves for anticipated future tightening of these standards and avoid having to install expensive "retrofits."[122] An in-depth study of beyond compliance measures in the pulp and paper industry showed that "anticipatory compliance" concerns

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[115] GUNNINGHAM, ET AL., *supra note* ___, at 37; ESTY & WINSTON, *supra* note ___, at 12.

[116] ESTY & WINSTON, *supra* note ___, at 12.

[117] GUNNINGHAM, ET AL., *supra note* ___, at 22.

[118] ESTY & WINSTON, *supra* note ___, at 102.

[119] GUNNINGHAM, ET AL., *supra note* ___, at 24; ESTY & WINSTON, *supra* note ___, at 103.

[120] Reinhardt, *supra* note ___, at 155.

[121] *Id.* at 155.

[122] GUNNINGHAM, ET AL., *supra note* ___, at 17, 21, 24; ESTY & WINSTON, *supra* note ___, at 118-119; FIORINO, *supra* note ___, at 108 (firms may go beyond compliance "when they anticipate the need to comply with more stringent rules later and when they overcomply by building a margin of safety into environmental investments.")

motivated at least some of these behaviors.[123] Some companies may undertake such actions in the hope that it will substitute for, and so prevent, more stringent future regulation.[124]

Reduce relative costs. Some actions that increase costs in absolute terms can nonetheless benefit a company if they impose greater costs on competitors.[125] For example, gasoline manufacturers in California assisted regulators in the design of new rules for reformulated gasoline that would reduce air pollution. These rules gave California manufacturers a competitive advantage over out-of-state suppliers who were less able to supply this commodity.[126]

C. Regulatory Theory Now, or Later?

The above illustrations of green business are encouraging, but anecdotal. Is it really possible to improve environmental performance while also enhancing business competitiveness? One scholar has asserted that "evidence of economic payoff from responsible and innovative environmental [corporate] policies is accumulating at an impressive rate."[127] Others are not yet so convinced.[128] Indeed, some have questioned the very notion of green business. They argue

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[123] GUNNINGHAM, ET AL., *supra note* ___, at 149.

[124] *Id.* at 21.

[125] Such a company "may need to incur higher costs to respond to environmental pressure, but it can still come out ahead if it forces competitors to raise their costs even more." Reinhardt, *supra* note ___, at 152.

[126] *Id.* at 153. Along similar lines the leading members of the chemical industry, facing the threat of more stringent regulation in the wake of the Union Carbide Bhopal tragedy, prevailed on the Chemical Manufacturers Association to require member companies to commit to six management codes covering such areas as pollution prevention, process safety and emergency response, or lose their membership in the organization. *Id.* The Responsible Care program actually improved the competitive position of the large corporations that organized it, since they were able to comply more easily than their smaller competitors. *Id.*

[127] FIORINO, *supra* note ___, at 16.

[128] *See, e.g.*, Kurt Strasser, *Do Voluntary Corporate Efforts Improve Environmental Performance?: The Empirical Literature*, 35 B.C. ENVT'L AFF. L. REV. 533 (2008) [hereinafter Strasser, *Environmental Performance*] (surveying

that the true purpose of corporate green initiatives is to "greenwash" the company's reputation by making it appear to be environmentally responsible when it really is not.[129] More empirical studies of green business and its actual environmental benefits are needed.[130] Until such studies are available, we cannot be certain about the claimed benefits of the green business endeavors described in Part II, or the extent to which they are representative of a broader trend.

This article does not seek to resolve this debate. It focuses on regulatory theory, not empirical analysis. Nonetheless, it takes the issue seriously and so must ask whether this is the right time to develop a regulatory theory of green business, or whether it makes sense to wait until more empirical work has been done? There are three reasons to work on the theory now. First, governments are not waiting for conclusive data but are already beginning to take action to promote green business. A refined theory may enable them to establish sounder policies at this important, early stage. Second, while the empirical verdict is not yet in, there is a theoretical reason to believe that self-initiated corporate actions should be able to reduce pollution at less cost than traditional regulations. The scholarly literature on pollution prevention has repeatedly shown that it is cheaper to reduce pollution through "upstream" changes to product and process design than by installing pollution control technologies at the "end-of-pipe."[131] Environmental regulation has traditionally focused on end-of-pipe solutions, not because regulators dispute this finding, but because government officials are highly reluctant get involved in the design of

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the literature and concluding that "the studies do not definitively answer the question . . . Further work is needed").

[129] *See, e.g.*, Dorit Kerret and Alon Tal, *Greenwash or Green Gain? Predicting the Success and Evaluating the Effectiveness of Voluntary Environmental Agreements*, 14 PENN STATE L. REV. 41 (2005) (defining greenwashing as "cosmetic attempts by industry to appear environmentally conscientious--when industry is in fact resistant to meeting its responsibilities.")

[130] *Id.*

[131] *See* Dennis D. Hirsch, *Second Generation Policy and the New Economy*, 29 CAPITAL L. REV. 1, 7 (2001) [hereinafter Hirsch, *New Economy*].

products or of production processes. They rightfully worry that such interventions could disturb operations and hurt economic performance. Corporate green business initiatives do not suffer from this problem. Company employees *do* understand the business and should be able to undertake upstream product and process changes without causing damage to the company.[132] In fact, many of the green business activities described above involve upstream changes that company employees, but not government officials, were in a position to identify.[133] Pollution prevention theory predicts that green business activities such as these should be able to reduce pollution at less cost than traditional regulation. This should yield at least some situations in which green initiatives can produce both environmental and bottom-line benefits, at least when compared to a baseline situation of firms being subject to direct regulation. Finally, a regulatory theory of green business already exists—Michael Porter's. It is influencing the development of law and policy today. If this theory contains some important gaps then regulators should understand what they are and how to fill them.

III. Law and Policy to Promote Green Business

This takes us to our central inquiry: How, if at all, can environmental regulation promote green business? In this Part we examine the three main candidates that scholars have suggested for this task: (1) the market backed by common law; (2) traditional technology-based standards; and (3) outcome-based standards. We begin by summarizing Professor Porter's views on these

[132] *See* Noah Sachs, *Planning the Funeral at the Birth: Extended Producer Responsibility in the European Union and the United States*, 30 HARV. ENVTL. L. REV. 51, 63 (2006).

[133] For example, consider 3M Corporation's substitution of water-based for solvent-based coatings, *see supra* notes ___-___ and accompanying text, IKEA's system for auditing the environmental performance of its wood suppliers, *see supra* notes ___-___ and accompanying text, or Patagonia's closed-loop process for recycling the fibers in its garments.

three mechanisms. We then evaluate his conclusions and, in so doing, provide our own assessment of them.

A. Porter's theory

In his articles, Professor Porter evaluates each of the three mechanisms just mentioned. He concludes that: (1) While improvements to environmental performance can make firms more competitive, the market on its own will not lead companies to identify all green business opportunities. Government has a role to play; (2) Traditional technology-based standards deter green innovation rather than promoting it; and (3) Outcome-based regulation is the most effective way to foster business innovations that improve both environmental performance and competitiveness.[134]

1. *The market will not lead firms to act on many green business opportunities*

Porter argues that economists have erred in the way that they have thought about environmental regulation's economic effects. Economic theory has long assumed that regulated industries will remain static in the face of regulation and that environmental requirements will accordingly impose costs that hurt business competitiveness.[135] Porter argues that this view is wrong. Businesses do not remain static in the face of pressures such as new competitors, new technologies, or new environmental regulations. Rather, they are *dynamic* entities that respond

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[134] *See generally,* Porter & van der Linde, *Green and Competitive*, *supra* note ___; Porter & van der Linde, *New Conception*, *supra* note ___.

[135] Environmental Law Institute, *supra* note ___, at 1 ("traditional economic theory . . . indicates that regulations imposing additional environmental requirements on industry would tend to reduce profitability and competitiveness. Indeed, much of the economic literature points to such a negative correlation between environmental regulation and costs"); Porter & van der Linde, *New Conception*, *supra* note ___, at 108 (citing studies that reach this conclusion); Jaffee, et al., *supra* note ___, at 133, 150, 158;

by changing their products and processes so that they can address these new pressures better than their competitors.[136] These innovations can lead firms to become more efficient. Where they do, they offset the costs imposed by the environmental regulation or other pressure. Porter refers to these as "innovation offsets."[137] Where the value of innovation offsets is greater than the cost that the new factor imposes, the requirement to deal with the new pressure can make firms more competitive, not less.[138]

Porter believes that this dynamic is particularly present in the environmental area. Pollution, he argues, is a form of economic waste. It reflects incomplete or inefficient utilization of a raw material.[139] Some businesses respond to environmental regulation by figuring out ways to utilize their raw materials more fully, and so to decrease their pollution. Environmental regulation can thus promote a particular kind of innovation: changes designed to increase a company's "resource productivity."[140] Enhanced resource productivity not only brings down the costs of regulation. It also makes the company's processes more efficient, and so enhances its overall competitiveness.[141] For example, such innovations can result in "higher process yields . . . materials savings . . . better utilization of by-products, lower energy consumption during the

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[136] Porter & van der Linde, *Green and Competitive*, *supra* note ___, at 120.

[137] Porter & van der Linde, *New Conception*, *supra* note ___.

[138] *Id.* at 101 ("In some cases, 'innovation offsets' can exceed the costs of compliance. This . . . sort of innovation is central to our claim that environmental regulation can actually increase industrial competitiveness").

[139] Porter & van der Linde, *Green and Competitive*, *supra* note ___, at 122; *see also* Porter & van der Linde, *New Conception*, *supra* note ___, at 105 ("Fundamentally, [pollution] is a manifestation of economic waste and involves unnecessary, inefficient or incomplete utilization of resources, or resources not used to generate their highest value. In many cases, emissions are a sign of inefficiency and force a firm to perform non-value-creating acivities such as handling, storage and disposal"); Environmental Law Institute, *supra* note ___, at 2 (under Porter's view "pollution represents wasted resources which could be more effectively used.")

[140] Porter & van der Linde, *Green and Competitive*, *supra* note ___, at 122.

[141] Porter & van der Linde, *New Conception*, *supra* note ___, at 9; Environmental Law Institute, *supra* note ___, at 12.

production process, reduced material storage and handling costs, conversion of waste into valuable forms, reduced waste disposal costs or safer workplace conditions. These offsets are frequently related, so that achieving one can lead to the realization of several others."[142] Thus, Porter argues, environmental requirements need not hurt competitiveness. To the contrary, "firms can actually benefit from properly crafted environmental regulations that are more stringent (or are imposed earlier) than those faced by their competitors in other countries. By stimulating innovation, strict environmental regulations can actually enhance competitiveness."[143]

But why should regulation be necessary? If it is true that increased resource productivity produces competitive advantages, will not firms undertake these actions on their own even in the absence of regulation?[144] Why not just leave this to the market backed by the common law? Porter argues that most companies do not have perfect information, and that organizational incentives are not always aligned with innovation. [145] To the contrary, companies are frequently faced with "highly incomplete information, organizational inertia and . . . limited attention."[146] Firms are fallible and miss opportunities to implement changes that could make them more competitive.[147] While the market alone will bring about some green business activities, it will leave many such opportunities untapped. It is here that environmental laws can play a useful role. Regulations can focus firms' attention on enhancing resource productivity, thereby

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[142] Porter & van der Linde, *New Conception, supra* note ___, at 101.

[143] *Id.* at 98.

[144] Porter & van der Linde, *Green and Competitive, supra* note ___, at 127 (posing this question).

[145] *Id.*

[146] *Id.;* Porter & van der Linde, *New Conception, supra* note ___, at 99.

[147] *Id.*

"overcoming organizational inertia and fostering creative thinking" that will lead to cost-saving changes.[148] In other words, environmental regulations can bring the pressure that will cause firms to innovate in ways that improve their competitiveness. Government has a role to play.[149]

2. *Technology-based standards deter green innovation*

As Porter sees it, all environmental regulations are not equal in this regard. Regulation promotes competitiveness only where it leads to innovation offsets. Thus, in order to have its pro-competitive effect, environmental regulation must give firms the flexibility to come up with their own, innovative ways of enhancing resource productivity and reducing pollution, preferably through upstream pollution prevention measures rather than end-of-pipe controls.[150]

Porter maintains that technology-based standards do not do this.[151] They push firms to adopt government-chosen, end-of-pipe control technologies. This prevents firms from looking upstream and "almost guarantees that innovation will not occur."[152] Porter accordingly argues that traditional regulation will not generate innovation offsets.[153]

3. *Outcome-based regulation is the best way to foster green business*

Instead, Porter argues for "outcome-based regulation" or, as it is often called,

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[148] Porter & van der Linde, *Green and Competitive, supra* note ___, at 128.

