

# Greening Industry: New Roles for Communities, Markets, and Governments

Conventional wisdom holds that developing countries cannot hope to clean up industrial pollution of their air and water until they reach a level of affluence seen today only in wealthy countries. According to this view, continued expansion of industrial output will inevitably worsen the already severe levels of pollution that are common today in urban areas of the developing world. Another prevalent belief is that growing global trade and open borders are encouraging dirty industries to move to developing countries, which cannot afford to curb environmental abuses.

Six years of research, policy experiments, and firsthand observation have shown this picture to be false. Factories in many poor countries run cleaner than a decade ago, and total emissions are actually falling in some areas where industry is growing rapidly. What's more, "pollution havens"—developing countries that provide a permanent home to dirty industries—have failed to materialize. Instead, poorer nations and communities are acting to reduce pollution because they have decided that the benefits of abatement outweigh the costs.

Environmental regulators in developing countries are trying fresh approaches and finding new allies in the battle to curb pollution. These initiatives stem from widespread recognition that traditional pollution regulation is inappropriate for many developing

countries. New regulatory institutions are often unable to enforce conventional discharge standards at the factory level. Many regulators also recognize that such standards are not cost-effective because they require all polluting factories to toe the same line, regardless of abatement costs and local environmental conditions.

To break out of this one-size-fits-all approach, developing-country regulators are opting for more flexible and efficient systems that nevertheless provide strong incentives for polluters to clean up. Some of the pioneers have turned to financial incentives by charging polluters for every unit of their emissions. As results from programs in Colombia, China, and Philippines have shown, many managers opt for serious pollution control when they face steep, regular payments for emissions. And pollution charges not only cut emissions but generate public revenue as well—which in turn can support local efforts to control pollution.

Other environmental reformers are using simple rating systems to publicly recognize factories that adhere to local and national pollution standards—and to train the communal eye on those that do not. By classifying factories based on their reported emissions, and widely broadcasting the results, regulators are enabling communities to identify serious polluters and pressure them to clean up. This channel for “informal” regulation has proven to be potent, even in cases where formal regulation is weak or absent. Such public disclosure programs also enlist the efforts of investors, lenders, and consumers, whose concern over liability from poor environmental practices and desire to reward green manufacturers brings pressure to bear on polluters. Indonesia and Philippines, in particular, have shown that such public disclosure programs can curb pollution at modest cost.

Public education regarding the sources and impacts of pollution also provides a powerful lever for improving the lives of poor people, who suffer greatly from emissions even as industry’s pollution intensity declines. Armed with good information, poor citizens can work with environmental agencies and elect political leaders willing to pressure factories to curb emissions, as regions and countries make the transition to greener industry.

To ensure the success of such programs, regulators are relying on low-cost computer technology that cuts the cost of gathering, processing, and distributing information. Selective, focused use of environmental databases and computer models, along with public

involvement, also helps communities and businesses negotiate environmental priorities and action plans based on a common understanding of the impact of pollution and the cost of abating it.

These initiatives are working because they have a solid economic foundation. Plant managers do not pollute because they enjoy fouling the air and water but because they are trying to minimize their costs, so they will tolerate emissions up to the point where the penalty for more pollution becomes greater than the cost of controlling it. In fact, managers' sensitivity to costs gives regulators many opportunities to influence their decisions. At the factory level, for example, environmental agencies can lower pollution-control costs by supporting training in environmental management for small and medium-scale enterprises. Recent pilot projects in Mexico have shown that such programs can provide a cost-effective complement to conventional regulation.

At the national level, economic reforms can also reduce pollution. Greater openness to trade can enhance managers' access to cleaner technology, while cutting subsidies for raw materials can encourage companies to reduce waste. State-owned enterprises are often heavy polluters, so privatization can contribute to cleaner production. Countries as diverse as China, India, and Brazil have demonstrated the power of such measures to reduce pollution. But economic reforms are no panacea, because growth-promoting measures can make local pollution worse in some cases. To ensure sustainable development, economic reformers should anticipate such impacts and work closely with environmental agencies to offset them.

Overall, the proliferation of innovative channels for reducing emissions has created a new model for pollution control in developing countries. In this model, regulation is information intensive and transparent. As environmental agencies exert influence through formal and informal channels, they become more like mediators and less like dictators. Community representatives take their place at the negotiating table along with regulators and factory managers. Market agents make their presence felt through the decisions of consumers, bankers, and stockholders.

The new model gives policymakers more options, but it also imposes new responsibilities—for strategic thinking about the benefits and costs of pollution control; a strong commitment to public participation; clever, focused use of information technologies; and willingness to try new approaches such as pollution charges and public dis-

closure. Of course, regulators will always have important responsibilities for monitoring factories' environmental performance and enforcing regulations. But in the new model, regulators use more resources to provide better public information, encourage informal regulation, furnish technical assistance to managers, and promote environmentally sound economic reforms.

We write about this model as participant-observers, because we have helped establish many of the innovative programs that we discuss, as well as studied their impact. Since 1993, we have collaborated with pioneers of the new model in Indonesia, Colombia, China, Brazil, Philippines, Mexico, and other countries. This report is really the story of those pioneers—their ideas, programs, and results. It is also the story of our colleagues in the World Bank and other international agencies who have worked tirelessly to provide the reformers with financial support, technical assistance, and information about environmental initiatives in other countries.

Together, these experiences have persuaded us that the conventional wisdom is wrong: Economic development and industrial pollution are not immutably linked. We are convinced that developing countries can build on the new model to reduce industrial pollution significantly, even if they grow rapidly during the coming decade.