
Introduction and Summary

The United States, Canada, and Mexico share more than long borders; they also share guardianship of a common environmental heritage. At times they have worked together to deal with transborder problems such as air and water pollution and disposal of hazardous wastes. At other times, differences over resource management (especially water) have raised sovereignty concerns and provoked fractious disputes.

As a result of a deepening integration over recent decades, particularly in urban clusters along the US-Canada and US-Mexico borders, environmental problems have become a highly charged regional issue. Whether it is the production of acid rain from industrial wastes, dumping of raw sewage, over-irrigation, or overuse of fertilizers, environmental policies and practices in each country are felt in its neighbors. Consistent time series are not available, but the “made for TV” conditions in cities such as El Paso and Juárez, not to mention the Rio Grande river, suggest that environmental conditions have worsened on the US-Mexico border over the past decade. Explosive growth has created new jobs and raised incomes, but it has been accompanied by more pollution.

Worsening conditions in the midst of urban growth date back to the 1970s. Not surprisingly, the proposal a decade ago to advance regional integration by negotiating a North American Free Trade Agreement (NAFTA) provoked sharp reaction by the environmental community. US environmental groups argued that increased industrial growth in Mexico, spurred by trade and investment reforms, would further damage Mexico’s environmental infrastructure; that lax enforcement of Mexican laws would encourage “environmental dumping”; and that increased competition would provoke a “race to the bottom,” a weakening of environ-

mental standards in all three countries. They demanded that any new trade pact include safeguards against real or potential abuses.

Concerns about environmental issues in general, and Mexican policies in particular, posed a serious obstacle to the launching of the NAFTA negotiations. Several groups tried to block the talks by opposing the extension of fast-track authority for the president, which was needed for US participation in the agreement. Other groups sought to modify the traditional trade agenda by adding new environmental issues. In response, the Bush administration issued an action plan in May 1991 to address US-Mexico environmental issues both in the NAFTA negotiations and in other bilateral forums along a “parallel track” (Magraw and Charnovitz 1994). Fast-track authority was extended for two years and the negotiations proceeded.

The “greening” of the NAFTA produced notable results when the talks concluded in August 1992, but not enough to satisfy presidential candidate Bill Clinton. During the election campaign in October 1992, he criticized the pact for not dealing adequately with labor and environmental issues, and committed to negotiate supplemental side agreements on those areas. He pledged not to implement the NAFTA until a supplemental agreement had been concluded requiring each country to enforce its own environmental standards and establishing an “environmental protection commission with substantial powers and resources to prevent and clean up water pollution” (speech at North Carolina State University, 4 October 1992).

Clinton’s campaign commitments created expectations among US environmental groups that were not fully met in the negotiations that took place after his election. The North American Agreement on Environmental Cooperation (NAAEC) that was concluded in August 1993 augmented the NAFTA’s environmental provisions and dispute settlement procedures, making the greenest trade accord even greener. However, Clinton did not choose to spend large sums of federal money on improving conditions in US and Mexican border communities. In the absence of a US piggybank, Canada and Mexico preferred a less confrontational approach to dealing with environmental issues in the region and did not agree to key US demands, particularly enforcement provisions. Thus the NAFTA side accord did not deliver on some of Clinton’s ambitious environmental promises. Most environmental groups initially supported the NAFTA, but became increasingly dissatisfied with government efforts to deal with environmental problems in the region and have since opposed new trade initiatives.

Does the NAFTA record on the environment since 1994 justify the criticism by environmental groups? Six years is too short a period to redress decades of environmental abuse, but it is not too soon to assess the NAFTA’s achievements and shortcomings in meeting its environmental objectives and its impact on environmental conditions in Canada, Mexico, and the United States. To that end, this report reviews (1) the envi-

ronmental provisions of the NAFTA; (2) the NAAEC; (3) the situation at the US-Mexico border; and (4) the trends in North American environmental policy.

Overall, the NAFTA experience demonstrates that trade pacts can simultaneously generate economic gains from increased trade; avoid the dismantling of existing environmental protection regimes; and improve environmental standards, especially of less-developed partners. But the NAFTA record does not demonstrate that a trade pact can reverse decades of abuse, or turn the spigot on billions of dollars of remedial funding. This report also identifies continuing environmental problems in the region, particularly substandard living conditions that persist along the US-Mexico border, as well as concerns about NAFTA provisions (e.g., investor-state suits brought under Chapter 11 of the agreement that challenge environmental regulations) and shortcomings in the NAFTA's environmental side agreement that need to be addressed.

Environmental problems along the border are particularly worrisome. The United States and Mexico have not kept pace with the growing demands on environmental infrastructure stemming from dramatic growth in the border economy. Communities on both sides of the border have problems related to air pollution, water supply, wastewater treatment, and hazardous and solid waste disposal. In Mexican border cities 12 percent of the population does not have access to drinking water, and wastewater plants treat only 34 percent of wastewater. On the US side of the border, most municipalities have adequate sewage treatment but many are near capacity. Moreover, the colonias located in Texas and New Mexico lack water supply and wastewater disposal facilities (US General Accounting Office 1999).

An improved NAFTA would help mitigate these concerns and reduce opposition to future trade pacts. To that end, this report offers recommendations to improve environmental conditions in the NAFTA region:

With regard to the US-Mexican Border:

- Charge the Border Environmental Cooperation Commission (BECC) with conducting a comprehensive assessment of border infrastructure needs and associated costs.
- Use the BECC and an enlarged North American Development Bank (NADB) to sharply improve living conditions along the US-Mexico border.
- Dramatically increase the pace of NADB lending and financial guarantees from the current level of under \$100 million annually to a level closer to \$1 billion annually.
- Create environmental assessment districts and similar mechanisms to finance environmental infrastructure, especially in Mexico.

With regard to the NAFTA's environmental and investment provisions:

- Communicate more effectively the “quiet successes” of the NAFTA's Chapter 7B (sanitary and phytosanitary measures) and Chapter 9 (standards-related measures). Nonpolitical consultation and dispute management mechanisms in these chapters have avoided or solved controversies and could be replicated in other areas.
- Clarify the NAFTA's Chapter 11 (investment) through an interpretive statement to explain the meaning of key terms found within the chapter and to increase the transparency and predictability of the chapter's investor-state arbitration process.

With regard to the NAAEC:

- Review the dispute settlement mechanisms that address persistent patterns of environmental non-enforcement.
- Strengthen the credibility of the Commission for Environmental Cooperation (CEC) by (1) narrowing the scope of CEC activities; (2) streamlining the citizen submission process; and (3) improving coordination among the NAFTA's institutions (committees and technical working groups) dealing with environmental issues.
- Hold an annual conference on the state of the environment and publish an annual environmental “report card” to allow continuous tracking of environmental conditions in the three countries, especially along the borders.

The NAFTA's Environmental Provisions

Since it entered into force in January 1994, the NAFTA has become one of the world's best-known free trade agreements. In many respects, the NAFTA represents the most environmentally conscious trade pact.¹ Public concerns about the interplay between trade and the environment pushed the NAFTA's architects to pursue a "parallel track" that incorporated environmental sensitivities into the agreement itself where trade-environment tensions were inescapable and dealt with other matters in side agreements (Esty 1994, Johnson and Beaulieu 1996).

The NAFTA explicitly addresses environmental issues in its preamble and in five of its 22 chapters. A number of other chapters deal with environmental issues indirectly.

Preamble and Chapter 1

The NAFTA's preamble ensures that the goals of the agreement are attained "in a manner consistent with environmental protection and conservation." Additionally, the preamble includes among NAFTA goals the "promotion of sustainable development," and the "strengthening of the development and enforcement of environmental laws and regulations."

1. The NAFTA's environmental program derives in no small part from the agreement's inclusive negotiation process. During the NAFTA's negotiation and ratification, policymakers made great efforts to integrate the views of trade professionals and nongovernmental environmental organizations (Esty 1994).

Chapter 1 sets forth the agreement's basic rules of interpretation, including the NAFTA's precedence over other international agreements except over trade provisions of specific multilateral environmental agreements (MEAs).² In other words, Canada, Mexico, and the United States recognized the legitimacy of incorporating trade measures as enforcement tools in MEAs, provided the parties chose the least trade-inconsistent measure.

Chapters 7B and 9

Chapter 7B, on sanitary and phytosanitary (SPS) measures, allows the signatories to adopt or apply SPS measures more stringent than those established by international bodies.³ In other words, an unusually "tough" SPS standard is not automatically a trade barrier. To avoid abuses, Chapter 7B requires that SPS measures (1) not arbitrarily discriminate among like goods, (2) be based on "scientific principles," (3) be repealed or abandoned when no scientific basis exists for them, (4) be based on a risk assessment, as appropriate to the circumstances,⁴ (5) be applied only to the extent necessary to attain the desired level of protection,⁵ and (6) not represent a bad-faith disguised restriction on trade.

Chapter 9 deals with technical barriers to trade and standards-related measures.⁶ It authorizes parties to choose "the levels of protection con-

2. The multilateral environmental agreements mentioned in Chapter 1 (Article 104) and its annex (104.1) are the Convention on International Trade in Endangered Species of Wild Fauna and Flora; the Montreal Protocol on Substances That Deplete the Ozone Layer; the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal; the Agreement between the Government of Canada and the Government of the United States of America Concerning the Transboundary Movement of Hazardous Waste; and the Agreement between the United States of America and the United Mexican States on Cooperation for the Protection and Improvement of the Environment in the Border Area.

3. See NAFTA Article 754.

4. The Statement of Administrative Action makes clear that the risk assessment requirement does not threaten highly protective but well-considered standards. For example, the statement indicates explicitly that the NAFTA does not threaten the "zero-risk" level of the United States for potentially carcinogenic food additives, as established by the Delaney Clause of the Federal Food, Drug, and Cosmetic Act.

5. Although the NAFTA's use of the term "necessary" may suggest to some an imposition of the GATT's strict interpretation of the word, as discussed later in this report the North American Free Trade Agreement Implementation Act makes clear that the NAFTA does not adopt this approach.

6. The NAFTA defines a "standard" as a document approved by a recognized body, that provides, for common and repeated use, rules, guidelines, or characteristics for goods or related processes and production methods, or for services or related operating methods, with which

sidered appropriate” and to adopt measures deemed necessary to attain the desired level of environmental protection, provided they are nondiscriminatory and do not create unnecessary obstacles to trade.

Chapters 7B and 9 set limits on regulatory powers. However, the NAFTA’s SPS disciplines are less restrictive than those of the General Agreement on Tariffs and Trade (GATT).⁷ For example, the GATT requires in Article XX(b) that any standards-related environmental laws be “necessary” for the protection of human, animal, or plant life or health. GATT dispute settlement panels have interpreted “necessary” as meaning “least trade restrictive.” The NAFTA differs from the GATT on several aspects:

1. The NAFTA’s Article 710 explicitly states that the provisions of GATT Article XX(b) do not apply to sanitary and phytosanitary measures.
2. The NAFTA’s Statement of Administrative Action makes two clarifications regarding Chapter 7B.⁸ First, “necessary” is not to be interpreted as “least trade restrictive.” Second, the prevailing “scientific basis” for an SPS measure is that of the regulating authority and not that of the dispute settlement panel.
3. The NAFTA’s Chapter 9 does not contain an express “least trade-restrictive” requirement.
4. In an arbitration case brought by a party under the NAFTA’s Chapter 7B or 9, the party challenging the law or regulation carries the burden of proof. By contrast, under the GATT a party must prove that its laws are consistent with the provisions of Article XX(b) or XX(g). In addition, in any challenge arising under Chapter 7B or 9, the defending party may choose to have the case heard under either a NAFTA panel or a GATT panel, ensuring the application of the NAFTA’s rules at the option of the defending party.

compliance is not mandatory. It may also include or deal exclusively with terminology, symbols, packaging, marking, or labeling requirements as they apply to a good, process, or production, or operating method. A standard under the NAFTA is thus different from a “technical regulation,” which resembles a standard in form but is required by law and thus is mandatory. Both standards and technical regulations are governed by Chapter 9’s terms regarding standards-related measures.

7. One important area in which the degree to which the NAFTA departs from the GATT is unclear is in the extraterritorial applicability of sanitary, phytosanitary, and standards-related measures. As a result, the NAFTA does not resolve all of the issues raised by the tuna-dolphin case (Esty 1994).

8. Under US law (19 U.S.C. secs. 2902–03(a)(3)), a Statement of Administrative Action must accompany any trade agreement negotiated under fast-track authority. Although not officially part of the NAFTA, the statement’s language supplemented that of the pact during the ratification debate and provides insight into the US interpretation of agreement provisions.

To date, the NAFTA parties have avoided formal challenges under Chapters 7B and 9. Two factors explain the lack of disputes regarding SPS or standards-related measures: First, the relatively more flexible standards of the NAFTA discussed above, and second, the successful management of controversies by the NAFTA's institutions (committees and technical working groups) and other bilateral institutions (for example, the US-Canada Record of Understanding on Agricultural Trade established a mechanism for discussion and cooperation, including on SPS matters).

Chapter 11

Improving the investment climate—especially in Mexico—was an important goal for NAFTA countries.⁹ Chapter 11 of the NAFTA provides a predictable framework for investment that offers protection to Canadian, Mexican, and US investors and investments to ensure fair, transparent, and nondiscriminatory treatment in the NAFTA region.

The protections given to foreign investors and investments include:

- the better of national treatment or most favored nation treatment;¹⁰
- treatment in accordance with international law, including fair and equitable treatment and full protection and security;
- freedom from performance requirements such as minimum-domestic-content standards, output contracts, and technology transfer mandates; and
- a guarantee that no party shall indirectly nationalize or expropriate an investment of an investor of another party in its territory or take a measure “tantamount to nationalization or expropriation” of an investment except (1) for a public purpose, (2) on a nondiscriminatory basis, (3) in accordance with due process of law and established principles of international law, and (4) upon payment of compensation equal to the investment’s fair market value at the time of the expropriation or nationalization.

9. In 1997, NAFTA countries had a combined total direct investment of over \$193 billion in each others’ economies. The US direct investment position in Canada was \$96 billion, and in Mexico, \$24.2 billion. Canada’s direct investment in the United States was close to \$70 billion, and Mexico’s was \$3.3 billion. All data are on a historical cost basis (Bureau of Economic Analysis, <http://www.bea.doc.gov>).

10. The NAFTA defines “national treatment” as treatment “no less favorable” than that accorded to a party’s own investors. “Most-favored nation treatment” is defined under the agreement as treatment whereby investors of other parties are accorded treatment no less favorable than that accorded to investors of any third party.

Additionally, Chapter 11 provides a framework for settling disputes between investors and governments. Companies or individuals from a NAFTA country investing in another NAFTA country can initiate a claim against the government of the host country if they believe their rights under the provisions of Chapter 11 of the NAFTA have been breached (Soloway 1999c).

