

## **Transgovernmental Solutions for Transnational Dilemmas: Lessons from Environmental Policy Innovators in Brazil and the United States<sup>1</sup>**

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**Abstract:** The environmental practices of multinational corporations (MNCs) present challenges and opportunities for policymakers. One multinational corporation alone may have dozens of subsidiaries in major manufacturing centers around the world, all beyond the jurisdiction of its home country. While many multinational corporations are publicly reporting standard environmental management practices throughout their global operations, it is difficult to verify their claims. Subsidiaries may not implement practices as thoroughly as possible. They may also shift the burden of highly polluting processes to host country firms. On the other hand, MNC subsidiaries that seriously implement environmental management practices are in an ideal position to share these practices with partners, suppliers, customers, and even regulators. Drawing upon research conducted in Brazil and the United States, this paper describes and evaluates a transnational alliance of policymakers--a "transgovernmental" effort--that developed between U.S. EPA Region 1 and the environmental protection agency in the state of São Paulo, Brazil (CETESB), to meet the challenge posed by MNC voluntarism.

Together, U.S. and Brazilian innovators created a pilot program: the International Partnership for Pollution Prevention (IP3, or PREVENIR in Brazil). Established with a non-binding agreement in September, 1997, and funded by the Brazilians and the companies involved (3M and AMP), PREVENIR brought environmental agencies from MNC home and host countries together to encourage, guide, and reward voluntary pollution prevention efforts. As it included subsidiary suppliers, the program enabled smaller domestic firms to implement pollution prevention practices, and greened the supply chain. The IP3/PREVENIR pilot program provides a model for cooperation as environmental policymakers confront the challenges of increasing global trade and direct foreign investment. Such transgovernmental forms of governance may supplement multilateral efforts to mitigate global change. The evaluation of the pilot program described in this paper offers lessons for those policymakers, MNCs, and multilateral organizations interested in replicating the model.

*\* The Center for Environmental Solutions offers this paper on our website so that others may continue the important work of our colleague, Dr. Ronie Garcia-Johnson. Dr. Garcia-Johnson died April 15, 2003 after a difficult battle with cancer. Additional information on Dr. Garcia-Johnson can be found at <http://www.env.duke.edu/news/ronie.html>.*

### **Introduction**

Increasingly, since the early 1990s, various multinational corporations, trade associations, and international industry groups have promoted voluntary environmental initiatives. Some of these initiatives can be described as environmental certification institutions (ECIs): complete with a "set of rules, principles, or guidelines" (usually in the form of a code of conduct, environmental management system, or a more general set of policies) and a "reporting or monitoring mechanism" (a corporate environmental report, audit, or labeling scheme) concerning the environment.<sup>2</sup> These environmental certification institutions include Responsible Care, a voluntary environmental, health, and safety initiative of the chemical industry,<sup>3</sup> and ISO 14001,

an environmental management system standard developed through the International Organization for Standardization (ISO).<sup>4</sup>

Non-governmental environmental organizations, working together or with corporate partners, are also creating certification institutions. For example, the CERES coalition provides a set of principles that have been adopted by some 50 firms; its Global Reporting Initiative allows multinational corporations to assess their social and environmental impact worldwide and to report it in a standard format.<sup>5</sup> The Marine Stewardship Council, for another example, was created by the World Wildlife Fund for Nature and Unilever.<sup>6</sup>

Environmental certification institutions have arisen after multilateral efforts to shape the behavior of multinational corporations faltered. Initial efforts to develop an MNC code of conduct came from the United Nations Center on Transnational Corporations, which was established in 1974 and dismantled in the early 1990s. Still, intergovernmental organizations have recently renewed their efforts. The Organization for Economic Cooperation and Development (OECD) published its first set of Guidelines for Multinational Enterprises in 1976; it released another revision of the guidelines in 2000.<sup>7</sup> The United Nations has established the Global Compact, which offers a set of nine principles on human rights, workers rights, and the environment.<sup>8</sup>

As some ECIs encourage MNCs to follow the same standards in their operations worldwide, and to facilitate adoption of similar standards by their peers in host countries, they have the potential to privately raise environmental standards and practices in the operations of companies worldwide. They may supplement the efforts of governments. They may also give firms the opportunity to become more competitive in the global marketplace. The existence of environmental certification institutions in particular facilitate trade, which may increase the willingness and capacity of countries to further work to protect the environment. They may thus prevent the dreaded “race to the bottom,” in which country after country lowers environmental standards to maintain or gain competitive national industries, or prevent the proliferation of pollution havens.<sup>9</sup>

However, these voluntary efforts may not be implemented consistently across or within firms. They may not effectively decrease environmental impact,<sup>10</sup> and they may focus on management systems rather than performance.<sup>11</sup> They may decrease the scrutiny of communities or governments. They may not provide access or transparency, and they may lack monitoring, enforcement, or accountability. Some argue that they impose unfair requirements upon smaller and medium size firms, industries, and entire countries.<sup>12</sup> They may preempt the development of multilateral environmental agreements and institutions, or of stringent environmental laws and regulations within countries.<sup>13</sup>

In any case, these voluntary initiatives and institutions, transnational, primarily private, and bypassing governments, fail to assuage our basic concern about multinational corporations and the environment. The stringent environmental laws and regulations faced by multinational corporations (MNCs) in their home countries do not necessarily move with them. Environmental protection agencies in most advanced-industrialized states have no jurisdiction in the many countries around the world where their corporations operate. While some major MNCs claim that they voluntarily follow the same high environmental standards in their operations around the world, holding them accountable to such assertions is difficult. The certification institutions in which they participate may mask deficient environmental standards and practices, and poor environmental performance.

As we study the human dimensions of global environmental change, it is imperative to understand that these relatively new voluntary environmental initiatives have enormous potential to shape the behavior of multinational corporations and their associates. Yet they have an equally enormous potential to thwart broad and intensive reform. How can we make the best of these voluntary environmental initiatives and institutions, while limiting their potentially harmful attributes?

