

Voluntary Environmental Programs: A Comparative Perspective

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Abstract

Voluntary environmental programs (VEPs) are institutions for inducing firms to produce environmental goods beyond legal requirements. A comparative perspective on VEPs shows how incentives to sponsor and participate in VEPs vary across countries in ways that reveal their potential and limitations. Our brief survey examines conditions under which VEPs emerge, attract participants, and improve participants' environmental performance. We focus on the costs and benefits for actors seeking to supply (or sponsor) these governance mechanisms as well as the costs and benefits for firms who are considering joining VEPs and adhering to their program obligations. © 2011 by the Association for Public Policy Analysis and Management.

INTRODUCTION

Voluntary environmental programs (VEPs) have emerged as important instruments of environmental policy and governance across the world. Their central purpose is to induce program participants, typically firms, to produce positive environmental externalities, as public goods, beyond the requirements of applicable government law.¹ In return, program participants acquire the ability to more credibly signal their environmental stewardship to external stakeholders who cannot otherwise fully observe participants' environmental processes or performance. Given such information asymmetries, VEPs' branding signal allows external stakeholders to discriminate among firms based on their environmental activities. The public policy payoff of successful VEPs is that they correct a failure in the market for environmental virtue (Vogel, 2005) by enhancing stakeholders' opportunity to reward firms for environmental stewardship.

While this paper focuses on VEPs, we recognize the growing prominence of voluntary approaches in other issue areas. Because voluntary programs are most developed in the environmental field, they serve as a blueprint for similar initiatives in other fields. Morgenstern and Pizer (2007) report that about 300 VEPs have been negotiated between firms and national governments in Europe and more than 87 VEPs have been sponsored by the U.S. Environmental Protection Agency. A study

¹ There is a debate on the appropriate terminology for these programs. Borck and Coglianese (2009) suggest that VEPs include unilateral stewardship commitment of firms (as in Walmart's Sustainability Focus), bilateral agreements negotiated between governments and firms (e.g., Project XL; Dutch covenants), and public voluntary programs (such as Responsible Care and ISO 14001).

of VEPs therefore informs not only understanding of environmental governance but the wider phenomena of social regulation (Rees, 1997), reflexive law (Orts, 1995), new public management (Kettl, 2002), and regulating from the inside (Coglianese & Nash, 2001).

This paper outlines a comparative perspective on VEPs that helps illustrate their potential and limitations. We explore how stakeholders' demand for environmental stewardship and the policy environment in which firms function influence how sponsors create VEPs and firms participate in them. We briefly survey research along three analytical themes: (1) program emergence, under what conditions VEPs are created; (2) program diffusion, what factors encourage firms to join VEPs; and (3) program efficacy, under what conditions VEPs improve participants' environmental performance. Cross-country comparisons reveal what shapes the costs and benefits for actors seeking to supply (or sponsor) VEPs as well as the costs and benefits for firms considering joining them and adhering to their obligations. Some VEPs have been rightly criticized for the lenient standards they impose on their participants and for being an industry foil for preempting governmental regulations. While we view effective VEPs as "regulation plus," we recognize that some VEPs have failed to promote environmental stewardship. The key lesson is that every policy approach, including VEPs, needs to be evaluated for its strengths and weaknesses, and these strengths and weaknesses ought to be assessed in the institutional and regulatory contexts in which firms operate. Policy approaches that show promise in some contexts might fail in others. Thus, it is important to explore the extent to which the ineffectiveness of some VEPs might be explained by their weak program design as opposed to their poor fit with the institutional context in which participating firms function.

The paper proceeds as follows. The first section outlines our theoretical perspective on VEPs. The second section focuses on program emergence, the third section on program diffusion, and the fourth section on program efficacy. The concluding section draws broader implications from our survey and identifies avenues for future research.

A THEORETICAL PERSPECTIVE ON VOLUNTARY ENVIRONMENTAL PROGRAMS

A key challenge in environmental governance is to induce polluters to incur the costs of internalizing pollution externalities, even though the benefits of a cleaner environment are enjoyed by all. During the industrial revolution, when smoke and other pollutants from industrial processes started becoming a public nuisance, governments responded with laws to regulate firms' polluting activities, such as the British Smoke Nuisance Abatement Act of 1853 and the Alkali Act of 1863 (Stradline & Thorsheim, 1999). Since the 1970s, governments substantially expanded their regulatory apparatus, which came to be labeled "command and control" regulations because they commanded firms to reduce their pollution emissions and controlled how they did it, often by specifying technologies and rules focused on reducing end-of-pipe emissions.

Command and control regulations have worked well for the first-generation environmental problems—emissions from a relatively small number of large industrial "point" sources—achieving dramatic reductions in pollution levels through the 1970s and 1980s (Cole & Grossman, 1999). Their downsides are a voluminous regulatory rulebook, high compliance and enforcement costs, and regulatory rigidity (Fiorino, 2006; Borck & Coglianese, 2009). Enforcement shortfalls are rampant across the world, especially in developing countries where regulatory agencies' lack of resources, capacity, and expertise is sometimes compounded by a culture of corruption (Power et al., 2011).

