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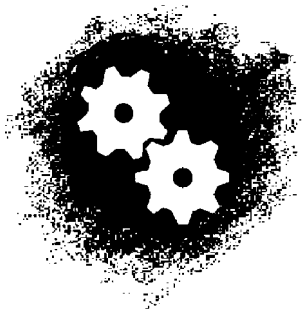
POLICY MODES, FIRMS AND THE NATURAL ENVIRONMENT



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This paper examines how different environmental policy types differentially impact firms and why firms vary in their responses to such policies. Based on the mechanisms embedded in policy instruments to create incentives for firms to comply, the characteristics of benefits/costs that policies impose on firms and the institutional context in which policy instruments were created and are sustained, the paper identifies five policy categories. These are category I (command and control), category II (market based), category III (mandatory information disclosures), category IV (business–government partnerships) and category V (private voluntary codes). Different policy types often bestow asymmetrical benefits/costs on firms. Some benefits/costs may constitute 'private/club goods' while others may constitute 'public goods'. Drawing insights from public policy literature, the paper argues that firms can be expected to favor policies whose benefits have the characteristics of private/club goods but the costs of public goods. Thus, understanding the nature of benefits/costs (private/club versus public) and the magnitude of their excludability is critical in explaining the variations in firms' responses. To understand how managers perceive the nature of benefits/costs (monetary as well as non-monetary), the paper draws on theories and perspectives in the business and public policy field. In doing so, the paper examines the 'demand' and the 'supply' sides as well as the market and non-market environments of a given policy. Thus, the paper makes a case for a multi-theoretic approach to understand variations in managerial assessments of benefits/costs, and consequently variations in their responses to various policy types. Copyright © 2004 John Wiley & Sons, Ltd and ERP Environment.

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BACKGROUND

An important issue in the study of environmental policy and management is how different policy instruments differentially impact firms, and why firms vary in their responses. While some firms have embraced greater environmental regulation and have gone beyond what is required by law, others with similar structural characteristics have fought tooth and nail against the adoption and implementation of more stringent standards. This paper seeks to shed light on such variations in firm behavior by examining how different types of environmental policy bring companies varying bundles of (perceived) costs and benefits. Our typology of various environmental policies would help policy makers to better predict firm behavior, and therefore better design and better target policy instruments. Our second objective is to bring more analytical clarity in the discussions on 'instrument choice' for environmental policy and management. Often times, policy instruments that are analytically separable are lumped together and portrayed as substitutes to achieve a given policy goal. Some other times, they are portrayed as belonging to mutually exclusive – such as government versus private – categories. To capture the complexity of the regulatory system that firms face, and yet to analytically comprehend it, we provide a typology of environmental policy instruments.

This paper identifies five policy modes or categories: command and control, market based, mandatory information disclosures, business–government partnerships and private voluntary codes. Our policy categorization is based on three factors: (i) the mechanisms embedded in these policies to create positive/negative incentives for firms to comply (such as state coercion, market incentives, pressures from stakeholders); (ii) characteristics of benefits and costs (private versus public) that instruments impose on firms and (iii) the institutional context in which policy instruments were created and are sustained. Though some aspects of these policy categories may overlap, they constitute analytically separable policy approaches to deal with environmental challenges. Yet, these policy modes need to be viewed as different pillars of the regulatory system that firms negotiate. In addition to the obvious case of the command and control mode, governmental prescriptions and interventions in setting overall emission targets, monitoring compliance and sanctioning violators provide critical building blocks for other policy modes as well. What is often not adequately recognized is that there are variations in the levels and types of prescription and the levels of regulatees' autonomy in deciding technology, emission levels or other kinds of environmental management issue.

The first category, command and control, represents the traditional style of government regulation in which legally binding performance standards such as emissions limits and the use of specific (or best available) technology are prescribed. This provides the basic environmental policy infrastructure across jurisdictions. The second category, market-based instruments, was created largely in reaction to the perceived inefficiencies (static and dynamic) of command and control policies. These are designed to encourage firms to internalize the costs of environmental externalities through various kinds of price signal. Policies in the third category, mandatory information disclosure, make use of market and non-market mechanisms by increasing the amount of environmental information available to shareholders, consumers and other stakeholders through such instruments as emissions registers and product labels. These policies do not specify technologies or emission levels (as in command and control policies), or put a specific cost on every unit of pollution generated by firms (as in market instruments). The fourth category, business–government partnerships, pertains to more specific voluntary agreements between individual firms and regulators in which the latter create incentives for the former

to meet environmental standards that go beyond those contained in law. The fifth and final category, private environmental codes, are schemes developed by non-government actors designed to create uniform standards of practice as well as advertising participation to external stakeholders.

Arguably, firms will prefer policies that give them more freedom. Hence, they can be expected to rank policy modes in the following order: voluntary codes, business–government partnerships, market based, mandatory information based and command and control. Nevertheless, firms' preferences of policy choices often vary – not surprisingly because firms themselves have varying bundles of competencies[1] to deal with different types of policy environment. Hence, in the process of designing and targeting policies, it is critical to reject an undifferentiated model of the firm and adopt a more nuanced one whereby firms can be differentiated and can be expected to vary in their responses to various policy types. In responding to a policy, firms could lobby the executive and the legislature to influence rule-making/interpreting processes, challenge statutes and regulations in courts, simply comply with law or join a voluntary initiative. This paper suggests that to explain variations in firms' responses the natures of the policy instruments (specifically, private/club versus public benefits and costs) and the managerial perceptions of the socio-political and market environments need to be taken into account. It draws on public policy scholarship and theories in the business and society field to build an explanatory framework.

By classifying environmental policies according to the type of instrument used and the institutional context in which they are created and sustained, this framework pinpoints how different policies interact with specific firm characteristics to shape managerial perceptions of their costs and benefits. We conclude that firms are likely to react positively to the introduction of policies whose benefits (monetary as well as non-monetary) have the nature of 'private/club goods' and whose costs have the nature of 'public goods'. This is not to say that this approach will lead to the 'best' possible type of public policy. Nevertheless, from a policy perspective, it is important to understand how the regulatees perceive the benefits and costs of various policy types, and why they exhibit varying levels of responses. Among the more important market and non-market forces that influence firms' perceptions of a policy's costs and benefits are its relationship with key stakeholders, the country's regulatory climate, the firm's ability to innovate, the nature of the product markets in which the firm competes and the level of its environmental performance.

The paper proceeds as follows. The first section introduces the discussion on policy characteristics and then describes five categories of environmental policies. Though this discussion primarily draws on the US experience, it also makes use of examples from the European Union and Japan. The second section discusses institutional and stakeholder theories as well as the corporate social responsibility literature and examines how the supply and demand of environmental policies affects managers' perceptions of their worth. In the third section, the specific costs and benefits of each of the five categories of policy modes are discussed. Finally, in the fourth section, conclusions and issues for further research are examined.

