

How Well Do Voluntary Environmental Programs Really Work?

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The explosive growth in voluntary environmental programs since the early 1990s in the United States, Europe, and Japan reflects, in part, changing societal attitudes about the environment and a growing optimism about the possibility of enhanced cooperation between government and business. It also reflects widespread frustration with the long and expensive battles often associated with new environmental regulations. In most cases, voluntary programs are being used to control pollutants that have not yet been regulated and for which legislative authority may be difficult to obtain. Unlike market-based approaches to environmental management, where the conceptual roots are largely academic, voluntary programs have emerged as a pragmatic response to the need for more flexible ways to protect the environment.

But do these programs actually work as advertised? That is, do they deliver significant environmental gains without the burdens associated with traditional, command-and-control regulation? Quantitatively, how large are the likely gains? And can they really substitute for mandatory requirements, or should expectations be more modest?

Getting credible answers to these questions is important. Friends and foes of voluntary programs are increasingly at odds, sometimes drawing opposite conclusions about the same program. The former, typically on the side of industry, see voluntary programs as a more practical, flexible approach to regulation. The latter, including some environmental advocates, often see them as an obstacle to more stringent, mandatory programs. This polarization may be partly a consequence of poor information.

A Loose Taxonomy

Because the existing literature on voluntary programs primarily focuses on why firms choose to participate, rather than on the final results, we chose to take a different approach, relying on case studies of representative programs (see the box on page 24). The result of this work is a book that we edited, *Reality Check: The Nature and Performance of Environmental Programs in the United States, Europe, and Japan* (RFF Press 2007), which this article is excerpted from (see the RFF Press advertisement on the back cover).

Regulators have come up with numerous terms to describe particular mechanisms: self-regulation, negotiated agreements, environmental covenants, business-led environmental strategies, and others. Nonetheless, a loose taxonomy has evolved, with three reasonably distinct bins, based on how the parameters of the commitment are determined:

Unilateral agreements by industrial firms. Business-led corporate programs fall under this heading, as do commitments or reduction targets chosen by firms or industry associations. Examples of such agreements in the United States include the American Chemistry Council's "Responsible Care" initiative for reducing chemical hazards, and McDonald's replacement of its Styrofoam "clamshell" containers with paper packaging.

Public voluntary programs. Participating firms agree to protocols that have been developed by environmental agencies or other public bodies. Although the public agencies may promote the programs to industry, they do not generally negotiate over the specific terms. Eligibility criteria, rewards, obligations and other elements are established by the public agencies.

Case Study Findings

What follows are brief descriptions of the different programs and highlights of the key findings and observations by the case study authors.

The 33/50 Program

EPA's first voluntary program, 33/50, was established in 1991 amid rising interest in finding a quick, cost-effective, relatively noncontroversial approach to address concerns about toxic releases. Focusing on 17 high-priority chemicals reported to the Toxic Release Inventory, the program emphasized pollution prevention as an environmental management technique. The 33/50 name derives from the program's goal of a 33 percent reduction by 1992 and 50 percent reduction by 1995 below a 1988 baseline.

Although some of the reductions clearly were driven by mandatory provisions of the Montreal Protocol and the 1990 Clean Air Act Amendments, covered releases declined considerably between 1988 and 1995, well in excess of the established goals. Several sophisticated studies have linked participation in the 33/50 program to such declines. However, one recent study, excluding two chemicals regulated by the Montreal Protocol, found negative results—33/50 participation led to higher emissions. While precise conclusions are difficult, this most recent study does raise questions about program performance.

Firms participated in the program for several reasons: they were motivated to cut their toxic releases out of a desire to differentiate themselves from rivals, garner positive publicity, and respond to perceived regulatory threats. Some companies simply welcomed formal recognition for efforts already under way.

Japan's Keidanren Voluntary Action Plan on the Environment

Japan's Keidanren Voluntary Action Plan on the Environment was initiated by industry in 1997, just prior to the negotiation of the Kyoto Protocol. It encompasses large enterprises drawn from 58 business associations, including the industrial, electricity, construction, commercial, and transport sectors. The plan initially was embraced by industry as a means of demonstrating cooperation with the government on greenhouse gas emissions while avoiding mandatory requirements. At present, the nonbinding targets are widely recognized as commitments with which industries are to comply.