Investment-related issues have been the center of attention of North American environmentalists since negotiations for the NAFTA began. What they feared before the NAFTA's passage was that Mexico would become a "pollution haven" attracting investment through weak environmental legislation and ineffective enforcement. To address these concerns, Chapter 11 contains a specific article on environmental measures. Article 1114 of the NAFTA states that "the Parties recognize that it is inappropriate to encourage investment by relaxing domestic health, safety or environmental measures," and that "nothing in Chapter 11 shall be construed to prevent a Party from adopting, maintaining, or enforcing any measure otherwise consistent with this Chapter that it considers appropriate to ensure that investment activity in its territory is undertaken in a manner sensitive to environmental concerns."¹¹

Recently, attention has shifted to the dispute settlement mechanism and its effect on environmental legislation. Chapter 11 disputes are controversial—especially those prompted by government regulation in the fields of health and the environment. Of the NAFTA cases filed under Chapter 11 provisions, eight involve environmental issues, and these eight account for claims of about US\$1.7 billion (see table 2.1).¹²

Three cases have been settled to date: Ethyl (Ethyl Corporation vs. Canada), Desona (Robert Azinian and others vs. United Mexican States) and Metalclad (Metalclad Corporation vs. United States). The Ethyl case against the Canadian ban on imports of MMT (a gasoline additive) was settled before the NAFTA panel hearings. The Desona case against Mexico's decision to void a waste collection concession was the first-ever decision of a Chapter 11 NAFTA panel. The independent NAFTA arbitration tribunal ruled in favor of the Mexican government. More recently, a NAFTA panel ruled that Metalclad's hazardous waste treatment facility had been unfairly shut down by Mexican authorities. This was the first time a Chapter 11 tribunal found that a sovereign nation denied foreign investors fair and equitable treatment. Other cases under consideration include USA Waste vs. Mexico, S. D. Myers vs. Canada, Sun Belt Water Inc. vs. Canada, Pope & Talbot Inc. vs. Canada, and Methanex Corporation vs. the United States.

11. See NAFTA, Article 1114.

12. The claims in the eight cases amount to \$1,732 million. The Methanex case filed in June 1999 accounts for more than half of that amount.

Table 2.1 Chapter 11 disputes under NAFTA, 1994–99

Initial filing ^a (status)	Petitioner (country of origin)	Defendant	Subject of dispute	Status or outcome
August 1995 (No claim filed)	Halchette Distribution Services (United States)	Mexico	Claim unknown.	Notice of intent to arbitrate filed. No further action taken.
March 1996 (No claim filed)	Signa S.A. de C.V. (Mexico)	Canada	Canadian regulations injured Mexican company's investment in Canada.	Notice of intent set claim for \$36.8 million. No further action taken.
September 1996 (Settled July 1998)	Ethyl Corporation (United States)	Canada	Canadian ban on MMT imports. Claimed US\$250 million for damages and expropriation.	Case settled for US\$13 million. Ban on MMT imports eliminated.
October 1996 (Decided)	Metalclad Corporation (United States)	Mexico	Government actions preventing the opening of a hazardous waste landfill. Claimed US\$65 million.	Tribunal ordered Mexico to pay Metalclad \$16.7 million in damages.
December 1996 (Decided)	Desechos Solidos de Naucal- pan C.V., "DESONA" (United States)	Mexico	Claim for US\$17 million for seizure of property and breach of contract.	Resolved in favor of the Mexican government.
February 1998 (Active)	Marvin Feldman (United States)	Mexico	Claim for US\$50 million for lost profits due to refusal to rebate excise taxes on ciga- rette exports.	Notice of arbitration filed May 1999. In arbitration.
June 1998 (Active)	USA Waste (United States)	Mexico	Claim for US\$60 million.	In arbitration.
July 1998 (Active)	S.D. Myers (United States)	Canada	Claim for \$20 million for losses due to export ban on PCB waste.	Hearings scheduled February 2000.

July 1998 (Active)	Loewen Group Inc. (Canada)	United States	Claim for \$725 million for discrimination and expropriation due to a \$550 million damage sentence in civil case.	Claim for arbitration October 1998.
November 1998 (Active)	Sun Belt Water Inc. (United States)	Canada	Claim for \$220 million for biased treatment by government of British Columbia in joint venture.	Consultations ongoing.
December 1998 (Active)	Pope & Talbot Inc. (United States)	Canada	Claim for \$130 million^b for discriminatory implementation of Softwood Lumber Agreement.	Tribunal dismissed 2 of the 4 claims made by Pope & Talbot Inc.
June 99 (Active)	Methanex Corp. (Canada)	United States	Claim for \$970 million in damages due to California state ban on the use of MBTE (gasoline additive).	Notice of intent to seek damages under NAFTA June 1999.
September 99 (Active)	Mondev International (Canada)	United States	Claim for \$16 million plus interest and legal costs for a failed mall development deal in Boston. In 1994 a US court agreed with Mondev, but in August 1998 the Massachusetts Supreme Judicial Court overturned the verdict. The US Supreme Court refused to hear an appeal.	
May 2000 (Active)	UPS of America Inc. (Canada)	United States	Claim for \$100 million. UPS accuses Canada Post of subsidizing its courier services with revenue from its regular letter delivery sources.	

^a Date of initial notice of intention to arbitrate.

^b The damages claim ranges from \$30 million to \$500 million, depending on the source.

Note: Environment-related cases are in bold.

Sources: Mann and von Moltke (1999), Soloway (1999b), and Dow Jones News Service.

Ethyl

The \$250-million claim of Ethyl Corporation was settled before panel hearings for \$13 million. MMT has been used in Canadian gasoline since 1977. In 1990, Canada tried to ban MMT as a toxic substance, but it could not do so under the Canadian Environmental Act because it lacked evidence of a health hazard. In 1997, the Canadian Parliament passed Bill C-29 banning international and interprovincial *trade* of MMT—but not domestic production. The government of Alberta sued the Canadian federal government alleging that Bill C-29 was inconsistent with Canada’s Agreement on Internal Trade (AIT). The challenge succeeded, and a dispute settlement panel established in June 1998 ruled that under the AIT, Bill C-29 created an obstacle to trade that did not address a valid environmental objective. In July 1998, the Canadian government repealed the trade ban on MMT because it lacked scientific justification.

Ethyl Corporation also challenged Bill C-29 in three related filings: in the Canadian domestic court system (Bill C-29 was repealed before the case went to trial); under Chapter 20 of the NAFTA (the US government did not pursue Ethyl’s claim); and under Chapter 11 of the NAFTA.

Ethyl Corporation’s activity in Canada was to import MMT and blend it with fuel to supply the Canadian market. Bill C-29 prevented Ethyl from conducting its business. Ethyl challenged the Canadian government under Chapter 11 of the NAFTA with the following arguments:

- National treatment: Bill C-29 did not ban the sale of Canadian-made MMT but prevented the sale of foreign-made MMT by prohibiting its movement.
- Performance requirements: To stay in business Ethyl Canada was required to purchase Canadian-made MMT or build manufacturing and blending plants in each Canadian province.
- Expropriation: Bill C-29 would reduce sales and the value of Ethyl’s manufacturing plant, and it would damage Ethyl’s corporate reputation.

Before the Chapter 11 panel hearing was completed, the Canadian government repealed Bill C-29, as noted above, following the recommendation of the dispute settlement panel established under the AIT and settled with Ethyl for \$13 million for legal costs and lost profits.¹³

Some environmental groups decried the Ethyl case, wrongly claiming that Chapter 11 elevates investment over the environment. Instead, the Ethyl case represents two propositions: Discriminatory rules that ban imports but do not forbid domestic production are not permitted by the NAFTA; and sound science is the touchstone for environmental standards.

13. For details on the MMT-Ethyl case see Soloway (1999a).

Desona

The Mexican municipality of Naucalpan awarded an American-owned company, Desona (Desechos Solidos de Naucalpan S.A.), a concession to collect municipal waste, operate a landfill and construct a new one, and build an electric power plant. The concession was nullified shortly afterward, because the municipality decided the company had misrepresented its financial capacity and technical expertise. The US claimants filed a case with the Additional Facility of the International Center for the Settlement of Investment Disputes in March 1997, arguing that the municipality's actions were unfair and that the Mexican federal government was responsible under the NAFTA, seeking \$20 million in damages for lost profits. In November 1999, the arbitration panel concluded that the claimants had not established any violation of the NAFTA or other international laws. It emphasized that the NAFTA does not allow investors to seek international arbitration for contractual breaches and considered the evidence provided by the Mexican government "sufficient to dispel any shadow over the bona fides of the Mexican Judgments." Noting that the dispute had been brought before Mexican domestic courts, the panel stated that "a governmental authority cannot be faulted for acting in a manner validated by its courts unless the courts themselves are disavowed at the international level."¹⁴

The Desona case is the first test of the controversial NAFTA investor-state mechanism. The ruling shows that the NAFTA investment rules can be used successfully by governments to defend their actions (*Globe and Mail*, 5 November 1999, B7).

Metalclad

In the early 1980s Metalclad bought an existing disposal site in San Luis Potosi and was authorized by the Mexican government to build a new hazardous waste facility. In 1995, local regulation denied Metalclad permission to operate. Metalclad filed a Chapter 11 claim in January 1997 and the tribunal ruled in August 2000 that the action was unjustified expropriation, and that it denied Metalclad both national treatment and the minimum standard of treatment required for investors under international law. Metalclad was awarded \$16.7 million in damages (*Financial Times*, 1 September 2000). Despite the victory, the US based corporation was not satisfied with the award because it covered only the cost of the property and did not compensate for the investment on the new facility or lost revenues. Indeed, Metalclad's original claim was for \$90 million (*Dow Jones International News*, 31 August 2000). The tribunal's decision

14. See Mexican Embassy press release, 8 November 1999 (BOL-99-159), <http://www.embassyofmexico.org>.

shows a healthy skepticism toward outlandish regulatory activities. At the same time, it reminds sovereign states of their obligation to give foreign companies fair and equitable treatment.

Methanex

Legislation regarding another gasoline additive, MTBE, is now being challenged. MTBE, a derivative of methanol, is used by oil companies to reduce carbon monoxide emissions.¹⁵ In 1990, the US Congress required that gasoline sold in areas with severe air pollution contain a higher amount of oxygen to reduce carbon monoxide emissions. MTBE is used in 85 percent of reformulated gasoline that includes an “oxygenate.” In March 1999, because of concerns about MTBE making its way into the water supply, California ordered oil companies to phase out the additive by 2002. In June 1999, Methanex Corporation of Canada notified the US government of its intention to seek damages under the NAFTA’s Chapter 11, stemming from California’s decision to ban MTBE. Methanol, used to make MTBE, is Methanex’s only product. Methanex estimates that it will lose \$970 million in profits as a result of the MTBE ban in California.

The outcome of the Methanex claim, more than the Ethyl case, will determine the reach of Chapter 11. Unlike the import ban on MMT, the phase-out order on MTBE does not discriminate between imports and domestic production. The main concern of the Californian authorities is the presence of MTBE in drinking water. The “sound science” issue is whether a use ban is a better way to prevent MTBE from entering the water supply than closer attention to leaks and spills.¹⁶ The key question is whether a total ban on MTBE can be supported by sound science.¹⁷

Environmental and consumer groups have denounced the Chapter 11 dispute process as undemocratic and unnecessarily secretive and claim that it is generating a “chilling effect” on environmental regulations

15. Globally, MTBE constitutes 30 percent of methanol demand. California’s demand for MTBE constitutes 6 percent of global methanol demand.

16. On 18 October 1999, the Commission for Environmental Cooperation (CEC) registered Methanex’s Submission on Enforcement Matters. Methanex requested that the CEC prepare a factual record on “California’s failure to enforce its regulations concerning underground storage tanks.”

17. The potential risk to human health comes from the presence of MTBE in drinking water. MTBE is more soluble in water than other gasoline components. When gasoline containing MTBE leaks or is spilled and enters a water source, MTBE is often the first sign of the presence of gasoline in the environment. There is disagreement about the toxicity of MTBE. California’s Proposition 65 regulations require the state to list human carcinogens, but MTBE was not listed as a human carcinogen. The Environmental Protection Agency classifies MTBE as a potential human carcinogen. The National Toxicology Program, in its ninth report to Congress, elected not to list MTBE as a carcinogen. The World Health Organization’s International Agency for Research on Cancer does not classify MTBE as a human carcinogen.

(Friends of the Earth and Public Citizen 1999). So far there is no evidence that these cases are weakening environmental regulation, but environmental groups cite the Ethyl case as evidence that trade overrides safety.

Chapter 11 provisions should not lead to environmentally harmful results. The rules set forth in Chapters 7B and 9 hinder any strict interpretation of the investor-protection provisions of Chapter 11. Chapters 7B and 9 make clear that the NAFTA allows parties to undertake a wide variety of legitimate regulatory activities. An interpretation of Chapter 11 that would require parties to pay exorbitant amounts to investors injured by legitimate regulation would conflict with Chapters 7B and 9—and in the event of such a conflict, Chapters 7B and 9 would take precedence over Chapter 11.

Some commentators argue that the phrase “tantamount to nationalization or expropriation” in Article 1110 represents the NAFTA’s intent to award compensation for everyday state regulatory activities that affect the value of investors’ property yet fall short of a total taking (Mann and von Moltke 1999). NAFTA tribunals will likely reject this argument. Despite the wording of Article 1110, any definition of “expropriation” or “nationalization” that includes partial regulatory takings would deviate from the established principles of international law that the tribunal is required to follow. The United States, Mexico, and Canada seldom recognize a right to compensation in the event of partial takings (MacDonald 1998). Moreover, no international court or tribunal has promulgated a definition of expropriation or nationalization that would require a state to compensate property owners for the reasonable, nondiscriminatory exercise of its police powers.¹⁸ In sum, a definition of expropriation or nationalization that would encompass everyday regulatory action finds little national or international legal precedent. NAFTA tribunals are unlikely to march into uncharted territory.

Although the risks in the provisions of Chapter 11 have been overstated, the investment chapter of the NAFTA does have serious shortcomings that raise legitimate concerns that should be addressed.

- First, Chapter 11 states that tribunals shall resolve issues in accordance with the agreement and applicable rules of international law. In many

18. Traditionally, expropriation has been thought of as a state’s unanticipated and arbitrary deprivation of rights unaccompanied by an invocation of legal rules or a contractual justification (Levin and Marin 1996). This extremely limited definition of expropriation has been expanded somewhat in recent years, but not so much as to require compensation for regulatory activity that falls short of a total taking. One scholar, reflecting on his and his fellow arbitrators’ decisions in the Iran-US Claims Tribunal, where many investors had alleged expropriative governmental activity, said, “liability does not arise from actions that are nondiscriminatory and are within the commonly accepted taxation and police powers of states” (Aldrich 1994). Likewise, the Third Restatement on Foreign Relations offers a broader definition of a regulatory taking; yet it, too, embraces a standard for takings analysis that recognizes the validity of reasonable, nonconfiscatory state action (American Law Institute 1987).

cases, however, neither the agreement nor international law has established clear rules that would resolve conflicts that may arise under the chapter.