[149] *Id.*

[150] *Id.* at 129 (regulations should "[c]reate maximum opportunity for innovation by letting industries discover how to solve their own problems.")

[151] *Id.* at 121.

[152] Porter & van der Linde, *New Conception, supra* note ___, at 111.

[153] Porter & van der Linde, *Green and Competitive, supra* note ___, at 129.

"performance-based regulation."[154] Outcome-based regulation specifies the required level of environmental performance–the desired outcome–but leaves it up to the regulated party to figure out how best to get there. Porter maintains that such rules give firms flexibility and so encourage the creation of innovation offsets.[155] Moreover, they allow firms to look upstream for changes that will reduce pollution, rather than just implementing end-of-pipe technologies. Porter's chief policy recommendation is, accordingly, that "[e]nvironmental regulation should focus on outcomes, not technologies."[156]

To support this point, he compares Scandinavian and American regulation of the pulp-and-paper industry's discharge of chlorine, an agent used to bleach paper.[157] American regulators identified a specific, end-of-pipe control technology–secondary treatment–and required industry members meet the rate of discharge that the technology would achieve. American firms installed the secondary treatment technology. They did not generate innovative ways of reducing chlorine.[158] By contrast, the Scandinavian countries set an outcome-based pollution level that was not tied to any particular technology, gave firms abundant time to comply, and served notice that the required level would become more stringent over time. Scandinavian pulp-and-paper manufacturers responded by developing new types of pulping and bleaching equipment that reduced chlorine discharges.[159] Eventually, they created a new type of paper that was completely

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[154] Coglianese & Lazer, *supra* note ___, at 691 (defining "performance-based regulation" as rules that "require that certain outcomes will be achieved or avoided" but do not prescribe the means of achieving this.)

[155] Porter & van der Linde, *Green and Competitive, supra* note ___, at 129 (regulations should "[c]reate maximum opportunity for innovation by letting industries discover how to solve their own problems."); *see also* Environmental Law Institute, *supra* note ___, at 9 (describing Porter's theory of regulation).

[156] Porter & van der Linde, *New Conception, supra* note ___, at 110.

[157] Porter & van der Linde, *Green and Competitive, supra* note ___, at 129.

[158] Porter & van der Linde, *Green and Competitive, supra* note ___, at 129.

chlorine-free. A market for environmentally-friendly papers developed, and the Scandinavian firms were able to charge a premium price for their new product.[160] In short, the more flexible Scandinavian regulation led to an innovation (low-chlorine, and then chlorine-free paper) that gave their firms a competitive advantage and offset their compliance costs. Porter believes that rules of this type can push firms to find ways to make upstream changes that will both improve their environmental performance, and enhance their competitiveness. That is, they will promote green business.

B. Assessing Porter's Thesis

We now evaluate Porter's ideas on the market, traditional regulation, and outcome-based regulation. In so doing, we offer our own assessment of these three mechanisms for promoting green business.

1. *Will the Market Promote Green Business?*

The literature largely supports Porter's assertion that businesses suffer from imperfections that can lead them to miss potentially profitable green business opportunities.[161] As "bounded rationality" theory suggests,[162] managers often work with imperfect information. Moreover, they may have been trained not to look to environmental performance as a source of competitiveness.

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[159] *Id.* at 130.

[160] *Id.*

[161] Environmental Law Institute, *supra* note ___, at 13 ("internal systems for knowing, communicating and managing are more imperfect within firms that is appreciated."); B. Sinclair-Desgagne & H.L. Gabel, *Environmental Auditing in Management Systems and Public Policy*, 33 J. ENV. ECON. & MGMT. 331-346 (1997); H.L. Gabel & B. Sinclair-Desgagne, *The Firm, its Routines and the Environment, in* INT'L YEARBOOK ENV. & RESOURCE ECON. (1998).

[162] Coglianese & Lazer, *supra* note ___, at 703, n. 6.

"Studies . . . consistently point to this issue. Firm management did not regard waste reduction as within their priority concerns. Their training concerned other issues, and there was little institutional focus on the issue absent regulation."[163] Company executives may be further inhibited by a "[s]tatic mind-set and industry inertia,"[164] institutionalized conservatism and resistance to change.[165] Moreover, those involved in design and production decisions, and those responsible for environmental decisions, often do not work together.[166] As a result, "may firms overlook sources of savings such as energy reduction and pollution prevention . . . in favor of either increased output or direct cost reductions related to production."[167] Finally, even where managers want to pursue green opportunities, they may not be able to make individual employees believe that it is in their interest to do so[168] or to monitor accurately employee performance in this area.[169] This principal-agent problem can prevent meaningful action. For all of these reasons, firms can often "fail to pick the 'low-hanging fruit'" of cost-saving through

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[163] Environmental Law Institute, *supra* note ___, at 18; Strasser, *Preventing Pollution*, *supra* note ___, at 44.

[164] Environmental Law Institute, *supra* note ___, at 18; *accord* Strasser, *Preventing Pollution*, *supra* note ___, at 44 ("Pollution prevention efforts within business organizations today are more limited by organizational culture than by available technology.")

[165] Environmental Law Institute, *supra* note ___, at 14. The literature on business response to technological change supports this. Consistent with Porter's findings in the green business area, these studies show that there is "considerable rigidity in business response to potential opportunities for change." *Id.* at 18; Strasser, *Cleaner Technology, supra* note ___, at 19-23. Studies also show that firms systematically under-invest in research, such as research into cost-saving green opportunities. Environmental Law Institute, *supra* note ___, at 15.

[166] *Id.* at 16.

[167] United States Office of Technology Assessment, *Permitting and Compliance Policy: Barriers to U.S. Environmental Technological Innovation* 247 (EPA 101/N-91/001) (1991).

[168] *Id.* at 16; *cf.* Office of Technology Assessment, *supra* note ___, at 246 (the "responsibility for finding pollution prevention opportunities may not rest with those most capable of doing so.")

[169] Environmental Law Institute, *supra* note ___, at 16; Office of Technology Assessment, *supra* note ___ (discussing constraints on managerial time and attention).

pollution prevention, even where such opportunities are available.[170] Regulation can play a useful role by giving executives the needed push and so "focus[ing] management attention on new concerns or approaches."[171] A group of scholars that studied business environmental decisions observed that "waste reduction opportunities were seldom considered until circumstances virtually forced plants to review their waste management practices."[172] For all of the above reasons, Porter is largely right in asserting that the market alone will neglect many profitable green business projects and that law and policy can help to correct for this.

But he is not completely correct. There are instances when the market does promote green business. For example, there is a growing demand for "green" products. Where the environmental benefits of product are clear and visible enough to be understood by and conveyed to consumers, the market can generate green innovation. Even where products are not specifically billed as "green," market pressures may be directly aligned with environmental ones.

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[170] Environmental Law Institute, *supra* note ___, at 16, quoting Gabel & Sinclair-Desgagne, *supra* note ___.

[171] Coglianese & Lazer, *supra* note ___, at 703, n. 6. This is an interesting twist. It is common knowledge, promulgated and repeated by politicians, that government is rigid and slow-moving, whereas business is nimble and creative. In fact, reality is a bit more complex. Just as government can be static and require private industry to inject dynamism and innovation, so private corporations (especially large ones) can adopt rigid and bureaucratic management styles and require government intervention to break though this and generate more flexibility, creativity and risk-taking. The recent federal take-over of General Motors, and the government attempts to shake-up management and inject more dynamism into the company, may be an example of this.

[172] D. SAROKIN, W. MUIR, C. MILLER & S. SPERBER, CUTTING CHEMICAL WASTES 143 (1985). Some firms may have valid reasons so resist investments in green business, even where these investments would provide a positive return. An existing, comprehensive business strategy may preclude making such investments. Environmental Law Institute, *supra* note ___, at 15; James Boyd, *Searching for Profit in Pollution Prevention: Case Studies in the Corporate Evaluation of Environmental Opportunities*, Resources for the Future Discussion Paper 98-30 (April, 1998) (discussing instance in which corporation had decided not to invest any more resources in the underperforming aspect of the business where the pollution prevention opportunity was available). A company may set a lofty "hurdle rate" for new investments that a given green business investment, as promising as it may be, cannot meet. Environmental Law Institute, *supra* note ___, at 14. A company that has already invested in highly expensive capital equipment may experience a "lock in" effect that precludes investment in new equipment for a period of time. *Id*. at 14; Boyd, *supra* (discussing high hurdle rates as barrier). Where small firms dominate an industry, the relevant companies may simply lack the research or financial capacity to make the required investments. Environmental Law Institute, *supra* note ___, at 14, 19. Finally, the search costs involved in identifying competitiveness-enhancing green opportunities may exceed the expected gains from these investments. Coglianese & Lazer, *supra* note ___, at 703. In each of these instances, firms have a legitimate reason for not pursuing green investments.

For example, success in the food production industry requires that a company produce food that is safe. Many food manufacturers will pursue product safety for purely market reasons.[173]

Tort liability—which we view as part of the market (i.e. non-regulatory) system—can also play an important role. Firms that know, ex ante, that consumers can sue them for products or processes that damage health or environment will have an incentive to make design or process changes that will prevent this damage. Thus, tort liability can generate business-driven, upstream green behavior. But its powers are limited. Many environmental problems result from the actions of a large number of different polluters, making it very difficult for the traditional tort model to work.[174] It can often be difficult to prove causality given the synergistic effects of the polluting substances. Finally, collective action and free rider problems can prevent victims from bringing suit, even where the aggregate harm would warrant such legal action.[175] Tort liability is only a partial, and highly imperfect, means of encouraging upstream, green behavior. It tends to work best in those instances where the environmental and public health damage is substantial, visible and targeted, and the causal connection is clear.

We can accordingly hypothesize that market best promotes upstream green activity where environmental benefits (e.g. in green products) or injuries (e.g. in tort suits) are targeted, significant and clear. It performs less well where environmental goods and injuries are diffuse

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[173] Coglianese & Lazer, *supra* note ___, at 702. Even in the food industry, these incentives are not always perfectly aligned. For example, it was recently reported that the manufacturers of peanut butter had ignored warnings about salmonella contamination. Purchasers got sick until regulators demanded a recall of the product. *See* Rebecca Cole *Salmonella alerts ignored; E-mails reveal that a company owner discounted warnings about contamination at his Georgia plant*, L.A. TIMES, Feb. 12, 2009, at A12.

[174] *See* JAMES SALZMAN & BARTON THOMPSON, ENVIRONMENTAL LAW AND POLICY 45 (2nd ed. 2007) ("[w]hen there are multiple sources of pollution, establishing proximate cause becomes difficult.")

[175] *See, generally,* PETER S. MENELL & RICHARD B. STEWART, ENVIRONMENTAL LAW AND POLICY 60 (1994) (describing collective action and free rider problems with tort model). Class action suits do not adequately solve this problem. Attorneys only invest in the minority of cases in which causality is relatively clear and the damages are large.

and shared by many,[176] insignificant to individuals, and difficult to discern. Many environmental and public health impacts fall into this latter category.[177] Tort liability and the market will promote some green investments, but will leave many such opportunities unexplored.[178]

2. *Technology-based Standards*

To evaluate the role that traditional technology-based standards can play, we must first describe them a bit more. Traditional environmental regulation consists of two types of rules: design standards, and performance standards based on the "best available technology."[179] Design standards specify the design of the pollution control technology that firms must use.[180] For example, Environmental Protection Agency (EPA) regulations require that companies use two or more liners when they construct a new hazardous waste landfill.[181] Regulated entities must comply with this technology specification, or face enforcement.[182]

Best available technology (BAT) standards work differently. Here too, regulators evaluate and choose a pollution control technology–the best technology that is currently

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[176] For example, the market provides too little of "public goods" such as clean air or clean water due to the collective action and free rider problems, described above. *Id.* at 54-55.

[177] *Id.* at 55.

[178] *See* Coglianese & Lazer, *supra* note ___, at 702, n. 5 ("by itself even liability is sometimes inadequate to induce firms to act in socially optimal ways, especially for problems such as pollution).