One solution may be to bring the state back in—or components of the state—operating transnationally to parallel private environmental initiatives and institutions, and to supplement multilateral ones. Joseph Nye and Robert Keohane described transgovernmental relations as a subset of transnational relations in their 1971 classic, *Transnational Relations and World Politics*. “Transgovernmental interactions...are defined as interactions between governmental subunits across state boundaries.”<sup>14</sup> Transgovernmental relations are distinct from official bilateral or multilateral relations. “On an abstract level we distinguish transgovernmental from interstate interactions by the extent to which actors are behaving in conformity to roles specified or reasonably implied by the formal foreign policy structure of the state,” explained Nye and Keohane.<sup>15</sup> Transnational relations take place when governmental actors go beyond their centrally specified duties, or even circumvent federal authority, in interactions with a counterpart or other transnational actor.

Reviving the study of transgovernmental relations in a 1997 *Foreign Affairs* article,<sup>16</sup> Anne-Marie Slaughter argued that functionally distinct parts of the state are increasingly working with their counterparts in other countries to address a number of global problems. Much of this transnational activity is ad hoc, and facilitated through memoranda of understanding. While Slaughter has argued that, in general, networks of bureaucrats can be more flexible, effective, and accountable than intergovernmental institutions and other governance alternatives, we have little in the way of theory or empirical evidence to understand the potential for transgovernmental relations to change the environmental practices of multinational corporations.

One case, however, can illuminate the potential for transgovernmental relationships to parallel the transnational initiatives and institutions proliferating in the private sector. The International Pollution Prevention Partnership pilot project (IP3), or PREVENIR, was a transgovernmental initiative envisioned by Brazilian and US policy innovators in the late 1990s, in the absence of shared borders or regional trade agreements, and without the specific direction of federal authorities, to make the best of MNC voluntarism. Although the pilot was limited to a few companies, and short-lived, we can draw some important lessons about the potential of this type of environmental cooperation. Drawing upon discussions and semi-structured interviews with IP3/PREVENIR participants in the United States and Brazil conducted in 2000 and 2001,<sup>17</sup> I provide an account of the origins and evolution of this project, assess its effectiveness, list some lessons and offer some recommendations.

### **The Origins of the IP3/PREVENIR Pilot Project**

The IP3/PREVENIR pilot project emerged from the interaction of personnel in similar environmental protection agencies. Region 1, New England, of the United States Environmental Protection Agency, and the state of São Paulo’s CETESB, in Brazil, were both strong environmental organizations, noted for their enforcement capacity. They were also leaders, influential among the other environmental agencies at the state and national levels in their respective countries. During the 1990s, both agencies were experiencing change.

### The United States Environmental Protection Agency and Region 1

The Clinton administration led the EPA in an effort to “reinvent” environmental regulation. In over forty new initiatives, the administration worked to “promote innovation and flexibility, increase community participation and partnerships, improve compliance with environmental laws, and cut red tape and paperwork.”<sup>18</sup> Most striking among the reinvention initiatives was a series of voluntary arrangements with industries and companies. Instead of employing a traditional “command and control” approach to regulation, the EPA was to work with business actors in a more conciliatory fashion. For example, the EPA’s pilot Project XL (short for “excellence and leadership,”) was an attempt to generate innovative technologies and processes by allowing companies, government agencies, and federal facilities flexibility in meeting environmental protection goals.<sup>19</sup>

In addition, the administration made a commitment to pollution prevention, as opposed to pollution control. Pollution prevention puts a priority on source reduction, waste minimization and reduction. Waste that cannot be eliminated should be recycled, and waste that cannot be recycled should be carefully treated before proper disposal.<sup>20</sup> Instead of setting technological requirements for end-of-the-pipe waste treatment, the EPA was to find ways to help companies practice source reduction and to increase recycling efforts.<sup>21</sup>

Finally, the Clinton administration gave the US EPA new direction in the 1990s by emphasizing global environmental protection, questions of trade and the environment, and technology transfer. For example, the 1993 National Export Strategy for Environmental Technologies linked the EPA and the Department of Commerce, and the public and private sector to win markets for the US envirotech industry.

As the international focus grew at the federal level, the EPA’s regional offices, to varying degrees, began to take their reinvention innovations to their counterparts in other countries. Region 1 (based in Boston), Region 2 (New York), Region 5 (Chicago), and Region 9 (San Francisco) were the most internationally active among these offices. Region 9 became especially active in Asia and the Pacific Rim, and also in Central and South America; by the late 1990s, it boasted the largest number of international visitors at any EPA installation (with the exception of EPA headquarters).<sup>22</sup> And Region 1 began programs with a variety of countries, including Hungary, Russia, Poland, Argentina, Brazil, and Chile.

By August, 1995, Region 1 provided assistance with institution and capacity building (including technical, legal, and planning assistance) and promoted the exportation of innovative environmental technologies (through trade missions, technical transfer programs, and partnerships among businesses and stakeholders). Like some other regions, Region 1 engaged in training efforts, but its focus was on pollution prevention (as opposed to command and control) enforcement, and it had developed enforcement training into a package in a way that the other regions had not.

Region 1’s distinct focus on pollution prevention was not surprising given its headquarter location in Boston, Massachusetts. Massachusetts, along with Oregon, was among the first states to pass reduction legislation (the Massachusetts Toxics Use Reduction Act, or TURA of 1989). TURA created the Massachusetts Office of Toxics Use Reduction Assistance and Technology to assist and guide industry;<sup>23</sup> this office developed strong ties with EPA Region 1. Also, by mid-1993, some 1,500 envirotech firms in Massachusetts alone employed 55,000 workers, and boasted annual revenues of some \$5.5 billion.<sup>24</sup> US EPA Region 1 worked with these firms in trade missions with commercial as well as environmental goals.<sup>25</sup> Yet Region 1’s reputation for

pollution prevention expertise, and its willingness to take that expertise beyond borders, was in great part due to leadership. Administrator John DeVillars was an advocate of pollution prevention who firmly believed that the EPA's role was international in scope.