ENVIRONMENTAL POLICY MODES

Policy characteristics: the nature of benefits and costs

Two factors significantly influence managerial perceptions about the desirability of

[1] In the management literature, this is termed as a resource-based view of the firm. Given that firms seek to create and sustain economic rents, instead of focusing on product market position, firms' strategies should be geared towards acquiring and exploiting resources and competencies that would give them competitive advantage. Firms' responses to various environmental policy modes should also be viewed in a similar context.

environmental policies: the quantum of benefits/costs, and whether these benefits/costs manifest themselves as public, impure public or private goods. Public policy literature, especially the 'collective action perspective', classifies goods and services (henceforth goods) according to their excludability and rivalry (Ostrom and Ostrom, 1977). The objective of this classification is to identify the conditions under which markets and other institutions function efficiently. Markets function well if those paying for products (the provisioners) have the right to appropriate products' benefits and to exclude others who are not paying for them. Otherwise, the non-provisioners will free-ride, thereby discouraging the provisioners from paying as well (Olson, 1965). Such collective action dilemmas could lead to the good being under-produced. The cost effectiveness of excludability is a function of how markets are structured (the institutional dimension), the availability of technologies to exclude and the characteristics of the goods in question.

It needs to be emphasized that in the case of 'privileged groups', where provisioners enjoy most of the benefits, the fear that others may free-ride may not impede collective action (Olson, 1965). Thus, market leaders may undertake activities that benefit the whole industry because the gains accruing to them are sufficient to justify their paying for these activities. For example, the Responsible Care program has been adopted predominantly by large chemical firms because they believe they receive a disproportionate share of the goodwill benefits that the program generates for the chemical industry (King and Lenox, 2000). Another variant of a collective action dilemma occurs when an individual believes that his/her action alone will not impact the aggregate outcome, but is not in a position to persuade others to act in the preferred way. Here, individual inaction is rooted not in the fear of free-riding by others; rather, it stems from the perception that the group will not act collectively (Kleindorfer, 1999).

Table 1. The nature of goods and services

Excludability: Rivalry	Easy	Difficult
Rival	Private goods	Common-pool resources
Non-rival	Club and toll goods	Public goods

Unlike excludability, rivalry typically depends solely on product attributes. If one actor consumes a particular unit of a rivalrous product, others cannot. Multiple users can use non-rivalrous products simultaneously. Some products may be non-rivalrous up to a certain limit and rivalrous thereafter (Weimer and Vining, 1999/1989). Multiple motorists and cyclists, for example, can use roads. However, after certain a number of users begin using them, as people living in large cities are well aware, road services become rivalrous.

Based on the twin attributes of excludability and rivalry, products can be classified into four stylized categories (see Table 1): private goods (rival, excludable), public goods (non-rival, non-excludable), common-pool resources (rival, non-excludable) and impure public goods (non-rival, excludable) (Ostrom and Ostrom, 1977).[2]

Traditionally, governmental provision of collective goods – public goods, impure public goods and common-pool resources – has been viewed as necessary because their provision is susceptible to market failures (Pigou, 1960/1920). However, a number of scholars have shown that other institutional vehicles can correct market failures as well (Coase, 1960; Ostrom, 1990). Specifically, non-governmental actors can successfully provide

[2]This classification is different from Wilson's (1980) discussion on how distribution of costs and benefits – disbursed versus concentrated – impacts policy-making. Costs or benefits can be concentrated and yet non-excludable, leading to collective action problems. Of course, if benefits are concentrated on a few actors, it may be easier to create institutions that make them excludable – an aspect Olson (1965) recognized when he argued that collective action is more feasible in small groups.

impure public goods (Tiebout, 1956; Cornes and Sandler, 1996). As suggested by Prakash (2000), these impure public goods are of two kinds: toll and club. Toll goods such as movie theaters can be unitized, whereby consumers reveal their preferences by paying for every additional unit. This transaction is carried out by levying a user toll. In contrast to toll goods, the discrete consumption units of club goods cannot be priced (since it is difficult to estimate their marginal costs). Membership fees (reflecting average costs) are used instead to finance their collective provision. As will be argued subsequently, private voluntary codes as well as voluntary business–government partnerships can be conceptualized as club goods whose benefits are excludable but non-rival. Critically, to get firms to subscribe to such clubs, policy design must curb free-riding and provide excludable benefits.

In sum, drawing on the collective action literature, we have suggested that benefits and costs of policy modes could have the characteristics of private, club or public goods (common-pool resources are not relevant here). Firms can be expected to favor policies whose benefits they appropriate without incurring costs. That is, benefits should have the characteristics of private/club goods but costs of public goods. Many managers believe that the benefits of reducing pollution have characteristics of public goods, while the costs are borne by their firms: hence the managerial reluctance to unilaterally invest in environmental programs that go beyond the requirements of law (more of this below) and tendency to oppose, delay and dilute regulations that they cannot avoid.

Environmental policy modes

One of the key premises of this paper is that the type of environmental policy crucially influences a firm's reaction to its introduction. Thus, to understand firm behavior we must first be able to categorize the different types of policy to which firms must respond. The categorization scheme used in this paper draws on concepts developed in more generic theories of (American) public policy. Much of this work began with Theodore Lowi's classification of policy into three basic types: distributive, redistributive and regulatory (1964). More recent scholarship has attempted to refine this general framework by differentiating between the types of policy instrument available to policymakers in achieving their goals. Many of these studies employ different categories of government resources such as fiscal tools, law or information to make distinctions between policy instruments (Hood, 1986; Howlett and Ramesh, 1993). The categorization system in this paper borrows from but also goes beyond these frameworks by including both the types of policy instrument used and the institutional setting in which these instruments are created/administered to delineate differences between its five categories. Thus, although there is some overlap, each category in our scheme can be distinguished from the other four by differences in types of policy instrument, how they create incentives for firms to comply and the policy's sponsoring group (supplier).