[179] ROBERT V. PERCIVAL, CHRISTOPHER H. SCHROEDER, ALAN S. MILLER & JAMES P. LEAPE, ENVIRONMENTAL REGULATION: LAW, SCIENCE AND POLICY (5th ed. 2006) (distinguishing between "design" and "performance" standards); Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333 (1985) (describing best available technology approach).

[180] *Id.*

[181] Solid Waste Disposal Act, 42 U.S.C. § 6924(o)(1)(A)(i) (2000).

[182] *Id.*

available in the industry.[183] However they do not require facilities to install this "reference technology."[184] Instead, they calculate the rate of pollutant emissions per unit of product that the facility would emit if it *had* installed the reference technology, and then require that the facility not exceed this rate.[185] In theory, this should leave the facility discretion to achieve the required rate by means other than the reference technology. In practice, however, firms almost never do this.[186] They know that, if they install the reference technology, regulators will be hard pressed to find them out of compliance with the required emissions rate. After all, the regulators based the rate on this technology.[187] Given the variability and unpredictability of most production processes, this assurance holds great value for firms that want to avoid compliance issues.[188] Thus, while firms theoretically have the flexibility to choose how they meet rate-based BAT standards, virtually all decide to install the reference technology.[189] Best available technology standards essentially function as de facto design standards. [190] We refer to traditional regulation as "technology-based standards," and use this term to encompass both de jure technology

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[183] Ackerman & Stewart, *supra* note ___, at 1335.

[184] *Id.*

[185] *See* Byron Swift, *How Environmental Laws Work: An Analysis of the Utility Sector's Response to Regulation of Nitrogen Oxides and Sulfur Dioxide Under the Clean Air Act*, 14 TUL. ENVT'L L. J. 309, 407 (2001) (discussing rate-based approach); PERCIVAL, ET AL., *supra* note ___, at 132; Porter & van der Linde, *New Conception*, *supra* note ___, at 110;

[186] PERCIVAL, ET AL., *supra* note ___, at 132.

[187] *Id.* at 131-32 ("A regulatory target may prudently decide its safest course to compliance is to install [the reference] technology. Then, should the target fail to comply, it can defend by attempting to place the responsibility on EPA.")

[188] *Id.;* Environmental Law Institute, *supra* note ___, at 10.

[189] *Id.* at 11 (BAT standards "blunt[] experimentation and innovation . . . because the adversarial and conservative nature of permitting under this method tends to reject the innovative or the new").

[190] *See* PERCIVAL, ET AL., *supra* note ___, at 132 ("performance standards become de facto technology specifications"); Environmental Law Institute, *supra* note ___, at 10 (best available technology standards "emphasize, or even dictate, end-of-pipe compliance solutions instead of the process changes which can lead to the results suggested by the Porter hypothesis").

requirements (i.e. design standards), and de facto ones (i.e. best available technology standards).

Whatever terminology one uses, Porter is correct when he says that traditional regulation–in both its design standard, and BAT standard forms–essentially prescribes specific control technologies.[191] He is also largely right when he says that this deters innovation and upstream changes.[192] Design standards, by their very nature, dictate the means of pollution control and almost always focus on end-of-pipe controls. For the reasons just discussed, best available technology standards also push firms toward specific, end-of-pipe solutions. Moreover, by directing firms to shoot for the best control technology *currently available,* they give them no incentive to come up with something new that will achieve even better results, and so no incentive to engage in green business.[193]

Yet, once again, Porter does not tell us the full story. There are circumstances in which technology-based standards *can* promote upstream changes that go beyond legal requirements. For example, the RCRA technology-based standards governing hazardous waste disposal have made it extremely expensive for firms to dispose of the hazardous waste. This has led many companies to change their raw materials and processes so as to minimize, or even eliminate, the production of waste deemed to be "hazardous."[194] They have used upstream innovations to prevent pollution and thereby take themselves outside the scope of the regulatory scheme. Thus,

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[191] Porter & van der Linde, *Green and Competitive, supra* note ___, at 129 (traditional regulations "mandat[e] specific technologies").

[192] *See* Environmental Law Institute, *supra* note ___, at 10 ("'best available technology' type standards . . . are inflexible and may severely limit innovation, creating higher costs than necessary").

[193] Neil Gunningham, *Environmental Management Systems and Community Participation: Rethinking Chemical Industry Regulation*, 16 UCLA J. ENVT'L L. & POL'Y 319, 327 (1998) (BAT regulation "provides little ongoing incentive for continuous improvement"); Ackerman & Stewart, *supra* note ___, at 1336 (BAT controls discourage development of superior environmental technologies); Environmental Law Institute, *supra* note ___, at 2 ("many of our environmental regulations are designed in away that discourages precisely such a re-examination of process technology. ")

[194] PERCIVAL, ET AL., *supra* note ___, at 321.

technology-based standards can promote beyond compliance, innovative behavior by imposing expensive requirements but allowing an "out" for companies that prevent pollution through upstream changes.[195] This phenomenon does not undermine Porter's point about technology-based standards since most either do not allow, or seriously discourage, such an "out." But it does qualify it to some extent.

Technology-based standards can also promote beyond compliance behavior in other ways. A credible threat of such regulation can lead companies to improve their environmental performance in the hope of staving off the anticipated regulatory action.[196] Moreover, the prospect that regulators may tighten existing technology-based standards may lead firms that are building new facilities to over-comply so as to avoid expensive retrofits later.[197] Finally, technology-based standards can motivate firms to over-comply so as to provide a "margin of safety" that can prevent variations in the production process from turning into compliance issues.[198] In these and other instances, "firms may prefer to address an issue on their own terms

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[195] FIORINO, *supra* note ___, at 96 & n. 23; JOHNSON, *supra* note ___, at 331-332. Michelle Ochsner, *Pollution Prevention: An Overview of Regulatory Incentives and Barriers*, 3 N.Y.U. ENV. L. J. 597-97 (1998) ("researchers have consistently found that regulatory compliance is important in motivating companies to investigate pollution prevention alternatives.") The Clean Air Act definition of "major source," which imposes technology requirements only on those facilities whose air emissions exceed the major source threshold offer another example of this. Many companies have sought to avoid regulation by keeping their emissions below the designated levels.

[196] GUNNINGHAM, ET AL., *supra* note ___, at 21 ("[n]ot infrequently, groups of firms have institutionalized voluntary self-regulatory plans more stringent than those required by law in hopes of warding off the possibility of more intrusive and less flexible government initiatives.") For example, in the 1980's, EPA Administrator William O'Reily wrote a letter to leading members of the chemical industry in which he invited them to participate in a voluntary program to reduce toxic emissions. O'Reilly's letter explained that the voluntary initiative was an alternative to "the detailed direction which is likely to be demanded if voluntary efforts are not fruitful." FIORINO, *supra* note ___, at 113 (quoting the O'Reilly letter). Many chemical companies signed up for the 33/50 program which succeeded in reducing toxic emissions by 33 percent by 1992 and by 50 percent by 1995. JOHNSON, *supra* note ___, at 337.

[197] GUNNINGHAM, ET AL., *supra* note ___, at 21. The growing number of companies that currently seeking to reduce their greenhouse gas emissions are an example of this. Andrew Hoffman, *Climate Change Strategy: The Business Logic Behind Voluntary Greenhouse Gas Reductions*, 47 CAL. MGMT. REV. (No. 3) 21, 23 (2005) (one of the reasons that some major corporations are setting voluntary reduction targets is that "[t]hey are searching for ways to be prepared for the long term, should GHG emission reductions become mandatory.")

rather than on the terms set by potentially inflexible government rules."[199] These circumstances qualify Porter's point about traditional regulation but do not refute it. For the most part technology-based standards stifle, rather than promote, green innovation, and do so for the reasons that Porter describes.

3. *Outcome-based Regulation*

Porter endorses "outcome-based" standards as the most effective way to promote green business. We described his reasons above[200] and need not restate them here. However, it bears repeating that Porter consistently depicts "outcome-based" standards as numeric limits on pollution that are not tied to a best available technology and so do not lead to the de facto design standard problem explained above.[201] For example, the Scandinavian regulations, which Porter holds up as a primary model, set increasingly stringent numeric limits on chlorine discharges from pulp-and-paper mills but did not tie them to a specific technology.[202]

Porter's argument that flexible, outcome-based standards allow businesses to figure out the best way to reach the desired result, and so to look for upstream improvements, is well-reasoned and finds substantial support in the literature.[203] The problem lies in what Porter does

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[198] FIORINO, *supra* note ___, at 108 ("Regulation may even lead firms to go beyond compliance when they anticipate the need to comply with more stringent rules later and when they overcomply by building a margin of safety into environmental investments.")

[199] *Id.* at 113; ESTY & WINSTON, *supra* note ___, at 118 (one of the reasons firms go green is that they "realize that getting ahead of regulations can save money and time, as well as reduce hassles.")

[200] *See supra* notes ___-___ and accompanying text.

[201] *See* Environmental Law Institute, *supra* note ___, at 10, 12 (distinguishing between rate-based and mass-based standards and associating Porter with the latter). In fact, Porter criticizes BAT standards and argues that they deter innovation. Porter & van der Linde, *Green and Competitive*, *supra* note ___, at 124.

[202] *See* The Management Institute for Environment and Business, *Competitive Implications of Environmental Regulation: A Study of Six Industries* 64 (report that Porter cites for the Scandinavian example).

not say. He fails to explain that outcome-based standards will only function properly in limited circumstances, and that they will not work to promote much of what we have come to see as green business. Like the market solution and traditional regulation, outcome-based standards are a useful, but ultimately insufficient, tool for encouraging firms to go beyond compliance.

While Professors Cary Coglianese and David Lazer do not expressly address Porter's theory in their 2003 article, *Management-Based Regulation: Prescribing Private Management to Achieve Public Goals,*[204] they nonetheless put their finger on its central problem. Coglianese and Lazer argue that, for performance-based standards to work, regulators must be able to measure and monitor the environmental outcome.[205] Without this, they will not be able to ascertain whether firms are achieving the desired result and so will not be able to enforce the standard.[206] It follows that performance-based standards are more effective than technology-based standards only when regulators can measure and monitor the results at a reasonable cost, where "reasonable" is defined as something less than the gains achieved from substituting flexible, performance-based standards for prescriptive, traditional ones.[207] If the transaction costs involved in measuring and monitoring outcomes exceed the gains from flexibility, then a performance-based approach will turn out to be a more expensive way of achieving environmental goals than will traditional rules.[208] It follows that performance-based standards are only preferable when "the costs of measuring social outputs or well-correlated proxies for

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[203] Environmental Law Institute, *supra* note ___, at 12 (summarizing literature).

[204] Coglianese & Lazer, *supra* note ___.

[205] *Id.* at 725 ("Performance-based regulation . . . will likely be appropriate only where the regulator can cheaply measure output and evaluate its social impact.")

[206] *Id.* at 702, 704-705, 720.

[207] *Id.* at 704.

[208] *Id.* at 702 (where it is "difficult or prohibitively expensive to assess critical outputs, the advantages of performance-based standards will be weaker.")

social outputs are low."[209]

To this it is necessary to add that, when employing a performance-based standard, regulators need not only to measure and monitor the outcome; they must also have sufficient knowledge about the regulated industry to set a realistic outcome-based goal in the first place.[210] If they do not, they will either set a goal that is too lenient, and so fails to generate innovation, or will set one that is too strict, and so either imposes unrealistic burdens or becomes riddled with exemptions (thereby again failing to generate innovation). As with the measuring and monitoring of results, regulators must invest resources in learning about an industry in order to set a realistic outcome-based target for it. These costs, too, must be considered when evaluating whether a performance-based regulation is truly preferable to a prescriptive one. Thus, building on Coglianese and Lazer, we would argue that performance-based rules are only preferable where the gains from flexibility exceed the transaction costs involved in identifying a realistic outcome-based target *and* in measuring and monitoring outcomes. This limitation applies both to performance-standards targeted at a single facility, and to those that lie at the heart of market-based trading programs.[211]

Are performance-based approaches an effective way to encourage green innovation? Or will the limiting conditions just described restrict their usefulness? Here, our description of

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[209] *Id.* at 704.

[210] *Id.* at 720.