Three factors that seem to be motivating industry to comply with the plan are the cooperative relationship between the Keidanren and companies; threats of mandatory policies, such as a tax or cap-and-trade schemes; and awareness of private companies' social responsibility. Some or all of these notions may be particular to the relationship that exists in Japan between the government and business.

In terms of absolute emissions, Keidanren members are committed to stabilizing their collective greenhouse gas emissions at 1990 levels by 2010—a goal for which they are now on track. The key question—confounded by an economic slowdown during the early years of the program—is whether this is significantly different from business as usual.

UK Climate Change Agreements

The United Kingdom was an early and strong supporter of the Kyoto Protocol and has adopted a proactive position on climate change, both domestically and internationally. In 2001, the UK government established voluntary, quantified, climate

change agreements (CCAs) with 48 sectoral associations in the industrial, commercial, and public sectors as part of a complex policy mix involving an energy tax, a climate change levy, and an emissions trading system.

When first taking on a CCA, firms could choose either intensity-based or fixed targets (most chose the former) expressed in terms of either energy use or carbon emissions. Overall, CCAs cover about 12,000 individual sites—virtually all those eligible—representing almost 44 percent of total UK industry emissions. Compliance could occur via reductions in energy use or by the purchase of emissions rights in the recently established pilot emissions trading program.

Aggregate emissions during the first two years of implementation were well below the targets, regardless of how they were set. Although a government-sponsored study found widespread compliance, given the low observed credit prices and relatively small number of transactions, CCAs appear only modestly effective in encouraging reductions beyond business as usual.

Denmark's Voluntary Agreements on Energy Efficiency

Beginning in 1996, the Danish Energy Agency established voluntary agreements on energy efficiency as part of a set of revenue-neutral CO₂ and other green taxes imposed on the industrial, trade, and service sectors. Lower rates were applied to energy-intensive firms and those most vulnerable to foreign competition. Virtually 100 percent rebates were given to energy-intensive firms if they entered into a voluntary agreement on energy efficiency with the energy agency. The voluntary agreements thus were considered complements to the tax scheme. If companies failed to follow through with their agreement, there

was an explicit sanction: they had to repay the rebate in full.

Although the voluntary agreements did not involve quantitative targets, rebates were initially conditioned on the completion of verified energy audits and the implementation within three years of all measures estimated to have a payback that exceeded given criteria. Measures to be undertaken included energy-savings projects, special investigations, and energy-management systems. Analyses of the effects of these agreements found reductions of between 2 and 8 percent, with the upper end somewhat suspect because of the small number of firms in that study. In addition, analysts found that most of the savings were realized in early years, leaving less opportunity in the future.

The German Cement Industry

In 1995, the Federation of German Industries, a group of 16 industrial associations representing major sectors of German industry, voluntarily issued the “Declaration of German Industry on Global Warming Prevention” (GGWP), which called for voluntary reductions in fuel consumption of up to 20 percent below 1987 levels by the year 2005. Initial industry commitments did not involve any government-provided incentives nor were they accompanied by threats of future regulation. By 2000, five years in advance of the target date, most of the commitments already were fulfilled, an indication that the targets were not very ambitious.

Subsequently, as the result of pressure by the government and the desire of industry to avoid mandatory requirements, the GGWP goals were made more stringent. For purposes of evaluating the effectiveness of the GGWP declaration, the cement industry was the only one among the 19 industries now in the German Federation for

which sufficient historical data were available to compare the CO₂ emissions of the industry following development of the GGWP to emissions in prior years. The authors calculate that the annual fuel efficiency improvements achieved when the voluntary commitment was in effect were about the same as the average over the prior two decades. Thus, they conclude that the industry has not gone much beyond good intention.

Climate Wise

Climate Wise is a voluntary EPA program designed to encourage the reduction of CO₂ and other greenhouse gases in the nonutility industrial sector. Originally established in 1993, it remained in operation until 1999–2000, when it was renamed and placed under the agency’s Energy Star umbrella. The requirements were that a participating firm develop baseline emissions estimates, self-designate forward-looking emissions reduction actions, and make periodic progress reports.