Starting in the 1980s, businesses began voicing concerns about the alleged high costs of complying with environmental regulations and the inflexibility of pollution

regulations.² Some firms claimed that command and control compelled their flight to “pollution havens” in the developing world, a hypothesis which has since been debated in the academic literature (Antweiler, Copeland, & Taylor, 2001). While command and control regulations provide the basic governance framework in most of the world, on their own they seem less appropriate for contemporary environmental challenges. Changing political conditions have made policymakers more sensitive to the backlash against command and control’s alleged heavy-handedness. Also, there is a sense that increasing heterogeneity among pollutant types and sources, the proliferation of non-point sources, the complexity of modern production processes, and the poor quality of regulatory infrastructure in developing countries have all made new command and control regulations harder to legislate and enforce. Practitioners and scholars suggest that instead of treating businesses only as the source of environmental ills (the implicit assumption in the command and control mode), policy efforts should look to mobilize their cooperation with positive incentives supplementing command and control’s “sticks” (Prakash, 2000; Kettl, 2002; Fiorino, 2006).

VEPs are among the new policy instruments aimed at correcting command and control’s perceived shortcomings.³ The core idea is to create incentives for firms to produce environmental public goods beyond the requirements of applicable laws by creating a credible, low-cost way for firms to signal their environmental stewardship. The assumption is that firms’ stakeholders will compensate firms for these “beyond compliance” environmental actions by bestowing benefits such as goodwill, regulatory relief, higher market shares, customer loyalty, and higher product prices (Gunnigham, Kagan, & Thorton, 2003; Lundgren, 2003). A VEP thus provides participating firms with an excludable “club good” (Buchanan, 1965; Cornes & Sandler, 1996) in that only firms participating in the program can leverage its excludable branding or signaling benefits (Prakash & Potoski, 2006a; Borck & Coglianesi, 2009; Kotchen & van’t Veld, 2009). A program’s branding allows external stakeholders to sort participants from nonparticipants (Spence, 1973) and target their appreciation accordingly. Without this signal, these stakeholders might treat all firms as “lemons” (Akerlof, 1970) and hold back their appreciation and rewards from all. In effect, VEPs can create a new market for corporate environmental reputation.

VEPs differ from command and control regulations on two counts. First, while in the context of command and control, government regulators are generally the key stakeholders, with the information and means to reward and sanction firms’ environmental stewardship, VEPs allow more and varied stakeholders to join the process of assessing, rewarding, and sanctioning firms’ environmental stewardship. Second, VEPs create more nuanced evaluative standards because they are more apt to allow varying stringency levels across programs, allowing firms to venue-shop across programs in the market for environmental virtue. VEPs allow actors to supply programs with different levels of stringency, in contrast with the common command and control scenarios, in which governments are monopoly suppliers of widely understood environmental standards.

Stakeholders infer the ability of VEPs to elicit improvements in participants’ environmental stewardship from several information sources, with two particularly important ones being the program’s design and its sponsorship. There are two central dimensions to program design: the stringency of obligations and the mechanisms to monitor participants’ compliance. More stringent obligations suggest that

² Theoretical challenges to the notion that governmental regulations are necessary to ensure that actors internalize externalities can be traced to the pioneering work of Coase (1960), and more recently Ostrom (1990).

³ Other policy innovations include market-based instruments such as tradable permit and mandatory information disclosure such as the Toxics Release Inventory program.

participants should achieve a higher level of environmental stewardship, an important signal because some environmentalists believe that voluntary programs are “greenwashes” or “astroturfs,” weak programs that require little beyond-compliance investment from participating firms, and yet seek to generate goodwill benefits for them. The second program design feature is the mechanism to address members’ shirking (King & Lenox, 2001; Delmas & Keller, 2005). Monitoring mechanisms can provide stakeholders with more confidence that members are adhering to their obligations. This is particularly important because unlike government’s regulations, where stakeholders have opportunities to observe governments’ enforcement and firms’ compliance, VEPs often operate behind closed doors where their claims for protecting the environment are less readily verified. Indeed, this lack of public scrutiny has led both scholars and environmentalists to call into question voluntary programs’ accountability. Thus, program design becomes an important factor for outside stakeholders to assess *ex ante* the degree to which VEPs are worth their appreciation and which their scorn.

Along with program design, outside stakeholders can assess VEPs’ stewardship impact through the attributes of program sponsors (Carmin, Darnall, & Mil-Homen, 2003; Darnall, Potoski, & Prakash, 2010). VEPs are sponsored by diverse actors including industry and trade associations, NGOs, and governments. While sponsors bear the cost of organizing collective action to design the program, recruit participants, and monitor compliance, the environmental benefits of their efforts are nonexcludable. What, then, are the incentives for actors to take on sponsorship costs? This issue is particularly important in the context of programs established by industry and trade associations. Arguably, industry associations have incentives to create programs that their members find acceptable. The often consensual decision-making procedures in these associations can lead to program designs that impose modest obligations on participants, provide weak monitoring and enforcement mechanisms, and whose claims cannot be verified by outside stakeholders. Participants are seldom sanctioned for not complying with program rules given that associations seek to retain and grow their membership base, not shrink it. A conflict of interest can arise because the industry association’s aim to hold their flock together may be in conflict with the objective of creating programs with stringent program obligations.