The schema used here also takes inspiration from work being carried out by scholars of environmental policy. As will be discussed below, environmental governance across countries still relies on the so-called command and control policies. Their perceived inefficiencies led to the creation of second generation policies, market instruments, in the 1980s. Deficiencies in both these policy types have led to the development of the third generation policies (Sabel *et al*., 2000; Tietenberg, 1998). While useful, this classification is plagued by two key problems. First, the third policy generation contains a number of distinct policy instruments that are sponsored by government and non-government actors and that impose different types of procedural and substantive requirement on firms. Although these can be clearly differentiated from the first two generations, these instruments should not all be

lumped into one category. So far, these studies have either failed to include key new instruments in their schemas (for example, Tietenberg (1998) focuses only on information-based policies) or they have failed to clearly differentiate between various instruments (for example, Kollman and Prakash, 2001; Sabel *et al*., 2000). We hope to avoid these weaknesses by separating the new policy instruments (often subsumed under third generation policies) into three distinct categories – mandatory information disclosures, voluntary business–government compacts, and private codes. We would also like to point out that there is another policy mode – private agreements – arrived at through direct bargaining between the polluters and the pollutees (Borkey *et al*., 1998). Except in Japan, this instrument has not been widely used by policymakers, and therefore is not discussed in this paper.[3]

The second weakness of this environmental policy/management literature is its reliance on the 'generation' metaphor (see, for example, Hoffman, 1997). This paper does not employ the terms phases, generation or stages because they have a temporal element to them. In addition, there is an implicit suggestion that transitions from one phase/generation/stage to another are automatic, subject to some natural law, and that there are no reversals to previous phases/generations/stages. A particular policy phase/generation/stage is the outcome of a number of complex factors – economic, political, social, environmental and technological. Though policy choices are conditioned by path dependencies and institutional inertia, if the conditions underlying them sufficiently change, policies could reverse to the ones in previous phases/generations/stages. Further, as Tietenberg (1998) notes, policy instruments employed in various phases continue to co-exist. In fact, most countries' environmental policy continues to be dominated by command and control instruments despite the recent introduction of a number of newer instruments (Golub, 1998). For these reasons, it is more useful to think of these instruments as different policy modes that can and, in many cases, are meant to co-exist. We now turn to examining various policy modes.

Category I (command and control)

In this policy mode, regulators prescribe technological standards for value-addition processes and end-of-pipe discharges. Regulators are expected to closely monitor firms' compliance and impose sanctions for non-compliance, thereby mitigating firms' incentives for non-compliance. Provisions for private enforcement – private actors asking courts to direct regulators to enforce regulations – also reduces incentives for non-compliance. However, the zealousness of and approach to monitoring and enforcement varies across countries, adversarial in the United States and Germany but accommodating in the United Kingdom and Japan (Vogel, 1986).

The command and control policy mode implicitly assumes that policymakers know society's preferences for environmental goods (its 'willingness to bear' cost schedules for regulations) and can accurately translate these preferences into statutes and standards (that is, they have the requisite information and the expertise to interpret it, there are no institutional impediments and there are no 'agency' conflicts). Although command and control policies often ensure quick and measurable improvements in firms' environmental performance, they leave firms with little operational flexibility. Consequently, in the static sense, the marginal costs of pollution reductions are often not equalized across firms, perhaps leading to resource misallocation (Tietenberg, 1985). In the dynamic sense, the technology-forcing aspect of this policy mode could decrease incentives to innovate.

[3] Arguably, the use of common law of nuisance claims is an example of this mode. In fact, Justice Scalia has recently observed that if land-use claims relied on something other than nuisance, then they would constitute an unconstitutional taking of private property. Thus, in this perspective nuisance would be a primary basis of setting land use policy.

The command and control policy mode, however, does provide firms with opportunities to influence rule-making processes. In the United States, the Administrative Procedures Act (APA) requires administrative agencies (the Environmental Protection Agency – EPA – in our context) to seek public input on proposed regulations. The European Union also offers 'interested parties' similar opportunities (Mazey and Richardson, 1993; Meny *et al*., 1996). Moreover, perhaps most importantly, the unique US style of 'adversarial legalism' (Kagan, 1991) that subjects many executive decisions to judicial scrutiny – about 80 percent of major EPA decision are challenged in courts (Reilly, 1999) – provides regulatees with many opportunities, albeit expensive ones, to influence policy processes.

Category II (market-based instruments)

Command and control policies have resulted in significant improvements in the quality of the natural environment. However, they focus on the benefits of environmental policies, not on their costs. Public preference for such policy modes was driven significantly by factors such as an increasing awareness of corporate abuses and environmental mishaps. With the basic command and control policy infrastructure in place, demands for focusing on the costs of regulations increasingly began to be articulated. Significant levels of non-attainment in some statutes also suggested that a critical review of command and control instruments was needed (Bagby *et al*., 1995). The regulatory reform movement, 'Contract with America', promoted by the 104th and the 105th Congresses (1994–1998), supported market-based policy instruments. A similar debate, often referred to as *Location Germany*, took place during German unification, where the perceived costs of stringent command and control legislation have been seen by some as a hindrance to investment in the former Eastern states.

Market-based instruments such as tradable permits, deposit refunds and emission charges seek to equalize the marginal costs of pollution reduction across firms (Baumol and Oates, 1988). First suggested by Pigou (1960/1920), they create market incentives for polluters to internalize externalities. Very similar to command and control policies, market-based instruments can only work if there is monitoring, and sanctioning of violators. In contrast to command and control policies, market-based instruments create monetary disincentives for firms to pollute and do not specify outcomes or technologies. As a result, this policy mode should in theory be able to provide greater operational flexibility to firms. It also conforms to the so-called 'polluter pays principle' (OECD, 1989), where the polluters bear the costs of pollution control and remediation. However, market-based policies require well specified property rights and low cost infrastructures to monitor firms and to sanction violators. Many jurisdictions do not have and perhaps cannot create such infrastructures in the short term. In global common-pool resources such as biodiversity, the genetic pool and the atmosphere, property rights are difficult to specify. Further, unlike situations involving command and control policies, regulators cannot always control the aggregate pollution levels (pollution permits being an exception) because they may not have complete information about firms' abatement cost schedules (Baumol and Oates, 1988). It also leaves out key stakeholders from decision-making processes because pollution levels are determined by regulatees' response to market incentives.

There is an explicit moral dimension to this policy mode as well in that market mechanisms can be perceived to legitimize pollution and to ignore issues of environmental justice. The environmental justice movement focuses on the disproportionate impacts (inadvertent or otherwise) of firms' activities on disadvantaged groups (Bullard, 1990). Market-based policies may create incentives for firms to relocate in less expensive neighborhoods that are also inhabited by disadvantaged groups.

Though this may be 'efficient', it could increase the incidence of pollution for such groups. Arguably, this could be defended on the Hicks–Kaldor principle: because incremental gains offset incremental losses, the beneficiaries could theoretically compensate the losers and still be left with a surplus. Critics point out that what constitutes 'just' compensation is itself influenced by the extant power structures. As a general principle, 'efficient' outcomes may not be 'fair' to all because every equilibrium level reflects a given distribution of power and property rights. Thus the issues of distributive justice and efficiency may need to be handled separately (Coase, 1960).

Category III (mandatory information disclosures)

Category III policies focus on mandatory information disclosures by firms. Although these laws mandate firms' compliance, they are analytically different from command and control policies in that they only impose information disclosure requirements without specifying the desired outcome or the technology that firms need to adopt. Thus, they leave firms with considerable autonomy regarding choice of management systems, technology and environmental performance. In some ways, they create conditions that facilitate corporate learning by identifying areas for improvement.

