

Voluntary Environmental Programs: An Efficient Alternative to Mandatory Regulation?
A Review of Current Literature

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Background: From Mandatory to Voluntary Standards

The traditional command-and-control model of environmental governance, represented by such 1970s legislation as the Clean Air Act, Clean Water Act, and Resource Conservation and Recovery Act (Borck and Coglianese 2009), has been criticized for incurring high costs for compliance, monitoring, and enforcement and increasing the adversarial relationship among businesses, governments, and environmentalists (Potoski and Prakash 2005a). These programs were initially successful, but in the U.S. have seen diminishing returns since the 1980s (Potoski and Prakash 2005b), when reduced budgets led to a lessening of oversight. “Between 1996 and 1998, less than 1% of the 122,226 large regulated facilities in the United States were inspected for all three pollution media”—air, water, and solid waste (Potoski and Prakash 2005b, 236). As a result, noncompliance with “mandatory” regulations is persistent (Borck and Coglianese 2009)

During this time, environmental protection has undergone a devolution from federal government to market forces: voluntary standards, consumer choice, and even citizen enforcement, such as consumer lawsuits of noncompliant companies and government agencies (Potoski and Prakash 2005b, Khanna 2001). Economic incentives such as pollution taxes and emissions trading have become more common (Khanna 2001) and may even be more effective than traditional command and control regulations (Arimura, Hibiki, and Kayayama 2008).

Voluntary environmental programs involve companies willingly internalizing external costs for the public good—in this case, a cleaner environment (Borck and Coglianese 2009, Krarup 2001, Potoski and Prakash 2005b). Described as an evolution from a “government-push” to a “business-led” approach (Khanna 2001, 291), they are increasingly common, especially in Europe, with hundreds of such programs in the Netherlands and Germany in particular (Khanna 2001). The U.S. Environmental Protection Agency (EPA) offers more than 100 voluntary

programs for corporations, in addition to many programs offered by other areas of the federal government, state governments, industry, and nongovernmental organizations. Their goals range from reducing hazardous waste and greenhouse gas emissions, to increasing energy efficiency, to encouraging the adoption of environmental management systems (EMS) (Borck and Coglianese 2009).

Broadly considered, there are three kinds of voluntary environmental programs: unilateral, bilateral, and public (Borck and Coglianese 2009, Lyon and Maxwell 2003, Krarup 2001).

In unilateral programs, companies take action without government encouragement, either by imposing requirements on their business partners (for example, GM and Ford having their suppliers adopt the ISO 14001 environmental management system) or by joining trade organizations that either require or promote these programs (for example, the American Chemistry Council's Responsible Care Initiative) (Borck and Coglianese 2009).

Bilateral agreements are negotiations between business and government, usually on a much more individual level and offering alternative standards for unique circumstances, often with tax or regulatory incentives (for example, the EPA's Project XL). Bilateral agreements are far more common in Europe and Asia than in the U.S. (Borck and Coglianese 2009).

In public voluntary programs, the government recognizes companies that go beyond compliance, setting broad standards for all who meet certain conditions (for example, many of the EPA's programs, including 33/50 and the National Environmental Performance Track) (Borck and Coglianese 2009).

While the business community generally considers voluntary programs to be a more flexible and lower-cost alternative to traditional policies (OECD 2003), environmental groups tend to be suspicious of self-regulation, worried that it may simply be "greenwashing"—a public relations

move that improves a company's image, but not necessarily its environmental impact (Potoski and Prakash 2005a, 2005b). Free riding—benefitting from the actions of others without sharing the costs—is certainly a possibility with group voluntary programs, and it undermines the credibility of such programs (Delmas and Keller 2005).

Research Questions

The purpose of this paper is to discover the current state of the literature on the questions:

1. What are the benefits of voluntary environmental programs?
2. Are they more cost effective than mandatory regulations?
3. What are some best practices for implementing them?

Benefits for Corporations

Voluntary environmental programs encourage companies to exceed required abatement levels by offering incentives, rather than sanctions (Borck and Coglianese 2009). Why would companies volunteer to spend more money in order to beyond compliance? Adhering to voluntary standards could be practical for companies for many reasons, including positive publicity, relaxed regulatory oversight (Borck and Coglianese 2009), and collective learning (Potoski and Prakash 2005b).