[211] *Id.* at at 701 (limitations apply to all performance standards, whether they are "market-based or uniform.") Trading programs will run up against the same limits as other performance-based approaches. Regulators must be able to set standards and monitor the results at a reasonable cost in order for such programs to be effective. If they cannot–if the transaction costs are too high–then traditional regulation is preferable to trading just as it is to other performance-based approaches. Thus, we focus on the limits of the performance-based approach generally, and not on the differences between trading and other performance-based approaches.

green business[212] should prove helpful. We can examine the activities that constitute green business and ask whether an outcome-based standard designed to promote them would meet the limiting conditions identified above. As we will see, the answer all too frequently is "no." This makes outcome-based standards insufficient for the purpose that Porter has assigned to them.

One important form of green business activity consists of systematic initiatives to enhance environmental performance. As described above, this category includes environmental management systems (EMS), pollution prevention initiatives, life cycle assessments, "design for environment" initiatives, and attempts to "green the supply chain."[213] Could regulators set meaningful outcome-based targets that would cause firms to undertake such activities, and could they measure and monitor the outcomes, at a reasonable cost? Probably not. Systematic pollution prevention initiatives often rely on many employees to search for upstream changes that will minimize pollution, and frequently yield scores of discrete projects. For example, 3M's 3P program (described above)[214] generated 5000 pollution prevention projects that decreased pollution by 2.2 billion pounds.[215] How could regulators have predicted this beforehand? Assuming that officials had wanted to motivate such behavior, how could they have known where to set the target? Even the company CEO, operating with all corporate information, could not have known *ex ante* what pollutants the initiative would reduce and by how much. That is why firms do not dictate pollution prevention measures from the top but rather utilize a systematic approach that draws the knowledge out of many employees throughout the organization. Clearly regulators, working from outside the company, would not have sufficient

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[212] *See supra* Part II.

[213] *See supra* notes ___-___ and accompanying text.

[214] *See supra* notes ___-___ and accompanying text.

[215] ESTY & WINSTON, *supra* note ___, at 106-107.

knowledge to set a realistic target.[216] To do so, they would need intimate knowledge of every facet of the facility, such that they could identify all pollution prevention opportunities and know approximately what they would cost and how much they would achieve. The search costs involved in uncovering this information would dwarf any efficiency gains that a more flexible, outcome-based standard would provide. The same goes for the costs of measuring and monitoring these improvements. Even if a pollution prevention initiative yielded only one-fifth the number of projects that 3M's did–one thousand, rather than five thousand–regulators would have to expend a huge amount of resources to identify a baseline for each project and then measure and monitor any gains. In short, the regulatory costs involved in setting a target for, and measuring and monitoring the results of, a systematic pollution prevention initiative such as 3M's 3P program would likely exceed any savings from the additional flexibility. Outcome-based rules would not be an effective tool for motivating such behaviors. Much the same could be said for environmental management systems, life cycle assessments, design for environment initiatives and attempts to green the supply chain. The costs of setting performance-based goals for such initiatives, and of measuring and monitoring the results, would be exorbitant. There may be ways that regulators can encourage firms to undertake systematic environmental improvement initiatives,[217] but outcome-based standards do not appear to be a good choice for this important regulatory task.

Very similar problems would arise in attempting to use outcome-based approaches to promote two other categories of green business activity: energy efficiency and resource

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[216] Professors Coglianese and Lazer make this very point. As they explain, "[a] most significant challenge in all of these cases comes about from the large number of sources of hard-to-detect risk. Even with substantially greater inspection resources, government agencies would be hard pressed to identify and test for . . . all the ways pollution prevention could be achieved.") Coglianese & Lazer, *supra* note ___, at 720.

[217] *See infra*, notes ___-___ and accompanying text.

efficiency initiatives. Sometimes, a company can achieve significant energy or resource efficiency gains through one or two substantial alterations to its products or processes. Patagonia's use of a night-flush system to replace hot air with cool, and so eliminate its need for air conditioning,[218] and Wal-Mart's decision to require its suppliers to provide only concentrated laundry detergent,[219] illustrate this potential. It would be difficult, but not impossible, for a regulator to foresee opportunities of this sort and design performance-standards that encouraged firms to take advantage of them. But many energy and resource efficiency initiatives do not resemble these discrete projects. Instead, they look much more like the systematic pollution prevention efforts described above. For example, Dupont's energy efficiency initiative involved "a hundred ways to get leaner and meet its energy targets."[220] Like systematic programs, these initiatives involve many people searching for incremental gains throughout the operation. This will make it virtually impossible for regulators, who are not intimately familiar with the facility, to predict the level of energy our resource efficiency that such an initiative could realistically achieve, or to monitor each of the many ways in which a company goes about achieving such a goal. Thus, outcome-based standards will not be an effective tool for encouraging wide-ranging energy and resource efficiency initiatives for much the same reasons that they would not work for promoting systematic environmental improvement programs.

Regulators will also have a hard time using outcome-based standards to motivate beyond compliance environmental reporting and stakeholder involvement.[221] The reason is that these actions are only indirectly tied to environmental results. While they generally yield

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[218] *See supra* notes ___-___ and accompanying text.

[219] *See supra* notes ___-___ and accompanying text.

[220] ESTY & WINSTON, *supra* note ___, at 105.

[221] *See supra* notes ___-___ and accompanying text.

environmental benefits it is anyone's guess as to what, exactly, these outcomes will be. This will make it extremely difficult for regulators to establish an outcome-based standard that will motivate such behaviors. If one cannot know, ex ante, the environmental outcome that will flow from such actions, then one cannot design an outcome-based standard to encourage them. The same point can be made about financing and investing in green products and behaviors.[222] Such investments will likely benefit the environment but it will be very difficult to predict how much they will do so. This will make it all but impossible to set a realistic outcome-based standard that could motivate such behavior. An agency could specify the number of stakeholder meetings that a company must hold, the frequency with which it must disclose information, or the amount of money it should invest in green products,[223] but these would not be outcome-based environmental standards in the sense that Porter uses the term. Green behaviors that have indirect effects on the environment thus represent another important area that Porter's recommended approach will do nothing to promote.

Outcome-based standards should prove better at prompting firms to invent discrete green technologies–be they products, processes, or pollution controls.[224] "Technology forcing" regulation of this type has long been a part (albeit a small one) of environmental law and generally employs outcome-based standards like those that Porter recommends.[225] It has yielded striking successes such as Congress's requirement of a 90 percent reduction in automobile

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[222] *See supra* notes ___-___ and accompanying text.

[223] It would probably make sense to leave such capital investment decisions to the corporation itself.

[224] PERCIVAL, ET AL., *supra* note ___, at 1053 (explaining how technology-forcing regulations that required the phase-out of chlorofluorocarbons (CFCs) led to the rapid development of substitutes for this product.")

[225] *See generally, Id.* at 562-579 (discussing technology-forcing standards).

tailpipe emissions leading to the auto industry's development of the catalytic converter,[226] or the Scandinavian outcome-based standards prompting the pulp-and-paper industry to invent chlorine-free paper.[227] But experience provides cautionary lessons about the limits of technology forcing. Such standards tend to succeed where industry has already made progress toward the development of a new technology and the stringent outcome-based standard serves to push the process to completion. Tailpipe emissions and the development of the catalytic converter are one example of this.[228] The phase-out of CFCs, and their replacement by substitutes that DuPont was already developing, is another.[229] By contrast, technology forcing standards have back-fired where regulators have instituted them without first gaining sufficient knowledge about what industry could reasonably achieve. In these instances regulators have occasionally set unrealistic standards and then been forced to lift them, thereby undermining their own authority to engage in technology-forcing regulation in the future. California's decision to require a certain percentage of zero emission vehicles (ZEV), and its ultimate relaxation of this standard, illustrates this dynamic.[230] Experiences such as this suggest that regulators should use technology-forcing standards sparingly, and should only employ them where regulatory officials already possess a good idea of the innovations they are seeking and have sound reasons for believing that industry can achieve them. The same logic also cautions against relying on outcome-based standards to

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[226] *Id.* at 565.

[227] *See* Porter & van der Linde, *Green and Competitive, supra* note ___, at 129; The Management Institute for Environment and Business, *supra* note ___.

[228] GREGG EASTERBROOK, A MOMENT ON THE EARTH: THE COMING AGE OF ENVIRONMENTAL OPTIMISM 186-89 (1995) .

[229] DAVID HUNTER, JAMES SALZMAN & DURWOOD ZAELKE, INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 579 (2nd ed. 2002) (describing how DuPont ultimately pushed for international regulation because its advance work gave it a competitive advantage).

[230] PERCIVAL, ET AL., *supra* note ___, at 569-71 (describing California's ZEV experience).

encourage zero-waste facilities, closed-loop processes, or by-product synergy arrangements.[231] Here, too, regulators will not be able to acquire enough information about a given facility and its operations to know whether such a technology-forcing requirement would be achievable, or would pose an unrealistic burden. Outcome-based standards will not be a good choice for this set of green business activities either.

Regulators may also face an informational deficit when using outcome-based standards to promote another form of green behavior: company decisions to address environmental impacts that are currently unregulated.[232] Government can certainly use outcome-based standards to turn unregulated pollutants into regulated ones. Or, it can threaten to develop such requirements, causing firms to reduce their pollution to either stave off, or be better positioned to comply with, such future regulation. Recent state initiatives to regulate greenhouse gases (GHG), and voluntary corporate efforts pro-actively to reduce GHG emissions in anticipation of a federal law, illustrate these dynamics.[233] Where outcome-based rules are used in this way they can promote innovation as firms come up with ways to meet, or anticipate, the future standards. Yet some of the most important instances in which firms have addressed unregulated impacts do not fit this model. In these cases, companies knew that they were creating environmental impacts, but regulators did not. The firms nonetheless went beyond legal requirements to address the

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[231] *See supra* notes ___-___ and accompanying text.

[232] *See supra* notes ___-___ and accompanying text.

[233] Until recently the federal and state governments have failed to regulate greenhouse gases (GHG). Some states have passed outcome-based regulations, thereby turning this unregulated group of pollutants into regulated ones. *See* http://www.rggi.org/home (last visited Aug. 23, 2009) (describing the Regional Greenhouse Gas Initiative, an effort by a group of Northeastern states to regulate greenhouse gases from electrical utilities). Other states, and the federal government, have been developing such legislation. *See, e.g.* The American Clean Energy and Security Act, H.R. 2454, 111th Cong. (2009) (federal bill to regulate greenhouse gas emissions). In anticipation of these new laws, some firms have begun pro-actively to limit their GHG emissions. *See* http://www.epa.gov/stateply/ (last visited Aug. 23, 2009) (describing the Climate Leaders Program in which corporations voluntarily commit to reducing their GHG emissions).

harm. One example of this is McDonalds decision to remove the mercury batteries from its toys, even though they were perfectly legal at the time.[234] Another is SC Johnson's program for removing harmful substances from its products, even though they were not required to do so.[235] In each of these cases the firms perceived dangers before the regulators did, and moved to minimize them. Beyond compliance behavior of this type is valuable precisely because it takes advantage of the informational asymmetries between the firm, which knows its operations intimately, and the government, which does not. But this informational divide makes output-based regulation a poor tool for motivating such actions. By definition, regulators will not know of many such opportunities, or will face high search costs in trying to find them out. This will make it very expensive for them to set an outcome-based target in these situations, much less to measure and monitor it.[236] This category, too, seems ill-suited to performance-based regulation.[237]

In sum, drawing on Coglianese and Lazer's helpful framework, we can say that outcome-based standards are likely to be effective where regulators already know quite a bit about the regulated industry's impacts and potential for green innovation so that it is possible to set realistic targets without having to incur excessive search costs, and where they can measure and monitor outcomes without great expense. Where these conditions are met, outcome-based standards can productively promote the development of discrete green products, processes and control technologies. By contrast, outcome-based standards are likely to be less effective when

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[234] *See supra* notes ___-___ and accompanying text.

[235] *See supra* notes ___-___ and accompanying text.

[236] Were regulators to make this investment and set the standard, this would negate the benefit of having firms use their superior knowledge to pro-actively address hazards.