These schemes make certain information available and let consumers and shareholders decide what are acceptable levels of performance. A prominent example is the Toxics Release Inventory Program – TRI – established in 1987 under Section 313 of the US Emergency Planning and Community Right-to-Know Act. This program requires owners and operators of facilities that have ten or more full-time employees, that are included in Standard Industrial Classification codes 20 through 39 and that have manufactured or processed more than 25 000 or 10 000 pounds of listed chemicals respectively during the calendar year to report releases of specified chemicals. The EPA has created a database that can be accessed free of charge by any stakeholder. The introduction of this much talked about program has led to a number of debates about what type of information should be disclosed, who should make this decision, using which criteria, and who should be able to access this information.

Environmental degradation can be viewed as manifest market failures, rooted in, *inter alia*, information asymmetries between firms and their stakeholders. Arguably, if stakeholders have access to information about firms' environmental programs and performance, they could decide how to reward/punish firms. This task is then facilitated by the falling costs of collecting and disseminating information. Firms could then respond to stakeholders' demands as they deem fit, leading to efficient levels of pollution abatement. Investors could invest in firms with superior environmental performance. Insurance companies could reduce premiums for firms with strong environmental programs. Consumers could buy 'green products' from 'green firms'. Additionally, information disclosures could exert moral pressure on firms by shaming them in front of their employees and communities. Thus, by empowering a wide gamut of stakeholders, mandatory information disclosure-based policies could potentially create monetary and non-monetary incentives for firms to adopt environmentally friendly policies.

These policies could be interpreted as working on the Coasian principle (Coase, 1960) whereby the 'polluter' and 'victims' bargain to arrive at optimal pollution levels (Tietenberg, 1998). However, the transaction costs of Coasian negotiations can be prohibitive, especially for non-point pollution, with a large number of dispersed victims, and with lags in noticing/assessing pollution's impact. Akin to market-based policies, Coasian bargains are also criticized for ignoring issues of equity and power. They require that low cost infrastructure exist to generate/disseminate information and key stakeholders have the abilities to comprehend such information. Further, research in

the decision sciences suggests that Coasian bargains may not lead to efficient solutions because individual preferences are significantly influenced by how issues are framed (Tversky and Kahneman, 1981). For example, individuals are prone to discount the future more than warranted by the prevailing discount rate. Consequently, they are unlikely to act as 'rationally' when purchasing energy-efficient appliances (Kleindorfer, 1999).

Category IV (voluntary business–government partnerships)

Command and control policies provide the basic framework for environmental governance but provide little flexibility to firms. Market-based policies and mandatory information disclosure-based policies, although through different routes, seek to provide flexibility to firms in meeting wider societal environmental goals. However, these policy modes inadequately deal with 'regulatory inflation' that is reflected in the increasing scope, number and complexity of mandatory regulations. Voluntary business–government partnerships are attempts to reverse such inflation without compromising environmental protection. Promoted under the 'reinventing government' (Osborne and Gaebler, 1992) initiative, this policy mode is epitomized in programs such as Green Lights, 33/50, Project XL in the United States and various 'covenants' negotiated between public authorities and industry in the Netherlands under the National Environmental Policy Plan. Such business–government partnerships differ from these three categories in that the instruments used either are not legally binding or only become legally binding by consent of the firm itself. Thus, individual firms voluntarily agree to meet standards that go beyond those contained in law in exchange for some sort of government reward.

There are two variants within this policy mode. In the first, the idea is to grant firms regulatory flexibility in complying with command and control policies in exchange for firms agreeing to adhere to more stringent standards than required by the statute. For example, under Project XL, Weyerhaeuser's Flint River facility has committed to reducing its allowable air emission by 60 percent. In return, the facility is allowed to undertake process modifications without prior approval and to certify its compliance annually instead of monthly (EPA, 1999, p. iii). In the second variant, firms voluntarily join an initiative that furthers some environmental goal such as energy conservation. The EPA, in turn, grants firms some sort of recognition such as the permission to use the 'energy star' logo.

Variant one has had mixed reactions. For example, Project XL requires participating firms to establish partnerships with local stakeholders and state agencies. However, some environmental groups are uncomfortable with the EPA providing flexibility to firms in meeting air and water standards. The credibility of community involvement has been questioned: local stakeholders may not have the expertise or may be overwhelmed by firms' clout in the local economy (Murdock and Sexton, 1999). The EPA has responded to such criticism. Its recent guidelines identify three categories of stakeholders who need to be consulted by firms: 'participants', involved in all day-to-day negotiations; 'commentators' with technical expertise, who submit written or oral comments; and the 'general public' (EPA, 2000).

In the 33/50 program, an example of the second variant of voluntary business–government partnerships, firms were encouraged to reduce voluntarily the emission of 17 priority chemicals more than the legal requirements. With 1988 as the base year, firms committed to reduce emissions by 33 percent by 1992 and by 50 percent by 1995. For this commitment, the EPA provided public recognition to 33/50 firms. The response of firms varied: only 13 percent of the eligible firms joined the EPA's 33/50 program (Sarokin, 1999). Critics contended that many firms that joined this program had already reduced their emissions.

Hence, according to this view, regulators or citizens did not benefit in terms of better environmental compliance or pollution reduction.

Category V (private voluntary codes)

Category V policies pertain to private voluntary regulation at multiple levels: a single firm (companies such as Baxter International and Shell annually publishing their environmental performance reports), an industry (Responsible Care in the case of chemical industry) or economy wide (ISO 14001 and the CERES principles).[4] This category is distinguished from the voluntary business–government partnerships by the fact that the sponsor(s) of these codes are private organizations rather than government regulators. Hence the processes by which private voluntary codes are supplied and sustained are different from those for business–government partnerships.

Historically, firms have established or joined private codes and standards across issue areas, both domestically and internationally (Hamilton, 1978). Some codes have been market promoting (such as technical standards that reduce transaction and production costs) while others have been market restricting (such as Sullivan Principles on trade with South Africa). Even market-restricting regimes can be viewed to be market promoting in the long run in as much as they seek to preempt command and control policies.

Many stakeholders welcome the emergence of credible voluntary codes of conduct. Regulators grappling with declining budgets can implement their mandates at lower costs and without the acrimony that characterizes environmental policy-making. Citizens can enjoy an increased supply of environmental amenities without increased taxes. Firms can gain greater operational flexibility in designing and implementing their programs (Fiorino, 1999).