- Second, the Chapter 11 arbitration process lacks transparency. In the absence of an agreement between the disputing parties, Chapter 11 tribunals meet in private. The tribunals need not make filings, other trial documents, or even rulings available to the public. To date, only the Canadian government has adopted a policy of public document disclosure for its Chapter 11 cases (Mann and von Moltke 1999). The failure of parties to share notices, documents, and rulings with the public has raised fears within the environmental community that adverse rulings may already have been made, yet were never made public.
- Third, the phrasing “tantamount to nationalization or expropriation” in Article 1110 is sufficiently ambiguous that an ordinary regulatory taking, involving no exceptional burden in the realm of administrative law, might be interpreted as an “indirect” expropriation or nationalization. In that event, foreign investors would receive compensation not available to domestic investors under similar circumstances. Moreover, they might receive compensation that would not be available if a similar regulatory taking had occurred in the investor’s home country. The possibility of extraordinary favorable treatment for foreign investors is one of the most objectionable aspects of the NAFTA’s Chapter 11 (Graham 1998).

The North American Agreement on Environmental Cooperation

The North American Agreement on Environmental Cooperation (NAAEC) was created to encourage cooperative initiatives to improve North America's environment and to provide a mediating mechanism for environmental disputes. In addition, in 1993 the United States and Mexico signed the Border Environmental Cooperation Agreement (BECA), which extended their joint efforts to deal with problems in the border region, building on the 1983 La Paz Agreement.¹ The BECA established two new institutions, the Border Environmental Cooperation Commission (BECC) and the North American Development Bank (NADB), to evaluate, certify, and help fund environmental projects.

The environmental side agreement was more the product of the US legislative battle over the NAFTA than the result of an acute environmental conscience in the governments of Canada, Mexico, and the United States. Regardless of the motivation that led to it, the NAAEC has provided North America with a trilateral framework for environmental governance (Kirton 1997).

1. The La Paz Agreement, the agreement between the United States and Mexico for the Protection and Improvement of the Environment in the Border Area, provided a formal foundation for cooperative environmental initiatives in the border region. The border region was defined as the area lying 100 kilometers to the north and south of the US-Mexico boundary.

Environmental Side Agreement Provisions

The NAAEC established a “framework . . . to facilitate effective cooperation on the conservation, protection, and enhancement of the environment”² and set up an institution—the North American Commission for Environmental Cooperation (CEC)—to facilitate joint activities.

Part One of the NAAEC contains an ambitious set of objectives that include the protection and improvement of the environment, the promotion of sustainable development, and enhanced compliance with and enforcement of environmental laws and regulations. Part Two obligates parties to periodically issue reports on the state of their environment; to develop environmental emergency preparedness measures; to promote environmental education; to develop environmental technology and scientific research; to assess environmental impacts; to use economic instruments for environmental goals; and to “ensure that [their] laws and regulations provide for high levels of environmental protection.”

Part Three of the NAAEC establishes the CEC and defines its structure (a Council of Ministers, a Secretariat, and a Joint Public Advisory Committee), its powers, and its procedures. Part Four calls for cooperation in the interpretation and application of the NAAEC, the prior notification of proposed or actual environmental measures, and the prompt provision of information upon the CEC’s request.

Part Five deals with the resolution of disputes. In case of a “persistent pattern of failure” to enforce an environmental law, a party may request an arbitral panel. The request alone does not trigger arbitration; instead, a two-thirds vote of the Council is needed to form a panel. This panel can require the implementation of an action plan to remedy the nonenforcement of the environmental law. Failure to comply with the plan can lead to suspension of NAFTA benefits—except when Canada is the defending party.³ So far there have been no initiatives regarding persistent failure to enforce environmental law, and hence this mechanism remains untested.

This dispute settlement mechanism was designed so that it would seldom be used. After a persistent pattern of failure to enforce environmental law has been observed, a NAFTA party may first request consultations with the offending party and ultimately demand arbitration (Articles 22–36 of the NAAEC; for a description of the arbitration process see box 3.1). However, there are important differences between this dispute settlement process and that outlined in Chapter 20 of the NAFTA.

- Under Chapter 20 of the NAFTA, a party’s request alone is sufficient to trigger the arbitration process. Under the environmental side agree-

2. See NAAEC, Preamble.

3. If the monetary enforcement imposed is not paid, NAFTA benefits can be suspended for an amount sufficient to collect the monetary enforcement assessment.

Box 3.1 North American Agreement on Environmental Cooperation Part V dispute resolution timeline and procedures

A NAFTA member government can initiate consultations with another NAFTA member if the government lodging the dispute believes the other country has shown a persistent pattern of failure to effectively enforce its environmental law. If the disputing parties fail to reach agreement within 60 days of the request for consultations, either party may request a special session of the Council. The Council must convene within twenty days of the request and will try to mediate the dispute. The Council may call upon technical advisers or create working groups. If the Council is unable to resolve the dispute within 60 days, an arbitral panel may be convened at the request of either party, with a two-thirds vote of the Council (Articles 22–24).

The panel examines whether there has been a persistent pattern of failure to effectively enforce environmental law. The disputants are allowed to make initial and rebuttal written submissions and are entitled to at least one hearing before the panel. The panel may seek advice from experts, with consent of the disputing parties. Within 180 days after the first panelist is selected, the panel must submit an initial report containing its findings. If the country was found to exhibit a persistent pattern of failure to enforce its environmental laws, the report will make recommendations, normally in the form of an action plan. The disputants have 30 days to submit written comments on the report, and the panel must issue a final report to the disputants within 60 days of the release of the initial report. The disputing parties must give the report to the Council within 15 days after it is presented to them. The final report will be published five days after it is submitted to the Council.

The disputing parties will then agree on an action plan which “normally shall conform with the determinations and recommendations of the panel” (Article 33). If an agreement cannot be reached on an action plan, a complaining party may request that the panel be reconvened, although it may be no earlier than 60 days or no later than 120 days after the date of the panel’s final report. The panel will either approve an action plan proposed by the party complained against, create its own action plan, or impose a monetary fine of up to 0.007 percent of total trade in goods between the disputing parties during the most recent year. If an action plan is not agreed on and a panel solution has not been requested within the required time frame, the last action plan submitted by the offending party will be used.

If the complainant believes that the offending country is not fully implementing the agreed-on action plan, it may request that the environmental panel be reconvened, although no earlier than 180 days after the action plan was decided upon. The panel shall determine within 60 days of being reconvened whether the action plan is being fully implemented. If the panel determines that the action plan is not being fully implemented, a monetary fine may be imposed of up to 0.007 percent of total trade in goods between the disputing parties during the most recent year for which data are available. If the complaining party believes that the offending party is still not complying with the determinations after 180 days, it may request that the panel be reconvened. The panel must determine whether the party is complying or not within 60 days of being convened. In the cases of the United States and Mexico, if the panel determines that there is still no compliance, the country filing the complaint may impose tariffs equal to the monetary fine. Trade sanctions cannot be imposed against Canada. Instead, Canada has agreed to make the panel’s determination legally binding under the Canadian courts—an “order of the court.”

Source: McFadyen (1998).

ment a majority vote of the CEC Council is needed to support a party's arbitration request (Article 24).

- The time frame set for an environmental arbitration is almost double that permitted for Chapter 20 disputes (465 days versus 270 days).
- In Chapter 20 of the NAFTA, arbitration ends with the presentation of the final report to the disputing parties. Under Articles 22–36 of the NAAEC, the arbitration process does not necessarily end with the final report. If the parties fail to agree on the action plan necessary to correct the nonenforcement pattern, the panel can be reconvened to determine an action plan or impose a monetary enforcement assessment (150 additional days of arbitration).
- The NAFTA Free Trade Commission can withhold the publication of a Chapter 20 panel final report. However, the CEC Council cannot prevent publication of an Article 24 panel final report.
- Under Chapter 20 of the NAFTA, failure to implement the recommendations of the final report within 30 days leads to the suspension of benefits of equivalent effect (total arbitration time, 300 days). Under Articles 22–36 of the NAAEC, nonimplementation can lead to monetary penalties⁴ and ultimately to suspension of NAFTA benefits sufficient to collect the monetary enforcement (total arbitration time, 795 days).⁵

Finally, the dispute mechanism of the NAAEC is more concerned with the unfair trade aspect of nonenforcement (weak enforcement of environmental laws is regarded as a kind of unfair subsidy) than with the environment per se. This fact is a negative incentive for environmental authorities of the three governments to apply the mechanism.

Commission for Environmental Cooperation

The operational goals of the NAAEC can be encapsulated in three parts—to improve environmental conditions through cooperative initiatives, to ensure appropriate implementation of environmental legislation, and to mediate environmental disputes. The CEC is the institutional structure created to achieve these goals. The CEC consists of a governing body, the Council of Ministers; a Secretariat, which provides the Council with tech-

4. Monetary enforcement assessments cannot be greater than 0.007 of total trade in goods between the parties during the most recent year for which data are available (NAAEC Annex 34).

5. Suspension of benefits under Article 36 of the NAAEC does not apply to Canada (Annex 36A). Additionally, suspension of tariff benefits is limited; the level of new duties cannot exceed the lesser of most-favored-nation rates on the date of suspension or the rate in force prior to the implementation of the NAFTA.

nical support; and a channel for nongovernmental organization (NGO) influence, the Joint Public Advisory Committee (JPAC).

The Council is composed of “cabinet-level or equivalent representatives” and meets at least once a year. The Council’s functions include the promotion of environmental cooperation; approval of the CEC’s annual budget; oversight of the agreement’s implementation and the Secretariat’s activities; assistance in the prevention and resolution of environment-related trade disputes; development of recommendations on environmental issues ranging from data analysis to enforcement; and cooperation with the NAFTA’s Free Trade Commission to achieve the NAFTA’s environmental goals.⁶

The Secretariat is a permanent trilateral organization based in Montreal. It carries out the daily work of implementing the agreement, elaborates reports on environmental matters (including the annual report of the CEC), and has some investigatory powers. Article 13 of the NAAEC allows the Secretariat to initiate investigations and prepare reports on “any matter within the scope of the annual program.” Additionally, Articles 14 and 15 authorize the Secretariat to elaborate a factual record after a complaint of environmental nonenforcement has been made by individual citizens or NGOs. A two-thirds vote of the Council is necessary to proceed both with Article 13 reports and Article 14–15 factual records.⁷

The JPAC is a 15-member advisory board that permits public input on the activities of the CEC. The JPAC advises the Council on any matter within the scope of the NAAEC, provides relevant information to the Secretariat, and permits public input on the activities of the CEC.⁸ Between 1995 and 1999 the JPAC met more than 20 times and provided advice to the Council on over 40 occasions on a wide range of issues.

Budget and Activities of the CEC, 1994–98

Article 43 of the NAAEC specifies that “each Party shall contribute an equal share of the annual budget of the Commission, subject to the availability of appropriated funds.” Any NAFTA government has the “ability to curtail the operation of the CEC by reducing or withholding financial support.” However, since 1995, the three countries have maintained their \$3 million annual contribution to the CEC budget (Kirton 1997). This amount is an insignificant fraction of the resources dedicated to the environment in the United States (0.04 percent of the 1999 Environmental Protection Agency budget), Canada (0.75 percent of the Environment Canada budget), and Mexico (0.34 percent of the SEMARNAP [Secretaría de

6. See NAAEC, Article 9–10.

7. See NAAEC, Article 11–15.

8. See NAAEC, Article 16.

Medio Ambiente, Recursos Naturales y Pesca] budget). Yet it imposes a higher burden on Mexico's budget for environmental protection in terms of opportunity cost. For example, the Mexican contribution to the CEC is equal to the funds available for conducting environmental audits.

The CEC expends over half of its modest \$9 million budget on specific programs and project implementation in five priority areas (see table 3.1).⁹ The breakdown among areas was as follows:

1. Pollutants and health (40 to 50 percent). Projects in this area include the identification of priority pollutants and development of action plans to reduce the risks associated with toxic substances; the elaboration and publication of an annual North American Pollutant Release and Transfer Register (PRTR); training programs to enhance pollution prevention; and development of tools to monitor and improve North American air quality.

- Action plans were established to phase out four pollutants: chlordane, DDT, PCBs, and mercury. Chlordane is no longer registered for use or produced in North America. The plan on PCBs is under review because of a 1997 US ban on imports of PCBs for destruction. Transborder shipment of PCB waste was a central part of the action plan for PCBs, but the US ban on imports may force a total phase out of PCBs. PCB waste can still be shipped to Canada for destruction, but the expense is much higher. The DDT plan continues to search for alternatives to the use of DDT in the control of malaria and expects to cut the use of this chemical by 80 percent. The DDT action plan focuses on alternative chemicals, as well as biological controls, public health and education initiatives to reduce the transmission of malaria. Changes in the US interagency review process have delayed the implementation of the action plan on mercury. The Office of Management and Budget has imposed new procedural requirements for internal US government reviews that in turn are delaying the tri-national process.
- The first report on pollutant releases and transfers by industries in Canada and the United States was published in 1997.¹⁰ The report, which analyzed Canadian and US data only, found that US facilities dominated the releases and transfers of toxic chemicals in North

9. Because of changes in the accounting method, it is difficult to determine the expenditure in direct program costs. During the first years the program-related administrative costs were included in the general administrative expenses. As a result, the annual amount devoted to specific programs has ranged from \$5 million in 1996 to \$8 million in 1998.

10. In this context "transfers" includes chemicals in waste that are sent from the reporting facility to another facility off-site that treats or disposes of the chemical.