[237] There is also the problem that, as soon as regulators set an outcome-based standard, the pollutants would no longer be "unregulated." But that is more a linguistic problem than a regulatory one.

regulators know less about the industry's impacts and potential for green innovation, so that it is very expensive to set realistic targets, and where they find it difficult and expensive to measure and monitor environmental results. In these instances the cost of setting a realistic target, or of measuring and monitoring the results, is likely to exceed any gains from increased flexibility. Thus, outcome-based approaches should not prove to be a good tool for promoting: (1) systematic and wide-scale corporate initiatives to improve environmental performance, energy efficiency or resource productivity; (2) actions that produce in environmental benefits indirectly (e.g. beyond compliance information disclosure, stakeholder involvement, or green investing); (3) product, process or control technology innovations that regulators cannot foresee due to a lack of information about the industry and its processes (e.g. zero-waste facilities or by-product synergy arrangements); and (4) facility reductions in unregulated impacts that regulators do not yet know about (e.g. beyond compliance reductions of toxic substances from toys or other products). In short, outcome-based standards are a poor choice for advancing many important aspects of the green business landscape. Porter's regulatory theory suffers from a serious gap when it comes to the important question of how environmental regulation can promote the win-win opportunities of green business.

IV. Reflexive Law and Green Business

How to remedy this gap? Having looked at the market, technology-based standards, and outcome-based regulation, and found them all to be lacking, are there any alternatives left? Here, the work German social theorist Gunther Teubner proves useful. Teubner argues that legal systems develop in an evolutionary progression: from common law rules that govern market transactions (which he calls "formal law" systems), to technology-based and outcome-based

standards (which he calls "substantive law" systems), to a third form of regulation that he terms reflexive law.[238] Reflexive law does not prescribe technologies or outcomes.[239] But neither does it leave things entirely to the market and common law.[240] Instead, it offers a third approach in which the law pushes firms to internalize social norms and objectives, reflect on their own performance with respect to them, and manage their operations so as to improve this performance. In other words, reflexive law is law that fosters self-regulation.[241] In Part I, we pointed to the Toxics Release Inventory, with its requirement that firms report annually on their releases and transfers of toxic substances, as an example of reflexive law. As we shall see, reflexive law encompasses not only information-based regulatory strategies, but also procedure-based and communication-based methods of promoting self-regulation.[242]

We focus on reflexive law not because we agree with Teubner's idea of an evolutionary progression, or his view that reflexive law represents some kind of final stage in the development of legal systems (we do not).[243] We focus on it because it offers another alternative—a

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[238] Teubner, *Elements*, *supra* note ___.

[239] *Id.* at 254 (reflexive law "retreats from taking full responsibility for substantive outcomes"); Stewart, *supra* note ___, at 130.

[240] Teubner, *Elements*, *supra* note ___, at 254 (reflexive law "shares with substantive law the notion that focused intervention inf social processes is within the domain of law.")

[241] See Teubner, *Elements*, *supra* note ___, at 246 ("a post-modern legal order must be oriented toward self-reflective processes within different social subsystems); Dorf, *supra* note ___, at 391 (reflexive law is "regulation of self-regulation"); David Schneider, *Radical or Rational? Reflexive Law as* Res Novo *in the Canadian Environmental Regulatory Regime, in* LAW, REGULATION AND GOVERNANCE 97, 99 (Michael Mac Neil, Neil Sargent & Peter Swan, eds., 2002) ("The role of law shifts, therefore, from . . . planning . . . to one of seeking ways to influence the development of self-regulating processes within other social systems")

[242] Teubner, *Elements*, *supra* note ___; Stewart, *supra* note ___, at 127-134. This is what distinguishes reflexive law from "management-based" regulation, as Coglianese and Lazer use that term. Management-based regulation focuses on planning and, to a lesser extent, on informational approaches that promote such planning. Coglianese & Lazer, *supra* note ___, at 694 Reflexive law assigns important roles to information-based, communication-based *and* procedure-based strategies. Teubner's reflexive law is thus broader in scope than Coglianese and Lazer's management-based regulation, although they do overlap.

productive one, as it turns out—for thinking about how law and policy can promote green business. In order to show this, we must first describe Teubner's evolutionary theory.[244] We can then elaborate on the three reflexive law strategies–information-based, procedure-based and communication-based laws–and explain how they can foster the growth of green business.

A. Teubner's Evolutionary Theory of Law

Continental "systems" theory, a set of ideas propounded by Jurgen Habermas,[245] Niklas Luhmann[246] and others, is a critical component of Teubner's reflexive law idea[247] and is the best starting point for explaining it. Stated simply, systems theory asserts that post-modern society has become so complex that it no longer consists of a single social/cultural system but rather many different self-regulating subsystems organized along functional lines.[248] Law is one such subsystem. Politics, industry, academia, family, sport and religion are others.[249]

Each subsystem is governed by its own "discourse"–its logic, values, norms and language.[250] This makes it difficult for one system (e.g. the law) to influence others (e.g. industry, or the family) in the way that it intends.[251] The message often gets distorted in the

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[243] *See infra* notes ___-___ and accompanying text.

[244] Readers more interested in the practical application of this theory to the fostering of green business than in the theory itself can skip directly to Section B of this Part.

[245] *See* JURGEN HABERMAS, COMMUNICATION AND THE EVOLUTION OF SOCIETY (1981).

[246] *See* Niklas Luhmann, *Evolution des Rechts*, 3 RECHTSTHEORIE 1.

[247] Schneider, *supra* note ___, at 99; Dorf, *supra* note ___, at 386.

[248] Teubner, *Elements*, *supra* note ___, at 244; Schneider, *supra* note ___, at 103. David Hess, *Social Reporting: A Reflexive Law Approach to Corporate Social Responsiveness*, 25 IOWA J. CORP. L. 41, 49 (1999).

[249] Orts, *supra* note ___, at 1260.

[250] Schneider, *supra* note ___, at 104; Orts, *supra* note ___, at 1260; Hess, *supra* note ___, at 49; Gaines, *supra* note ___, at 20.

course of being translated from one discourse into another, sometimes resulting in unforeseen consequences that undermine the intended effect. The Clean Air Act New Source Review (NSR) program can serve as an example from the environmental field. In the NSR provisions, Congress required those major emitters that that intended to construct a new plant or significantly modify an existing one to install the best available pollution control equipment when they did so.[252] Congress assumed that, with the natural turnover of capital stock, most emissions sources would eventually install the required technology. Industry, however, interpreted the rule according to its own economic logic. Instead of building new plants many companies chose to extend the life of less efficient, dirtier plants so as to avoid the NSR emissions control requirement.[253] These old, inefficient plants remained in service longer than they otherwise would have, resulting in more pollution, not less. EPA had to resort to industry-wide litigation in order to reestablish some linearity between Congress's action and industry's response.[254]

Teubner argues that the existence of self-regulating subsystems, and the way they distort legal interventions, has important implications for the evolution of legal systems. He observes that the first stage of Western legal systems consists of relatively simple laws that provide a formal structure within which autonomous individuals make decisions and take actions.[255] He

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[251] Schneider, *supra* note ___, at 104; Orts, *supra* note ___, at 1265 (discussing "different systemic languages."). In Teubner's terms, each is partially "closed" in the sense that its own discourse interferes with its ability to assimilate communications from another subsystem. Teubner, *Elements*, *supra* note ___, at 248-249.

[252] *See generally,* Bernard F. Hawkins, Jr., *The New Source Review Program: Its Prevention of Significant Deterioration and Nonattainment Analysis Programs*, *in*, THE CLEAN AIR ACT HANBOOK (Robert J. Martineau, Jr. & David P. Novello, eds., 1998) (describing NSR program).

[253] *Id.*

[254] *See generally,* Peter E. Seley, *Lawmaking Through Litigation: EPA's Gamble on New Source Review*, 15 NAT. RES. & ENVT. 260 (2001) (describing NSR litigation).

[255] Teubner, *Elements*, *supra* note ___, at 252.

calls these "formal law" systems.[256] The Anglo-American common law system of contract, property and tort, which form the backdrop for individual market transactions, would be an example.[257] Formal law systems find their theoretical justification in Classical Liberalism which holds that the role of the state is to ensure that all possess equal rights to liberty (e.g. freedom of contract, property rights) and then to let individuals, so endowed, work out their own futures.[258]

Teubner argues that, over time, the growing complexity and externalities of modern society overwhelm formal law. For instance nuisance law, which was able to handle the spillover effects between neighboring agrarian landowners, is often unable to address pollution from millions of automobiles, or from thousands of factories, that damage the health of large populations. The collective action, free-rider and causality problems render it ineffective.[259] Teubner maintains that societies have responded to this evolutionary development with "substantive law."[260] This legal form requires regulated entities to undertake defined actions and to obtain particular results.[261] It does not leave social outcomes to the market and autonomous individuals[262] but rather aims at achieving "specific goals in concrete situations."[263] Much current environmental regulation, including both technology-based and outcome-based

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[256] *Id.;* Stewart, *supra* note ___, at 130.

[257] *Id.*

[258] Cohen, *supra* note ___, at 3.

[259] Orts, *supra* note ___, at 1256; Schneider, *supra* note ___, at 100, 102; Cohen, *supra* note ___, at 154 ("The task at hand is far too complex for such a simple solution.")

[260] Teubner, *Elements*, *supra* note ___, at 240.

[261] Cohen, *supra* note ___, at 4 (substantive law is "regulatory, interventionist and direct.")

[262] Teubner, *Elements*, *supra* note ___, at 253; Schneider, *supra* note ___, at 100; Orts, *supra* note ___, at 1255; Hess, *supra* note ___, at 48.

[263] Teubner, *Elements*, *supra* note ___, at 240, 253; Schneider, *supra* note ___, at 100; Stewart, *supra* note ___, at 130; Cohen, *supra* note ___, at 152; Orts, *supra* note ___, at n. 117 ("substantive law instead means that law is used instrumentally in an attempt to regulate the 'substance' of social interactions directly.)

standards, would fall in this category. Substantive law finds its theoretical justification in the Welfare State.[264] The collective society intervenes in individual market transactions in order to correct market failures and bring about socially desired results.[265]

For Teubner, systems theory is important because it explains the breakdown of substantive law. The Welfarist, substantive law paradigm assumes that society can intervene in the marketplace for certain purposes, and that the intervention will actually accomplish those purposes.[266] Systems theory, however, says that this is unlikely to happen. Subsystems interpret the commands of the legal system according to their own logic, and their responses to these directives can be decidedly non-linear.[267] Interpreting the directive through the lens of their own discourse, subsystems often distort the message, or even undermine it altogether.[268] This can lead centralized directives to misfire[269] as in the New Source Review implementation problems described above.[270] Teubner believes that substantive law all too frequently fails to achieve its

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[264] Schneider, *supra* note ___, at 97, 100; Cohen, *supra* note ___, at 3;

[265] Teubner, *Elements*, *supra* note ___, at 253 (substantive law is grounded in the "perceived need for the collective regulation of economic and social activities to compensate for the inadequacies of the market.")

[266] Cohen, *supra* note ___, at 153, *quoting* Teubner (substantive law is premised on the "'rather primitive' model of linear causality guiding purposive legal action: [legislation is] . . 'thought to lead to . . . changes in social behavior so as to realize the desired goals'"); Schneider, *supra* note ___, at 115.

[267] *Id.* at 105 ("This closed, self-referential quality of social subsystems, is the basis of their resistance to external forms of regulation.")

[268] *Id.* (neither formal law nor command and control "directly affect the behavior of their intended target, as is posited by current legal theory." Only those components of the legislation "contribute to order in the system are selected by the system. This closed circle, or self-referential quality of social subsystems, is the basis of their resistance to external forms of regulation.")

[269] Cohen, *supra* note ___, at 153; Orts, *supra* note ___, at 1265 ("they often miss their mark by misunderstanding the ability of other social systems to respond"); Schneider, *supra* note ___, at 105 ("regulatory failure can be attributed to the lack of respect for the autonomy and internal logics of the regulated subsystem.")