EPA provided a checklist of major actions, such as specific boiler modifications and waste-heat recovery systems, and firms were strongly encouraged to select at least some of their proposed actions from this list. EPA also offered several kinds of technical assistance, including a guide to industrial energy efficiency, various government publications on energy efficiency, and free phone consultation with government and private-sector energy experts.

When comparing program participants with equivalent, nonparticipating firms, the principal result is that Climate Wise appears to have had little to no effect on fuel use, while slightly increasing demand for electricity, a seemingly counterintuitive result. There are several possible reasons why this happened. For example, firms may have chosen to increase electricity use to

reduce direct CO₂ emissions. In addition, although the focus of the program was on energy efficiency and the reduction of CO₂ emissions, a few firms proposed non-energy reductions, suggesting the fuel focus may be missing part of the story. All of these results become indistinguishable from the absence of any effect after two years, suggesting any program consequence is temporary.

Residential Demand-Side Management Programs in California

Beginning in the 1970s, at the instigation of the regulatory authorities, California electric and gas utilities sponsored programs to promote the residential adoption of energy-efficient technologies and energy-conserving behavioral practices.

At least two of the three programs examined found energy savings on the order of several percent that would not have occurred in their absence. This magnitude is consistent with previous findings of the savings accruing from demand-side management programs such as these that do not include financial incentives.

Savings were reported to be driven principally by changes in the behavior of households—such as improving maintenance of appliances or discontinuing use of secondary refrigerators—rather than by the installation of new equipment. While vaguely aware of the energy benefits of the recommended actions, customers tended not to act on this knowledge until it was suggested by an expert. This implies that a key barrier to action by homeowners may be information from an authoritative source.

Negotiated agreements. These consist of a target and timetable for attaining the agreed-upon environmental objectives and are negotiations between government authorities and a firm or industry group over specific terms. In some cases, participating firms also receive relief from an otherwise burdensome tax, making the voluntary notion of the program somewhat hazy.

It is worth noting that while the delineation into these three categories may seem clear cut, virtually all voluntary programs involve some degree of dialogue between government and firms over various terms.

What Matters After All

Looking across programs, we see effects of between zero and 28 percent—or, focusing on energy-related programs, between zero and 10 percent. The single non-energy/non-climate change program—EPA’s 33/50 program, which focuses on toxics—had a dramatically larger effect than the others and suggests that effectiveness is likely influenced by factors related to the kind of pollution being addressed. These factors include the fact that toxics typically are a local or regional problem, while climate change is global; that toxics can have a direct, acute effect on human health; and that with no practical opportunity for end-of-pipe abatement, reductions in energy-related greenhouse gas emissions often amount to reductions in energy use itself—something already incentivized by energy prices.

Among the remaining energy and climate change programs, the context of the program, particularly the additional use of carrots and sticks to encourage and strengthen program effectiveness, appears to have only a limited effect on measurable, quantitative results. It is true that the programs with the weakest incentives, Climate Wise and the German GWP declaration, had the weakest effects. Those with the strongest incentives, the UK and Danish agreements and the Japanese Keidanren program, had the strongest effects. However, the difference is small, with all the energy-related programs having less than a 10 percent effect on emissions, and more typically closer to 5 percent.

Of course, a 5 percent reduction in energy use or CO₂ emissions is not trivial. Some nations’ initial efforts under the Kyoto Protocol amount to roughly that order of magnitude. It also represents potentially billions of dollars in savings. Nonetheless, it represents what appears to be an outer limit on what these kinds of programs can achieve.

In contrast to the limited effect on the magnitude of effects among participants, incentives did play a significant role in the level of participation, with some programs with larger incentives and lower barriers to participation having near universal enrollment. Therefore, despite the lack of a large impact on estimated effects among participants, the fact that the pool of participants is larger means that the overall impact is larger as well.

Advice to Policymakers

Voluntary programs can affect behavior and offer environmental gains but in a limited way. By considering the media and activity, as well as the potential incentives that can be brought to bear, rough assessments can be made of the potential for a voluntary program. A critical step is having a realistic, agreed-upon baseline. In many cases, such programs make sense; when the arguments for mandatory programs are unclear or lacking legal or political support or where such programs will take considerable time to implement, voluntary efforts can play an important role. However, truly convincing evidence of dramatic environmental improvements is lacking. Therefore, we find it hard to argue for voluntary programs where there is a clear desire for major changes in behavior. ■