### The State of São Paulo's CETESB

The state of São Paulo's CETESB—the Companhia de Tecnologia de Saneamento Ambiental—has long been recognized as the premiere environmental agency in Latin America. With origins dating back to the early 1960s, this agency was known for technological expertise, for the creation of policy that has been influential among other Brazilian environmental agencies at the state and federal level, and for the enforcement of environmental regulation (often more stringent than in other Brazilian states). CETESB was energized in the 1990s by the United Nations Conference on Environment and Development, held in Rio de Janeiro. The agency was also buoyed by new funds. The Programa de Controle de Poluição (PROCOP), for example, was made possible by funds from the World Bank.

Fabio Feldmann (a lawyer and Brazilian congressman) was appointed as the state of São Paulo's Secretary of the Environment in 1995. Known for bringing environmental issues to the forefront of Brazilian politics as the country democratized, and for his involvement in the writing of an article on environmental protection in the new Brazilian Constitution, Feldmann was eager to shape CETESB. He was convinced that CETESB officials could work more effectively with stakeholders, and that it could work with business to generate sound environmental management. Building on the points elaborated in Agenda 21, he spearheaded the development of ten new programs on biodiversity, climate change, ozone depleting substances, environmental education, water, solid waste, coastal management, and decentralization. Feldmann involved partners or assistance from a number of countries, including Germany, Japan, Canada, and the United States in these programs.

Like the US EPA, CETESB had employed a “command and control” approach to regulation for the better part of its history. Feldmann was interested in learning about a new approach, and in changing the culture of the organization. He did not want to replace command and control, but to create new instruments and processes. Feldmann also realized that CETESB was facing some of the same problems and challenges that were faced by environmental agencies in the United States.<sup>26</sup>

Paulo de Souza Coutinho was among the members of Feldmann's energetic staff. Coutinho had previously served as the coordinator of the Brazilian Program for the Elimination of Ozone Layer-Depleting Substances (PBCO) and had been responsible for the industrial implementation of the Montreal Protocol. At CETESB, he was Director of International Cooperation and executive secretary of PROCOP.

### Training Initiatives

Coutinho traveled to Washington, where he engaged officials in EPA headquarters in a successful effort to renew a lapsed memorandum of understanding. The Office of International Activities sought a regional office to work with CETESB on a pollution prevention training effort. Region 1's offer to provide assistance was accepted. The EPA and CETESB signed the “Agreement Between United States Environmental Protection Agency and Companhia de Tecnologia de Saneamento Ambiental (Brazil).” Given the terms of the agreement, the EPA was to provide “technical expertise, training, and environmental management and information exchange activities in a variety of areas including pollution prevention (P2), implementation of

ISO 14000, emergency response, risk assessment, ozone layer protection, environmental legislation, air quality, enforcement, contaminated site management (particularly brownfields), laboratory quality assurance, and economic instruments for environmental protection.” A four-day pollution prevention workshop to address these issues was scheduled for April 1997. The EPA was to pay the salaries of employees involved in the program, and CETESB was to pay all non-salary costs through PROCOP.

A joint seminar, Partnerships for Pollution Prevention, took place from March 4-7, 1997, at CETESB headquarters in São Paulo. Pollution prevention experts from New England (including David Webster, Director of the Unit of Pollution Prevention Assistance at Region 1, Rick Reibstein, from the Massachusetts Executive Office of Technical Assistance for Toxics Use Reduction, and John DeVillars) delivered presentations; CETESB experts, and representatives from industry also led or participated in panels. This initial seminar quickly built relationships between the Americans and Brazilians. Feldmann and DeVillars learned that their organizations were similar in many ways and developed a rapport. They were both struggling with the established command and control approach, and they were both working to supplant that approach with a more progressive pollution prevention model.<sup>27</sup> DeVillars wondered how to make the most of the emergent partnership between Region 1 and CETESB. He challenged Anne Kelly, the Special Assistant to the Regional Administrator and Project XL coordinator, to think about how Region 1 could share reinvention with the Brazilians.

During the remainder of 1997, CETESB brought delegations to the United States for demonstrations of Region 1’s on-the-ground approach to pollution prevention. These demonstrations included tours of US facilities. Gaining the support of Suely Maria Machado Carvalho, CETESB’s Director of Development and Technology Transfer, Coutinho took Armando Shalders Neto, CETESB’s Director of Pollution Control, to Boston. On similar visit to Region 1, Coutinho met Anne Kelly.

CETESB officials, for the most part, were enthusiastic about their interaction with the New England team; they hoped to learn from the successes of the US pollution prevention model, and to avoid its mistakes. To build upon this enthusiasm, Coutinho brought 40 people from a department together with the New England team. In June 1997, on a carefully planned retreat in Campinas, Rick Reibstein, Anne Kelly, and others led a training session. Although it had to be adjusted upwards in order to engage the Brazilians, the session (which included events from brainstorming sessions to “walk-throughs” of facilities) went very well. After the walk-throughs, teams wrote letters of recommendation to each company. They also wrote letters to superiors explaining what changes in policy were necessary and how such changes should be made. This training session was an important one. Key CETESB personnel worked through their command and control approaches to more fully appreciate pollution prevention. Emergent transgovernmental relationships were strengthened.

### The PREVENIR Idea Emerges

As the regional coordinator of Project XL, Anne Kelly had the opportunity to interact with a number of large corporations with facilities in New England. In the spring of 1997, Kelly visited the facilities of a multinational corporation that was eager to demonstrate its pollution prevention technology. The facility was indeed very clean. Impressed, Kelly wondered whether or not the corporation’s subsidiary facility in Brazil was as clean. But she was unable to get an answer from the company. She began to worry about the performance of New England-based MNC subsidiaries beyond US borders. What prevented MNCs from following the Gillette

model? The Gillette Company had won many environmental awards from the EPA, and had recently announced that it would be as clean in 63 countries as it was in the United States

Kelly began to consider working with CETESB and multinational corporations based in Region 1 in a voluntary environmental agreement similar to Project XL. Although EPA had no jurisdiction in Brazil, CETESB did. And while the EPA could do nothing about MNC subsidiaries in São Paulo, CETESB could. Kelly telephoned Coutinho to ask about the practices of US MNCs in Brazil. It was not clear that even the cleanest US firms had showcase facilities in São Paulo. In fact, Coutinho explained, they had some problems. Of some 1300 facilities in São Paulo operating without a permit, several were US-based MNC subsidiaries. Another challenge was that even the cleanest MNC subsidiaries in Brazil could pass along environmental costs or wastes to other, domestic firms; some US-based MNCs contracted with the dirtiest suppliers.