In contrast, programs sponsored by NGOs or governments tend to be more credible because such obvious conflicts of interest seem lower, if not absent. Both NGOs and governments have incentives to establish programs that can help sort the green firms from the less green ones. However, such programs might be less attractive for firms because they do not want NGOs telling them how to run their business. This lack of trust toward NGOs makes firms unsure how NGOs will enforce the program rules. Further, firms fear that NGOs, recognizing that exiting the program imposes reputational costs on firms, might opportunistically impose new obligations in the future. While industry associations face conflict of interest issues, NGO-sponsored programs face credible commitment problems. Thus, program sponsorship, especially when assessed in conjunction with program design, can provide useful clues about the level of environmental stewardship that VEP participation induces from members.

THE EMERGENCE OF VOLUNTARY ENVIRONMENTAL PROGRAMS

Having briefly outlined the design and sponsorship dimensions to *ex ante* assess VEPs’ stewardship potential, here we examine factors that account for variations in their emergence across countries. How does the availability and stringency of other policy instruments, political institutions, political culture (including business–government relations), encourage actors to invest resources to establish VEPs and recruit firms to join them?

Because public regulation provides the basic framework for environmental governance, incentives to create new policy tools must be assessed with public regulation as the starting point. VEPs differ from command and control regulations on two counts. First, while in the context of command and control, government regulators are generally the key stakeholders with the information and means to reward and sanction firms' environmental stewardship, VEPs allow more and varied stakeholders to join the process of assessing, rewarding, and sanctioning firms' environmental stewardship. Second, VEPs create more nuanced evaluative standards because they are more apt to allow varying stringency levels across programs, allowing firms greater latitude to venue-shop across programs in the market for environmental virtue. VEPs allow actors to supply programs with different levels of stringency, in contrast with the common command and control scenarios in which governments are monopoly suppliers of widely understood environmental standards.

The stringency of government regulations shapes actors' incentives to sponsor VEPs. Stringent and strictly enforced public regulations lower incentives for sponsoring VEPs because they reduce opportunities for firms to distinguish themselves through beyond-compliance VEPs. On the other hand, countries (and sectors within countries) with lax public regulation provide opportunities for actors to supply VEPs because firms can now differentiate themselves on environmental stewardship via VEPs (Börzel & Risse, 2010).⁴

VEPs reflect the increasing interest in information-based regulation designed to provide information to stakeholders about firms' environmental practices and outcomes. The U.S. EPA's Toxic Release Information (TRI) provides pollution emissions information for over 25,000 industrial facilities. Yet the TRI does not adequately fulfill the sorting function, given the difficulty for stakeholders in sorting through the information on such a large number of facilities. Recognizing this limitation, the EPA launched the 33/50 VEP, which obligated participating firms to commit to reduce the emission of specified TRI chemicals by 33 percent by 1992 and by 50 percent by 1995 (Arora & Cason, 1996; Khanna & Damon, 1999; Innes & Sam, 2008).⁵ The TRI model has been adopted beyond the United States, spreading to 20 OECD countries by one recent count (U.S. Environmental Protection Agency [USEPA], 2011). While many countries established TRI-like programs—arguably reflecting the broader interest in transparency and information-based regulations—they did not follow up with a 33/50-type VEP as an additional way for firms to signal their environmental stewardship. Canada is a notable exception, with its Accelerated Reduction and Elimination of Toxics program modeled along 33/50. The subject of VEP nonemergence when a blueprint VEP (such as the 33/50) exists has not been explored by environmental policy scholars.⁶

Government regulations also shape the policy space available to VEPs because they influence relations between firms and government. In the U.S. (and arguably

⁴ India is notorious for poorly enforcing environmental laws. The Web site of India's Green Rating program, sponsored by a leading NGO, the Center for Science and Environment, notes that "International financial institutions and investors are keen to know more about the potential liability they could be involved in by investing in emerging markets like India, which lacks in environmental commitments. Investors associate poor social and environmental performance with financial risks and liabilities. Environment conscious consumers express their support to responsible companies by purchasing their products in the market. With the increased thrust on exports, the companies will have to present themselves as environmentally responsible to be able to withstand international scrutiny" (<http://www.cseindia.org/node/277>).

⁵ Actors have sorted firms based on their TRI performance, primarily by naming and shaming them. Recognizing that stakeholders respond to pollution threats in their immediate vicinity, newspapers and NGOs have published country-wise lists of top TRI polluters (dirty dozens, in one case).

