



**ADDRESSING CROSS-BOUNDARY
AIR POLLUTION:
A COMPARATIVE CASE STUDY OF
THE US-MEXICO BORDER AND
THE HONG KONG-GUANGDONG BORDER**

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1. Background

1.1 Introduction

Cross-border relationships between administrative authorities are complex. In Hong Kong's case, developing an effective win-win relationship with Guangdong is vital to many areas of activities. One such area of activity is managing air quality. Over the past few years, the two sides have increased contacts and are looking at increasing cooperation. Whilst it will take time to develop a suitable framework, Hong Kong and Guangdong can learn from examining the past decade of relationship-building between the United States (US) and Mexico. This paper explores US-Mexico initiatives, drawing out possible lessons for Hong Kong and Guangdong.

Regional air pollution, which contributes to levels of ambient air pollution in Hong Kong and Guangdong, is a growing problem. Scientific studies show pollutants such as total suspended particulate (TSP) levels are significantly higher in winter when the prevailing winds come from the North and West, blowing Guangdong's emissions towards Hong Kong.¹ Conversely when winds come from the South and East, Hong Kong's pollution blows into Guangdong. Future research may well show pollution coming from further afield as well. Pollutants such as nitrogen oxides, ozone and sulfur dioxides can remain in the atmosphere for several days, allowing time for the prevailing winds to blow them over the border.² Levels of ozone pollution, which cause haze and reduced visibility, have doubled over the last 10 years. Currently, Hong Kong's Environmental Protection Department (EPD) and Guangdong's Environment Protection Bureau (EPB) are working on a joint study to pinpoint the sources of air pollution and develop a joint action plan.³ This study is due for release at the end of December 2001 or the beginning of January 2002.⁴

While Hong Kong needs to cut down on its own pollution, particularly pollution from vehicles, emissions will need to be addressed on a regional basis in order to achieve long-term improvements in Hong Kong's air quality. In his 2001 policy address, Hong Kong's Chief Executive announced that Hong Kong and Guangdong aim to reach a consensus by April 2001 on a plan to implement long-term measures to improve air quality.⁵ It is likely that broad agreements can be reached in some areas by April, but more time will be necessary to work out details.

¹ Shouquan Cheng and Kin-che Lam. "An Analysis of Winds Affecting Air Pollution Concentrations In Hong Kong," *Atmospheric Environment* 32 (1998): 2559-2567.

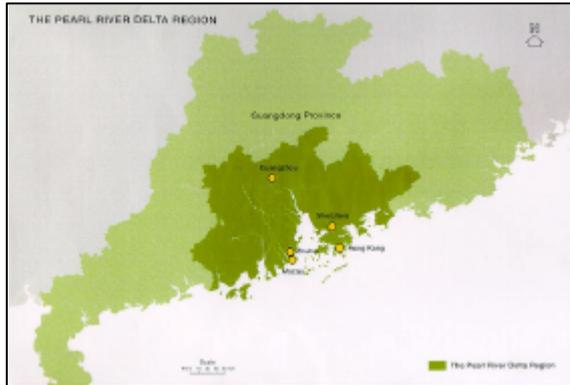
² Atmospheric residence times: Ozone: 35 days; Volatile Organic Compounds (VOCs): 0.1-7 days; Nitrogen Oxides: 15 days; Sulfur dioxide: 1-2 days. (The Commission for Environmental Cooperation. "Continental Pollutant Pathways: An Agenda for Cooperation to Address Long Range Transport of Air Pollution in North America," 1997).

³ Planning, Environment & Lands Bureau. "A Joint Study to Reduce Air Pollution," Paper presented to LegCo Environmental Affairs Panel, September 1998.

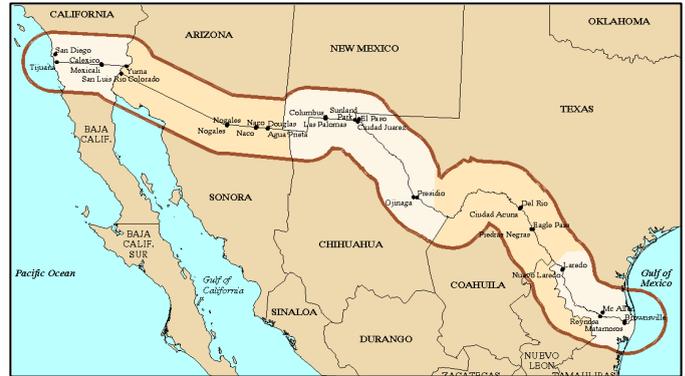
⁴ Begun in 1998, the study was commissioned by the Hong Kong-Guangdong Environmental Protection Liaison Group. The "joint study" is actually two separate studies: "Study on Acid Rain Pollution and Its Control Measures" and "Study on Pollution of Nitrogen Dioxide, Photochemical Smog and Particulates and their Control Measures." The EPD and EPB are examining these two sets of issues separately, but the final report will be jointly prepared by experts on both sides of the border. (Environmental Protection Department. Personal communication, October 2001. Also Chee-hwa Tung. "Building on Our Strengths, Investing in Our Future." Policy Address, 10 October 2001).

⁵ Chee-hwa Tung. "Building On Our Strengths, Investing in Our Future." Policy Address, 10 October 2001.