Kelly explained her idea of linking the two environmental protection agencies with New-England-based MNCs to Paulo Coutinho, who received it enthusiastically. He appreciated the idea of cooperation between the two agencies to facilitate MNC subsidiary greening. Yet Coutinho added an important point. Greening the subsidiary was not enough. They must train subsidiary suppliers to take a pollution prevention approach as well as the subsidiaries. Kelly and Coutinho agreed that they would work to green the supply chain. Finally, Kelly and Coutinho decided that it was important to reward the various companies involved. Such rewards were built into Project XL and Climate Wise.

### **Envisioning and Implementing PREVENIR**

Kelly and Coutinho immediately began to work on their idea. They developed it with Tellus Institute supply chain research, models of clean production from the Massachusetts Office of Technical Assistance, and research by the CETESB staff on environmental indicators. Kelly eventually adapted the model from the Climate Wise program.<sup>28</sup> Climate Wise, a partnership between EPA, Department of Energy and US industries, was designed to help companies develop energy efficiency and environmental performance goals and convert them into assets. Kelly hoped to select MNCs with demonstrated dedication to pollution prevention to participate in the program; the MNC subsidiaries would work on the implementation of plans within their facilities and serve as mentors to their suppliers. CETESB would work with participating firms to help them achieve their pollution prevention goals, and to showcase the best among them.

In Region 1, John De Villars was optimistic about the emerging plan. At EPA headquarters, however, officials hesitated. The idea of EPA influencing US-based MNC subsidiaries in Brazil was unconventional. They were also worried because there was no democratic process to decide which companies would participate; the selection of companies could be seen as favoritism. Kelly and Coutinho tackled the selection issue by seeking volunteers.

Kelly and Coutinho next looked at maps to find companies that could volunteer to participate in the program. Wally Hayes of Gillette expressed enthusiastic support for the idea; Gillette had Brazilian subsidiaries. But at the time Gillette did not have a manufacturing facility in São Paulo. Kelly contacted M/A Com (a microwave components manufacturer) and 3M. Both companies were stellar performers, and pollution prevention leaders. M/A Com (later bought by AMP, which manufactured “electrical, electronic, fiber-optic and wireless interconnection devices and systems”<sup>29</sup>) was receptive to the idea of government cooperation, in part because the Office of Technical Assistance had helped it save millions of dollars. 3M also volunteered; as it

was headquartered in Minnesota, Kelly consulted its regional EPA office before inviting the company to participate.

On July 17, 1997, Region 1 and CETESB met with representatives from 3M and M/A-Com in an “Initial Partnership Meeting” to discuss the details of the program. They settled on the English name, IP3, or International Partnership for Pollution Prevention (Coutinho’s contribution). In Brazil, the project was dubbed Parceria Internacional de Prevenção à Poluição, or PREVENIR. Coutinho gained CETESB support for the pilot project when he returned to São Paulo.

### **Box 1: Summary of IP3/PREVENIR Components**

- Mentoring between US firms and their subsidiaries
- Mentoring between subsidiaries and their suppliers
- Meetings linking CETESB, primary firm and supply firms
- Action plan development from suppliers
- Self-assessment questionnaire
- Environmental indicators
- Awards from CETESB, for the most individual progress toward action plan goals
- Enforcement
- Funding through PROCOP

Kelly traveled to Brazil in September 1997. She met with Fabio Feldman and Armando Shalders Neto, the Director of Pollution Control at CETESB, and Fernando Rei, the Chief of Development and Technology Transfer. Coutinho and Kelly also met with representatives from 3M and AMP. The representatives signed the PREVENIR protocol. By November, 1997, the IP3/PREVENIR group had established three points of purpose:

- (1) To encourage increased pollution prevention and beyond compliance practices in São Paulo with particular emphasis on subsidiaries of New England firms and their respective supply chains;
- (2) To showcase and designate as environmental leaders those firms which demonstrate true environmental stewardship in São Paulo;
- (3) To create an effective, transferable, self-sustaining international model for and in cooperation with OIA, which can be used throughout the developing world.<sup>30</sup>

IP3 was to take subsidiaries beyond Brazilian practices, to new ones created by US-EPA-trained CETESB personnel.

Coutinho’s team in Brazil developed a set of environmental indicators that included the reduction of water consumption, polluting emissions, energy consumption, environmental risk, and risk to worker health, the reduction or substitution of primary material and of combustibles consumption, and the improvement of internal recycling. The indicators also included the quantity of generated wastes per unit of product, and the quantity of workers with an

understanding of the environmental implications of their work. These indicators were to guide the implementation of the pilot and allow for its eventual evaluation.

Next, both 3M and AMP carefully selected suppliers to participate in the program. This selection was based on the firms' "(1) potential [to] have a major environmental impact (2) significance as a supplier to product development (3) willingness to go beyond compliance and to devote time and resources to completing the project."<sup>31</sup> Among the selected 3M suppliers were Indústria de Papel de Salto (a paper company), Cermatex (textiles), and Crios Resinas Sintéticas (a resins manufacturer). AMP selected Eluma S/A Industria e Comercio (metal parts), Scheurermann and Heiling, Roshaw (a chemical treatment service provider) and Lwart (a waste oil company). (See table 1)

**Table 1: Participating PREVENIR Companies**

<b>US-based MNC</b>	<b>3M (chemical adhesives and other products)</b>	<b>AMP (electronics)</b>
<b>Brazilian Supplier</b>	Crios Resinas Sintéticas (synthetic resins)	Eluma (metallurgy)
	Cermatex (textiles)	Lwart (oil refinery)
	Papel de Salto (paper)	Scheurermann and Heiling
		Roshaw Equipamentos (chemical treatment)

In April 1998 the MNC subsidiaries invited selected firms to join them and CETESB at meetings to discuss PREVENIR.