Table 3.1 Commission for Environmental Cooperation project budget, 1996–98 (in thousands of US dollars)

	1996	1997	1998	Total
Environmental Conservation	420	655	665	1,740
Cooperation in the Conservation of North American Birds	67	200	280	547
Plant Biodiversity Inventory and Information Network for North American Forest Ecosystems	77	n.a.	n.a.	77
Maps of North American Ecoregions	71	n.a.	n.a.	71
Cooperation on the Protection of Marine and Coastal Area Ecosystems	100	255	260	615
Nongovernmental Participation in Conservation of Protected Areas and Adjacent Land Holdings	105	n.a.	n.a.	105
North American Biodiversity Information Network	n.a.	100	125	225
Cooperation for the Conservation of Monarch Butterflies	n.a.	100	n.a.	100
Environment, Economy, and Trade	529	375	805	1,709
NAFTA Environmental Effects	214	250	100	564
Technology Clearinghouse	24	125	60	209
Pollution Prevention Cooperation	224	n.a.	n.a.	224
Capacity Building in Pollution Prevention	n.a.	n.a.	290	290
Economic Instruments for Migratory Songbird Habitat Protection	67	n.a.	n.a.	67
Exploring Linkages between Environment and Trade	n.a.	n.a.	30	30
Emerging Trends in North America	n.a.	n.a.	25	25
Promoting Trade in Green Goods: Inventory	n.a.	n.a.	57	57
Sustainable Tourism in Natural Areas	n.a.	n.a.	48	48
Shared Approaches to By-Product Synergy	n.a.	n.a.	175	175
Exploring Linkages between Trade and Species Conservation in North America	n.a.	n.a.	20	20
Enforcement Cooperation and Environmental Law Program	603	420	300	1,323
Cooperation in Environmental Enforcement	478	320	n.a.	798
Reciprocal Access to Courts	67	n.a.	n.a.	67
New Approaches for Environmental Performance	n.a.	100	n.a.	100
Dialogue on Environmental Law	58	n.a.	n.a.	58
North American Regional Enforcement Forum	n.a.	n.a.	49	49
Strengthening Regional Capacity to Enforce the Convention on International Trade in Endangered Species	n.a.	n.a.	105	105
Hazardous Waste Enforcement	n.a.	n.a.	44	44
Environmental Management Systems and Compliance	n.a.	n.a.	27	27
Compliance Indicators	n.a.	n.a.	75	75
Information and Public Outreach Program	239	150		389
CEC Database Development	239	n.a.	n.a.	239
North American Integrated System for Environmental Management	n.a.	150	n.a.	150

(Table continues next page)

Table 3.1 (continued)

	1996	1997	1998	Total
Human Health and the Environment	2,217	987	1,075	4,279
Sound Management of Chemicals	522	250	535	1,307
North American Pollutant Release Inventory (NAPRI) and Transfer Register (NAPRTR)	364	105	335	804
North American Air Monitoring and Modeling	158	150	n.a.	308
Science Liaison, Cooperation, and Coordination	67	n.a.	n.a.	67
Transboundary Environmental Impact Assessment (TEIA)	249	100	n.a.	349
Cooperation on North American Air Quality	n.a.	n.a.	205	205
Energy Efficiency Cooperation	138	n.a.	n.a.	138
North American Cooperation on Climate Change	330	n.a.	n.a.	330
Climate Change and Its Potential Impact on Transboundary Water Resources in North America	119	n.a.	n.a.	119
Environmental Education and Training	166	n.a.	n.a.	166
Capacity Building in Environmental Management in Guanajuato	104	382	n.a.	486
Total budget on projects	4,008	2,587	2,845	9,440

n.a. = not available

Source: CEC annual reports, <http://www.cec.org>.

America. Canada surpassed the United States only in discharges to surface water. A list of the top 50 polluting facilities identified the chemical industry as the top polluting industry. The report warned that some databases do not include transfers for recycling or reuse or for recovery. The second annual PRTR report, published in 1998, showed a 4 percent decrease in US releases and a 2 percent decrease in Canadian releases. Transfers increased by 25 percent in Canada and fell by 2 percent in the United States.¹¹ The 1999 PRTR showed a continuing downward trend: Pollutant releases declined by 4 percent in the United States and by 11 percent in Canada. Transfers increased by 3 percent in the United States and 10 percent in Canada. While providing a useful tool for cooperation in pollution management, the PRTR draws its information from national inventories that cover a limited number of industries and pollutants.¹² The Emission and Pollutant Transfer Program in Mexico is developing comparable data that will be included in the PRTR as it becomes available.

11. In Canada more new facilities reported in 1995, accounting for an increase in transfers; in the United States the decrease was in part due to some facilities' not reporting in 1995.

12. For 1996 the US inventory covered 608 substances, whereas Canada's covered 176. The North American Pollutant Release Inventory covers the 165 substances that have common reporting requirements. Reported chemicals represent only 1 percent of all chemicals in the two countries.

- To encourage pollution prevention, a survey was conducted to identify the specific environmental training needs of Mexican companies. Pilot projects in small to medium-sized Mexican enterprises are trying to demonstrate the economic and environmental benefits of pollution prevention. Additionally, pilot projects were launched in Tampico, Mexico, and Calgary, Canada, to promote the use of one industry's waste products as another industry's raw materials. (Five by-product synergies were identified in Tampico; the Canadian project is in progress.)
 - To improve North American air quality, several air monitoring and modeling initiatives were launched to examine compatibility of air data sets in North America. To reduce emissions of greenhouse gases, emission inventories are being developed as well as an evaluation of the potential for a greenhouse gas emissions trading system. Transboundary environmental initiatives aimed at helping countries identify environmental priorities include a project on smog in northeastern United States and eastern Canada and the development of a system to control environmental problems along the highway system in the free-trade transportation corridor connecting three Mexican states and Texas. However, no formal mechanism forces federal and state governments on both sides of the border to notify each other of border projects with potential transborder effects.
2. Environment, trade, and economy (12 to 20 percent). This program identifies links between environmental variables and economic indicators and reports on NAFTA environmental effects.
- Phase I identified four major linkages between the NAFTA and environmental changes in Canada, Mexico, and the United States: the production underlying trade and investment; the physical infrastructure that supports and transports this production; the social organization around production; and government policy. The studies also pointed out indicators and data sources available for the evaluation of the ecological impact of the NAFTA.
 - On the basis of this preliminary work, Phase II will develop a general analytical framework to assess the environmental effects of the NAFTA through the study of specific issues in key sectors, such as automotive-transportation, energy-petrochemicals, and forestry.¹³

13. The sectors selected had to constitute a major share of NAFTA trade and investment, be subject to important NAFTA provisions, and be an object of environmental concern. Automotive-transportation, energy-petrochemicals, and forestry were identified as possible broad sectors for further study.

Environmental impact studies on maize in Mexico, cattle feedlots in Canada and the United States, and electricity in the three NAFTA countries were used to test and refine the framework for analysis of the NAFTA effects.

3. Environmental conservation (10 to 20 percent). The objective of this program is to promote the protection and conservation of North American biodiversity.

- Projects in this area identified important resting and nesting areas for migratory birds and developed ecoregion maps to assess their conservation status and water resources.
- This program also developed a North American Biodiversity Information Network to link the databases of various agencies and make biodiversity information accessible to the public; launched cooperative pilot projects to conserve coastal areas in the Southern California Bight and the Gulf of Maine; and identified possible areas of cooperation with NGOs in the conservation of protected areas.

4. Enforcement (10 to 15 percent). This program monitors and reports on the implementation and enforcement of environmental standards and promotes regional cooperation to improve environmental laws and regulations. On the basis of projects in this area, the CEC recommended that the three governments improve public access to environmental information.

- The Enforcement Cooperation program established a Permanent Working Group of environmental enforcement officials to oversee cooperation in this field and supported seminars to improve maquiladora compliance with environmental laws.
- In addition, it established the North American Working Group on Wildlife Enforcement to enhance wildlife protection and provided training programs for improved enforcement of the Convention on International Trade in Endangered Species.
- Under this program a comparative environmental law database has been made available on the Internet at <http://www.cec.org>.

5. Information and public outreach (6 to 15 percent). The objective of this program is to promote environmental awareness and provide the general public with environmental information.

- The CEC Web site, <http://www.cec.org>, was developed to be an environmental information center.

- In cooperation with private environmental technology groups, the CEC created an electronic service to promote green technology, <http://www.sie.org>.
- This program also supported the creation of a Mexico-based NGO, the North American Center for Environmental Information and Communication. This organization has been successful both in improving public access to environmental resources in Mexico and in attracting funds from private corporations to ensure its survival.

In addition to these programs, the CEC supports specific obligations of the NAAEC in the following ways:

- Facilitating public access to environmental information held by public authorities of each party (Article 10(5)(a)).
- Preparing the CEC annual report (Article 12(1)).
- Preparing the State of the Environment Report (Article 12(3)).
- Developing Article 13 reports, of which the CEC has prepared three. The first investigated the death of migratory birds in the Silva Reservoir in Mexico and concluded that Mexico was not responsible for the problem. A scientific panel identified specific actions to deal with the issue, but the final CEC recommendation to the Mexican government was only to conduct a comprehensive evaluation and propose solutions (Soloway 1999c). As a result of the Silva report, an action program for the State of Guanajuato was developed, the state's first environmental council was created, and workshops on the Turbio River and wastewater treatment were established.

The second report analyzed the long-range transport of air pollutants in North America. This report provided a technical basis that can be used for coordination of air pollution policies in North America. The third report examined the water base in the resting stops of migratory birds along the upper San Pedro River (this river originates in Sonora, Mexico, and runs north into Arizona). The report found that the current level of development of the aquifer is unsustainable, recommended specific measures for water conservation, and pointed out the need for a binational coordinating structure to produce and implement action plans.

- Processing citizen submissions and developing factual records pursuant to Articles 14 and 15 of the NAAEC. The CEC can investigate citizen complaints about national enforcement of environmental laws. Between 1995 and August 2000, 28 citizen submissions on enforcement matters were registered, 9 regarding Canadian enforcement, 11 regarding Mexican enforcement, and 8 regarding US enforcement (see table 3.2). The Secre-

Table 3.2 Commission for Environmental Cooperation Article 14 submissions on enforcement matters, 1994–99

ID number and filing date	Claimant and defendant	Claim	Status
SEM-95-001 30 June 1995	Biodiversity Legal Foundation et al. vs. United States	Failure to effectively enforce some provisions of the Endangered Species Act of 1973 as a consequence of the Rescissions Act of 1995.	Process terminated. The Secretariat determined that “enactment of legislation which specifically alters the operation of pre-existing environmental law in essence becomes a part of the greater body of laws and statutes on the books.” The Secretariat “cannot characterize the application of a new legal regime as a failure to enforce an old one.”
SEM-95-002 30 August 1995	Sierra Club et al. vs. United States	Failure to effectively enforce all applicable federal environmental laws by eliminating private remedies for salvage timber sales as a consequence of the “Logging Rider” clause of the Rescissions Act of 1995.	Process terminated for the same reason stated in submission SEM-95-001. The Secretariat also concluded that the submission lacked a factual basis supporting the assertion of failure to effectively enforce.
SEM-96-001 18 January 1996	Comite para la Proteccion de los Recursos Naturales et al. vs. Mexico	Failure to effectively enforce environmental laws during the evaluation process of a project involving construction and operation of a port terminal and related works in Cozumel.	Factual record released to the public on 14 October 1997. Council did not make any recommendations.
SEM-96-002 20 March 1996	Aage Tottrup, P. Eng vs. Canada	Failure to effectively enforce environmental laws, resulting in the pollution of specified wetland areas impacting on the habitat of fish and migratory birds.	Process terminated because the same case has been brought before Canadian Court of Law.
SEM-96-003 September 9 1999	The Friends of the Old Man River vs. Canada	Failure to effectively enforce the habitat protection sections of the Fisheries Act and the Canadian Environmental Assessment Act.	Process terminated because a similar legal issue was pending before Canadian Court of Law. The submission was refiled (as SEM-97-006) on 4 October 1997, after the conclusion of Canadian legal proceedings. On 17 May 2000, the Council voted to defer the decision to develop a factual record because of Canadian domestic proceedings.
SEM-97-006 4 October 1997 (refiled)			

SEM-96-004 14 November 1996	The Southwest Center for Biological Diversity and Dr. Robin Silver vs. United states	Failure to effectively enforce the National Policy Act with respect to the US Army's operation at Fort Huachuca. Specifically, expansion of the base will drain local water supply and destroy the ecosystem dependent on it.	Submission withdrawn. Matter is currently being examined by the Secretariat under Article 13.
SEM-97-001 2 April 1997	B.C. Aboriginal Fisheries Commission et al. vs. Canada	Failure to enforce the Canadian Fisheries Act and to use its powers pursuant to the National Energy Board Act to ensure the protection of fish and fish habitat in B.C. rivers from ongoing and repeated environmental damage caused by hydro-electric dams.	The Secretariat transmitted a factual record of this case to the CEC Council on 31 May 2000. The factual record was released to the public on 12 June 2000.
SEM-97-002 15 March 1997	Comite Pro Limpieza del Rio Magdalena vs. Mexico	Failure to enforce Mexican environmental laws governing disposal of wastewater; alleging that wastewater from Imuris, Magdalena de Kino, and Santa Ana is being discharged into the Magdalena River without prior treatment.	The Secretariat is reviewing the submission in light of the party's response. On 13 September 1999 the Secretariat requested additional information from Mexico.
SEM-97-003 9 April 1997	Centre quebecois du droit de l'environnement et al. vs. Canada	Failure to enforce several environmental protection standards regarding agriculture pollution originating from animal production facilities in Quebec.	The Secretariat has reviewed the response from Canada. On 29 October 1999 the Secretariat informed the Council that this submission warrants developing a factual record. The Council voted down the development of a factual record on 16 May 2000.

30 **Table 3.2 Commission for Environmental Cooperation Article 14 submissions on enforcement matters, 1994–99 (continued)**

ID number and filing date	Claimant and defendant	Claim	Status
SEM-97-004 26 May 1997	Canadian Environmental Defence Fund vs. Canada	Failure to enforce law requiring environmental assessment of federal initiatives, policies, and programs. In particular, failure to conduct an environmental assessment of the Atlantic Groundfish Strategy, as required by Canadian Law, jeopardizing the future of Canada's east coast fisheries.	The Secretariat determined that submission criteria was not met. There was no evidence of defendant party's failure to effectively enforce its environmental law. Specifically, there was a significant delay between the time of the alleged failure to enforce and the filing of the submission, and there was no indication that the party's failure was continuing. Moreover, the law had been superseded and is no longer in force, and nothing indicates that local remedies were diligently pursued. Process terminated.
SEM-97-005 21 July 1997	Animal Alliance of Canada et al. vs. Canada	Failure to pass endangered species legislation or regulations as required by the Biodiversity Convention to which Canada is a signatory.	Process terminated. The Secretariat determined that "until international obligations are implemented by way of statute . . . those obligations do not constitute the domestic law of Canada." Since the Biodiversity Convention does not constitute Canadian law, the submission does not prove failure by Canada to effectively enforce its environmental law.
SEM-97-007 10 October 1997	Instituto de Derecho Ambiental vs. Mexico	Failure to effectively enforce the applicable environmental laws with respect to a citizens' complaint filed on 23 September 1996 in regard to the Hydrological Basin of the Lerma Santiago River-Lake Chapala. The citizens' complaint was submitted "with the view to declaring a state of environmental emergency in the Lake Chapala ecosystem, following administrative proceedings." Specifically, the submission alleges that Mexico failed to carry out the requisite administrative procedures provided by the LGEEPA.	The Secretariat is reviewing the response provided by the defendant party on 16 December 1998.