[270] *See supra* notes ___-___ and accompanying text. The "brownfields" problem in environmental law provides another example. The Comprehensive Environmental Response Compensation and Liability Act (CERCLA) seeks to cleanse hazardous waste sites of harmful substances and return them to productive use. To this end, it requires current owners of these sites to clean them up, often at great expense. *See generally,* PERCIVAL, ET AL., *supra* note

ends, and that this occurs because of the difficulties inherent in system-to-system communication.[271]

What to do? Teubner does not advocate a return to formal law. He explicitly rejects the Liberalist model and maintains that property, contract and tort ceased to be sufficient many years ago. [272] Instead, he maintains that, just as systems theory diagnosed the problem, so it points the way to the solution. If social subsystems are autonomous, self-regulating entities, then the way to encourage them to achieve social goals (such as environmental protection) is to get them to incorporate social values into their own discourse and build it into their own self-regulation.[273] That is, regulation should no longer follow the substantive law model and seek to control social outcomes through centralized directives.[274] Instead, it should seek to: (1) get firms to internalize social goals (such as environmental values) and adopt them as their own;[275] and (2) to encourage

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___, at 366-371 (describing basic principles of CERCLA statute). In some instances, this does in fact lead to cleaner sites. However, at sites where there is no existing owner, and where there is ambiguity about the cost of a CERCLA clean up, the requirement often backfires. Prospective purchasers stay away from the site, knowing that if they purchase it they may find themselves saddled with a large liability that they cannot quantify beforehand (and so cannot properly discount in the purchase price). *Id.* at 414. Instead of being cleaned up and returned to productive use, many such sites become abandoned, an eyesore for the community and a haven for criminal activity. This is the opposite of CERCLA's intended result. The logic of the market has distorted that of the law.

[271] Schneider, *supra* note ___, at 115 ("The difficulty of providing effective environmental protection is a concrete example of the general failing of the substantively oriented, purposive law characteristic of the modern welfare state."); Dorf, *supra* note ___, at 395 ("Teubner argues that modern society is so complex and fractured that command-and-control regulation is bound to fail.")

[272] Cohen, *supra* note ___, at 154.

[273] Orts, *supra* note ___, at 1340 ("[b]ecause law itself cannot solve all the problems directly, regulators must begin to find ways to use law to encourage other forces in society to work for environmental improvement."). In Teubner's terms, integrating social values directly into the discourse of regulated subsystems will overcome the system-to-system "translation" problem that has interfered with the proper operation of substantive law. It will "solve the problem of governability." Cohen, *supra* note ___, at 155.

[274] Stewart, *supra* note ___, at 130.

[275] Stewart, *supra* note ___, at 127 (reflexive law's "aim is to promote the internalization of environmental norms by firms and other organizational actors as opposed to directly controlling their external conduct"); Dorf, *supra* note ___, at 395 ("Reflexive law is thus the best tool for the society in general to influence the individual social subsystems with which the law interacts, because it encourages actors within subsystems to internalize the general norm"); Cohen, *supra* note ___, at 155 (purpose of reflexive law is "to foster internal reflection: to force the

companies to reflect on these goals and self-manage to achieve them.[276] It should engage in the regulation of self-regulation.[277] Teubner calls this type of governmental activity "reflexive law" both because the subject (regulation) "mirrors" the object (self-regulation)[278] and because the law achieves its objectives by getting other actors to reflect on how their behaviors impact the wider society.[279]

Seen in historical context, reflexive law is something of a hybrid that draws together elements of the other two legal forms. Government *is* intervening in the marketplace, and seeking to achieve social objectives, as it does in substantive law.[280] Yet it is doing so in a way that respects the individual/corporate autonomy that lies at the center of formal law. In this sense Teubner's theory can be seen as a type of Hegelian dialectical synthesis[281] that seeks to resolve

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organization to internalize outside conflicts in its own decision structure, so as to become socially sensitive" to the externalities caused by its own behaviors and so "to develop effective internal control structures.")

[276] See Teubner, *Elements*, *supra* note ___, at 246 ("a post-modern legal order must be oriented toward self-reflective processes within different social subsystems); Stewart, *supra* note ___, at 129; Orts, *supra* note ___, at 1339 ("[t]he idea is to create a climate in which businesses voluntarily adopt procedures to encourage environmentally sound decisionmaking and to monitor environmental progress. This is not an impossible task").

[277] Dorf, *supra* note ___, at 386; Schneider, *supra* note ___, at 99 ("The role of law shifts, therefore, from . . . planning . . . to one of seeking ways to influence the development of self-regulating processes within other social systems.") Teubner, *Elements*, *supra* note ___, at 251 ("Instead of taking over responsibility for concrete social results, the law is restricted to structuring mechanisms for self-regulation"; law should focus on "creating, shaping, correcting and redesigning social institutions that function as self-regulating systems"); Stewart, *supra* note ___, at 127, quoting Teubner (goal is "ecological self-governance.").

[278] As Professor Dorf explains, "thinking about thought is reflexive thought, cleaning a vacuum cleaner . . . is reflexive cleaning, and regulation of regulation is reflexive law." Dorf, *supra* note ___, at 391; *see also* Cohen, *supra* note ___, at 155.

[279] Orts, *supra* note ___, at 1232, 1265; Hess, *supra* note ___, at 42-43. Some argue that reflexive law is also reflexive in a third way in that it does not assume that one form of law works best in all situations, but rather calls for reflection on the best form of law to use to address a specific problem. Cohen, *supra* note ___, at 152; Orts, *supra* note ___, at 1266. However, Teubner seems less inclusive than these commentators and is more committed to an evolutionary scheme in which reflexive law supplants the earlier forms. Teubner, *Elements*, *supra* note ___.

[280] Cohen, *supra* note ___, at 155.

[281] *See* Raj Bhala, *Hegelian Reflections on Unilateral Action in the World Trading System*, 15 BERKELEY J. INT'L L. 159, 161 (1997) (discussing the "dialectical process of sublation, that is, through an opposition of a pair of ideas - a thesis and antithesis - that is replaced by a new synthesis.")

the tension between the Liberal and Welfarist models that preceded it. Confronted with the dichotomy between individual autonomy and state directives, reflexive law chooses a third way: "regulated autonomy."[282]

Yet Teubner himself maintains that law has difficulty communicating its intentions to industry and other subsystems. How, then, can it get firms to incorporate social values and make them their own?[283] That is the problem on which reflexive law sets its sights. In explaining how it approaches the task it is useful to distinguish between reflexive law's two core objectives: (1) getting firms to adopt social norms as their own, and (2) encouraging them to self-manage in order to achieve these goals. It is also useful to focus more specifically on *environmental* law since that is of greatest relevance to our broader inquiry concerning the greening of industry.

B. Encouraging Industry to Internalize Environmental Norms

Reflexive law encourages industry to internalize environmental norms in two primary ways: information-based strategies, and communication-based methods.

1. Information-based strategies

Information-based strategies require firms to collect and disseminate information about their environmental performance.[284] The Toxics Release Inventory, described above,[285] is an

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[282] Teubner, *Elements*, *supra* note ___, at 254.

[283] "How are we to break out of the closed circle of law through legislation and penetrate the closed circle of social worlds?" GUNTHER TEUBNER, LAW AS AN AUTOPOIETIC SYSTEM 77 (1993) [hereinafter TEUBNER, AUTOPOIETIC SYSTEM].

[284] Stewart, *supra* note ___, at 131 (Government's role is "to ensure that appropriate information is generated, conveyed and exchanged.")

[285] *See supra* notes ___-___ and accompanying text.

example of this type of regulation. Such disclosure empowers stakeholders to bring pressure on industry through purchasing decisions, media campaigns, and other actions.[286] It also serves to educate those who work in industry about the environmental impacts of their own actions and so appeals to their moral commitments as social beings.[287] The combined effect should be to get industry to take more seriously, and seek to reduce, its impacts on the environment and human health.[288] It should "lead to environmentally beneficial changes in organizational behavior as a result of influences and interactions generated by consumption of . . . information by public stakeholders."[289] Information-based strategies for getting firms to internalize environmental norms fall into three sub-categories: those, such as TRI, that collect and disseminate *negative information* about firms' environmental impacts and so make them want to do better; those that collect and disseminate *positive information* about the companies' environmental performance and thereby use a carrot, rather than a stick, to encourage improvement; and those that disclose *other* types of relevant information, such as descriptions of green business success stories.[290]

2. Communication-based strategies

Reflexive law also seeks to promote the internalization of environmental norms by

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[286] Hess, *supra* note ___, at 66 (provide information to stakeholders so that they can bring pressure on the subsystems); Stewart, *supra* note ___, at 134-35 (information informs market choices).

[287] Stewart, *supra* note ___, at 142 (managers themselves may care about others opinion of their organization); *cf.* Hess, *supra* note ___, at 59 (such government regulation seeks to get subsystems to understand what society expects of them).

[288] Stewart, *supra* note ___, at 131 (reflexive law gets firms to "understand the impact of their actions and of the actions of others in order to make appropriate decisions").

[289] *Id.* at 134.

[290] See *Id.* at 130-141 (distinguishing between positive information programs, negative information programs, and neutral information programs.)

enhancing communication between stakeholders and the industries that affect them.[291] As was mentioned above, systems theory predicts that part of the problem is the lack of communication between the broader society and industry, and that part of the solution accordingly involves breaking into industry's own discourse–its norms, values and language–so that it can better hear, and ultimately incorporate, others' perspectives on its actions. Communication-based initiatives seek to facilitate this. For example, government might require industry to reach out to and meet with stakeholders and to demonstrate that it has given due consideration to their input regarding environmental management. Or, government might issue a public challenge to a given industry sector to improve its environmental performance, thereby stimulating dialogue and media attention on the topic. In these ways and others government officials become the "structural engineers of communicative systems."[292] The information-based strategy connects to the communication-based one since well-informed stakeholders will be more motivated to communicate with industry, and will be more persuasive when they do make their case.[293] It is worth noting that neither information-based nor communication-based strategies prescribe specific environmental outcomes. However, they do enable stakeholders to express their desires to industry and press it to align its norms and behaviors with their own. In Teubner's terms, law's role shifts from prescribing specific behaviors or environmental outcomes to "coordinating" the objectives of different sectors of a highly complex and differentiated

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[291] Teubner, *Elements*, *supra* note ___, at 251 (reflexive law focuses on the "organizing of participation" without mandating specific outcomes); Cohen, *supra* note ___, at 155-56 (reflexive law fosters reflection "by the establishment of discursive structures that allow for communication and bargaining within each particular subsystem between various actors conscious of potential external effects of decisions"); Stewart, *supra* note ___, at 129 (government establishes "communication channels and other structural arrangements, so that the primary conduct of businesses and other organizations and the level of environmental quality achieved would emerge from communications among and within organizations and other societal actors"); Orts, *supra* note ___, at 1268.

[292] Stewart, *supra* note ___, at 130.

[293] *Id.* at 128-29.

society.[294]

C. Promoting Self-reflection and Planning

Once information-based and communication-based strategies have gotten firms to understand and internalize environmental norms and objectives, the next step is to get them to reflect on their own environmental performance and manage their operations so as to bring them more into line with these values.

1. *Procedure-based strategies*

Here, reflexive law's primary *modus operandi* is procedural.[295] It requires or encourages firms to engage in planning and decision-making procedures through which they reflect on and manage their environmental performance.[296] For example, some states require facilities to engage in pollution prevention planning as a condition of permit issuance.[297] Others provide incentives for such behaviors, or technical assistance to facilitate them. Laws such as these do

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[294] Teubner, *Elements*, *supra* note ___, at 242 ("law becomes a system for the coordination of action within and between semi-autonomous social subsystems"); Teubner, *Elements*, *supra* note ___, at 255 ("The role of reflexive law is to structure and restructure semi-autonomous social systems by shaping both their procedures of internal discourse and their *methods of coordination* with other social systems"); Stewart, *supra* note ___, at 130 (reflexive law focuses on coordinating the goals and objectives of different elements of society); Stewart, *supra* note ___, at 134 (information allows stakeholders to "align incentives and coordinate objectives."

[295] Teubner, *Elements*, *supra* note ___, at 255 ("The role of reflexive law is to structure and restructure semi-autonomous social systems by shaping both their *procedures of internal discourse* and their methods of coordination with other social systems") (emphasis added); Schneider, *supra* note ___, at 101; Orts, *supra* note ___, at 1262; Hess, *supra* note ___, at 50-51; Stewart, *supra* note ___, at 131 ("process-oriented structuring of institutions.")

[296] Orts, *supra* note ___, at 1254 (reflexive law is "[p]rocedural. It aims to set up processes that encourage institutional self-reflective thinking and learning about environmental effects"); Hess, *supra* note ___, at 51 (procedures to encourage subsystems to be self-reflective with respect to their impacts on the larger society); Cohen, *supra* note ___, at 155 (reflexive law establishes "norms of procedure, organization, membership, and competencies that can make overall processes of decision making sensitive to side effects and externalities.")