On June 9, 1998, in São Paulo, the Projecto Prevenir pilot was officially launched with the signing of a Protocol of Intentions. The protocol's objectives were outlined as follows:

- To promote sustainable development
- To diffuse prevention as an instrument of environmental protection
- To stimulate the introduction of clean technologies
- To improve the efficiency of production processes
- To reduce environmental risks and risks to the health of workers
- To strengthen the ties of international cooperation
- To develop local partnerships for the protection of the environment, with the cooperation of the environmental agency
- To channel resources for pollution prevention

The protocol stated that each MNC subsidiary, along with CETESB, would prepare an action plan, and more specific action plans would be developed by the suppliers with help of the subsidiaries; upon approval by CETESB, these plans would be implemented. CETESB, through PROCOP, could help finance equipment and process modifications. The companies with the highest levels of improvement in the implementation of the project were to receive a prize for environmental excellence from the state (with the support of the Secretary of the Environment). Representatives from CETESB, 3M, and AMP were present as the three suppliers for 3M and four for AMP signed the PREVENIR Protocol. Kelly congratulated each supplier, but did not sign the Protocol again—this was to be an agreement among Brazilians, and Kelly was careful not to trespass jurisdiction. With the enthusiastic direction of Tânia Mara Tavares Gasi, the

Director of Development and Technology Transfer, and Célia Regina Poeta, Manager of the Preventive Actions Department, the pilot program began.

In the months that followed the signing ceremony, participating suppliers were asked to respond to a questionnaire about their environmental management practices and then they began to meet with MNC subsidiaries and experts from CETESB headquarters (not the local environmental officials with whom these companies were more familiar). During these meetings CETESB provided pollution prevention information and training. CETESB also visited the facilities of suppliers. CETESB charged each set of partners (subsidiaries and suppliers) to generate an action plan or list of goals, and to present them to CETESB for input and approval. More informally, managers from the subsidiaries and suppliers met together, and supplier managers consulted with CETESB experts and technicians for advice and direction.

As CETESB and participating firms worked together, the transgovernmental interaction that generated the PREVENIR program subsided. Yet in late 1998, inspectors found a lapse in the permit of one MNC subsidiary that was resolved almost immediately, because—informed about the problem by Region 1—MNC headquarters in the United States insisted that the Brazilian subsidiary take action to clarify the situation.

But by 2000 formal PREVENIR meetings came to a halt. Fabio Feldmann left his position as Secretary of the Environment in April 1998; many of his innovative programs were not continued after his departure. Pollution prevention efforts at CETESB continued, but the companies involved in PREVENIR began to experience change as well. Perhaps most importantly, Tyco International purchased AMP in November 1999. Tyco, occupied with its acquisition, began to express a different set of business priorities. CETESB officials had to suspend the project without recognizing the best-performing suppliers. CETESB was also unable to evaluate the project with the indicators that it had developed.

### **Assessing Success**

Evaluating the success of the PREVENIR program is difficult particularly because the program was designed to achieve success, not to facilitate evaluation. The pilot operated in a time of change, and alongside similar programs sponsored by government and private actors alike, rendering evaluation subject to problems of maturation and misplaced causality. For example, as the PREVENIR project developed, firms in Brazil had the opportunity to participate in two voluntary, private certification institutions. Responsible Care, which had been adopted by the Brazilian chemical industry association, ABIQUIM, had been available since the early 1990s; participation in the program for ABIQUIM members was mandatory by 1998. By July 2000, ABIQUIM had 140 members.<sup>32</sup> ISO 14001, an environmental management systems standard, was released in 1996; it was catching on in Brazil as PREVENIR was implemented. By July 2000, 149 firms in Brazil had attained ISO 14001 certification.<sup>33</sup> In addition, São Paulo firms were expecting the state and federal government to make water and air regulations increasingly stringent.

There are problems of internal validity: interviews were conducted about a year and a half after the program was suspended; companies have changed hands, MNC-supplier relationships have changed, various individuals involved in the project have moved to other positions or companies, data has not been kept, and memories have faded. Data that does exist comes from just a year and a half of program operation. External validity as well as internal

validity is suspect: the selection of MNCs and suppliers for their sound environmental records built in selection bias and the number of cases is very small.

Despite these difficulties, it is possible to generate lessons from the PREVENIR pilot. Information collected in Brazil in June 2001 from interviews with five of the nine participating companies (both MNC subsidiaries and three supplier companies) and from CETESB, as well as information from a variety of sources in Brazil and United States, allows us to understand the strengths and weaknesses of the model.

Two of the three goals of the initial agreement signed by the US EPA, CETESB, and the multinational corporations in November 1997 have been met to some extent. The third goal, the creation of a self-sustaining model for the EPA's Office of International Activities to use with environmental agencies throughout the developing world, may yet be realized. The second goal, to showcase environmental leaders, was not fully realized as planned: companies did not receive awards for their PREVENIR efforts from CETESB. However, as a part of its ongoing pollution prevention efforts CETESB has selected the efforts of some PREVENIR firms to showcase as examples. The first goal of encouraging increased pollution prevention among the subsidiaries of New England firms and their supply chains has been best achieved. Pollution prevention in the subsidiaries suppliers has increased due to PREVENIR.

The companies in the AMP chain were difficult to locate; information on just two of the five companies in this chain were obtained. However, information on all four of the companies in the 3M chain was available, and interviews were conducted with managers at three of these companies.

### The AMP Chain

AMP was initially very enthusiastic about PREVENIR. AMP had won a number of awards throughout the 1990s for its environmental efforts in the United States.<sup>34</sup> With the support of top managers, AMP do Brasil's Brangança Paulista plant began work towards ISO 14001 certification in November 1996 (eventually earning a certificate in March, 1998).<sup>35</sup> AMP's ongoing pollution prevention efforts (of which the PREVENIR program was just a part) reduced the company's water consumption by recycling effluents. The Brangança Paulista facility separated wastes to recycle within and beyond its gates, and to reuse or recycle 100% of its plastic and metal waste along with 99% of the paper waste.<sup>36</sup> AMP won recognition from CETESB for these efforts, and was singled out for its pollution prevention success.