SEM-98-002 14 October 1997	Hector Gregorio Ortiz Martinez vs. Mexico	Failure to effectively enforce the applicable environmental legislation in relation to a citizen's complaint regarding lumbering operations at the "El Taray" site in the state of Jalisco. Specifically, the submission alleges that the technical audit and inspection visit that were performed were inadequate response to the citizen submission and that the relevant authority failed to issue the appropriate ruling regarding damages and losses as provided by section 194 of the LGEEPA (in force at the time of the submission).	The Secretariat terminated the process on 18 March 1999. The subject matter of the dispute is expressly excluded from Article 14 review by the definition of environmental law in Article 45(2)(b) of the agreement. This article states that for purposes of Article 14 "environmental law" does not include any regulatory provisions aiming to manage the commercial exploitation of natural resources.
SEM-98-001 9 January 1998	Instituto de Derecho Ambiental vs. Mexico	Failure of the Federal Attorney General and Federal Judiciary to effectively enforce the LGEEPA in relation to the 22 April 1992 explosions in the Reforma area of the city of Guadalajara, state of Jalisco.	The Secretariat terminated the process on 11 January 2000 because the submission failed to correct the incident with a violation of applicable environmental law.
SEM-98-003 27 May 1998	Department of the Planet Earth et al. vs. United States	Failure of the US EPA to enforce domestic laws (the Clean Air Act, 1990) and treaty obligations with Canada with regard to regulation of solid waste and medical incinerator air pollution designed to protect the Great Lakes.	The Secretariat requested a response from the US government. On 24 March 2000, the Secretariat requested additional information from the United States.
SEM-98-004 29 June 1998	Sierra Club of British Co- lumbia et al. vs. Canada	Failure to enforce provisions of the Fisheries Act with regard to protecting fish and fish habitat from the destructive environmental impacts of the mining industry.	The Secretariat is reviewing the submission in light of the party's response.

Table 3.2 Commission for Environmental Cooperation Article 14 submissions on enforcement matters, 1994–99 (continued)

ID number and filing date	Claimant and defendant	Claim	Status
SEM-98-005 23 July 1998	Academia Sonorense de Derechos Humanos vs. Mexico	Failure to effectively enforce all environmental legislation in regard to the operation of a hazardous landfill less than six kilometers from Hermosillo, Sonora.	The Secretariat is reviewing the submission in light of the party's response.
SEM-98-006 20 October 1998	Grupo Ecologico Manglar, A.C. vs. Mexico	Failure to enforce and properly administer domestic and international environmental laws, including the LGEEPA, in relation to the establishment and operation of the Granjas Aquanova S.A. shrimp farm in Nayarit, Mexico.	The Secretariat requested a response from the government of Mexico on 17 March 1999 in accordance with Article 14(2). On 4 August 2000 the Secretariat determined that the submission warrants the development of a factual record.
SEM-98-007 23 October 1998	Environmental Health Coalition vs. Mexico	Failure to effectively enforce environmental laws according to Mexican Law and the La Paz Agreement in connection with the abandoned lead smelter in Tijuana, Baja California, Mexico.	The Secretariat requested a response from the government of Mexico on 5 March 1999 in accordance with Article 14(2). On 17 May 2000 the Council advised the Secretariat to develop a factual record.
SEM-99-001 18 October 1999	Methanex Corporation vs. United States	Failure to effectively enforce environmental laws and regulations related to water resource protection and the regulation of underground storage tanks in California.	The Secretariat acknowledged receipt of the submission on 20 October 1999. The Secretariat requested a response from the US government on 30 March 2000.
SEM-00-002 20 March 2000	Neste Canada Inc. vs. United States		On 20 April 2000 this submission was consolidated with SEM-00-002. On 17 July 2000 the CEC dismissed the merged submissions because the matter raised by the submitters is the subject of a pending arbitration proceeding under Chapter 11 of the NAFTA.

SEM-99-002 19 November 1999	Alliance for the Wild Rockies et al. vs. United States	Failure to effectively enforce Section 703 of the Migratory Bird Treaty Act, which prohibits the killing of migratory birds without a permit.	The Secretariat acknowledged receipt of the submission on 22 November 1999. The Secretariat is reviewing the US government response received on 20 March 2000.
SEM-00-001 9 February 2000	Rosa Maria Escalante de Fernandez vs. Mexico	Failure to effectively enforce the LGEEPA in relation to the operation of the com- pany Molytex, S.A. in Cumpas, Sonora, Mexico.	First submission dismissed due to lack of information. The Secretariat is reviewing a second submission on the same matter to determine whether it meets the cri- teria of Article 14(1).
SEM-00-005 3 May 2000	Academia Sonorense de Derechos Humanos vs. Mexico		
SEM-00-003 21 March 2000	Hudson River Audubon Society of Westchester Inc. et al. vs. United States	Violation by the National Park Service of the US Department of Interior of the Mi- gratory Bird Treaty Act and the Endan- gered Species Act by proposing the con- struction of a paved bicycle path through the Jamaica Bay Wildlife Refuge in Queens, New York.	The Secretariat dismissed the submission because it al- leges a prospective rather than an ongoing failure to effectively enforce environmental laws and therefore does not meet the requirements of Article 14(1).
SEM-00-004 23 March 2000	Suzuki Foundation et al. vs. Canada	Failure to enforce sections of the Fisheries Act against logging in British Columbia is disrupting fish habitat.	The Secretariat received a response from the Canadian government on 25 July 2000.
SEM-00-006 06/09/2000	Comision de la Solidari- dad y Defensa de los derechos Humanos vs. Mexico	Failure to effectively enforce its environ- mental law by denying indigenous com- munities in the Sierra Tarahumara in the State of Chihuahua access to environ- mental justice.	The Secretariat is reviewing the submission to determine if it meets the criteria of Article 14(1).

LGEEPA = General Law of Ecological Equilibrium and Environmental Protection

Sources: Commission for Environmental Cooperation. (2000). *Submissions on Enforcement Matters*, <http://www.cec.org/English/citizen/index>.

tariat ruled that seven of these submissions did not warrant the cost of developing a factual record; one submission was withdrawn by the submitters; and in four cases, the Secretariat informed the Council the submissions warranted developing a factual record. The Council instructed the Secretariat to prepare a factual record in the Cozumel Pier case against Mexico, the British Columbia hydroelectric dams case against Canada, and the Tijuana smelter case against Mexico. The Council voted down the development of a factual record on the Quebec animal production pollution case against Canada. The remaining 11 cases are under review by the Secretariat. Two factual records have been published to date. After the Cozumel factual record was compiled, the Council did not make any recommendations to the Mexican government. Despite the lack of action of the Council on this matter and the initial disregard of the record by the Mexican government (which permitted the work to continue), this submission yielded some positive results: It prevented the development of larger tourism infrastructure; it pushed President Zedillo to declare Cozumel island a protected natural area; it created a precedent for the reform of the law of environmental impact; and it involved civil society in ecological regulation of the island.¹⁴ The British Columbia hydroelectric dam's factual record was released to the public on 12 June 2000.

Finally, the CEC budget provides funding to small communities through the North American Fund for Environmental Cooperation (NAFEC). The NAFEC was established by a resolution of the Council in 1995.¹⁵ Since 1996, the NAFEC has provided over \$3 million to 97 community environmental projects (see table 3.3). These projects focus on pollution prevention, water and forest management, habitat and species protection, sustainable development, energy efficiency, and public information. They encourage public participation in environmental matters and address specific environmental needs in a decentralized manner. Notwithstanding its positive impact in community involvement, the NAFEC costs the CEC \$1 million annually, raising questions about the value of this initiative (Independent Review Committee 1998).

Four-Year Review of the CEC

Article 10(1)(b) of the NAAEC required the Council to review the operation and effectiveness of the CEC before 1998. In November 1997, the

14. Telephone conversation with Gustavo Alanis (Centro Mexicano de Derecho Ambiental), legal adviser for the Cozumel Submission.

15. "Creation of the North American Fund for Environmental Cooperation." Council Resolution 95-09, <http://www.cec.org>.

Table 3.3 NAFEC grants awarded, 1996–98

	Number of projects	Total value of grants (in thousands of US dollars)
Projects in the United States	9	350
Projects in Canada	19	570
Projects in Mexico	31	1,300
Trilateral projects	12	485
US/Mexico projects	12	570
US/Canada projects	10	420
Canada/Mexico projects	4	75
Total	97	3,800

NAFEC = North American Fund for Environmental Cooperation

Note: Original data were in Canadian dollars and converted to US dollars using the average exchange rate for the period 1996–98 provided by *International Financial Statistics*, June 1999.

Sources: Data are from NAFEC documents found at <http://www.cec.org>.

Council appointed an Independent Review Committee (IRC) to examine the work of the CEC. The report of the IRC recommended:

- Stronger interagency involvement to build political support for the CEC.
- Engagement of all Canadian provinces in the NAAEC. The NAAEC specifies that the rights and obligations apply at federal and nonfederal levels in the United States and Mexico, but only at the federal level in Canada. Canadian provincial governments can sign on to the NAAEC, but only three provinces have done so: Alberta, Quebec, and Manitoba.
- Expeditious review of citizen submissions.
- Clear division between the staff responsible for the submission process and those responsible for the cooperative work program to avoid conflicts.
- Efficient use of resources devoted to public consultation.
- Focus on the practical aspects of the relationship between trade and the environment to demonstrate the positive links between them.
- Establishment of routine contacts with the NAFTA Free Trade Commission and its subsidiary bodies.
- Adoption of a rolling three-year program and budget cycle, focusing on a smaller number of projects that reflect the purpose of the CEC and the key priorities of the parties.
- Establishment of a systematic process to evaluate the annual results of each project.
- Seeking of funding links with donors and development banks.

After publication of the IRC report, recommendations of advisory bodies,¹⁶ and mounting criticism of the CEC's ineffectiveness in achieving the NAAEC's objectives (Bureau of National Affairs 1998a), the CEC replaced the annual program with a three-year program. Yet the CEC's 2000–02 proposed program plan still incorporates a diffuse range of “core” program areas (environment, economy and trade; conservation of biodiversity; pollutants and health; and law and policy) and an even wider variety of specific projects.¹⁷ The efforts of the CEC to tackle the shortcomings of the program seem meager compared with the size of its problems.

CEC-NAFTA Institution Interaction

The Free Trade Commission (FTC) is the central institution created by the NAFTA to fulfill the objectives of the agreement. The FTC is supported by a network of subsidiary bodies (committees, subcommittees, and working groups) that are in many cases involved in environment-related activities. Article 10(6) of the NAAEC mandates the CEC to cooperate with the FTC to achieve environmental goals of the NAFTA by:

- acting as point of contact for NGOs and people on environmental matters;
- providing assistance in consultations under Article 1114 of the NAFTA (pollution haven disputes);

16. In addition to the Joint Public Advisory Committee, Articles 17 and 18 of the NAAEC allow each party to create a National Advisory Committee (NAC) and a Government Advisory Committee (GAC) to advise it on “the implementation and further elaboration of the Agreement.” Currently Mexico, Canada, and the United States each have an NAC; the United States has a GAC.

17. The specific projects listed in the CEC's 2000–02 proposed program plan include Critical and Emerging Environmental Trends in North America; Assessing Environmental and Trade Relationships; Innovative Financial Mechanisms and the Environment; Facilitating Trade in Green Goods and Services: Promoting Sustainable Agricultural Production and Trade; Facilitating Conservation of Biodiversity as It Relates to Trade in Wildlife Species; Sustainable Tourism in Natural Areas; Strategic Directions for the Conservation of Biodiversity; Ecosystem Monitoring Initiative; Cooperation on the Protection of Marine and Coastal Ecosystems; Mapping Marine and Estuarine Ecosystems of North America; North American Marine Protected Areas Network; North American Biodiversity Conservation Mechanisms; The North American Biodiversity Information Network; Facilitating Trilateral Coordination in Air Quality Management; Developing Technical and Strategic Tools for Improved Air Quality in North America; Trilateral Air Quality Improvement Initiative: North American Trade and Transportation Corridors; Sound Management of Chemicals; North American Pollutant Release and Transfer Register; Capacity Building for Pollution Prevention; Cooperation between Environmental Laboratories; North American Regional Enforcement Forum; Enforcement and Compliance Capacity Building; and Indicators of Effective Environmental Enforcement (CEC 1999).

- contributing to the resolution of environment-related trade disputes; and
- assisting the FTC in environment-related matters.

Although the NAAEC provides for cooperation between the CEC and the FTC to fulfill the environmental goals of the NAFTA, little contact has occurred between the CEC and the NAFTA's institutions. Over the past six years, some of the NAFTA's trade disputes have been "environment-related," yet the CEC has not been involved in any of them.¹⁸ The advisory bodies of the CEC have pointed out the urgency of implementing effectively Article 10(6) of the NAAEC given the growing public concern about environment-related Chapter 11 disputes.¹⁹ However, trade and environment officials are only now beginning to identify the appropriate ways to implement this article (Mann and von Moltke 1999). A first joint meeting of the CEC Article 10(6) Environment and Trade Group and the NAFTA Working Group on Standards-Related Measures took place on 28 June 2000. The specific area of discussion was labeling and certification, with some general discussions on possible areas of information exchange. The report of the meeting has not been released to the public (CEC 2000).

18. For details on interaction between the CEC and the FTC, see Soloway (1999c), Kirton (1997), and Independent Review Committee (1998).

19. See US NAC Advice No. 99-3, 5, <http://www.epa.gov>. Canada NAC Advice 99-1, <http://www.naaec.gc.ca>.

The US-Mexico Border

For over 30 years, the border area has undergone dramatic growth in population and industrialization. Unfortunately, the region's infrastructure capabilities have not kept pace, leading to inadequate facilities for water supply, sewage treatment, and hazardous and solid waste disposal. The problems on the Mexican side of the border result primarily from inadequate urban planning, uncertain federal funding, and constraints on municipal budgeting and finance.

Local communities on the Mexican side of the border depend on a revenue-sharing system from the federal and state governments to finance infrastructure projects. The revenue available to most communities is uncertain, because it depends on allocations made annually by legislative decree. As an alternative, communities can turn to Mexico's National Bank of Public Works and Services for credit for environmental infrastructure projects; but most communities cannot afford the interest rates. Municipalities cannot raise capital outside the domestic market, since the constitution prohibits states and municipalities from borrowing in foreign currencies or from foreign creditors.

Dependence on the federal government, the absence of a civil service tradition (administrative staff turns over with every change of municipal, state, or federal government), and three-year terms in local administrative offices all contribute to urban chaos. Municipal capacity to plan, develop, and manage public works projects is very limited (US General Accounting Office 1999).

Most US border municipalities have environmental infrastructure. Local governments in the United States are able to raise funding for infrastructure through bonding and taxing mechanisms and are therefore able

to initiate projects independently and develop appropriate financing. Furthermore, civil service ensures the continuity of municipal administrators.