[297] *See* JOHNSON, *supra* note ___, at 340-41 (summarizing the state initiatives). Government can link this procedure-based strategy to its information- and communication-based ones by requiring facilities, as a part of the planning process, to discloseenvironmental information to, and/or engage, stakeholders.

not prescribe specific control technologies or pollution levels.[298] Instead, they require or encourage firms to undertake planning and decision-making steps. The law accepts the environmental outcomes that emerge from these processes.[299]

In sum, reflexive law seeks to get firms to internalize environmental norms and objectives, reflect on where they stand with respect to them, and manage their operations so as to perform better. To accomplish this, it uses information-based, communication-based, and procedure-based regulatory strategies.

D. Filling the Gap in Regulatory Theory

Can reflexive law strategies foster the green business activities that Porter's outcome-based methods cannot address? Can they fill the gap in the theory of how regulation can promote green business?

To answer these questions, we first reprise our earlier discussion of outcome-based strategies and their limited capacity to foster corporate greening.[300] We concluded that outcome-based regulation will likely be *effective* where regulators already know quite a bit about the regulated industry's impacts and potential for green innovation, and where they can measure and monitor outcomes without great expense. Assuming these conditions are met, this strategy will be well-suited for promoting the development of discrete green products, processes and control technologies. On the other hand, outcome-based regulations will likely prove *ineffective* where

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[298] Orts, *supra* note ___, at 1232 (reflexive law focuses on enhancing the self-referential capacities of social systems and institutions outside the legal system, rather than direct intervention of the legal system itself"); Schneider, *supra* note ___, at 103 (reflexive law is "indirect").

[299] Hess, *supra* note ___, at 50 (reflexive law establishes procedures that guide behavior, but leaves it to private actors to determine their own outcomes).

[300] *See supra* notes ___-___ and accompanying text.

regulators know little about the industry's impacts and potential for green innovation, and where they found it difficult and expensive to measure and monitor outcomes. Outcome-based approaches will likely not be a good tool for promoting: (1) systematic and wide-scale corporate initiatives to improve environmental performance, energy efficiency or resource productivity; (2) actions that indirectly result in environmental benefits; (3) product, process or control technology innovations that regulators cannot foresee due to a lack of information about the industry and its processes; and (4) facility reductions in unregulated impacts, where regulators are not yet aware of these impacts.

Are information-based, communication-based, and procedure-based reflexive law strategies better able to foster these important green behaviors? Do any existing programs demonstrate how they might achieve this? We turn now to these questions.

1. *Systematic initiatives to improve environmental performance, energy efficiency and/or resource productivity*

When a firm launches a systematic environmental improvement initiative it does not simply tell its employees to seek pollution prevention, energy efficiency or resource productivity opportunities. Instead, it typically institutes some type of internal procedure for making sure that they are doing this, and for assessing the gains (if any) and expenditures.[301] While it would be extremely complicated and expensive to set an appropriate outcome-based standard to motivate such activity,[302] it would be relatively easy and straightforward to create a procedure-based reflexive law to accomplish this. For example, regulators could sketch out the general contours of a pollution prevention, energy efficiency or resource productivity planning system and then

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[301] Strasser, *Pollution Prevention*, *supra* note ___, at 35-36.

[302] *See supra* notes ___-___ and accompanying text.

require firms to implement it. Regulators would not have to calculate outcome targets in advance, or even to measure the results. So long as the facilities implemented the system and worked through the planning, they would be in compliance. The environmental results would be those that emerged from this process. While some firms might simply jump through the hoops and generate few environmental benefits, our analysis of the motivations behind greening[303] suggests that most should not do so. In many cases, firms that take the process seriously should be able to reduce their material, energy and regulatory compliance costs. The planning requirement could be the "push" that many companies need to break through the barriers that keep them from pursuing such win-win opportunities.[304]

This is not a new idea. A number of federal and state laws already require planning of this type.[305] For example, Massachusetts requires firms that use large quantities of toxic substances to develop a toxics use reduction plan, have the plan certified by a trained third-party planner, and submit a copy to the state.[306] The state publishes the plan on the Internet but has no authority to enforce the plan, monitor the company's implementation of it, or require that the plan result in any specific environmental outcomes.[307] Nonetheless, the planning requirement has led to significant reductions in the use and release of toxic substances.[308] This suggests that a

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[303] *See supra* notes ___-___ and accompanying text.

[304] *See supra* notes ___-___ and accompanying text (describing these barriers).

[305] JOHNSON, *supra* note ___, at 206.

[306] *Id.* at 208 (describing program); http://turadata.turi.org/WhatIsTURA/index.html (last visited Aug. 23, 2009) (same).

[307] *Id.*

[308] http://turadata.turi.org/Success/ResultsToDate.html (last visited Aug. 23, 2009) ("TURA filers have decreased their toxic chemical use by 14% from the 2000 base year to 2007. Using the same method of adjustment, TURA filers are generating 34% less byproducts or waste per unit of product and have reduced releases of TRI reported on-site chemicals by 44%").

procedure-based, reflexive law approach can work in this area.[309]

Some have argued that *requiring* systematic planning approaches will turn them from an opportunity that companies embrace, into an obligation that they resist.[310] They recommend using incentives and assistance, rather than requirements, to encourage such planning.[311] Governments have already experimented with these reflexive law approaches as well. The U.S. EPA waives gravity-based penalties for firms that employ an environmental management system to detect violations and then self-disclose these infractions to the Agency.[312] It has established a national database of information on EMS implementation experiences,[313] has published an EMS implementation guide and established an EMS Resource Center.[314] These and other[315] procedure-based reflexive policies, none of which specify environmental outcomes, can promote

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[309] Planning requirements also exist in federal law. For example, The National Environmental Policy Act (NEPA) requires federal agencies to prepare and publish an environmental impact statement (EIS) before they undertake any major actions that could significantly affect the environment. See Orts, *supra* note ___, at 1272. Private parties can be drawn into NEPA planning where they are seeking a permit or other federal approval that triggers NEPA requirements. The Clean Air Act requires businesses that have more than a threshold quantity of hazardous chemicals on site to develop a risk management plan that assesses the potential damage from accidental releases and identifies a strategy for responding to such an incident. Clean Air Act § 112(r), 42 U.S.C. § 7412(r) (2006); Orts, *supra* note ___, at 1335; JOHNSON, *supra* note ___, at 334.

[310] Stewart, *supra* note ___, at 147 (discussing those who believe that "requiring the adoption of environmental management systems could destroy their voluntary character, which may be vital to their success.")

[311] *Id.*

[312] U.S. EPA, *Incentives for Self-Policing: Discovery, Disclosure, Correction and Prevention of Violations*, 65 Fed. Reg. 19,618, 19,620-21 (Apr. 11, 2000); Stewart, *supra* note ___, at 144, 147-48; Orts, *supra* note ___, at 1276 (self-disclosure policy), 1279 (prosecution policy), 1281 (sentencing policy).

[313] U.S. EPA, *Draft EMS Action Plan* 6 (Dec. 20, 1999) (copy on file with author).; *see also* http://ndems.cas.unc.edu/ (last visited Aug. 23, 2009) (web site providing information on database);

[314] U.S. EPA, *Draft EMS Action Plan*, *supra* note ___, at 16.

[315] Regulators could adopt "integrated" permitting procedures, rather than media-specific ones (e.g. one permit for air, one for water, one for waste, etc.). Some studies have suggested that the process of applying for an issuing an integrated permit, which incorporates requirements related to air, water, and waste into a single document, would better enable facilities and regulators to see material and pollution flows as a whole and so to engage better in pollution prevention planning. This, too, would facilitate the adoption of systematic approaches to improving environmental performance.

systematic planning to advance environmental performance.

Information-based strategies could also contribute. Employing a positive information strategy, agencies could offer social recognition, such as the right to display a special logo or membership in an elite program, to companies that undertake rigorous, systematic planning efforts. Recalling our list of factors that motivate firms to go green,[316] such recognition would improve the company's brand name with customers, send a signal to investors that the firm has superior environmental management, encourage employees to remain with the company and bolster relationships with regulators. It should be able to motivate some companies to act. The European Union instituted such a program in 1995 when it implemented the Eco-Management and Audit Scheme (EMAS).[317] EMAS provides firms with a standard model for environmental management, auditing and reporting and offers modest incentives, including the right to display the EMAS logo, to those industrial enterprises that voluntarily adopt and successfully implement these practices.[318] Professor Eric Orts has urged to the United States to institute a similar program.[319] Doing so would promote green business.

In 2000, the U.S. EPA did take a step in this direction when it initiated its Performance Track program.[320] The program admitted only those facilities that could demonstrate that they were environmental leaders with superior compliance records, and that they had implemented an

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[316] *See supra* notes ___-___ and accompanying text for a description of these factors.

[317] See Orts, *supra* note ___, at 1287-1311 (discussing this program at length and relating it to reflexive law).

[318] *Id.* at 1290.

[319] *See* Orts, *supra* note ___, at 1339 (recommending that the U.S. adopt such a program).

[320] *See generally*, U.S, EPA, *Program Description of the National Achievement Track*, 65 Fed. Reg. 41,655 (July 6, 2000) [hereinafter U.S. EPA, *Achievement Track*]; Hirsch, *New Economy*, *supra* note ___, at 13-14.

environmental management system.[321] It granted these firms the right to display the Performance Track logo, listed them on the program Web site, and singled them out for praise at EPA events.[322] EPA used this recognition to encourage more companies to adopt EMS's.[323] By 2009, the program had grown to 547 members.[324] Yet the EPA terminated the program in May of 2009, not five months after the Obama Administration had taken office.[325] That an Administration that supports industrial greening would cancel this program suggests either that, notwithstanding its rising numbers, the Performance Track program was ineffectual, or that regulators and policymakers do not yet fully appreciate the role that reflexive law can play in promoting green business.

2. *Actions that indirectly result in environmental improvements*

Social recognition can also play a role in fostering actions–such as enhanced stakeholder involvement, environmental reporting or financial investments in green business–that indirectly produce environmental benefits and so do not lend themselves to outcome-based regulation. For example, the Performance Track program required applicants to reach out to public stakeholders by creating a community advisory panel, publishing a community newsletter and holding public meetings.[326] Such a policy, which combines information-based and communication-based

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[321] U.S. EPA, *Achievement Track*, *supra* note ___, at 41,656-57.

[322] *Id.* at 41,659-61.

[323] Stewart, *supra* note ___, at 144; Orts, *supra* note ___, at 1309.

[324] U.S. EPA, *Performance Track Final Progress Report* 1 (May 2009).

[325] U.S. EPA, *Notice to Terminate the National Performance Track Program*, 74 Fed. Reg. 22741 (May 14, 2009).

[326] U.S. EPA, *Achievement Track*, *supra* note ___, at 41,658.

strategies, should encourage more stakeholder involvement.[327] Information-based strategies can also promote green investing. The Securities and Exchange Commission requires firms to disclose actual and potential environmental liabilities and material risks.[328] This gives investors insight into firms' environmental performance, thereby facilitating green investing. It creates a strong incentive for firms to self-regulate in order to minimize such liabilities and risks.

Turning to communication-based strategies it is clear that company reports on environmental performance would be of much greater use to investors and consumers if all firms were to employ the same metrics to measure that performance. Were government to establish such metrics, investors and others would likely pressure firms to adopt them since this could increase their ability to compare company performance in these areas. This, in turn, would likely encourage firms to improve their environmental performance. International and European agencies have begun to do this. In 1999, the United Nations Environment Programme joined CERES, a non-profit devoted to socially responsible investing,[329] to promote the Global Reporting Initiative (GRI) sustainability reporting guidelines—a standard format for reporting on corporate performance with respect to a wide variety of environmental and social indicators.[330]

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[327] Government can also enhance stakeholder participation by offering technical assistance and funding to stakeholder groups. This is particularly important in the environmental area where the issues can require technical knowledge that most citizens do not possess. U.S. EPA experimented with this in Project XL, giving stakeholder groups the opportunity to apply for grants of up to $25,000 to hire experts to assist them. *See* U.S. EPA, Regulatory Reinvention (XL) Pilot Projects: Notice of Modifications to Project XL, 62 Fed. Reg. 19872, 19881 (April 23, 1997); Dennis D. Hirsch, *Lean and Green: Environmental Law and Policy and the Flexible Production Economy*, 79 INDIANA L.J . 611, 643 (2004) (discussing this initiative). Agencies could replicate this approach in other contexts.