According to a former AMP manager, the AMP suppliers in the PREVENIR program also achieved some success with their pollution prevention efforts. Through the PREVENIR program the company assisted suppliers as they developed goals for improvement, implemented cleaner production practices, and made changes in their production lines. For example, it worked with a supplier to develop a substitute for the cyanide used in polishing.<sup>37</sup> AMP was also able to conduct some environmental audits in these supplier firms. As a result of PREVENIR, some suppliers were able to realize financial gains. The former AMP manager had an overall positive experience with the program, and would recommend it again (particularly if the implementation was verified and results measured).<sup>38</sup>

Yet Eluma, a former AMP supplier, did not find the PREVENIR experience fruitful. Eluma's origins on its site in Santo Andre date back decades, but the company has relatively new

owners. The Brazilian conglomerate, Paranapanema, which purchased Eluma in the late 1990s, has worked to spread environmental concern throughout the organization. Eluma, which uses raw copper and other metals from Brazil and other Latin American countries, as well as with copper and metal parts, to manufacture brass and copper fittings, tubes, pipes, and rolled products for the electronics, auto, construction and decorative industries, had no environmental management program in 1997. But the company did have a good record with local environmental officials; it recycled its metal wastes (as well as used metal parts) and was working to recycle the water it used.<sup>39</sup>

The invitation to participate in PREVENIR seemed like a good opportunity to operationalize Paranapanema's environmental concerns. Participation in the PREVENIR program also seemed to be a good way to meet the needs of AMP, an important client that purchased connectors from Eluma. Eluma participated in a series of PREVENIR meetings, and hosted AMP and CETESB headquarter personnel at their facility. AMP brought Eluma information and data.

But the firm could not proceed very far into the PREVENIR program. Some problems that had been identified could not be corrected due to a lack of money and competing priorities. For example, the company could not recycle wooden packaging materials without incurring significant costs. Other suggestions for improvement involved a change in processes that could not occur given a lack of technology (technology that did not seem to exist in the industry). Finally, because it was the sole metal processor in the PREVENIR program, it was difficult for Eluma to learn from the MNC subsidiary or other supplier participants. The program never represented more than a small slice of its many relationships.

Despite these problems, Eluma managers would recommend a more advanced version of the program. Working to stay ahead of the curve of local and Brazilian environmental law, and to implement its parent-firm's green concerns, it welcomes assistance.<sup>40</sup>

### The 3M Chain

3M has long been known as a path-breaker for its pollution prevention efforts.<sup>41</sup> These efforts are ongoing and global. The firm's subsidiary in Sumaré, Brazil was eager to adhere to the company's pollution prevention ethic, to stay above the curve of Brazilian air regulations, and to integrate its ISO 14001 commitments as it implemented PREVENIR<sup>42</sup> (the Sumaré facility was certified in March of 2001). As CETESB, touting the company as a model, explained, the company increased the efficiency of its solvent recovery system by investing in new equipment, and began to substitute water-based adhesive for adhesives based on organic solvents in 90% of its Scotch-Brite production. Increased savings and reduced emissions resulted from these efforts.<sup>43</sup>

3M enthusiastically began work with its suppliers of paper, cloth, and resins to reduce environmental impact in processes at supplier facilities and within the Sumaré facility. It worked with Cermatex Indústria de Tecidos, a textile firm in Santa Bárbara D'Oeste, on various projects. One was to reduce the consumption of water used in the dyeing process. Others involved reducing toxicity and substituting various ingredients to reduce potentially harmful emissions (for example, substituting colorants with high sulfur contents for alternatives with less sulfur).<sup>44</sup> Cermatex's substitution of soluble starches reduced the final cost of its product by 1.5%, and its pollution prevention work in the

dying process resulted in a reduction of the final cost of product by about 5%.<sup>45</sup> This was among many successes documented also by CETESB given its work with the company in other projects.

**Table 2: Summary of the 3M Chain Results\***

<b>Company</b>	<b>Results</b>
<b>3M</b>	Reduction of solvent vapors, energy savings, reduction of 240 resin drums per month
<b>Crios</b>	Reduction of resin drums by 1/3, reduction of phenol emissions, reduction in energy consumption, diffusion of pollution prevention ethic to its suppliers; ongoing relations with 3M
<b>Cermatex</b>	Numerous improvements including reduction of use of toxics, reduction of organics in waste, reductions in water and energy consumption
<b>Papel de Salto</b>	Reduction in water use, 100% treatment of effluents, 25% reduction in use of chemical products

\*All companies were also engaged in other CETESB or industrial voluntary initiatives

Despite participating in other programs, another 3M supplier, Crios, made pollution prevention progress that it directly attributes to PREVENIR. Crios had been in operation for just under 25 years when it received a letter from 3M inviting it to participate with it and CETESB in the PREVENIR pilot program. Located in Rio Claro, São Paulo, the company had been 25% owned by the German firm Hüttenes-Albertus Chemische Werke GMBH since 1977. The company produced various types of resins (including acrylic and polyester), molding powders, coated sand, formaldehyde, and hexamethylenetetramine: raw materials for use in a wide range of auto, chemical, and paint products. Crios supplied the resin that 3M used to make sand paper.<sup>46</sup>

While the company had no environmental management plan, it had demonstrated sound environmental citizenship. It had no history of accidents, and had not encountered problems with the local environmental agency during its 20 years on its Rio Claro site. Its permits were current. The company also recycled 100% of its wastewater through a process adapted from its European associate for the Crios production mix. Closed loop wastewater, at this time, was rare among ABIQUIM companies, and certainly, no other company in the area had it. Yet the written invitation from 3M elicited a brief moment of hesitation—what did CETESB headquarters want from Crios?