Reputational Benefits

Positive publicity associated with voluntary environmental standards could lead to customers willing to pay higher prices or to buy more from environmentally friendly companies; make it easier to recruit employees; and avoid negative reactions from stockholders (Borck and Coglianese 2009, Khanna 2001). Innes and Sam have shown that green marketing hasn't been a large purported incentive for companies, since the disconnect between company message and

consumer behavior in this case hasn't been clearly shown. However, improved relations with the community and boycott deterrence are both self-reported reasons why companies have participated (Innes and Sam 2008).

Regulatory Benefits

Demonstrating good faith by taking part in voluntary environmental programs can lead to a loosening of regulatory oversight, preemption of regulatory threats, or influence on future regulation (Borck and Coglianese 2009, Khanna 2001, Innes and Sam 2008). This is often a leading motivation to participate (Lyon and Maxwell 2003). Companies were more likely to get ISO 14001 certification if they received frequent government inspections or were subject to more stringent regulations (Potoski and Prakash 2005b), and membership in the EPA's Strategic Goals Program was an attempt by companies to fend off new water pollution and hazardous waste regulations (Borck and Coglianese 2009). Participants in the 33/50 program received less environmental inspection and enforcement action by an average of 26 and 44 percent, respectively (Innes and Sam 2008). The Performance Track program offered more explicit rewards: less frequent reporting, more flexible air permits, and expedited review for water discharge permits (Innes and Sam 2008). The Netherlands' "covenants" even set binding contracts in which the government agreed not to introduce new legislation unless abatement targets were not met (Khanna 2001).

Informational Benefits

Potoski and Prakash theorize that green clubs provide members "nonrival but potentially excludable benefits," such as collective learning of technical information (Potoski and Prakash

2005b, 235). Voluntary environmental programs facilitate such collective learning more easily than regulations or tax policy. Development and dissemination of technical information about best practices throughout the industry is more cost-efficient than duplicating efforts, especially as more companies join—comparative cost decreases as participation increases (Khanna 2001, Krarup 2001).

Benefits for Government

What incentives would governments have to use voluntary environmental programs instead of more traditional regulatory measures? The EPA notes, “Governments promote voluntary initiatives for a variety of reasons, including the pilot testing of new approaches and the absence of legislative authority to establish mandatory programs” (Lyon and Maxwell 2003). In addition, Potoski and Prakash note that such flexibility leads to better compliance with environmental laws: “facilities in states where regulators are less likely to fine for noncompliance are more likely to be in compliance with clean air regulations. Likewise, facilities in states with government sponsored voluntary programs have better compliance records than facilities in states without these programs” (Potoski and Prakash 2005b). So voluntary programs help companies meet standards set by laws, but how effective are they at encouraging companies to go beyond regulation requirements?

Measuring Efficacy

Most research on voluntary environmental programs has focused on why companies participate and how to get more of them to do so, not whether the programs themselves have been effective (Borck and Coglianese 2009). However, the old adage, “You can’t manage what

you don't measure" holds true. So how is effectiveness measured? Borck and Coglianese outline an effectiveness equation:

$$\text{Effectiveness} = \text{Number of participants} \times \text{Average effect per participant} + \text{Spillover effects}$$

To find out if the results can be attributed to the program itself, researchers must also do a with-and-without comparison by controlling for other factors that may influence performance, such as existing and anticipated mandatory regulations, threat of liabilities, and self-selection bias (Khanna 2001). Other problems evaluating effectiveness include single measures (such as toxic chemical emissions) used as proxies for broader objectives, and difficulty finding control groups (for instance, many new air pollution rules went into effect around the same time the EPA introduced the 33/50 program, and one of the chemicals involved was banned under the Montreal Protocol) (Borck and Coglianese 2009).

Results

General consensus among researchers indicates that targets set under voluntary programs are usually met, but not much improvement can be attributed to the programs themselves (OECD 2003): "At best, VEPs can sometimes achieve relatively modest improvements in environmental quality" (Borck and Coglianese 2009).

Case Studies

ISO 14001 is the most widely adopted voluntary environmental program in the world, considered "the gold standard" (Potoski and Prakash 2005b, 238). Launched in 1996 by the

International Standards Organization based in Geneva, it was built on the successful quality management code ISO 9000. By October 2004, more than 74,000 facilities across 130 countries had joined (Potoski and Prakash 2005a). To receive certification, a facility must review its environmental practices and formulate and implement a plan for environmental management, identifying responsible parties for issues. Companies are strongly encouraged to receive third-party audits (Potoski and Prakash 2005b).