Other stakeholder groups, however, view private codes as being outside public scrutiny (Steinzor, 1998). For example, although the flagship program of the American Chemistry Council (ACC – formerly the Chemical Manufacturers Association), Responsible Care, requires facilities to establish Community Advisory Panels (CAPs), the membership of CAPs is decided by firms and citizen groups that do not have unfettered access to facilities' environmental records (Prakash, 2000). As pointed out previously, the Administrative Procedures Act has institutionalized public involvement in the US regulatory processes on the assumption that procedural equity is critical for achieving equitable substantive outcomes. The processes of establishing private codes may not be adequately inclusive and transparent. Because of the perceived 'liberal' bent of the judges and the juries, the US public-interest movement also favors challenging regulatees in the judicial arena (Vogel, 1996). By making laws less adversarial, voluntary private codes could lessen the recourse to judicial settings.

Firms' responses to specific private codes policies vary, thereby suggesting that perceptions of the net benefits of such policies are not uniform across firms. These perceptions are influenced by the institutional context (such as an adversarial economy) as well as by firm-level characteristics (such as pollution intensity and export intensity). The ISO 14001 environmental management system has had low levels of acceptability in the US vis-à-vis Europe and East Asia. European countries have also responded differently to voluntary environmental codes such as the Eco-Management and Audit Scheme – EMAS (Kollman and Prakash, 2001).

To sum up, the five environmental policy modes, although analytically separable, coexist across countries. In fact, they should be viewed as working together to achieve public

[4] This policy mode could also be described as 'management-based regulation' as opposed to performance-based or technology-based regulation or 'regulating from the inside' (Coglianese and Nash, 2001). We prefer the phrase 'private voluntary codes' because, in addition to environmental management systems or EMS-based standards, these codes may specify outcome or performance standards as well. What is critical is that such codes are designed, diffused, monitored and enforced by private actors.

policy objectives. Prescriptive regulation, often identified with command and control policies, also finds expression in market-based mechanisms and in mandatory-information-based policies. If governments do not set overall emission limits, allocate quotas, monitor compliance and sanction violators, emission trading may not work. Similarly, if firms are not sanctioned for incorrectly reporting TRI emissions, then the TRI program may not generate stakeholder pressures on firms. Thus, is some ways, prescriptive policies find expression in several policy modes. The key difference is how varying levels of prescriptions, and what actions are sought to be prescribed, create bundles of private–public costs and benefits for firms.

We employed insights from public policy literature, especially the collective action perspective, to highlight how different policy modes create varying bundles of private/club and public benefits/costs for firms. Different societal groups have varying perspectives on advantages and disadvantages of these policy categories. Business response to them – in terms of adopting, stalling, influencing their design and enforcement – also tends to vary. The next section examines 'supply' and 'demand' aspects of each policy mode and the incentives for firms to respond in a given manner. To do so, we employ theories and perspectives from the business and society field to highlight how the institutional environment and stakeholder responses influence managerial perceptions of monetary and non-monetary benefits and costs of various policy types.

FACTORS SHAPING THE PERCEPTIONS OF BENEFITS AND COSTS

Governments are the suppliers of policy modes I (command and control), II (market based), III (mandatory information disclosures) and IV (voluntary business–government partnerships) while nongovernmental actors supply category V (private voluntary code) policies. However, the demand for these modes stems from various sources, both market and non-market. To understand the sources of the demand for and the supply of the five policy modes, and mangers' perceptions of their costs and benefits, an examination of firms' market *and* non-market environments is needed. To do so, we draw insights from theories and perspectives in the business and society field.

According to neoclassical economic theory, the sole objective of business is to maximize shareholders' value (Friedman, 1970). Markets are assumed to function efficiently and firms are advised to follow and faithfully interpret market signals. Governments are the only critical non-market institutions important to firms' calculations because governments define and enforce property rights. The upshot then is that firms can be expected to comply with rules that are strictly enforced and with significant penalties for non-compliance. This perspective would also suggest that non-governmental institutions and non-profit objectives should not be and are not of material importance to managers.

Other theories offer different perspectives on what objectives firms pursue/should pursue and how they respond to market as well as non-market environments. Three such perspectives are briefly described below. The first, institutional theory, focuses on the impact of non-market institutions on firms' policies. Some institutional theorists suggest that firms are not mere profit maximizers. Rather, their policies reflect pressures from non-market actors for legitimacy (Meyer and Scott, 1992; Hoffman, 1997). Institutional theorists also suggest out that often times structural changes in organizations that make them more similar do not necessarily make them more efficient (DiMaggio and Powell, 1983).

The corporate social performance (CSP), responsibility (CSR1) and responsiveness (CSR2) literature suggests that firms are (should be) sensitive to the notion that they are

obligated to carry out their social responsibilities (in the form of business–government partnerships and voluntary codes). Thus, firms adopt such policies because it is the ethical thing to do. There is an inconclusive debate in this literature about whether such policies reinforce profit objectives or are implemented without direct regard for the bottom line (Wood, 1991).

Stakeholder theory suggests that firms' policies should and do reflect the preferences of multiple stakeholders – stakeholders being 'any group or individual who can affect or is affected by the achievement of the organization's objectives' (Freeman, 1984, p. 46). Akin to the CSP literature, there is an ongoing debate on whether adopting a stakeholder approach improves firms' economic performance (for a review, see the special issue of *Academy of Management Journal*, October 1999). Further, the stakeholder literature acknowledges that not all stakeholders are alike (e.g. primary/secondary, owners/non-owners, voluntary/involuntary risk bearers and legitimate/illegitimate stakeholders) and that managerial response should take into account these differences. Work by Mitchell *et al*. (1997) suggests that managers classify stakeholders in terms of their power, legitimacy and urgency in shaping their policies. As this discussion suggests, stakeholder theory – like neoclassical economic theory – holds that a key managerial task is allocating scarce resources among competing ends. Where the two part ways is the salience they attach to these multiple ends.

In sum, institutional, stakeholder and CSP literatures suggest that firms may not always maximize profits and that they may respond to the demands of non-market, non-governmental actors. As will subsequently be discussed, the extent to which external institutions – governments, markets and citizen groups – influence firms' perceptions of the benefits and costs of environmental protection varies across the five environmental policy modes, thereby influencing firms' responses to these modes.

Managerial responses

Category I (command and control)

Command and control policies are supplied by the government, often in response to demands from powerful stakeholders. They impose excludable costs on firms while generating non-excludable benefits. Historically, these policies have been viewed as forcing firms to internalize externalities (pollution being a classic externality), thereby correcting market failures. Indeed, their technology-forcing nature imposes costs that firms cannot avoid (private costs). Many managers believe that non-compliance may result in stiff penalties. Depending on the elasticities of demand and supply in their product markets, firms may be able to pass on, partially or completely, the increased costs to consumers. If they cannot, they have incentives to oppose, both proactively and reactively, the policies' formulation or implementation.