Crios decided to participate in the program, signed the PREVENIR protocol, and began work on an action plan that it completed in August 1998 with CETESB's cooperation. Just as Crios was deciding to participate in the PREVENIR program, ABIQUIM made Responsible Care membership mandatory. Crios eventually decided to participate in this program and has been working to implement its codes. It also decided to work toward ISO 14001 certification (which it received in June 2001). But it was PREVENIR, a Crios manager insists, that made the difference in mindset and change in practices. He remembers Paulo Coutinho speaking about the three steps of pollution prevention, and experiencing a revelation. He began to think about production at his facility in a new way, and to look for opportunities to avoid waste, to recycle, and to work for continuous improvement (all the while increasing profits). Dozens of projects later, Crios can boast of over 50 tons of waste avoided.

Crios developed a work plan with three specific goals. The first was to develop a resin product for 3M with less phenol to decrease atmospheric emissions. The second goal was to develop a urea resin with less phenol that could be stored at room temperature to reduce energy costs for the company and for 3M. Crios achieved both goals. The third goal was to reduce the number of drums that Crios used as it distributed products to 3M and other clients. It reduced the use of disposable drums for sales and supplies by about one third (reducing some 1000 each month) by switching to reusable drums, trucks for bulk distribution, and tanks. This resulted in an initial reduction for 3M (which installed a new tank in collaboration with Crios) of 240 drums each month; 3M expected additional reductions.

Crios did not stop its pollution prevention efforts after it achieved its work-plan goals. It worked within its facility to reduce energy consumption through more efficient computers and lamps. It also sought to make the transportation and storage of the drums that it did use safer; it sent letters to associates reminding them that inappropriate disposal was a crime, and providing instructions for proper disposal. Finally, although the PREVENIR program had been suspended, Crios personnel continued to interact with their 3M partners in a continuing effort to prevent pollution. “We kept the spirit of PREVENIR,” explained the Crios manager.<sup>47</sup>

All of this has come at no special costs to the company. In fact, the investment in time, money and energy Crios made in the PREVENIR program has paid off. “We have a culture here—everything we do must have a payback...be profitable.” When Crios changed the way it distributed resins, it reduced the price 3M paid for these resins by 8%. The industrial director of Crios remarked to a reporter, “By offering less harmful products we gained a competitive advantage and opened new channels within 3M which other competitors did not have.”<sup>48</sup> For a time, Crios increased its sales to 3M, which has recognized the company with top supplier awards. Crios has built a closer relationship with 3M since the PREVENIR program, and expects to continue to win its business. Winning 3M’s business and attention, in turn, bolsters the company’s reputation in the industry and the community: suppliers to 3M must be good. Crios pollution prevention efforts have left it in good shape to meet the demands of its new American owner (Schenectady International, Inc, based in Schenectady, New York), which purchased 70% of Crios in November 2000 (leaving the German partner Hüttenes Albertus with 25% and the Brazilian partners with 5%).<sup>49</sup>

Industria de Papel de Salto, a company established in 1889 to manufacture paper, was operating as a joint venture between the European group Arjo-Wiggins and the Brazilian Grupo Votorantim in the late 1990s. The oldest paper company in Brazil, it manufactured specialty paper with one machine that was over 100 years old, and two newer ones. The company was targeted by CETESB for its water consumption along with other water companies in addition to participating in PREVENIR, yet it also achieved significant results that are direct products of PREVENIR.

The company paid for an effluent treatment station to treat water in the paper production process. It reduced the amount of water it captured from the river by 45% and treated 100% of this water for reuse or release. It reduced by 85% the output into the river, and the water that does return to the river is in better condition than it arrived. The use of chemical products has been reduced by 25%. Waste fiber is separated from the water to become intermediate product, and is returned to the paper production process or sold to another user;<sup>50</sup> one company makes tiles out of it.

The company’s work was noted in the press. A Brazilian reporter explained that “Inspired by visits from 3M technical experts, the Paper Industry of Salto invested 800 thousand reais in

the improvement of processes and in the construction of an effluent treatment station, which permitted the reuse of wastewater. The consumption of chemicals decreased by 25% and the volume of water extracted from the Tiete River dropped by 55%. ‘The savings we have made on water will be a valuable asset when charges for water use are implemented, says the Industrial Director, Gerson Justo.’<sup>51</sup> According to a company manager, the company would avoid paying high taxes for water use.

The Paper Industry of Salto, like Crios, is eager to spread the ethic it learned as a PREVENIR participant. It looks for companies with the most environmentally friendly policies, advanced equipment, and community outreach programs when it assesses its own suppliers. A manager at the company claimed that this all started with PREVENIR, and that he would participate in the program again if he could.<sup>52</sup>

### **Conclusion: Lessons from the IP3/PREVENIR Program**

The IP3/PREVENIR program—a transgovernmental partnership with multinational corporations—represents yet another permutation of transnational activity. If we think of transnational relations of various types as layers of activity, we perceive the PREVENIR program as two layers—usually kept separate—temporarily united. The counterpart agencies, operating far from one another, cooperate to supervise a strand of global industrial activity—the supply chain—otherwise beyond the jurisdiction of any single agency. The benefits described in the case of 3M and supplier firms demonstrate that the PREVENIR model has the potential to supplement, reinforce, or even take the place of voluntary industrial activities and ECIs.

While the presence of a transgovernmental program may be redundant in some situations where multinational corporations are active, it may bolster efforts in others. The substance of the IP3/PREVENIR pilot program, for example, facilitates an understanding of a supply chain’s environmental impacts. While 3M is conducting similar life-cycle stewardship initiatives within the firm, and may not need to work with government to evaluate and mitigate the environmental impacts of its suppliers, such approaches are still rare among major multinational corporations. And while the Responsible Care program in Brazil, like the IP3/PREVENIR program, provides forums for the discussion of improvements, technology transfer, and the sharing of management practices among firms, the program is specific to an industry and falls short of reaching all firms. By design, the IP3/PREVENIR model incorporates small and medium firms regardless of industry. By design, the model discourages MNCs from pushing dirty production or substances somewhere else along the supply chain.

The 3M cases also demonstrate the potential effectiveness of the model to increase accountability. Through the action plan development process, government and firms generated shared expectations about environmental management and impact, and the responsibilities of each partner. And instead of making promises to their industrial counterparts, or a voluntary institution, firms in the IP3/PREVENIR program made promises to the government. Firms in the 3M program, at any rate, kept these promises. Accountability and transparency may be improved through verification or evaluation conducted by governments, universities, or third-party consultants.