⁶ Recognizing enforcement problems, Indonesia's Environmental Impact and Management Agency established the PROPER program, a color-based rating system reflecting facilities' actual emissions versus regulatory standards (Blackman, Afsah, & Ratunanda, 2004).

in Germany as well), some scholars view firms and government regulators as locked in inflexible and adversarial relations (Kagan, 1991), compared to more cooperative and flexible relations, as is largely the case in Britain (Kollman & Prakash, 2001). As a vehicle for allowing firms to distinguish themselves, VEPs are more likely to emerge in the more fertile ground of flexible and cooperative government–business relations (Potoski & Prakash, 2004). Indeed, Britain has been at the forefront of many interesting experiments in voluntary governance, several of which became templates for global voluntary programs such as ISO 9000 and ISO 14001.⁷

In the spirit of comparative analysis, it is useful to compare VEP emergence across industries. In some industries, firms hold a common reputation because the actions of one firm have consequences for the other firms. The 1984 Bhopal disaster caused significant reputational damage for the chemical industry, as has the recent Gulf of Mexico oil spill for the petroleum extraction industries. Given that industry reputations are a shared, nonrivalrous resource, many industry associations have created programs to enhance their members' collective reputations. In some cases these are the sort of industry self-regulatory programs that seek to preempt government regulation. Countries with well-functioning industry associations are likely to have more VEPs because these associations, as actors organizing collective action to further their members' common interests, have lower costs for sponsoring an industry-level VEP.

Industry and trade associations might sponsor VEPs to preempt or shape governmental regulation, sometimes, though not necessarily, in ways that reduce social welfare (Segerson & Miceli, 1998; Maxwell, Lyon, & Hackett, 2000; Dawson & Segerson, 2006). Such a preemption perspective on industry-sponsored VEPs is compatible with the collective reputation perspective. Just as an industry reputation is a collective good held in common by industry members, the regulatory and tax policies targeting an industry can be similarly viewed as industry-level collective goods.

An examination of the forestry industry illustrates cross-national incentives to sponsor a range of VEPs. The regulatory terrain was open for the emergence of forestry VEPs because there was evidence of rapid deforestation, primarily due to lax forestry regulations (Cashore, Auld, & Newsom, 2004). In response to such perceived regulatory deficits, NGOs such as the Rainforest Alliance and Greenpeace first embarked on an activist mode with campaigns focused on topics such as tropical deforestation and biodiversity loss. Faced with a failure to persuade governments to supply new regulations, NGOs decided to get involved in direct governance, leading to their sponsorship of the Forest Stewardship Council program, which obligates participants to adopt a range of sustainable forestry (and social) practices (<http://www.fsc.org>). The intent behind FSC was to produce a global branding program that is sensitive to regional and national variations.

In response to NGO activism, various country-specific industry groups have sponsored a variety of forestry VEPs. In the United States, the American Forest and Paper Association established the Sustainable Forestry Initiative (<http://www.sfiprogram.org>). Landowner groups have sponsored VEPs such as Europe's PEFC (<http://www.pefc.org>) (Overdevest, 2010). Thus, forestry VEPs have emerged in response to lax government regulations and in response to VEPs sponsored by actors representing different interests, a process that varies across countries, reflecting different levels of organizational cohesiveness among the forestry industry, landowners,

⁷ The International Organization for Standardization launched its global quality assurance voluntary program in the mid-1980s. These standards obligate participating firms to establish internal management-based systems for quality control. Given the enormous success of ISO 9000 in terms of cross-country participation levels, the ISO adopted the management systems approach for its VEP, ISO 14001, launched in 1995 (Prakash & Potoski, 2006a).

sawmills, and environmental NGOs. The “market” for forestry VEPs is now populated by VEP “products” carrying different levels of stringency and coming from different sponsors. As we discuss in the next section, it is noteworthy that the most stringent VEPs (FSC in this case) are not necessarily the most widely adopted. Firms take into account both the benefits and costs of participating in VEPs, considerations that NGOs sometimes do not adequately appreciate as VEP sponsors. Recognizing this challenge, some forestry NGOs have launched aggressive campaigns to discredit FSC’s VEP competition (Sasser et al., 2006), with the aim of reducing the branding benefits potential members might receive from them (e.g., <http://www.pefcwatch.org>). In many ways, the benefits and costs of VEP participation are endogenous to political strategies of actors in the policy arena.

In the VEP marketplace, businesses and NGOs can be adversaries as well as collaborators. The Marine Stewardship Council (MSC; <http://www.msc.org>) represents a collaborative effort between the World Wildlife Federation and Unilever, one of the world’s largest purchasers of frozen fish. MSC seeks to encourage sustainability fishing practices. Informed by its FSC experience, the WWF made a strategic decision to collaborate with a key industry supply chain firm, Unilever, to create MSC (Gulbrandsen, 2009). Interestingly, in this case some governments did not approve the idea of a VEP in an area where they wanted to exercise regulatory power. The Nordic governments, in particular, have resisted the MSC, with the Swedish government pushing KRAV, a Swedish organic labeling organization, to develop a competing fishery VEP. Thus, a battle of VEP brands can also be witnessed in the fisheries sector; this time between some governments and the coalition of NGOs and commercial actors.