Firms may signal their displeasure with such policies by employing 'exit' strategies (Hirschman, 1970); that is, moving out of jurisdictions with stringent environmental laws. Given that regulations and indirect taxes have similar impacts on firms, this argument is akin to the 'Tiebout hypothesis' (1956) in public finance literature, where voters oppose high taxes by 'voting with their feet'. Systematic empirical evidence about 'pollution-haven' and 'industrial flight' arguments is inconclusive (Anderson and Kagan, 2000). Not wanting to or unable to exit, firms could respond by influencing the rule-making processes. The objective is to reduce the compliance burden, or at least to ensure that environmental laws do not place them at a competitive disadvantage. In the US, under the APA, firms have opportunities to provide administrative agencies with their input during rule-making processes. Firms can also challenge the procedural or substantive aspects of regulations through the courts. Firms lobby the legislature as well, as the ongoing debate about campaign finance reforms suggests. Finally, firms can

also exploit the political tension between the EPA and Congress, especially if different political parties control the two institutions. This latter strategy can backfire, however. In the 1980s, the Democratic Congress adopted excessively detailed environmental statues. This left little autonomy for the EPA implementers, whose key appointments (perceived as favoring businesses over environmentalists) were made by Republican Presidents (National Academy of Public Administration, 1995). As discussed below, this has constrained the EPA's leeway in granting regulatory relief under some business–government partnerships such as Project XL.

Cost minimization may not be the sole objective firms have in influencing policy processes. Complying with command and control policies require significant resources. Thus, the more intricate and expansive such policies are, the higher the cost of entry into such industries is. Firms that possess environmental competencies – in terms of technologies, management systems or relationships with regulators – could therefore *demand* tougher command and control policies (Maxwell *et al*., 2000; Barrett, 1991). Zywicki (1999) provides numerous examples of industries gaining private benefits through enactment of command and control environmental policies.

Interestingly, some scholars suggest that, if 'properly' designed, command and control policies may provide a 'double dividend': in addition to reducing pollution, they force firms to innovate, thereby reducing costs (Porter and van der Linde, 1995; but also see Walley and Whitehead, 1994). In particular, Nehrt's (1998) work is instructive, because he examines conditions under which first-movers in environmental technologies can maintain their competitive advantages when competing against firms that operate in jurisdictions with less stringent environmental laws. In this sense, the benefits of command and control policies accruing to firms could be excludable. However, the critics believe that, given the history of environmental policy-making and agency conflicts, it will be difficult to ensure that regulators indeed 'properly' design policies to bring about such benefits (for an elaboration, see Jaffe *et al*., 1995).

Category II (market based)

Market-based policies are also supplied by the government to correct market failures. They too impose excludable costs on firms and create non-excludable benefits. Again, given firms' reluctance to embrace them voluntarily, they are required by statute. However, unlike command and control policies, firms have some discretion in determining the levels of excludable costs they will bear in terms of both adopting technologies as well in deciding the appropriate levels of emissions.

Firms could attempt to influence rule-making processes for these types of policy as well. Take the case of tradable permits (such as sulphur dioxide emission quotas created under the 1990 Clean Air Act Amendments) that set an upper limit for certain emissions and grant rights to actors to pollute or to trade these rights. The decisions about where to set the upper limit, whether the limit should change over time and how to distribute pollution rights are inherently political questions, which are quite amenable to lobbying by firms and other actors.

Arguably, the legal liability system can also be viewed as a market-based instrument. Before the enactment of the National Environmental Policy Act in 1969, the common law of torts and property – private, remedial action – provided the framework for environmental governance (Bagby *et al*., 1995). Unlike command and control policies that impose *ex ante* standards on firms, the liability system imposes costs *ex post* (after the act such as an environmental mishap). Based on the probability of environmental accidents and the potential penalties, a profit-maximizing firm could have incentives to voluntarily modify their behaviors *ex ante*.

The liability system (both negligence and strict liability) can either be incorporated into

formal statutes such as the 1980 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or work through the torts system. As Segerson (1999) points out, unlike negligence, which penalizes firms only if they do not undertake 'due diligence', strict liability offers no such relief. In this sense, negligence is akin to the command and control policy mode, where firms are sanctioned only if they break the law, while strict liability (as in CERCLA) is similar to the market-based policy mode because firms are required to pay for using environmental amenities although operating within the ambit of the law. Strict liability may also force firms to buy expensive insurance that eventually is reflected in higher product prices or lower profits. The reason is that under strict liability 'victims' have few incentives to undertake mitigation activities. Consequently, firms need to absorb victims' risks as well. Thus, firms have significant incentives to influence the rule-making processes so that the doctrine of strict liability is not incorporated in statutes. Not surprisingly, business associations actively lobbied for tort reform and regulatory reform of such statutes as Superfund and successfully got them on the agenda of the 104th and the 105th Congresses.

Category III (mandatory information disclosures)

Category III policies pertain to mandatory information disclosures. The total quantum of *ex ante* excludable costs imposed on a given firm by such disclosures is often difficult to estimate.[5] Similarly, it is difficult to estimate the value of excludable benefits accruing to a firm were it to adopt policies that mitigate the negative impact or enhance the positive impact of such disclosures. Assuming that non-compliance is not a viable strategy, firms could influence the supply of such policies by intervening in rule-making processes. Specifically, they could influence the type of information required to be disclosed as well as how this information would be made available to the public.

Consider the case of eco-labels. Firms may oppose disclosing some types of information on labels because consumers may not correctly comprehend them. Unlike their European counterparts, US agro-business is strongly resisting the mandatory labeling of genetically modified foods on the assumption that consumers have propensities to over-estimate their health risks. The debate over eco-labels – that require food items to disclose the presence/levels of genetically modified ingredients – threatens to snowball into a major spat between the United States and the European Union. US agro-business, having invested substantial resources in developing genetically modified foods, has vigorously lobbied the US Department of Agriculture and the US Trade Representative on this issue. No final resolution appears to be in sight.

Category IV (business–government partnerships)

This policy mode includes business–government partnerships in the environmental arena. There are two variants. In the first, the idea is to grant regulatory flexibility to firms in complying with command and control policies. In return, firms would agree to adhere to standards more stringent than required by the statute. In the second variant, firms *voluntarily* join a 'beyond compliance' initiative sponsored by regulators. The regulatory agency, in turn, grants these firms some sort of recognition such as permission to use the 'energy star' logo. One could also view this as a club sponsored by regulators.

The first variant bestows excludable benefits (regulatory flexibility, better relationships with regulators) and imposes excludable costs (higher standards, delays in project

[5] However, there is a literature on the *ex post* impact of 33/50 and TRI releases on stock prices (Hamilton, 1995; Konar and Cohen, 1997; Khanna *et al*., 1998).

implementation due to consultations with multiple actors). Stakeholder response to this policy mode has varied. For example, some citizen groups welcome that in deciding on the regulatory offsets under the Project XL program (variant one) the EPA requires firms to partner with local and national stakeholder groups. However, some other stakeholders view such consultations as perfunctory because of power asymmetries that favor firms. Because of stakeholder opposition, the average transaction costs of arriving at Final Project Agreements for Project XL projects were estimated at $450 000 (EPA, 1999). Thus, it is not clear what net goodwill benefits firms generate with stakeholders if they decide to adopt such policies.