[328] *See* Securities and Exchange Commission, *Standard Instructions for Filing Forms Under Securities Act of 1933, Securities Exchange Act of 1934 and Energy Policy and Conservation Act of 1975—Regulation S-K*, 17 C.F.R. § 229.10 et seq. (SEC instructions on how to comply with Regulation S-K); JOHNSON, *supra* note ___, at 201 (describing these rules).

[329] *See* http://www.globalreporting.org/AboutGRI/WhatIsGRI/History/OurHistory.htm (detailing history of GRI) (last visited August 7, 2009).

[330] *See* http://www.globalreporting.org/ReportingFramework/G3Guidelines/ (describing guidelines) (last visited Aug. 7, 2009).

The Dutch environmental ministry has since contributed funding to the effort, which is also supported by non-profits, investor groups, and companies.[331] The transaction costs involved in putting together such a detailed set of metrics and the fact that, in order to be of much value, such metrics must be public goods, will lead profit-seeking entities to undersupply them. American environmental agencies could expand their involvement in, and support for, such communication-enhancing efforts.

Procedure-based strategies could also be of use. For example, agencies could require facilities seeking permits to meet with stakeholders and discuss the plant's environmental impacts and compliance strategy as a condition of permit issuance. Alternatively, they could provide incentives for this type of stakeholder engagement. Such "front-end" involvement in facility environmental planning would give stakeholders a chance to make their views known before important decisions had been made, and so could prove more effective than "back-end" challenges to permits.[332]

3. *Innovations that regulators cannot foresee*

Regulators lose credibility when they impose an unrealistic outcome-based, technology-forcing regulation and then have to back down.[333] Thus, outcome-based standards do not work well when regulators cannot sufficiently predict the innovations of which a given industry is capable. Can reflexive law strategies more successfully press a sector to innovate in these situations? One way to do this would be to collect and disclose information about the negative

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[331] *See* http://www.globalreporting.org/AboutGRI/Funding/ (describing funding) (last visited Aug. 7, 2009).
[332] U.S. EPA, *Action Plan for Achieving the Next Generation in Environmental Permitting* 7 (1999); JERRY SPIER, GREEN PERMITS AND COOPERATIVE ENVIRONMENTAL AGREEMENTS: A REPORT ON REGULATORY INNOVATION PROGRAMS IN OREGON AND WASHINGTON 49 (2000).

[333] *See supra* notes ___-___ and accompanying text.

impacts the industry is imposing on the environment and public health. The dissemination of such information activates many of the drivers discussed above.[334] It can allow consumers to make more informed choices about whether they want to patronize that company, arm stakeholders with relevant information for use in discussions with the firm, affect corporate brand and goodwill, alter potential investors' perception of company management and environmental risks, and attract the attention of regulators. In these ways, disclosure of negative environmental information can push firms to seek ways of improving their environmental performance.[335] We have already described how the Toxics Release Inventory utilizes negative information in this way, and that it has resulted in a substantial decrease in toxic releases.[336] The TRI is a reflexive law success story that could be replicated in other areas. For example, federal or state governments could require firms to report their annual greenhouse gas emissions and then rank the emitters by industry or geographic location. As with hazardous substances, the negative publicity associated with the ranking would likely encourage the highest-polluting firms to focus more on reducing emissions.

Another way to disclose negative environmental information is to require companies to include it in their product labeling.[337] For example, California's Proposition 65 program requires firms that sell consumer products in California to assess whether they contain one or more listed carcinogenic substances or reproductive toxicants and, if so, disclose this on the

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[334] *See supra* notes ___-___ and accompanying text.

[335] *See supra* notes ___-___ (discussing drivers); GUNNINGHAM, ET AL., *supra note* ___ at152.

[336] *See supra* notes ___-___ and accompanying text; *see also* ESTY & WINSTON, *supra* note ___, at 111 (describing how TRI reports motivated DuPont to undertake a major pollution prevention initiative).

[337] Stewart, *supra* note ___, at 139.

product label or face penalties of up to $2500 per day.[338] The program has caused firms to explore upstream ways of changing their products to remove the harmful substances and avoid the labeling requirement.[339] In true reflexive fashion, it has achieved this through information disclosure and without the benefit of technology- or outcome-based requirements. The federal government and/or other states could adopt programs similar to Proposition 65 and could expand the requirement to cover production and process methods, in addition to end products.[340]

Government can also motivate green product and process innovation by collecting and disclosing *positive* information about firm environmental performance. This method, too, activates some of the important drivers that encourage firms to go green. It can influence consumer preferences, especially when it is tied to specific products. It can also affect corporate brand, investor assessment of managerial capacity, and relations with regulators. Eco-labeling programs which provide positive environmental information about specific products are a powerful tool of this type. The European Union's Eco-Label Program is the largest and most successful of these initiatives.[341] The European Commission has established environmental criteria for 15 product categories–ranging from refrigerators, to laundry detergents, to personal computers. These criteria relate to the product's entire life cycle and include overall waste generation, energy and natural resource usage, and air or water pollution associated with the product. Firms can voluntarily apply for certification and, where successful, display the Eco-Label in their product advertising. The U.S. EPA has dipped its toe into these waters. For

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[338] JOHNSON, *supra* note ___, at 203.

[339] Stewart, *supra* note ___, at 139; Clifford Rechtschaffen, *How to Reduce Lead Exposures with One Simple Statute: The Experience of Proposition 65*, 29 Envtl. L. Rep. 10,581 (1999).

[340] Stewart, *supra* note ___, at 140.

[341] JOHNSON, *supra* note ___, at 205.

example, it launched the Energy Star program which establishes energy efficiency standards for a host of consumer products and allows those that meet the standards to display the Energy Star label.[342] Federal or state governments could go much farther with this reflexive law tool by expanding the assessment to include life cycle environmental impacts rather than just energy efficiency, and by setting standards for a wider array of products.[343]

In its role as the "structural engineer[] of communicative systems,"[344] the government can also promote green product and process innovation by policing green marketing claims. This ensures that those who have truly come up with a better product or process gain a competitive advantage from these efforts, and so encourages such innovation. The Federal Trade Commission, acting under its Section 5 authority to enforce against "unfair and deceptive" marketing practices,[345] has taken steps in this direction by promulgating Guides for the Use of Environmental Marketing Claims (the "Green Guides").[346] The Green Guides provide general instructions on making a valid environmental marketing claim and provide specific guidance on for those who would claim that a product is biodegradable, compostable, recyclable, contains recycled content or is ozone safe.[347] The FTC is currently working on an enhanced set of Green

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[342] *See* http://www.energystar.gov/ (describing the Energy Star program) (last visited Aug. 6, 2009); Stewart, *supra* note ___, at 136.

[343] The market has spawned some private eco-label services. *See* JOHNSON, *supra* note ___, at 205 (describing the Green Seal and Scientific Certification Systems labeling services). One that is becoming increasingly visible and successful is the U.S. Green Building Forum's Leadership in Environmental and Energy Design (LEED) program which ranks buildings in terms of their energy efficiency and environmental impacts. ESTY & WINSTON, *supra* note ___, at 201. However, as a whole, these initiatives have achieved neither the legitimacy nor the penetration of the European program. This may be due to the fact that consumers do not place as much stock in a private labeler paid by the product producer, as they would in a public one.

[344] Stewart, *supra* note ___, at 130.

[345] *See* Federal Trade Commission Act, §5, 15 U.S.C. §45 (2006) (authorizing FTC to act to prevent "unfair methods of competition in or affecting commerce and unfair or deceptive acts or practices in or affecting commerce.")

[346] 16 C.F.R. § 260, et seq.; *see generally* JOHNSON, *supra* note ___, at 204; Orts, *supra* note ___, at 1272.

Guides that will reflect the expansion of green marketing claims in recent years.[348] From a reflexive law perspective, it makes sense to invest more resources in this communication-based tool.

4. *Reductions in unregulated impacts that regulators are not yet aware of*

Several of the reflexive law tools already discussed could promote this type of green behavior as well. For example, agencies could provide social recognition[349] to firms that reduce unregulated impacts. Moreover, regulators could use incentives or technical assistance to get firms to adopt lifecycle analysis tools that include identification of all of a product's environmental impacts. This could lead these companies to acknowledge, and possibly address, unregulated injuries. They could also require or encourage firms to build all environmental impacts, not just regulated ones, into systematic pollution prevention planning initiatives. Some environmental management systems already do this, leading to reductions in such impacts.[350]

The purpose of this discussion is not to list all the ways in which reflexive law strategies can promote green business but simply to show that this regulatory approach offers a host of options for doing so. Indeed, the reflexive law strategies just described appear able to promote greening in just those situations where outcome-based and technology-based standards appear unable to do so. The programs just described do not owe their genesis to Gunther Teubner and his theory of reflexive law. In all likelihood, many of the legislators and regulators who created

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[347] *See* http://www.ftc.gov/opa/reporter/greengds.shtm (describing Green Guides) (last visited Aug. 7, 2009).

[348] *Id.*

[349] *See supra* notes ___-___ and accompanying text.

[350] *See* Pacific Institute, *Managing a Better Environment: Opportunities and Obstacles for ISO 14001 in Public Policy and Commerce* 42-43 (March 2000) ("EMS are also attractive from a public interest perspective because they can address non-regulated environmental aspects.")

these initiatives were unfamiliar with the concept of reflexive law and did not have it in mind. The value of Teubner's theory lies not in the way that it has already shaped the fabric of regulatory law, but rather in the way that it allows us to pull together the initiatives just described and see them as part of a broader whole–a reflexive law approach to promoting green business.[351] Having made these connections we can begin to evaluate whether these programs are in fact furthering green business, with what benefits and at what cost. This is an important area for future research. Where the early results warrant it, we can also begin to envision ways (some of which were suggested above) to expand and add to existing information-, communication- and procedure-based approaches and so sketch out a reflexive law strategy for the promotion of green business.

V. Conclusion

Three important conclusions flow from the above analysis. First, reflexive law's emphasis on pushing firms to self-regulate, rather than on prescribing technology-based or outcome-based requirements for them, enables it to promote dimensions of green business that the other types of regulation cannot successfully address. Reflexive law has an important, yet heretofore under-appreciated, role to play in government efforts to foster green business. Policymakers and scholars should pay more attention on these strategies in order to identify the contexts in which they can prove most helpful.

Second, the critical role that reflexive law can play in promoting green business does not detract from the importance of other approaches. The market and common law, technology-

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[351] Professor Eric Orts and Professor Richard Stewart have each provided their own, very helpful descriptions and analyses of reflexive environmental laws. S*ee* Orts, *supra* note ___; Stewart, *supra* note ___. This article builds on their work by identifying additional reflexive environmental laws, and by showing how such laws can promote green business.

based standards and outcome-based standards can also contribute to the promotion of green business.[352] Reflexive law should supplement, not replace, formal and substantive law. Teubner's evolutionary story is therefore too simplistic on both descriptive and normative levels. This conclusion holds with even greater force when one considers, not only green business, but also the governance of day-to-day corporate compliance that does not depend on self-initiated innovation.

Finally, the above analysis may hold some lessons for efforts to encourage corporate social responsibility more generally. The theory of corporate social responsibility maintains that firms can benefit, not only from improving their environmental performance (i.e. green business), but also from enhancing their social performance in other areas such as human rights, labor, consumer protection, and anti-corruption.[353] Policymakers that attempt to promote self-initiated action in these areas will face many of the same challenges, and will have to choose from among the same set of regulatory tools, as those that have been seeking to encourage green business. That reflexive law appears to have the capacity to foster green business suggests that it may also be able to promote these other types of voluntary social performance. Some researchers have already begun to explore this terrain.[354] Our analysis suggests that this area, too, is one that deserves further scholarly attention.

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[352] *See supra* notes ___-___ and accompanying text.

[353] *See generally,* David Monsma, *Equal Rights, Governance and the Environment: Integrating Environmental Justice Principles in Corporate Social Responsibility,* 33 ECOLOGY L. Q. 443, 472-482 (2006) (describing the theory of corporate social responsibility and relating it to environmental law).

[354] *See, e.g.*, RALF ROGOWSKI & TON WILTHAGEN (EDS.), REFLEXIVE LABOUR LAW (1994) (applying reflexive law principles to the field of labor law); Hess, *supra* note ___ (arguing for corporate social reporting).