VEPs in the fishing industry provide a cautionary tale about the importance of VEPs’ fit with the nature of policy problems and the regulatory context. Fishery VEPs come with targeted objectives such as maintaining “sustainable” fish stocks that are easily defined on paper, though sometimes difficult to gauge in the water. Jacquet et al. (2008) survey a range of sustainable fishery VEPs and find that strong evidence of their efficacy is lacking. Gulbrandsen (2009) reaches similar cautious conclusions about the Marine Stewardship Council’s fisheries certification program. Though VEPs are perhaps still finding their way in the fishery industry, their struggles are suggestive. Fishery depletion is a canonical example of the tragedy of the commons, an open-access resource that lacks defined property rights (see Dolsak & Ostrom, 2004), but it may stem only tangentially from the type of information failures between firms and their stakeholders that VEPs look to solve. Instead of VEPs, simple catch share limits, a form of traditional regulation, have proven an effective tool to stem fishery decline (Costello, Gaines, & Lynham, 2008).

So far we have suggested that opportunities for supplying VEPs are influenced by the stringency of public law, the capacity of industry associations, and the supply of competing VEPs. Even in countries with stringent public regulation, exogenous shocks such as an industrial disaster can create the policy space for actors to launch a VEP, as occurred with Responsible Care, the chemical industry’s flagship VEP launched in the mid 1980s in the wake of the 1984 Bhopal disaster (Barrett, 2007). As the U.S. Congress passed the Emergency Planning and Community Right to Know Act in 1986, the chemical industry recognized that the industry had to collectively signal its commitment to environmental stewardship beyond the legal requirements. Responsible Care emerged in this context (Rees, 1997). First launched in 1985 by Canada’s chemical industry association, and closely followed in the United States the following year, Responsible Care has since spread to over 50 countries, reflecting the chemical industry’s need to signal its collective commitment to environmental stewardship not only domestically but also globally. A chemical disaster in one industry can have negative reputational spillovers in other countries, a reality we suspect the nuclear industry is grappling with post-Fukushima

Diachi.⁸ The extent to which a given VEP blueprint has been replicated in other industries has not been studied. While the forestry case discussed previously shows the commercial actors' desire to sponsor VEPs across countries, country-level factors played a far greater role in creating the many forestry VEPs.

The political and legislative gridlock that block the enactment of new legislation might encourage governmental regulators to sponsor VEPs. In some cases, this gridlock is encouraged by trade and industry lobbies opposed to new regulations. Self-regulation via industry-sponsored VEPs allows firms to establish their own the rules of the game, often with little outside scrutiny. In the U.S., however, instead of government gridlock leading to a proliferation of industry-sponsored VEPs, the EPA has created VEPs across a range of issues, from the politically charged context of global climate change to more run-of-the-mill issues such as home appliance energy efficiency. The EPA's attention to VEPs has frustrated some environmental groups that view these programs as an alibi for regulatory and legislative inactivity. Indeed, one does not find regulators sponsoring VEPs to the same level in other countries. Dutch regulators instead seek to directly negotiate business–government covenants, a policy which would face enormous difficulties in the United States, especially if business participation is sought to be encouraged by the promise of regulatory relief.⁹ In China, instead of sponsoring VEPs, governmental agencies have played an important role in persuading firms to join global VEPs such as ISO 14001 (Fryxell, Chung, & Lo, 2004).

RECRUITMENT AND DIFFUSION

A study of VEPs' global diffusion requires examining the varying costs and benefits of VEP membership from the perspective of participating firms. When VEPs are sponsored by trade or industry associations, the calculus of VEP participation tends to be endogenous to firms' calculus in supporting the creation of the VEP in the first place. This is because trade and industry associations tend to establish VEPs with the active input of their members, the target group for VEP participation. Such VEPs reflect the regulation of a set of firms by the same set of firms. In some cases, the trade associations mandate their members to join their VEP, as in the cases of the Sustainable Forestry Initiative of the American Paper and Forestry Association, the Responsible Care initiative of the American Chemistry Council, and the U.S. National Ski Areas Association's Sustainable Slopes program. The dynamics of VEP emergence and diffusion begin to differ when VEPs are sponsored by other actors such as NGOs, governments, or international organizations such as the ISO because a new set of national-level factors shape firms' benefit–cost calculus of program membership, a widely discussed topic in this literature.