Further, there could be a strategic downside to acquiescing to this policy mode. Once firms agree to open themselves to scrutiny by external stakeholders and begin to share sensitive information about their environmental policies and programs, it would be difficult for them to roll back these practices. Notwithstanding the commendable ideals of the stakeholder model, the objectives of firms and some stakeholders may not coincide. Thus, the costs of joining such partnership programs could be significant in the long run in terms of changed norms about what is expected of firms. Managers of publicly traded firms faced with strong pressure from the stock market to increase shareholder value could then be left in a quandary if the projected benefits of such partnerships do not materialize. Agency conflicts may lead to an over-investment in environmental programs. This is not to argue that the stakeholder model needs to be jettisoned. A learning that is well emphasized in the stakeholder literature is that not all stakeholders are equally legitimate. Before committing to such partnerships, firms need to be cognizant of the potential costs.

Variant two partnerships serve as regulator-sponsored clubs of environmentally progressive firms. With some sort of a certification that could be prominently displayed, firms could perhaps reap excludable benefits. For example, 'green consumers' could favor products manufactured by these firms. There could be cost savings as well: the EPA reports that firms that joined the Green Lights program reduced their energy bills by $100 million per year with rates of return on investment reaching up to 50 percent (Borkey *et al.*, 1998).

However, the costs of joining such programs are not trivial. Realizing this, the EPA typically targets industry leaders and 'persuades' them to join these clubs (Potoski and Prakash, 2004a). This persuasion ranges from moral suasion to implicit threats of imposing command and control policies. Given that having regulators' goodwill is beneficial to firms that operate in an adversarial economy, joining such clubs could bestow excludable benefits to firms.

Category V (voluntary private codes)

Category V policies can be viewed as club goods because, although their benefits are non-rival and potentially excludable, it is difficult to price their discrete units. As a consequence, to defray their supply there is a need to impose membership fees. As suggested previously, demands for voluntary codes emanate from multiple sources, including from firms wanting to preempt business-unfriendly command and control policies. At the supra-national level, multinational enterprises have promoted EMAS and the ISO 14000 series to preempt the proliferation of national environmental regulations that could serve as trade barriers. Regulators may also favor private codes that operate within the ambit of public law and, at the same time, lessen their monitoring responsibilities.

Industry leaders (akin to Olson's privileged group) typically take the lead in supplying club goods. Although most benefits of clubs are potentially excludable, such benefits can be reaped only after a lag, while the costs are borne in the short term. Thus, industry leaders with a significant stake in the outcome and

abilities to invest in projects with long lags are most likely to take the lead.

An interesting aspect in assessing the benefits of joining a club is that firms may not be able to undertake this assessment without examining what their peers are doing. The quantum of benefits is a function of, *inter alia*, the total number of eligible firms that have joined the club. In essence, there are 'network effects' (Farrell and Saloner, 1985) impacting total and per capita benefits. The upshot is that benefits of products with network effects cannot be estimated in isolation. The net benefits to a firm of joining a private code depends on how many other eligible firms have joined it and whether or not key stakeholders view the club as being credible. DiMaggio and Powell (1983) point out that isomorphism in organizations can be attributed to three sets of non-market processes: coercive, mimetic and normative. All three processes are at work in creating incentives for firms to join a particular code, especially when dominant firms or industry associations champion them. In addition to pressures from powerful peers (coercive) and the evolution of common normative frameworks on how to deal with pollution (normative), membership in such clubs becomes a way to collectively deal with regulatory uncertainty (mimetic).

Unless a critical number of firms join the club, it is possible that there would be no perceptible decline in pollution levels. Further, there could be network effects in technological issues as well – unless a certain level of packaging waste is collected with certainty, waste management technologies may not be cost efficient (Borkey *et al*., 1998). Thus, the realization that network effects could result in collective action dilemmas where firms individually believe that their actions alone will not impact the aggregate outcome but are not in a position to persuade others in the industry to act in the preferred way. The role of market leaders becoming first-movers therefore assumes importance.

CONCLUSIONS AND FUTURE RESEARCH

As summarized in Table 2, this paper has examined five categories of environmental policies: category I (command and control), category II (market based), category III (mandatory information disclosures), category IV (voluntary business–government partnerships) and category V (private voluntary codes). This categorization is based on the mechanisms embedded in these policies to create incentives for firms to comply, the characteristics of benefits/costs imposed on firms and the institutional context in which policy instruments were created and are sustained.

This paper has incorporated insights from public policy scholarship, especially the collective action perspective, and theories from the business and society field to understand variations in managerial response to the policy modes. Our conclusion is that explaining managerial perceptions of benefits/costs requires that the demand and the supply sides as well as the market and non-market environments of a given policy be examined. In contrast to neoclassical economic theory, this paper has also pointed out that firms may not always maximize short-term profits and that they may be responsive to demands of non-market institutions. Thus, managerial perceptions of the pressures from and expectations of external stakeholders could impact a policy's benefit–cost calculus.

Second, the paper emphasized that different environmental policy types bestow asymmetrical benefits/costs on firms (on other societal actors as well, but this paper focused on firms only). Some benefits/costs may constitute private/club goods while others may constitute public goods. Firms can be expected to favor policies whose benefits have the characteristics of private/club goods but costs of public goods: that is, benefits are excludable while costs are borne by all. Since this is often not the case, firms are either required by law to

Table 2. Policy modes and managerial perceptions of net benefits

Policy mode	Key characteristics	Supply/demand	Managerial perceptions of net benefits	
			Positive	Negative
Command and control (I)	• Public benefits and private costs decided by regulators • Legalistic • Prescriptive • Use of emissions limits, technology standards • Penalties for non-compliance	Government regulators/ environmental stakeholders	Firms with elastic product prices Firms with expertise in green technologies Innovative firms that can influence standard setting	Firms in price competitive markets Dirty firms; environmentally laggard firms
Market-based instruments (II)	• Levels of costs and benefits decided by firms • Incentives to internalize market externalities; penalize firms firm every unit of pollution • Polluter pays principle • Firms decide on technology and emission levels	Government regulators/some environmentalists, economists, some industrial groups	Firms with elastic product prices Low polluting firms that can sell pollution permits in trading schemes Influential firms that can influence permit schemes Firms in high risk industries that fear liability risk	Dirty firms in price competitive industries Firms in high risk industries that fear liability risk but can obstruct policy
Mandatory information disclosures (III)	• Levels of costs and benefits, often not easily quantifiable, influenced by firms as well as activism by stakeholders • Name and shame; penalties for pollution decided by stakeholders • Transparency • Use of public emissions registers (e.g. TRI), public right-to-know legislation	Government regulators/ environmental stakeholders, investor firms, shareholders	Firms that perform comparatively well Firms with green product lines (esp. for labels)	Industry laggards Dirty firms that can block labeling schemes or water down their content
Business–government partnerships (IV)	• Benefits are private as well as public while the costs are private • Government sponsored voluntary initiatives	Government/firms, industry associations, some stakeholders	Firms in countries with positive stakeholder relations, esp. high levels of trust between government and industry	Firms in countries with poor stakeholder relations.