The IP3/PREVENIR model also offers promise as an inclusive solution for the promotion of environmental protection across borders and firms. As the program is voluntary, and as actors are expected to work together to create plans, the problem of imposition (on other countries and firms) is mitigated.

Clearly, the IP3/PREVENIR model, whether it promotes pollution prevention or another substantive topic, has potential pitfalls. First, as the model's designers argue, the program would not have developed without the base of cooperation from which it emerged. This cooperation not only developed a kind of institutionalized trust, but interpersonal trust (especially between counterparts representing parallel components of the agency). It is difficult to imagine replicating a successful IP3/PREVENIR model among agencies that have not interacted together over time. It is difficult as well to imagine the model operating among agencies that share very little in common.

Second, the IP3/PREVENIR model depends on the existence of strong environmental agencies with a willingness to make change and collaborate, and with sufficient funds. This is indeed a problem—where the model is most needed, it may be less likely to succeed. Also, transgovernmental relationships, at some point, must be somehow allowed to flourish by state authorities (even if this means ignoring them). Legal questions about jurisdiction and sovereignty may make some governments hesitate to ignore or endorse them. The model depends as well on the existence of enthusiastic, capable multinational corporations. Here again, it may be less likely to succeed where it is most needed. If strong MNC partners are selected, what becomes of the weak MNCs, or those that do not implement their expressed environmental concerns?

Finally, the IP3/PREVENIR model is vulnerable to changing leadership, within government agencies and business firms. Mergers, acquisitions, and business failures, common as trade liberalization occurs, threaten even the best possible combination of environmental agencies and firms. Embedding the model in other multinational and transnational efforts may improve stability. Or, where and when appropriate, other civil society actors, such as trade associations or even environmental NGOs, may be included as partners.

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<sup>2</sup> Gary Gereffi, Ronie Garcia-Johnson and Erika Sasser, "The NGO-Industrial Complex," *Foreign Policy* (Jul.-Aug. 2001): 56-65.

<sup>3</sup> For a discussion of Responsible Care at the global level, see Ronie Garcia-Johnson, *Exporting Environmentalism: U.S. Multinational Chemical Corporations in Brazil and Mexico* (Cambridge, MA: The MIT Press 2000).

<sup>4</sup> For a critical overview of ISO 14001 see Riva Krut and Harris Gleckman, *ISO 14001: A Missed Opportunity for Sustainable Global Industrial Development* (London: Earthscan Publications Ltd., 1998).

<sup>5</sup> See CERES, "About Us: Who We Are," <http://www.ceres.org/about/main.htm>.

<sup>6</sup> Penny Fowler and Simon Heal, "Learning from the Marine Stewardship Council: A Business-NGO Partnership for Sustainable Marine Fisheries," *Greener Management International* (Winter 1998): 77+.

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- <sup>7</sup> See OECD, “New OECD Guidelines for Multinational Enterprises Reinforce Framework for Global Economy,” <http://www.oecd.org/media/release/nw00-68a.htm>, updated 14 Mar. 2000, accessed 28 Dec. 2000.
- <sup>8</sup> See United Nations, “The 9 Principles,” <http://www.unglobalcompact.org/gc/unweb.nsf/content/thenine.htm>.
- <sup>9</sup> Garcia-Johnson 2000. For a recent discussion of pollution havens, see Eric Neumayer, “Pollution Havens: An Analysis of Policy Options for Dealing with an Elusive Phenomenon,” *Journal of Environment & Development* 10 (Jun. 2001): 147-77.
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- <sup>11</sup> See especially Krut and Gleckman.
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- <sup>13</sup> Garcia-Johnson, 2000.
- <sup>14</sup> Robert O. Keohane and Joseph S. Nye, eds., *Transnational Relations and World Politics* (Cambridge: Harvard University Press, 1971): 383. They explained, “‘transnational interactions’ is our term to describe the movement of tangible or intangible items across state boundaries when at least one actor is not an agent of a government or an intergovernmental organization” (xii).
- <sup>15</sup> Keohane and Nye 383.
- <sup>16</sup> Anne-Marie Slaughter, “The Real New World Order,” *Foreign Affairs* 76, 5 (Sep.-Oct. 1997) 183+.
- <sup>17</sup> A workshop sponsored by Duke University was held July 1-2 2000 in Lexington, Massachusetts, where PREVENIR designers discussed the pilot project and provided data; discussions continued in Boston in November 2000. Fieldwork in Brazil (described in more detail below) was conducted in June 2001.
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- <sup>19</sup> United States Environmental Protection Agency, “What is Project XL?” <http://www.epa.gov/projectxl/file2.htm> 2 Dec. 1999, accessed 28 Dec. 2000.
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- <sup>22</sup> David S. Mowday, International Activities Coordinator, EPA Region 9, e-mail to Lee Hayes Byron, 28 Mar. 2000.
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- <sup>26</sup> Fabio Feldmann, former São Paulo Secretary of the Environment, personal communication, 27 Jul. 2000.
- <sup>27</sup> Director of International Activities.
- <sup>28</sup> Climate Wise is a voluntary program sponsored by the EPA and supported by the Department of Energy to facilitate US reduction of greenhouse gas emissions. Participating companies implement an action plan with the assistance of the EPA to increase energy efficiency and pollution prevention, and report results. In addition to technical, software, and other support, Climate Wise companies may receive free assessments and public recognition. See EPA, "Climate Wise," <http://www.epa.gov/climatewise/> last modified 19 Jul. 1999, accessed 28 Dec. 2000.
- <sup>29</sup> See Tyco, "Tyco History," [www.tyco.com/main/inside\\_tyco/history.AMP](http://www.tyco.com/main/inside_tyco/history.AMP).
- <sup>30</sup> Anne Kelly, Memorandum to John DeVillars, November 4, 1997.
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- <sup>34</sup> See AMP, "Awards and Recognition," <http://www.amp.com/about/media/environment/awards.stm>.
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