VEPs are mechanisms for firms to signal their environmental stewardship to external stakeholders. The benefits of such signals, and thus firms' incentives to join VEPs, depend on the context in which firms function. The signals' value increases when firms lack other means for communicating the same message (Börzel & Risse, 2010). While firms located in developing countries might not face demands from domestic stakeholders to demonstrate environmental stewardship, they may face such demands from their global stakeholders. Examining such trade effects in the context of ISO 14001, Prakash and Potoski (2006b) find that high levels of ISO 14001 adoption in importing countries encourage firms in exporting countries to join the same VEP, a phenomenon analogous to the California effect (Vogel, 1995). International supply chain effects echo country findings that firms actively encourage

⁸ Chancellor Merkel has reversed her 2010 decision and committed to phasing out all 17 nuclear plants by 2022.

⁹ On issues with Project XL and National Performance Track programs, see Coglianesi and Nash (2009) and Fiorino (2009).

their suppliers to adopt ISO 14001 (Christmann & Taylor, 2001; Christini, Fetski, & Hendrickson, 2004). The U.S. auto industry requires first- and second-tier suppliers, many of which are located abroad, to adopt ISO 14001 (Coglianese & Nash, 2001; Borck & Coglianese, 2009).

Multinationals' subsidiaries can likewise serve as instruments for diffusing VEPs from host to home countries. If much of foreign direct investment comes from home countries where VEPs are strongly entrenched, these multinationals are likely to aggressively diffuse VEPs in their host country supply chains. Arimura, Darnall, and Katayama (2011) find that ISO 14001-certified facilities require more progressive environmental practices from their suppliers. Prakash and Potoski (2007) find support for the country-of-origin argument in that inward foreign direct investment (FDI) stocks are associated with higher levels of ISO 14001 adoption in host countries only when FDI originates from home countries that themselves have high levels of ISO 14001 adoption.

The regulatory systems and compliance culture in a country can also create important incentives for firms to participate in VEPs. Relief from government regulations was an important incentive for firms to join the EU's EMAS (Glachant et al., 2002), a strategy which faces legal obstacles in the United States (Coglianese & Nash, 2009; Fiorino, 2009). However, in less-developed countries, where regulations and their enforcement are less strong, regulatory relief may be little incentive to induce firms to join a VEP. Some other incentive might be required, and, as suggested before, these incentives might emanate from customers and NGOs located in the importing countries.

EFFICACY

By helping participants signal their commitment toward environmental stewardship, VEPs create a sorting mechanism for external stakeholders looking to target their appreciation and rewards in nuanced ways. This is a first-order benefit that many VEPs seek to generate, especially some government-sponsored ones that recognize firms' stewardship, thereby creating positive incentives for firms to continue on this path (Fiorino, 2009).

VEPs' efficacy might also be assessed on a more stringent criterion: Does VEP participation lead firms to produce environmental public goods beyond what they would otherwise produce? Given the beyond-compliance nature of VEP obligations, VEP participation should encourage more pollution reduction than the law requires, or what they will do unilaterally. Compliance with public law is often a key first requirement of VEPs. Firms' noncompliance with government regulations can be rooted in willful evasion or ignorance of the requirements of applicable law (Brehm & Hamilton, 1996). Some VEPs seek to correct ignorance-based noncompliance by requiring participants to establish environmental management systems (EMSs). Given that the quality of EMSs varies, VEPs requiring their participants to adopt extensive, specific, and demanding EMSs should show higher levels of environmental improvements (Darnall & Kim, in press; Anton, Deltas, & Khanna, 2004). Whether such beyond-compliance production of public goods is beneficial from a social perspective or inefficient over production remains an open question, an issue we take up further in the conclusion. Since identifying the socially optimal level of environmental goods is a daunting task, we focus on whether VEPs lead individual firms to reduce their pollution beyond the legal requirements.

If a firm is beyond compliance prior to joining a VEP, its prior environmental performance might be treated as the baseline for assessing VEP efficacy. In scholarly practice, the implicit baseline is the analytic counterfactual of what firms would have done in the absence of the program, usually with reference to their prior environmental performance and that of comparable nonparticipants. Thus, to demonstrate VEP

efficacy, participants need to have superior pollution reduction in relation to both nonmembers and themselves prior to joining the VEP.

To the extent VEP participation induces firms to follow the law, membership can yield environmental benefits that participants might not otherwise have produced. If this is indeed correct, then VEPs might hold substantial promise in developing countries where governments' capacity to make and enforce regulations is weak and the culture of compliance among firms is not well established (Espach, 2006; Graham & Woods, 2006; Kerret, 2008; Börzel & Risse, 2010). Even in developed countries, variation in the quality of compliance with the law suggests where VEPs can be helpful. Thus, regulatory complexity and regulatory institutions can be expected to correlate with VEP efficacy in a given jurisdiction.

VEPs' efficacy also depends on what types of firms join them. While some VEPs attract environmental leaders and others attract laggards (Lenox & Nash, 2003), by some standards laggards may make for a more effective VEP if it in fact induces more beyond-compliance environmental externalities from them. Another scenario is that firms that comply with the law will join VEPs. Indeed, in consonance with the sorting argument (Spence, 1973), credible VEPs are likely to be populated disproportionately by firms that have adopted beyond-compliance policies even prior to joining VEPs.