Despite these advantages, the US side of the border has plenty of problems. Texas has thousands of colonias—poor residential developments with little infrastructure; drinking water is scarce and sewage systems barely exist. As unincorporated settlements, colonias lack the tax or administrative systems needed to borrow money. Jurisdictional disputes among cities, counties, and rural water districts have left the colonias without basic services (US General Accounting Office 1999).

Property and sales tax payments on the US side of the border contribute directly and indirectly to the tax base of local communities, and these tax revenues are used to fund basic infrastructure. In Mexico, however, property taxes tend to be low, and the value-added tax paid on most purchases of goods and services is collected and administered by the central government in Mexico City. Only 3 percent of the taxes collected by the Mexican federal government return to the municipalities (*San Antonio Express-News*, 24 May 1998, J1).

The disparity in resources available to local governments on opposite sides of the border is best illustrated by the municipal finance of Tijuana and San Diego, two border communities. Tijuana's 1996 municipal revenue was \$64 million (including \$30 million from the federal government and \$14 million from taxes), to service a population of 1.3 million. In the same year, San Diego County's municipal revenue was \$2.8 billion (including \$70 million from the federal government, \$1,544 million from the state government, \$87 million from local government, and \$405 million from taxes), to service a population of 2.8 million.¹

Another twin-cities comparison illustrates the same point: El Paso (population 0.7 million) and Juárez (population 1.1 million). El Paso's revenue was \$441 million in 1996 (including \$31 million from the federal government and \$167 million from taxes). On the Mexican side of the border, the revenue of the municipality of Juárez was \$57 million in 1996 (\$17 million from the federal government and \$14 million from taxes).²

The growth of twin plant activity on the border has contributed to environmental strains. Maquiladora incentives were first established in 1965

1. Population data from the Institute for Regional Studies of the Californias, <http://www-rohan.sdsu.edu>. Municipal revenue information for Tijuana from Instituto Nacional de Estadística's (INEGI) Sistema Municipal de bases de datos (SIMBAD) program, <http://www.inegi.gob.mx>. San Diego County revenue from 1999 Statistical Abstract of the United States, <http://www.census.gov>, and 1996–97 County of San Diego Budget, http://www.co.sandiego.ca.us/cnty/cnty_depts/general/auditor/budget.

2. Estimated population for El Paso County and Ciudad Juárez from the City of El Paso, <http://www.ci-el-paso.tx.us>. Municipal revenue information for Juárez from INEGI's SIMBAD program, <http://www.inegi.gob.mx>. El Paso revenue from 1999 *Statistical Abstract of the United States*, <http://www.census.gov>.

to attract foreign investment and provide employment for Mexican workers disemployed by the end of the US Bracero Program.

The maquiladora program succeeded in encouraging foreign direct investment and stimulating industrial production in the border region. But the industrial boom was not accompanied by infrastructure for handling wastes and residues. Deplorable environmental conditions are the consequence. In spite of regulatory and enforcement efforts, the maquiladora industry still poses a major environmental challenge. The Mexican National Ecology Institute estimated that in 1997 over 20 percent of the hazardous waste generated in Mexico came from maquiladora industries.³

The number of twin plants has increased by 50 percent since the launch of the NAFTA, from about 2,200 in January 1994 to more than 3,300 in December 1999. Employment in those plants doubled during this period. Although twin plants continue to proliferate along the border, an increasing share of the growth has moved inland; indeed, the proportion of maquiladora plants not located in border states grew from 14 percent in December 1993 to 23 percent in August 1999 (Christman 1999). Twin plants in the interior have more stable workforces and better infrastructure capabilities (*Dallas Morning News*, 5 July 1998, 1J).

A positive aspect is that new *maquilas*, by incorporating new equipment and technology, improve the average environmental friendliness of the industry. A worrying fact is that, with the end of the *maquila* regime in 2001 and the end of tax breaks, ordinary factories set up in Mexico will have no legal obligation to ship waste back to the country that supplied the inputs (usually the United States). The impact is difficult to predict, since the law on waste repatriation is often ignored. Moreover, the Border XXI program (discussed below) promises to continue the policy of returning *maquila* hazardous wastes to the United States. Whatever the size of the problem, the ultimate solution lies in the provision of Mexican infrastructure capable of handling hazardous wastes, and the design of incentives to ensure that the infrastructure is used.

The maquiladora industry provides jobs to more than 1 million workers and produces 46 percent of Mexico's total exports. However, the maquiladora boom is stressing communities along the border that find themselves struggling for tax money to pay for roads, schools, electricity, and sewage systems. To be sure, maquiladora tax breaks are being scaled back. In 1999, the Mexican Finance Ministry and the US Department of the Treasury reached a new agreement to avoid double taxation. This arrangement will last until 2002 and requires maquiladora companies to pay a tax of 6.9 percent of assets used in operations (5 percent prior to the agreement) or 6.5 percent of the *maquila's* operating costs. Taxes paid to

3. The estimates of the Mexican National Ecology Institute are not exhaustive; in 1997 only 10 percent of the industrial plants submitted a report on hazardous waste generation, yet they produce 45 percent of the waste.

Mexico can be credited against US corporate tax liability. The arrangement increases Mexico's tax revenue by about \$120 million (Mexican maquiladora tax revenues previously were about \$200 million annually) and correspondingly decreases the parent company's US tax liability (*Los Angeles Times*, 12 October 1999, A1; 30 October, A1).

The additional tax revenue from maquiladoras will flow to the Mexican treasury. Unless the Mexican government provides more financing for border infrastructure projects, there will be no relief at the border. Even if all maquiladora taxes were returned to the states and municipalities, there would be a revenue shortfall. The long-term solution would be to give Mexican states and municipalities real authority to collect and spend property taxes and infrastructure fees.

Integrated Environmental Plan for the Border Region

For over a century, US and Mexican authorities have recognized the importance of cross-border environmental cooperation. In 1889, a bilateral treaty created the International Boundary Commission. In 1944, another treaty—the Water Treaty—converted the commission to the International Boundary and Water Commission. In 1983, the US and Mexican governments moved to a broader agenda with the signing of the Agreement for the Protection and Improvement of the Environment in the Border Area.

During the course of NAFTA negotiations, the US Environmental Protection Agency and its Mexican counterpart (then known as SEDUE) developed an integrated environmental plan for the border region calling for the establishment of six working groups: water, air, solid waste, pollution prevention, contingency planning and emergency response, and cooperative enforcement and compliance. In 1996, the plan was updated and expanded, becoming the Border XXI program. The revised plan added three more working groups: environmental information resources, natural resources, and environmental health.

At the 1999 annual meeting, the national coordinators reported the accomplishments of the Border XXI program:

- By year 2000, Mexico will provide 93 percent of its border population with drinking water, 75 percent with sewage infrastructure, and 81 percent with wastewater treatment capacity—up from 88 percent, 69 percent, and 34 percent, respectively, in 1995. Other statistics are sobering, however. Wastewater treatment plants in Mexican border cities treat only 34 percent of all wastewater, and insufficiently treated wastewater sometimes flows into surface and drinking water shared by both countries (US General Accounting Office 1999). In fact, 18 percent of Mexi-

can border towns have no safe drinking water, 30 percent have no sewage treatment, and 43 percent have inadequate garbage disposal.⁴

- Sister Cities Joint Contingency Plans have been signed to respond to environmental emergencies.
- The Mexican policy of returning hazardous waste from maquiladoras to the United States will continue after the full implementation of the NAFTA.
- Pollution prevention assistance provided to 19 maquiladoras resulted in savings of resources (31 million gallons of water, 10.9 million kilowatt-hours of energy use) and pollution reduction (53,000 pounds of volatile organic compound emissions, 8,600 tons of hazardous waste, and 52,000 tons of nonhazardous waste), saving participating industries \$8.4 million.

NAFTA advanced the cooperative efforts for the recovery of the US-Mexican border. In addition to the CEC, two bilateral institutions were created: the North American Development Bank (NADB) and the Border Environmental Cooperation Commission (BECC). These institutions are designed to develop, certify, and finance environmental infrastructure projects in the US-Mexico border area. The projects assisted by the BECC and the NADB focus on improved water supply, wastewater treatment, and solid waste disposal in border communities.

The BECC and the NADB also work together to improve coordination among US and Mexican environmental agencies through a quarterly coordinating committee with representation from the EPA, the Mexican Water Commission, and the US and Mexican sections of the International Border and Water Commission.

Border Environmental Cooperation Commission

The BECC provides technical assistance to border communities and certifies projects for consideration for NADB finance. Under its technical assistance program, the BECC helps communities prepare their project proposals for certification. By the spring of 2000, the BECC had authorized about \$17 million in technical assistance funds for 125 infrastructure projects in over 92 communities (54 percent of the funds went to Mexican communities and 46 percent to US communities). About 80 percent of the funding was devoted to water and wastewater projects, and 20 percent to solid waste projects. The management training program of the BECC

4. *The Economist*, "A greener, or browner, Mexico?" 7 August 1999.

helped organize eight training courses for state and municipal authorities on the management of water and solid waste.⁵

Over the past five years, the BECC has certified 36 infrastructure projects that ultimately will entail a total estimated expenditure of \$844 million (the NADB provides \$209 million in loans and grants for 26 of these projects).⁶ Of these projects, 14 are located in Mexico and 22 in the United States; they will benefit over 6 million border residents.

North American Development Bank

The NADB provides managerial assistance and loans and encourages financing from other lenders through guarantees. It also administers US EPA grant resources (see table 4.1).⁷ The NADB, as lender or guarantor, facilitates financing for environmental infrastructure projects certified by the BECC. Mexico and the United States contribute equally to the funding of the NADB. Both countries have fully authorized their \$1.5 billion capitalization commitments, for a total of \$3 billion. Of the capital, 15 percent (\$450 million) consists of actual cash; the remaining \$2,550 million is callable capital that the governments must provide to the NADB to meet debt obligations or guarantees, if required.

As of July 2000, the NADB has authorized \$266 million in loans and grants for 29 infrastructure projects representing a total investment of more than \$832 million.⁸ If the indicated relationship between funds lent or guaranteed by the NADB and the resulting expenditure on infrastructure is maintained (\$1 lent = \$3.13 investment), the NADB would have to lend or guarantee about \$2.6 billion to achieve the \$8 billion investment in infrastructure suggested in 1993 as minimally necessary for the recovery of the border region.⁹ With the explosive border growth since 1993, the

5. Data from Spring 1999 Joint Status Report of the BECC and NADB.

6. See BECC press release, 31 March 1999, http://www.cocef.org/apartcom/P8_PP99E.html.

7. Funding sources for border environmental infrastructure include international, federal, state, and city government institutions as well as some private resources. The International Boundary and Water Commission has funded wastewater projects, and the World Bank and the Inter-American Development Bank have planned border programs for Mexico (but high peso interest rates and low repayment capacity have delayed implementation). Among national government sources of funding are the US EPA and the Department of Agriculture-Rural Development, and the Mexican CAN and SEDESOL. From 1995 through 1999, Congress appropriated \$425 million for border infrastructure grant funds for EPA distribution.

8. See the executive summary of the Joint Status Report, <http://www.nadbank.org>.

9. Figures on required infrastructure are, at best, guesses; the NAFTA report by the Office of the US Trade Representative estimated \$8 billion in infrastructure investment needs (US Trade Representative 1992). In 1993, Hufbauer and Schott recommended \$5 billion for the first five years of NAFTA in border investment (Hufbauer and Schott 1993). In 1993, the Sierra Club estimated that \$12 billion would be needed to recover the border region (Sierra Club 1993).

Table 4.1 US Environmental Protection Agency border infrastructure funding, 1995–99 (in millions of US dollars)

Year	Congressional appropriation	Project	Funding
1995	100	Wastewater plant Tijuana	52.5
		Transfers to IBWC for wastewater	47.3
		Rescission by Congress	0.2
1996	100	BECC assistance program	10.0
1997	100	NADB-BEIF	170.0
		Border state/tribes and reserves	17.5
		US-Mexico Science Foundation	1.5
1998	75	Wastewater Tijuana (reserve)	54.0
		Border state/tribes and reserves	5.5
		US-Mexico Science Foundation	1.0
		IBWC project planning	10.0
		El Paso evaluation	3.0
1999	50	BECC assistance program	10.0
		US-Mexico Science Foundation	1.0
		NADB-BEIF	41.0
1995–99	425	Total	424.5

IBWC = International Border and Water Commission

BECC = Border Environmental Cooperation Commission

NADB = North American Development Bank

BEIF = Border Environment Infrastructure Fund

Source: Environmental Infrastructure Funding Projections, North American Development Bank.

minimal necessary expenditure in 2000 is probably closer to \$20 billion—suggesting that NADB’s financial target should exceed \$6 billion.

The NADB has a capital base of \$3 billion yet less than \$300 million has been approved for financing of border region projects. The NADB operates on narrow commercial criteria and its interest rates are too high for the poorest communities. Additional funding would allow interest rate subsidies to lower the cost of borrowing. Mexican President-elect Vicente Fox has suggested the capital base of the NADB be expanded from its present \$3 billion to at least \$10 billion to help reduce the gap in living standards between the United States and Mexico. (“Fox looks to bank to close crossborder income gap.” *The Financial Times*, 22 August 2000).

Currently, the management of the NADB is pushing for an expansion of its mandate to maximize its lending capacity. The proposals would make funds available for a greater range of environmental projects—at present, NADB projects have to be related to water, wastewater treatment, and solid waste; cover a large geographic area (expanding NADB coverage from 100 to 300 kilometers north and south of the US-Mexico border); and incorporate new financing mechanisms to give the poorest communities access to NADB lending.

The Mexican and US governments have to agree to the mandate change. President Fox has already called for an enlargement of the NADB

role. In the United States, the Clinton administration hopes to make a decision by the end of September 2000 (*Inside US Trade*, 1 September 2000).

The NADB's Institutional Development Cooperation Program (IDP) provides assistance for studies that enhance the management of public utilities, and training for utility managers and staff. The goal is to ensure the long-term viability of infrastructure projects. The IDP became fully operational in the spring of 1997 and is currently involved in 75 projects assisting 58 communities. The IDP projects are funded with NADB earnings, and the annual budget was doubled in August 1997 from \$2 million to \$4 million (North American Development Bank 1998). As an extension of the IDP, in the fall of 1999, the Utility Management Institute was established with the cooperation of academic institutions in the United States and Mexico to develop the professional skills of the utility staff. In some communities, improved operating efficiencies have increased revenues up to 30 percent.

To make projects affordable for the poorest communities, the NADB established the Border Environment Infrastructure Fund, which administers grants from other institutions. It was established with an initial EPA contribution of \$170 million for water and wastewater infrastructure projects. As of July 2000, over \$250 million had been authorized for 26 projects.