ISO 14001–certified facilities have shown a faster reduction in toxic emissions and better regulatory compliance compared to similar noncertified facilities (Potoski and Prakash 2005a, 2005b), but on a modest scale. Studies in the U.S., Europe, and Japan have shown a reduction in energy use and greenhouse gas emissions of an average of 5%. However, ISO 14001 doesn't require members to demonstrate improvements in environmental performance or regulatory compliance, just to establish and maintain an environmental management system towards that purpose (Potoski and Prakash 2005b, Rondinelli and Vastag 2000). The automobile sector has shown minimal reductions under this program, and electronics companies have shown improved environmental practices but higher emissions (Borck and Coglianesi 2009). ISO 14001 certification improved Mexican facilities' self-reported compliance with relevant laws (Potoski and Prakash 2005b), but neither it nor the European Union's Eco-Management and Audit Scheme (EMAS) have been shown to reduce noncompliance in the U.K. (Borck and Coglianesi 2009, Potoski and Prakash 2005a, Arimura, Hibiki, and Kayayama 2008).

One of the reasons that the program is as effective as it is may be its sheer size: its broad reputation reflects positively on participants. Additionally, while the adoption of an environmental management system reduces ignorant noncompliance, third-party auditing reduces *willful* noncompliance (Potoski and Prakash 2005b). Potoski and Prakash call this third-

party auditing without public disclosure of audit information a “weak sword,” but shows that even this makes free riding less likely (Potoski and Prakash 2005a, 745). Arimura has shown that the measured effect of ISO 14001 is larger when the effect of public reporting isn’t controlled for, since such information disclosure has been shown to help reduce natural resource use, solid waste generation, and wastewater effluent; however, ISO 14001 was more effective than public disclosure in the first two areas (Arimura, Hibiki, and Kayayama 2008). Another reason for the program’s relative success may be, as Potoski and Prakash has shown, that cooperation between regulators and facilities leads to better compliance, and ISO 14001 was “sponsored by a nonprofit, nongovernmental organization and was developed with heavy input from multinational corporations” (Potoski and Prakash 2005b, 239).

The EPA’s 33/50 program was begun in 1991 to reduce the emission of 17 toxic chemicals at the source by 33% over four years and 50% over seven years (Borck and Coglianese 2009, Khanna 2001, Innes and Sam 2008). Sixteen percent of eligible companies participated and on average exceeded the final goal by 4%. However, after researchers controlled for other factors, such as the ozone-depleting chemicals banned in the Montreal Protocol, only a 28% reduction was attributable to the program, primarily in the first year (Innes and Sam 2008, Khanna 2001, Potoski and Prakash 2005b). Also, when the various industries involved were analyzed separately, it was shown that the fabricated metals and paper industries decreased their emissions, but the chemicals and primary metals industries actually *increased* their emissions. Even those who reduced their emissions tended to do so by recycling, rather than eliminating them, which was the original intention of the program (Borck and Coglianese 2009).

Members of the American Chemistry Council’s Responsible Care Program actually reduced their emissions *more slowly* than nonmembers (Borck and Coglianese 2009, Potoski and Prakash

2005a, 2005b)—though the chemical industry as a whole improved during that time period (Khanna 2001). Khanna concludes that the program effectively reduced stakeholder pressure and incentives to change. Without third-party audits and enforcement, Potoski and Prakash call it a “covenant without swords,” and the American Chemistry Council apparently agreed. It eventually made third-party audits mandatory in order to try to improve the effectiveness of the program (Potoski and Prakash 2005a).

The EPA’s National Environmental Performance Track was more successful, as self-reported by the 500 businesses that enrolled. They collectively reported reducing more than 3.5 billion gallons in water use and more than 300,000 metric tons of greenhouse gas emissions, and preserving more than 15,000 acres of natural habitat, all beyond what they were required to achieve by law (Borck and Coglianesse 2009).

The EPA’s WasteWise program was started in 1994 to reduce municipal solid waste. It offered free technical assistance and public recognition for companies designing their own waste reduction and recycling program. However, only 20% of members reported results in 1999 (Delmas and Keller 2005).

The EPA’s Climate Change Action Plan program was intended to reduce pollution emissions; however, participating utilities didn’t achieve more reduction than nonparticipating ones (Potoski and Prakash 2005b). Secondary benefits for the utilities included gaining information about projects undertaken by other firms, as well as performance and cost data on energy efficiency products sold by a variety of vendors (Lyon and Maxwell 2003).

The Department of Environmental Protection’s Climate Wise program was also shown to have accomplished little more than would have already been done (Potoski and Prakash 2005a, Arimura, Hibiki, and Kayayama 2008).