From a research perspective, the selection issue is a challenge because some unobserved factors may induce firms to both join the VEP and improve their environmental performance. Every empirical VEP study confronts the selection issue in one way or another, sometimes by explicitly stating its approach and underlying assumptions, and, unfortunately but more commonly, by not addressing the issue directly, leaving unstated (and less clear) implicit assumptions about how the VEP participation process is related to outcomes.

Scholarly evaluations of VEPs' efficacy have usually been focused on a single program within a country. Cross-national and cross-program analyses are rare (exceptions include Darnall & Carmin, 2005; Lenox & Nash, 2003). Research has shown VEPs having successes and failures in both developed and developing countries. One of the most studied is ISO 14001, the most widely adopted VEP in the world. There is some evidence that ISO 14001 participation (modestly) improves facilities' environmental performance in both the developed and developing countries, with developed country evidence coming from the U.S. (Potoski & Prakash, 2005a) and Japan (Arimura, Hibiki, & Katayama, 2008) and developing country evidence coming from countries such as India (Padma, Ganesh, & Rajendran, 2008) and Turkey (Turk, 2009). ISO 14001 also seems to improve participants' regulatory compliance, again with evidence from both developed countries like the U.S. (Potoski & Prakash, 2005b) and developing countries like Mexico (Dasgupta, Hettige, & Wheeler, 2000).

Meanwhile, developed countries have produced some notable failures, where VEP participation has had no discernible impact on environmental performance, such as Responsible Care (King & Lenox, 2000) and Sustainable Slopes (Rivera & deLeon, 2004). While ISO 14001 enjoyed the backing and expertise of the International Organization for Standardization, developing countries have produced successful VEPs of their own. In the developed world, Certification for Sustainable Tourism, a VEP established by the Costa Rican government, improved the environmental performance of Costa Rica's hotel and tourism industry (Rivera & deLeon, 2005). The Green Rating project in India significantly improved environmental performance among the country's largest and dirtiest pulp and paper mills, though not its cleanest ones (Power et al., 2011).

The forestry industry has had a rich experience with VEPs, attracting considerable scholarly attention. But unlike ISO 14001, where compliance and pollution emissions serve as convenient evaluative yardsticks, FSC was, according to its bylaws, formed to promote multiple environmental and social objectives. This has created a system of multiple trade-offs, with FSC standards and implementation

becoming variable across countries. In the U.S., FSC has focused on management, monitoring, and ecological practices, while Sweden's focus has been on ecological and social issues (Auld, Gulbrandsen, & McDermott, 2008). In contrast, developing world FSC implementation has focused more on labor and community relations (Newsom & Hewitt, 2005). Thus, country-specific political issues have led FSC to prioritize certain aspects of firm performance over others.

In sum, scholarly research is thinnest in the area of cross-national VEP efficacy due to data limitations (the lack of systematic facility-level, cross-national pollution data), methodological challenges (such as the always tricky endogeneity and selection challenges), and the multiple goals that some VEPs promote.

FUTURE DIRECTIONS

Can pollution reduction become a win-win proposition for firms and society? How can public policy support a market for environmental virtue? Porter and van der Linde's (1995) hopeful win-win perspective assumes that firms tend to overlook opportunities to increase profits by failing to recognize pollution as resource wastage. In this perspective, "appropriately designed" regulatory pressures can encourage (lazy) firms to capture private benefits of pollution reduction. The proliferation of VEPs points to another channel for win-win outcomes. Unlike the Porter-van der Linde argument, the VEP model assumes that even if firms recognize pollution as resource wastage, cost reductions alone will not provide them sufficient private incentives to invest in pollution reduction beyond the levels required by law. Firms will need additional incentives. The promise of capturing VEPs' excludable club benefits, typically reputational or branding benefits from participating in the program, if the program is effective can serve as the incentive for firms to contribute to the provision of a public good, namely a cleaner environment. Indeed, an area for future research is to parcel out the extent to which VEP participation is motivated by the firms' desire to appropriate Porter-van der Linde types of private benefit as opposed to club benefits, which the VEP literature emphasizes.

The VEP literature has had an impressive start and is well established across several social science disciplines. We see four major issues for systematic work in the future. First, it is important to recognize that VEPs are not a magic bullet for solving environmental problems. The quality of VEPs tends to be variable and their fit with the policy problem and regulatory context uneven. Indeed, based on seven case studies, Morgenstern and Pizer (2007) conclude that pollution reduction or environmental gains from VEPs are modest. While VEP proponents need a healthy dose of skepticism, one should not subject VEPs to excessively high standards beyond what would be applied to the status quo regulatory approaches. All institutions can fail: Markets can fail, governments can fail, and VEPs certainly can fail. The challenge is to understand the sources of institutional failures without assuming that they are necessarily endogenous to the attributes of the institution itself. Just because democracy as a political system has failed in large parts of the world does not imply that democracy is a flawed political system in all contexts.