The NADB established a financial institution in Mexico, the COFIDAN (Corporacion Financiera de America del Norte), to facilitate lending to Mexican public institutions. The Mexican Constitution contains a provision that prohibits Mexican states and municipalities from borrowing from foreign entities or in foreign currencies. The creation of the COFIDAN, a limited-purpose financial institution authorized to make loans to finance environmental infrastructure, allows the NADB to lend directly to municipalities.¹⁰ The COFIDAN made its first four loans to Mexican public entities (totaling \$5.3 million) in 1999; however, there has been no further COFIDAN lending in 2000.

Lawsuits, increased media scrutiny, public awareness, the CEC, the BECC, and the NADB have contributed to increased attention to the border's environmental woes. However, the progress is in no way proportional to the depth of the problem (Simon 1997).

The border situation shows the difficulty of building stable communities in an area of sudden population growth. The US-Mexico border problem is accentuated by the economic pressures of the maquiladora program: the influx of maquiladora workers; the desire of many of these workers either to cross the border or to return to family homes elsewhere in Mexico; the resulting high turnover of workers; and high poverty rates.¹¹

10. The foreign currency problem was dealt with by using the Mexican Ministry of Finance hedging mechanism that allows loans in pesos without an exchange risk for the NADB.

11. Some maquiladora experts believe the trends in trade liberalization that led to the maquiladora boom will eventually trigger its decline as companies find cheaper production markets elsewhere (*San Antonio Express-News*, 24 May 1998, J1; *Christian Science Monitor*, 1 November 1999, 3).

The lack of stability and long-term community commitment, combined with the impoverished conditions of many border communities, Mexican rules limiting local governments' taxation revenues, and the low availability of foreign funding, makes community development and infrastructure development difficult.

The NADB and the BECC are improving the US-Mexico border region, but their combined outlays plus induced outlays by other government bodies have totaled less than \$1 billion over five years. By comparison, when the NAFTA was enacted in 1993, contemporary estimates put the required expenditures at \$8 billion to \$20 billion (US Trade Representative 1997).

Underlying the slow pace of border recovery are three problems. First, no comprehensive assessments have been made of required environmental outlays. Second, the Mexican tax system fails to capture even a modest fraction of the spiraling property values to improve public infrastructure. And third, some Mexican border communities are too poor to start on the recovery path.

Environmental Policy Trends in North America

At the time of the signing of the NAFTA, Canada, Mexico, and the United States had diverse environmental legislation, environmental concerns, and budget levels (see table 5.1). In the United States, the EPA budget increased from \$5.6 billion in 1994 to \$7.8 billion in 1999. In Canada, environmental spending has not exceeded \$450 million since 1995. In Mexico, although environmental issues have gained attention since the end of the 1980s, the environmental budget remains highly vulnerable to the economic situation and shows sharp fluctuations (in 1999 the budget was \$880 million). As a percentage of gross domestic product, Mexico spends on average twice the amount of Canada or the United States.

Different levels of economic development in the three NAFTA countries mean diverse levels of environmental funding and different environmental priorities. In 1999, the United States spent \$30 per capita on the environment, Canada \$13.5, and Mexico \$9.¹ Furthermore, in less-developed areas, environmental priorities are safe drinking water and basic infrastructures that provide minimum living standards for humans. In more prosperous regions, where all these services are provided, environmental initiatives focus on saving butterflies, birds, and trees.

Two concerns were raised during the ratification process of the NAFTA—the “downward harmonization” of US and Canadian environ-

1. Figures calculated by dividing environmental agencies' 1999 budgets in US dollars by estimated population (Canada, 30 million people; Mexico, 100 million; and United States, 266 million).

Table 5.1 Environmental budgets in Canada, Mexico, and the United States, 1994–99 (in millions of US dollars)

Year	Canada		Mexico		United States	
	Amount	GDP (percent)	Amount	GDP (percent)	Amount	GDP (percent)
1994	n.a.	n.a.	n.a.	n.a.	5,568	0.08
1995	474	0.08	n.a.	n.a.	7,558	0.10
1996	426	0.07	949	0.30	6,281	0.08
1997	386	0.06	1,162	0.29	6,799	0.08
1998	425	0.07	1,371	0.33	7,361	0.08
1999	414	0.07	880	0.18	7,771	0.08

GDP = Gross domestic product

n.a. = not available

Sources: Canadian spending data are from Environment Canada, at <http://www.ec.gc.ca>. Canadian values for 1995–97 are actual amounts, and values for 1998 and 1999 represent planned spending. Mexican spending data are from SEMARNAP Programas anuales, <http://www.semarnap.gob.mx>. US spending data are from the Environmental Protection Agency, <http://www.epa.gov>. Data that were originally in Canadian dollars and in Mexican pesos were converted to US dollars on the basis of the exchange rate at the end of the period, from *International Financial Statistics*, October 1999. Percentage of GDP calculations are based on GDP data from *International Financial Statistics*, June 2000.

mental or public health standards, and the creation of a “pollution haven” in Mexico. The evidence shows that neither of these fears has materialized.

US and Canadian Environmental Standards

Since the NAFTA was enacted, no significant environmental legislation has been repealed in the United States, and new health- and environment-related laws, such as the Safe Drinking Water Act Amendments of 1996 and the Food Quality Protection Act, have been added to the regulatory framework.

Nor has enforcement been lax in the United States. The EPA recently announced that it set several enforcement records in 1999. These included the collection of \$3.6 billion through enforcement actions and penalties for environmental cleanup, pollution control, and improved monitoring (up 80 percent from 1998); \$166.7 million in civil penalties (up 60 percent from 1998); and the bringing of 3,945 civil, judicial, and administrative actions (*PR Newswire*, 19 January 2000).

Canada’s post-NAFTA environmental record has been less impressive. Changes in Ontario’s environmental laws have been decried as competitiveness-driven deregulation. Furthermore, the number of environmental investigators employed by Environment Canada fell from 28 to 17 between 1995 and 1998 as a result of a 40 percent reduction in the agency’s budget over that period (Bureau of National Affairs 1998b). However, Canada’s fiscal year 2000 budget reverses this downward trend, allocat-

ing \$470 million for environmental technologies and practices (Bureau of National Affairs 2000). In addition, the recent budget cuts have not yet translated into worsened environmental conditions across Canada. In fact, a report by the Fraser Institute found signs of improvement in Canadian environmental quality, including decreasing levels of air pollution and a 25 percent reduction of toxic chemical releases between 1993 and 1997 (Jones, Griggs, and Fredricksen 2000).

Environmental Policy in Mexico

Until recently, few Mexicans worried about environmental issues; to many, there was no room for environmental concerns as long as half of the population lived in poverty. The 1994 devaluation of the peso, which halved the value of the Mexican currency, killed or postponed environmental priorities. However, a more favorable economic environment allowed considerable environmental spending growth between 1996 and 1998 and a comeback of ecological movements.

A major environmental concern, especially in the United States, at the time of the NAFTA negotiations and in the run-up to congressional ratification was the permissive character of Mexican environmental laws and particularly their weak enforcement. Mexico's efforts to improve its environmental legislation started well before the NAFTA agreement was conceived.

In 1988, the General Law of Ecological Equilibrium and Protection of the Environment (LGEEPA) was approved, strengthening environmental regulation. Public environmental expenditures grew steadily, reaching almost \$2 billion in 1991 (DiMento and Doughman 1998). After the NAFTA agreement, a Mexican institution was created in 1994 to handle environmental issues: the Environment, Natural Resources, and Fisheries Secretariat (SEMARNAP). In 1996, the LGEEPA was reformed to adapt to the growing environmental challenges. Today, the official Mexican environmental norms are renewed and updated annually. In December 1998, the Mexican constitution was amended to include the right to an appropriate environment. Article 4 of the Mexican Constitution states that "every person has the right to an environment suitable for its development and welfare." Other major changes in the environmental legislation in 1998 include the establishment of maximum permitted discharges of contaminants into the atmosphere and water resources.² A total of 54 official Mexican norms regarding the environment are now in force.³

2. The Official Mexican Norm NOM-002-ECOL-1996 was published in the *Government Bulletin* in June 1998. This norm, together with NOM-001-ECOL-1996, corrects deficiencies in previous water legislation. Other norms deal with specific contaminants. NOM-105-ECOL-1996, published in April 1998, established maximum authorized emissions of solid particles and sulfur compounds to the atmosphere by cellulose industries. NOM-003-ECOL-1997, published in September 1998, established maximum levels of contaminants in treated water

Environmental standards, however, do not ensure results unless they are accompanied by strong enforcement measures. The Mexican Federal Environmental Protection Agency, PROFEPA, is charged with enforcement matters. In 1995, the Mexican government established an environmental auditing program to promote voluntary compliance; the program covers all public-sector industries as well as big private industrial groups. The PROFEPA completed 629 audits between 1995 and 1998, and 350 more were expected by the end of 1999.⁴ Almost 1,000 industries have signed compliance action plans to correct environmental failures detected in the past four years. From 1995 to 1997, the 400 action plans entailed more than \$800 million in environmental improvement expenditures in Mexico (US Trade Representative 1992).

Through its inspection program, the PROFEPA verifies compliance with environmental legislation. From 1995 to 1998, almost 50,000 industries were inspected, and an additional 7,600 will go through PROFEPA scrutiny in 1999. In 1998, around 22 percent of facilities complied with the legislation, 77 percent had minor irregularities, and only 1 percent of the inspected industries had major environmental flaws.⁵ The PROFEPA is also responsible for environmental inspection and regulation of natural resources. From 1995 through 1998, some 57,000 inspections were carried out, and 38,000 more were planned for the next two years.⁶

The inspection program has yielded some quantifiable results:

- In the Metropolitan Mexico City Region, the emission of atmospheric industrial contaminants was reduced by 65.5 percent between 1992 and

used in public services. It also established the quality standards of the water to safeguard the environment and public health. NOM-121-ECOL-1997 established limits to the emissions of volatile organic compounds from the auto industry. For additional information on Mexican legislation, see <http://www.ine.gob.mx>.

3. The Mexican government classifies these norms as follows: three regulate water contamination, 22 regulate atmospheric contamination, five monitor the atmosphere, one controls the quality of fuels, eight regulate hazardous wastes, one regulates municipal wastes, four address noise contamination, four protect natural resources, and six have to do with environmental impact and ecological arrangements.

4. See <http://www.semarnap.gob.mx/gestion/avances/presentacion/Normatividad>.

5. Comparison with US and Canadian data is difficult because of differences in regulation and presentation of data. In fiscal year 1998, the US EPA performed some 23,000 inspections, over 3,000 (15 percent) of which concluded in formal actions and settlements (including 266 criminal cases and 411 civil cases). Canada performed 1,650 inspections resulting in 60 investigations, 208 warnings, seven prosecutions, and three convictions. See <http://www.epa.gov>.

6. SEMARNAP, "Cumplimiento de la Normatividad," <http://www.semarnap.gob.mx>. The inspections included 20,125 for fish resources, 16,121 for fishing operations, 10,757 for forestry, 2,434 for forestry operations, 7,964 for wild flora and fauna, and four verifications of the ecological order.

1998.⁷ This dramatic reduction is due among other things to new legislation requiring large polluting industries to relocate or reduce emissions, compulsory annual verification of industry emissions, and tax incentives for industrial relocation away from Mexico City. However, since only 3 percent of contaminants in the Metropolitan Mexico City Region are of industrial origin, and since autos are the largest source of pollution, air quality remains poor.

- The volume of hazardous residues handled with the appropriate safety measures increased from 193,000 tons in 1994 to 233,000 tons in 1998. Despite this positive trend, only 6.5 percent of hazardous waste is handled safely; there are 10,600 industries registered as hazardous waste producers, and their total waste production is 3.6 million tons annually.
- The quantity of hazardous substances produced by maquiladoras and returned to the United States doubled between 1994 and 1998, rising from 27,500 to 54,000 tons.
- Verification of new vehicle engines for compliance with fume and noise emission standards has improved dramatically since 1994. By 1998, the standards covered 100 percent of all engine types produced.⁸
- Inspections have reduced the waste of natural resources in Mexico. More than 2,000 tons of fishing products were saved with fishing method controls and boat inspections. Fire prevention measures and prosecution of illegal logging saved 15,000 cubic meters of wood, more than twice the amount saved in previous years.
- The Mexican government has improved its response capacity in the face of environmental emergencies. In 1995, only four of 38 emergencies elicited a government response (11 percent); in 1998, 34 of 38 reported cases elicited a response (89 percent).

In spite of the improvements in Mexican environmental protection, numerous challenges remain. While big companies and public enterprises in Mexico have largely embraced the voluntary compliance program, 90 percent of Mexican firms are small and medium-sized companies. Many are financially strapped. Only 50 percent of medium-sized enterprises have wastewater treatment facilities, and most small firms have no environmentally friendly equipment. The Mexican government provides some incentives to stimulate investment on environmental equipment,

7. See SEMARNAP's 1998 Environmental Program, <http://www.semarnap.gob.mx>. The 1998 emissions were 110,000 tons.

8. Ibid. In 1995, only 57 percent of engine types were inspected. *Red Mexicana de Accion Frente al Libre Comercio*, boletín no. 24, March–April 1999.

but these have not had the hoped-for results, partly because of deficient marketing, and partly because of the financial problems facing small companies.⁹

Environmental Policy Convergence in North America

As noted earlier, the NAFTA and the NAAEC emphasize national autonomy. However, their environmental provisions create a North American environmental framework with mild harmonization effects (Rugman and Kirton 1998). This harmonization does not come from mandated NAFTA standards but instead from requirements imposed on the three countries: health and safety regulations based on sound science and risk assessment; recognition of standard-setting bodies and equivalency of standards; enforcement of environmental laws; and acceptance of a trinational dispute settlement mechanism for enforcement matters.

Between Canada and the United States, convergence in environmental policy is apparent. This convergence results from parallel domestic pressures, international environmental agreements, increased economic integration, and emulation. The United States is the largest trading partner of Canada and Mexico and in most cases has higher environmental standards than those of its NAFTA partners. The NAFTA, by increasing economic integration, allows greater interaction between policymakers and NGOs, magnifying the pressure for convergence (Hoberg et al. 2001).

9. *El Economista*, 19 July 1999, quoting Pedro Murad, president of the Asociación Nacional de Industrias del Medio Ambiente.

Conclusion and Recommendations

In determining whether the NAFTA has improved or damaged the North American environment, it is critical to define the relevant counterfactual. Some environmentalists believe that tougher environmental clauses could have been built into the agreement. Most negotiators disagree: The side agreements crafted by the Clinton administration in 1993 stretched the patience not only of Mexico and Canada, but also of Republicans in the US Congress. In our view, the relevant counterfactual was not tougher provisions, but no agreement. Without the NAFTA, the Mexican government would have had less incentive to pass environmental legislation or to improve its enforcement efforts, and the achievements, modest though they are, of the Commission on Environmental Cooperation, NADB, and BECC would not exist.