Economic Efficiency

The assumption is that voluntary agreements are a lower-cost method of meeting environmental goals, but even with these voluntary programs, low administrative cost leads to low environmental performance. They cannot compete with pollution taxes or emissions trading in economic efficiency, although they are better than traditional “command-and-control” regulation in that regard. When combined with environmental permitting systems, environmentally motivated subsidies, environmentally related taxes and charges, and emission trading systems, voluntary programs tend to weaken the environmental effect of these programs and increase administrative costs. This is true even in the otherwise highly efficient SO₂ emissions trading in the U.S. (OECD 2003).

Best Practices

Stronger voluntary programs have monitoring and enforcement systems with three components: third-party auditing, public disclosure of audit information, and sanctioning by program sponsors (Potoski and Prakash 2005a).

Third-Party Auditing

At heart, the issue with voluntary environmental programs is one of trust—whether government and environmental groups trust companies to self-monitor or expect them to “greenwash” their brand (Potoski and Prakash 2005b). Free riding is a significant problem with voluntary programs (OECD 2003), especially when targets are set for an industrial associations rather than individual companies (Krarup 2001). In Germany, industry-wide targets and

sanctions that didn't take into account individual companies' successes or failures saw high rates of free riding (Khanna 2001). Unfortunately, setting a separate target for each company increases administrative costs, cancelling out the cost benefit of voluntary programs (OECD 2003).

External auditing mitigates these free-riding issues and helps to build trust between corporations, regulators, and the public—groups that often have adversarial relationships (Delmas and Keller 2005). Voluntary programs have been shown to lessen tensions and facilitate negotiations between enforcement agencies and polluting firms (Innes and Sam 2008). Each cycle of improvements verified by a third party strengthens those relationships: “a virtuous cycle of trust begetting more trust” (Potoski and Prakash 2005b, 246). These audits have more of an effect on companies' long-term environmental performance when they “are reviewed by the top-management and are linked to environmental managers' performance evaluation” (Potoski and Prakash 2005a) and where they are disclosed publicly (Arimura, Hibiki, and Kayayama 2008).

Public Disclosure

In addition to improving environmental performance, publicizing audit data also reduces “informational asymmetries” that twist the market model, which always assumes perfect information (Krarup 2001). If this disclosure is made in an accessible manner, it decreases transaction costs for external stakeholders (Potoski and Prakash 2005a), allowing the market to function more reliably. In this model, the government can play an important role in ensuring clear information through product labeling and disclosure requirements (Khanna 2001).

Sanctions

A combination of voluntary programs with stringent “credible” regulatory threats increases

participation by lowering the relative cost of joining (Khanna 2001, Krarup 2001, OECD 2003). A lack of sanctions for non-improvement increases participation but leads to smaller benefits (Khanna 2001).

Conclusions

Voluntary environmental programs are indeed more flexible and lower cost than mandatory regulations, but they are modestly effective, especially if few resources are put into their preparation, negotiation, and enforcement (OECD 2003). ISO 14001 seems to be an exception, with its combination of modest standards and strict enforcement leading to overall greater effectiveness. The international Organisation for Economic Co-operation and Development concludes that a “first best” approach would be to replace the “command and control” policies by economic instruments (such as pollution taxes or tradable permits) where possible. A “second-best” option would be to improve the flexibility of pre-existing “command-and-control” regulations and, if a voluntary approach is decided on, to first set targets based on industry-wide projections and back them up with credible threats (OECD 2003). Voluntary environmental programs are “weak tools used when political opposition makes environmental taxes infeasible” (Lyon and Maxwell 2003) or implementation slow, since they are often quicker to realize than stricter mandatory regulations. They should not be an alternative to such regulations, but a complement to them to increase compliance as part of policy mixes (OECD 2003).

Considerations for Future Research

There is potential opportunity for research on the spillover effects of voluntary environmental programs. The existing literature discusses this phenomenon, but there seems to be a dearth of

information on its effect (Lyon and Maxwell 2003, Borck and Coglianese 2009). Spillover effects include those had on nonparticipating programs, as innovative practices diffuse throughout the industry. The EPA uses the phrase “performance curve” for the distribution of environmental performance across all facilities and describes its goal as “shifting the curve toward better performance.” The information sharing and peer pressure that voluntary programs encourage help to move the curve. Also hard to quantify are the effects of secondary goals, such as improving business-government relations and community trust (Borck and Coglianese 2009).

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