Table 2. (*Continued*)

Policy mode	Key characteristics	Supply/demand	Managerial perceptions of net benefits	
			Positive	Negative
	• Government bestows excludable benefits for firms that meet higher standards than is required by law • Two variants: (i) participants are granted regulatory flexibility (e.g. EPA's Project X/L); (ii) participants are given government recognition e.g. through labels (EPA's 33/50 Program)		Firms with low hanging fruit or that have already achieved voluntary standards	Dirty/laggard firm
Private voluntary codes (V)	• Benefits are private as well as public while the costs are private • Non governmental actors design and sustain such codes • Proactive, 'beyond compliance	Individual firms (particularly industry leaders), industry associations, private standards organizations/ private stakeholders, market, regulators	Firms in countries with good stakeholder relations Firms in countries with well developed information networks that promote these codes	Firms in countries with adversarial economies Firms in countries that lack institutional promoters for these codes
	• Corporate reporting schemes, technical standards, private labeling schemes, environmental management schemes		Firms in industries that are sensitive to changes in environmental image Firms with publicly recognizable brands or end products	

adopt a policy or the policy instrument seeks to provide them with substantial net excludable benefits. Thus, understanding the nature of benefits/costs (private/club versus public) and the magnitude of their excludability is critical in explaining the variations in firms' responses.

An obvious implication of this paper is that to make policies politically acceptable to firms governments and other suppliers of regulations should design policy instruments that create significant excludable benefits for firms while, at the same time, minimizing private costs. Of course, such policies may not be politically acceptable to other stakeholders and may even work against objectives such as equity and accountability. Nevertheless, from a policy design perspective, it is critical that the benefit–cost calculus of the key targets of regulation be taken into account. This is a crucial step in lowering monitoring and enforcement costs and making policy instruments realize their objectives. From another perspective, if policies impose substantial private costs – as

many do because the objective is to make firms internalize externalities – then they should be backed by frequent monitoring and strong sanctioning. The issues of instrument choice need to be carefully examined keeping in mind the resources and capabilities of both the regulators and the regulatees. Clearly, this has often not been so, especially in the US case, where there are serious shortfalls in monitoring compliance with the law (Potoski and Prakash, 2004b).

One could think that firms will always prefer voluntary instruments over command and control policies. This paper tries to show otherwise. Firms differ in their costs and revenue functions as well as in their internal competencies. Policy suppliers, even those supplying command and control policies, are likely to find allies in industries/firms that possess or can easily acquire 'green competencies' (in terms of technologies, internal management systems, brands etc.) and face opposition from industries/firms in 'dirty' industries that are unlikely to possess or easily acquire such competencies.[6] Similarly, industries that have developed environmentally progressive cultures, whose industry associations generally take pro-environment positions or whose key and influential stakeholders expect them to show environmental leadership may support such policy initiatives. Thus, it is critical for policy suppliers to identify critical players in the institutional environment and have an understanding of their possible responses to policy initiatives. As in many policy types, getting key players buy into the policy type creates substantial signaling effects for other firms to join in as well.

Policies that impose private costs on firms need to be followed up with frequent monitoring and enforcement, and non-trivial sanctioning. This is especially true in the case of industries/firms that face elastic demand curves and cannot pass on cost increases to consumers. Such regulatees can be expected to oppose such policies. If policy suppliers cannot ensure frequent monitoring and enforcement (as governments increasingly are unable to monitor compliance with command and control policies), they need to rethink policy design – a critical lesson that has not always been adequately understood in the design and enforcement of command and control policies.[7] Further, policy suppliers need to develop non-market strategies to counter opposition from actors seeking to derail such policy initiatives. On this count, policy suppliers themselves become some sort of political actor, not merely technocrats with expertise in designing regulatory instruments.

The notion of demand and supply was used as an analytical artifact to examine how we can explain managerial perceptions about environmental regulation. Similarly, benefits/costs of many environmental programs, especially the ones that entail establishing management systems or joining codes (business–government partnerships and private codes), cannot always be quantified with a fair degree of certainty. With 'soft' variables such as winning the legitimacy and trust of key stakeholders significantly influencing managerial incentives in voluntary environmental programs, reductionist explanations for understanding managerial responses can be under-specified. Thus, a multi-theoretic approach may be necessary to adequately understand variations in managerial assessments of costs and benefits of a given policy, and consequently variations in their responses.

An important area for future research is to examine the role of policy instruments in

[6] Among automobile manufacturers, Honda is the only one that supports the strengthening of the Corporate Average Fuel Economy (CAFÉ) standards. This is not surprising because Honda has invested significantly in clean, low emission technologies, and perceives gains in market share with the strengthening of CAFÉ standards.

[7] This is an important reason to examine if, and under what circumstances, voluntary programs could improve firms' compliance with command and control policies (Potoski and Prakash, 2003). Examining inter-play of policy instruments can provide valuable policy insights.

facilitating corporate learning. Learning can be facilitated by identifying problems, providing pathways to possible solutions and facilitating conditions for cultural change within firms to adopt progressive environmental policies. Command and control policies as well mandatory information disclosures bring environmental issues onto the corporate agenda. They identify problems and sometimes force solutions. Market-based policies and voluntary programs may create incentives for firms to examine the benefits of adopting progressive environmental policies through means that are best suited to the organization. Arguably, voluntary programs, especially management system based, may also help firms to develop organizational cultures that marry business strategy with superior environmental performance. Thus, the extent to which carrot and/or stick facilitate corporate learning is an important issue for future research.

An important issue for future research to emerge from this analysis is the role that network effects play in firm reaction to voluntary-based policies. Because business–government partnerships and private code modes can be viewed as clubs, a better understanding of the role of network effects on clubs' benefits is required. One can speculate that there are perhaps diminishing returns to enlarging club size as well. If the club becomes so large that most key players are 'in,' then a new member may not get any competitive advantage from joining it. The member would only avoid a competitive disadvantage (akin to a 'hygiene' factor à la Herzberg, 1966). However, if club membership is not so large so as to include all key competitors, but sufficiently large to garner recognition, then joining the club could provide a competitive advantage (akin to a 'motivating' factor à la Herzberg, 1966). Thus, future research could examine the benefits in the context of network effects while trying to identify the membership level where diminishing returns to enlarging membership set in.

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