Despite the positive environmental incentives of the NAFTA and the achievements of the environmental institutions created by the side agreements, the NAFTA's environmental record is imperfect and there is ample room for improvement. Toward this end, we offer some recommendations:

With regard to the NAFTA's environmental and investment provisions:

NAFTA countries should highlight the success of Chapters 7B and 9. These chapters demonstrate that free trade need not undermine appropriate regulatory authority and sovereignty. The fact that no claims have been litigated under these provisions shows that the NAFTA countries recognize each other's right to establish appropriate levels of protection.

Although critics overstate the risk that the NAFTA's Chapter 11 poses to reasonable environmental regulation, NAFTA signatories must address shortcomings.

- First, an interpretive statement by the NAFTA's parties, as authorized under the agreement, would resolve any doubts about the extent of the rights afforded to investors under Chapter 11. To avoid overzealous invocation of Article 1110, the international tribunal should apply a dual test to determine whether a foreign investor is entitled to compensation after a regulatory taking. A foreign investor's complaint should be covered by investor protection provisions only if domestic investors would receive compensation for a similar regulatory taking, or the foreign investor would receive compensation in its own country under the same circumstances.

The NAFTA parties have entered into limited discussions on a statement of interpretation but have taken little action on the matter (Mann and von Moltke 1999). In the wake of the Ethyl case, Canadian Trade Minister Sergio Marchi lobbied the other NAFTA parties for such a statement, especially one that would clarify the meaning of the chapter's expropriation provisions. Mexicans, on the other hand, fear that the re-opening of the accord might lead to the revision of other chapters or cause changes in investors' risk perception. The Mexican government argues that the Desona case proves that governments are capable of using the NAFTA's investment chapter to their advantage.

The United States is divided on the issue. The Department of Justice and the EPA are seeking interpretive clauses to eliminate claims that normal regulatory activity affecting investments is "tantamount to nationalization and expropriation."¹ The Department of Justice favors the change to defend US law against foreign challenges. The EPA favors a modification of the controversial provision under pressure from environmental NGOs seeking assurance that US environmental laws will not be challenged. The Treasury, the Department of Commerce, the Department of State, and the Office of the US Trade Representative favor maintaining the current language of the agreement to protect US investment abroad (*Inside US Trade*, 18 December 1998, 1–3; 15 January 1999, 1–2).

- Second, procedures of investor-state claims must be reviewed to enhance investor and public trust in this arbitration mechanism. Public dissemination of information about arbitration claims should be improved. At a minimum, filing of claims and final resolution of dispute panels should be made public. Further reforms could allow the public to submit amicus briefs to tribunals and witness arbitration proceedings.

1. Article 1110 (1) of the NAFTA.

With regard to NAAEC:

The NAAEC is probably the most comprehensive environmental cooperation agreement associated with a trade agreement. However, it has two major shortcomings:

- The “nonenforcement” mechanism contained in Articles 22–36 of the NAAEC is disappointing. It deceives those who identified this mechanism with the “teeth” of the side agreement, and it continues to irritate Canadians and Mexicans, who begrudgingly consented to these procedures. Indeed, the Canadians did not fully consent, which created a separate issue arising from the fact that Canada and Mexico are not subject to the same penalties. This mechanism should be revised; its design should be changed to make it more functional. The potential withdrawal of NAFTA benefits should be replaced with civil fines, which would avoid differential penalties between Mexico and Canada and limit the interruption of trade in sectors unrelated to the environmental practices in question.
- The institution created to carry out the side agreement’s goals, the CEC, has not been given adequate support by the NAFTA governments. In addition, CEC performance would benefit from a more focused agenda and a more effective citizen submission process.

Since its creation in 1994, the CEC has tried to be all things to all people—on a modest annual budget of \$9 million. It has played too many roles to be truly effective in any of them: environmental information center, developer and controller of environmental indicators, promoter of environmental awareness and clean technology, producer of environmental reports, founder of environmental community projects, and arbiter of disputes.

The CEC has launched an alphabet soup of initiatives (NAFEC, NABIN, NAPRI, NAWEG, CITES, NARAP, and so on)—so many that they have become a shield against public scrutiny. Additionally, the CEC has engaged in a costly project trying to identify linkages between the NAFTA and the environment. While this is an interesting exercise, most observers are concerned with the absolute level of environmental conditions and the direction of change, not how much NAFTA changed the slope of the trendline.

The alphabet soup approach and the focus on NAFTA linkages represent mistaken strategies. For example, compare the CEC’s \$9 million annual budget to the \$7.8 billion of the US EPA. Indeed, the apparatus of the entire world trading system is strapped for resources; even the World Trade Organization operates on a budget of only \$80 million annually. In these circumstances, the CEC might at most double its budget over the next five years.

This budget constraint alone should compel the CEC to focus its activities. With existing and foreseeable resources, the CEC can do two things well: (1) it can make use of the investigatory powers of Articles 13–15 to draw attention to environmental problems, especially those arising in the North American trade context; and (2) it can become a reputable source of North American environmental data to facilitate better policymaking.

Investigatory Powers

The CEC should produce reports under Articles 13–15 that shed light on specific environmental problems and lagging environmental enforcement, proposing solutions and issuing recommendations. It could do a great deal more to encourage cooperative initiatives and prod enforcement of existing environmental laws in the NAFTA countries. Article 13 reports and factual records resulting from Article 14 citizen submissions have had some positive results. However, in six years only three Article 13 reports have been developed, and only three of almost 30 citizen submissions have led to the development of factual records.²

Articles 14 and 15 of the NAAEC allow “any nongovernmental organization or person” to submit a complaint about a government’s failure to “effectively enforce its environmental law.” However, before a factual record is developed, the Secretariat must accept the submission, determine whether it merits a response from the “nonenforcing” party, and, in light of the response, decide whether the submission merits the development of a factual record. This factual record will be prepared only if mandated by a two-thirds vote of the Council. The process ends once the factual record is submitted to the Council. The factual record becomes publicly available only with a two-thirds vote of the Council in favor. In light of the factual record the Council can make recommendations, but it is not obligated to do so. No recommendations have been made to date.³

Several factors explain the limited success of the submission process: (1) The members of the Council tend to protect each other; it takes two members to move the process forward. (2) The Secretariat depends on annual contributions from the NAFTA governments. The process of receiving complaints from the public and developing reports puts it in conflict with one or more members of the Council. (3) The cost, the duration, and the technical nature of the process discourage NGOs from bringing cases. (4) Limits on CEC power to pass judgment reduce the incentive to bring cases.

2. After the Cozumel factual record was published, the submitters requested that the Council make a recommendation to the Mexican government to enforce its environmental law; one year later, no recommendation has been made.

3. Telephone conversations with CEC Secretariat legal officer and submitters of the Cozumel Pier Case.

Against this background, the NAFTA citizens have come to the disappointing but realistic conclusion that a trip to the CEC will not generate enough pressure to justify the investment of time and energy required.

The revised and revived citizen submission process of the NAAEC should include provisions to help NGOs finance the costs of the litigation and ensure a more expeditious process. Furthermore, it should *require* the CEC to determine whether nonenforcement has occurred and to offer recommendations to ensure future enforcement.

Environmental Data

The CEC could become the premier source of “hard” environmental data comparing levels and trends in Canada, Mexico, and the United States. The CEC should shift its publication style from long descriptive reports to comparative statistics modeled on the OECD’s *Economic Outlook* and the IMF’s *World Economic Outlook*. In its first five years, the CEC wrestled with heterogeneous environmental indicators and poor data collected in the three countries. Building on its prior work, the CEC should now be able to provide comparable indicators for the three countries, saving NAFTA citizens the trouble of searching for “hard” information across numerous discursive reports. To the extent that data gaps remain, the CEC should invest in creating useful and reliable indicators and data. With the publication of clear and concise reports, the CEC would establish a reputation for providing useful information to interested citizens. In addition, readily available and highly regarded reports would allow the CEC to use the “public shame factor” to pressure governments to give a good environmental performance.

Additionally, the technical working groups of the CEC and the NAFTA’s Free Trade Commission should meet periodically for consultations on environment-related trade issues. Greater cooperation between the FTC working groups and the CEC would allow a more comprehensive analysis of trade facilitation issues and their environmental impact.

In sum, the CEC has made two contributions to the North American environment: (1) it provides an institutional framework where environmental cooperation can occur; and (2) it sponsors initiatives that reduce pollution. However, CEC performance would benefit greatly from reforms in two areas: (1) a narrower scope focusing on trade and environment issues; and (2) a more expeditious citizen submission process. Efficient execution of a reduced number of tasks would enhance public support for the CEC, provide the CEC with greater independence, and ultimately result in a better balance between trade and environment for the NAFTA.

Perhaps the greatest obstacle to efficient management of the North American environment has been the absence of comprehensive annual assessments of environmental conditions in Canada, Mexico and the United States, especially along the border. The absence of consistent environ-

mental indicators makes it difficult to evaluate the environmental impact of the NAFTA and to set priorities for public spending. We recommend the publication of an annual North American environmental “report card” (in the style of the Fraser Institute’s *Environmental Indicators—Critical Issues Bulletin*) and the organization of a public annual conference on the state of the environment. The three NAFTA governments should provide funding for high quality independent environmental analysis to be presented in these annual conferences. Similarly, the CEC, BECC, and NADB should take this opportunity to report on their activities, call attention to particular environmental problems, and present evaluation reports commissioned by independent consultants.

With regard to the US-Mexican Border:

On the difficult US-Mexico border, the NADB and the BECC have launched several projects. In addition, they provide an umbrella for inter-agency meetings between US and Mexican environmental agencies. As a result, collaboration has improved between local, national, and international agencies. Nevertheless, border conditions are bad and in some respects may be getting worse.

The NADB and the BECC should assess what needs to be done in border communities to reach environmental levels comparable to those in nearby US cities and in interior Mexican cities that are known for good environmental practices. The NADB and the BECC should also promote financing mechanisms to ensure that worthwhile projects are implemented over the next decade.

For the NADB to respond effectively to the needs of the border area it should first assess the extent of the problem, examining each environmental problem in turn. Costs should be measured against two standards of environmental quality: representative nonborder communities in the United States, and representative nonborder communities in Mexico. These independent assessments of the existing environmental problems, work programs necessary for recovery, and estimates of the associated costs required for provide clean up and infrastructure in these border communities, would achieve several goals. They would give the public a better appreciation of the price tag, help establish the priorities, and focus attention on finding new revenue sources.

As noted earlier, the NADB provides about one-fourth of the funding of the infrastructure projects. The rest of the funding comes from international institutions and federal, state, and local governments. Hence border infrastructure projects must compete with other important goals for scarce public funds.

However, there should be no shortage of funding. The border area is booming and property values are soaring. Within this thriving economy,

there are adequate resources to pay for the environment. To tackle the funding problem, the NADB and the BECC should create environmental assessment districts along the border region. These local institutions should be funded with environmental fees assessed on industries and housing in the area. The “polluter pays” principle should govern these assessments whenever possible. For activities that cannot be directly taxed, the assessment districts should rely on property taxes. Local taxes would both provide additional funding and make communities and industries more environmentally aware. Under the “polluter pays” principle the direct link between the environmental impact of an industry or other local activity (such as operating old, polluting cars) would provide a disincentive to pollute, and in turn would reduce future environmental problems.

Recent World Bank studies point in this direction. Research found that traditional regulation relying on fines, plant shutdowns, prison sentences, and the like is not always successful because it requires strong enforcement mechanisms—monitoring, analysis, legal proceedings, and so on. The World Bank suggests that pollution charges (taxes) are more efficient than traditional penalties in providing the right incentives to reduce polluting activities (World Bank 1999).

Additionally, the impact of the NADB and the BECC would be magnified if they focused on projects that encouraged the development of stable communities. The NADB and the BECC could sponsor and promote corporate ventures to improve housing infrastructure. Some maquiladoras along the border have home-subsidy programs, through which the company assists employees to invest in homes. Such houses generally are equipped with electricity, running water, sewage systems, and phone lines. The early returns on such programs demonstrate that they provide an effective means of building community. They reduce employee turnover, and they encourage residents to pay attention to their own property and communal spaces and to see themselves as part of a community rather than as transients (Houston 1999). Procedural and financial obstacles to such programs present an opportunity for the BECC and the NADB to make progress.

Given the growth of the border economy, the BECC and the NADB should also encourage and participate in more public-private ventures with maquiladora factories in the border region.⁴ Similarly, the BECC and the NADB should support private ventures, which often provide greater

4. Several recent joint ventures have resulted in cost savings to maquiladoras as well as reduced pollution. During the first year of operation, one joint Texas-Mexico pollution prevention effort provided technical assistance to 19 maquiladoras and resulted in a savings of 31 million gallons of water and 10.9 million kilowatt-hours of energy use, saving participating companies approximately \$8.4 million. Meanwhile, the same efforts led to a 26-ton reduction in volatile organic compound emissions, 8,600 fewer tons of hazardous waste, and 52,000 fewer tons of nonhazardous waste (Information Access Company 1999).

efficiency and less pollution than their public counterparts (Esty and Gentry 1997).

In conclusion, the achievements of the CEC, the NADB, and the BECC fall well short of the aspirations of the environmental community. All three institutions should be strengthened in the next phase of the NAFTA.

The NAAEC was created in the context of a trade agreement to address environmental issues related to the NAFTA. To gain public support for the trade agreement, US officials sold the environmental side agreement as the panacea for the environmental problems of North America. In the public eye, political rhetoric made the CEC an environmental superhero, and expectations about the capacities and potential of the CEC were too high. In the face of inflated expectations and limited means, the side agreements and the CEC were almost destined to disappoint.

The environmental problems of North America were not the result of the NAFTA, nor was the NAAEC devised to address all of them. It is difficult to quantify what amount of environmental deterioration is a direct consequence of increased trade. Furthermore, the NAFTA is the main factor but not the sole factor in North American trade expansion.

Putting these linkages aside, significant improvements can be made to get better results from the NAFTA's environmental institutions. The starting point is to clarify the role of the NAFTA's environmental provisions and institutions to avoid further public disappointment.

There are two ways to reconcile the divergence between public expectations and the NAFTA's environmental capacities: (1) modify the agreement to better handle environmental problems and to address the flaws of its institutions and enhance their performance to meet the environmental expectations of the North American public; (2) clarify the environmental limitations of the NAFTA and its environmental side agreement and address environmental issues through non-NAFTA institutions and mechanisms.

The NAFTA's environmental record clearly is imperfect. It makes more sense to tackle the shortcomings than to lament the existence of a free trade agreement, as many environmentalists do, or to overlook the problems, as diehard free-trade advocates might. With the necessary tuning, the NAFTA can become a trade agreement that both environmentalists and free traders appreciate.