The problem of uneven VEP quality deserves careful scrutiny. Low entry barriers to establish VEPs allow unscrupulous sponsors to establish "greenwashes," "astroturf," or fake programs that contaminate the VEP population. Program design and program sponsorship should allow an *ex ante* assessment of the stewardship potential of VEPs, thereby differentiating the astroturfs from the real greens. Unfortunately, stakeholders often do not have resources or the abilities to sort through the multiple and competing claims on VEPs. Their policy illiteracy is accentuated by information overloads, thereby rendering it difficult for them to assess the worth of social and environmental claims of corporations. There is little research to show whether, how, and why such VEP contamination varies across countries and industries. Future work should also focus on how stakeholders

process stewardship claims of different VEPs. Methodologically, we see a potential for experimental work in this area that so far has tended to be dominated by either econometric studies or case studies.

Second, there is an opportunity to more systematically examine conditions under which VEPs reduce pollution. Much of the VEP literature on program efficacy has focused on facility-level studies. Another approach would be to look at the aggregate country-level effects of VEPs and how these effects might systematically vary across countries. VEPs with stringent obligations might not lead to a large membership roster. While participation in such VEPs might dramatically improve the environmental performance among their limited roster of firms, the aggregate, country-level pollution reductions (number of participants*pollution reduction per participant) might be modest.¹⁰ In contrast, consider another VEP with less stringent obligations but with a higher membership roster. While pollution reductions might be modest per participant, the larger participation roster might lead to substantially higher aggregate effects. It is therefore important to examine the elasticity of recruitment into VEPs in relation to the stringency of their obligation, to help the debate on whether stringent VEPs always constitute better public policy, and what is the optimal club size (Buchanan, 1965) of VEP from a welfare perspective. As we noted, this would vary across countries because stringency of any VEP or its welfare implications must be assessed in relation to domestic law, institution, and regulatory culture. While cross-country studies provide the opportunity to study the efficacy of a given program across jurisdictions, comparable facility-level cross-national data are not easily available. New developments such as the European Pollutant Emission Register, which provides industrial emissions to air and water, can certainly allow for cross-national comparisons within the European Union. Such data will allow scholars to explore the issue of institutional fit in more depth: how national-level institutions, politics, and culture bear upon VEP efficacy.

Third, there is an opportunity to study VEP emergence in the context of varying risk preferences across countries. In situations where pollution or environmental degradation can have disastrous consequences or where pollution externalities have characteristics of post-experience goods (i.e., their implications can be observed after a time lag), command and control regulations might be politically feasible (although it is important to recognize that the Chernobyl disaster occurred in a society with virtually no VEPs). Citizens may want an authoritative and mandatory government response to preempt a particular problem rather than waiting for the industry to take action voluntarily. Nevertheless, risk perceptions, how societies respond to risks, and government's ability to act decisively vary across countries. The link between varying perceptions of risk and VEP emergence and participation is an issue that needs further research.

Finally, scholars should explore VEPs' social welfare implications. Suppose VEPs are so successful that they lead firms to reduce pollution on a large scale. Is this socially optimal, especially if pollution reduction emanates from firms' desire to corner branding-club benefits as opposed to the Porter-van der Linde type of private benefits? Because firms face competing priorities, their VEP investments have opportunity costs, such as foregone investments in improved labor productivity. While individual firms are in the best position to assess optimal levels of their investment in VEPs, given the externality problem, this may not translate into optimal policy outcomes in the aggregate. Low entry barriers for creating a new VEP can lead to an "oversupply" of VEPs. If firms are already producing environmental

¹⁰ Borck and Coglianese (2009) rightly suggest that assessments of program effectiveness should also incorporate the spillover effects. For example, some firms might adopt EMSs specified in VEPs, but not get themselves certified due to the high costs of third-party auditing. This will depress VEP membership count. Yet VEPs have induced a culture of environmental stewardship and diffused best EMS practices among nonparticipants, which eventually affects aggregate pollution levels.

protection at a socially optimal level, VEPs may lead to a socially inefficient over-production. VEPs are an instrument to correct a market failure, but may themselves be subject to market failures.

Complicating this subject is the issue of identifying optimal pollution levels across jurisdictions. This issue has generated considerable controversy, as evidenced in the literature on environmental racism (Bullard, 1994; Konisky, 2009). Nevertheless, the cost–benefit approach to regulation is one way to examine the welfare impact of VEPs within and across jurisdictions. Federal regulations are now routinely defended or criticized on the basis of cost–benefit calculus. Because most VEPs do not set a specific pollution reduction target, it is difficult to assess *ex ante* the net benefits of VEPs for various levels of VEP participation. The extent to which VEP participation might lead to pollution reduction can allow an *ex post* assessment of net benefits of VEP. Cross-national benefit–cost evaluations would require data on how citizens and policymakers value human well-being. The field of public health, for example, has made important contributions in this direction, and we believe there is an opportunity to employ tools from other disciplines to the study of environmental governance across jurisdictions.

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