1.2 Parallels between the Hong Kong-Guangdong and US-Mexico Borders



Available at <http://www.info.gov.hk/hk2030/hk2030content/con_digest/map_PRD.htm>



Available at <<http://www.usmcc.org/images/border21.gif>>

Hong Kong-Guangdong Border Region

US-Mexico Border Region

As cross-border issues gain momentum in Hong Kong, the US-Mexico border serves as a useful case study because of its similarities to the Hong Kong-Guangdong border.⁶ Both are powerful city-regions, with high levels of cross-border traffic and economic integration. Just as people commute between Mexico and the US, people commute between Guangdong and Hong Kong. 45,000 vehicles travel across the US-Mexico border each day while 30,000 vehicles pass daily between the SAR and China.⁷

Both regions are also characterized by major income disparities. In 1998, per capita GDP was US\$32,328 in the United States and only US\$4,406 in Mexico.⁸ The situation is similar across the Hong Kong-Guangdong border even though Guangdong is the wealthiest province in China. In 1999, real per capita GDP in Hong Kong was US\$23,177, compared with US\$1,103 in Guangdong.⁹ This income inequity allows the United States and Hong Kong to rely on low-cost labour from across the border. In both Mexico and Guangdong, low-cost labor has fueled an export-oriented, high growth economy. If the US-Mexico border was considered a state, it would lead the US in job creation.¹⁰ In Guangdong, GDP increased by 10.5% in 2000, compared to an 8% national growth rate.¹¹ Guangdong's economic strength relies on its cities and industry. In 2000, exports accounted for 80% of GDP and Guangzhou, the provincial capital, generated 24% of the region's GDP.¹²

Table 1: US-Mexico Border vs the Hong Kong-Guangdong border

⁶ The US-Mexico border runs 2,000 miles from San Diego-Tijuna to Brownsville-Matamoros. The border area is commonly considered the territory 100 km north and south of the boundary.

⁷ Steve La Rue. "Customs Will Bar Vehicles Evading California's Laws," *Union Tribune*, 30 March 1999. <http://www.uniontrib.com/news/metro/990330-0010_7m30plates.html> Also Wilbur Smith Associates. "Third Comprehensive Transport Study. Technical Report for the Government of the HKSAR Transport Department," 1999.

⁸ Organization for Economic Cooperation and Development. <<http://www.oecd.org/std/gdpperca.htm>> All per capita GDP figures are based on current exchange rates.

⁹ Hong Kong Government. <<http://www.info.gov.hk/hkbi/eng/hkbi/4/4-5a.htm>> and China Online. "Shenzhen Rates Highest in Per Capita Disposable Income," 22 March 2000.

<http://www.chinaonline.com/issues/econ_news/NewsArchive/secure/2000/March/C00032101.asp>

¹⁰ Ygnacio "Nacho" Garza, Chairman of the Board of Directors of the Border Environment Cooperation Commission. Speech at the "Conference on Achieving Sustainability on the U.S.-Mexico Border: Economic Prosperity, Environmental Protection, and Healthy Communities," University of Texas-Brownsville, 22-25 March 1999. <<http://www.us-mexicoborder.com/highlights.cfm>>

¹¹ International Trade Administration, US Department of Commerce. "Economic Performance 2000: Guangdong, Fujian, Hainan, Guangxi." <<http://infoserv2.ita.doc.gov>> Also Central Intelligence Agency. <<http://www.cia.gov/cia/publications/factbook/geos/ch.html>>

¹² See footnote 11.

	US-Mexico	Hong Kong-Guangdong
Cross-border traffic	45,000 vehicles/day	30,000 vehicles/day
Per capita GDP	1998: \$32,328 (US) v. \$4,406 (Mexico)	1999: \$23,177 (HK) v. \$1,103 (Guangdong)
Population Growth	11 million; expected to double within 20 years.	2000-2029: 34% population growth predicted (HK)
Economic Growth	Border region leads U.S. in job creation.	2000: Guangdong GDP increases 10.5%

The causes of air pollution are similar in the two areas. The environmental problems of the US-Mexico border are *"the result of industrialization and rapid population growth..coupled with poor enforcement of existing regulations and grossly inadequate infrastructure facilities."*¹³ The same holds true in Hong Kong-Guangdong. In the US-Mexico situation, blame for air pollution has focused on the *maquiladoras*, export-oriented border factories often owned in the United States.¹⁴ In Hong Kong-Guangdong, it has been suggested that some portion of the air pollution comes from Guangdong-based factories owned in Hong Kong and, in some cases, Taiwan.

However, industry is not the only problem. Both regions have other major sources of pollution, notably vehicle emissions from older vehicles and motorcycles and population growth. The US-Mexico border region currently has 11 million people, a number that is expected to double over the next 20 years.¹⁵ Population growth in Hong Kong and Guangdong is expected to similarly skyrocket. By 2029, the SAR Census and Statistics Department predicts that Hong Kong's population will reach 9.05 million, an increase of 34.6%¹⁶ In Guangdong, population increased 37.5% between 1990 and 2000, a rate of increase that shows no signs of slowing.¹⁷

Clearly, the similarity between the US-Mexico border region and the Hong Kong-Guangdong border region can be overstated. The US and Mexico are sovereign nations while Hong Kong and China are "one country" but "two systems." The United States is a large nation, while Hong Kong is a prosperous city-state. Yet the parallels make a comparison worthwhile. The US-Mexican experience offers some useful insights for Hong Kong and Guangdong.

1.3 Guangdong: Current Situation

Guangdong, particularly the Pearl River Delta, has enjoyed rapid economic growth over the last 20 years. In 2000, Guangdong's GDP accounted for 10.7% of national GDP and its export volume comprised 39% of the national total.¹⁸ Much of this growth is due to foreign direct investment (FDI). In 2000, FDI in

¹³ Peter Emerson and Alan Nessman. "Integrating Environmental Protection and Free Trade," Review of Marketing and Agricultural Economics 63, no. 2: 246.

¹⁴ While popular blame has focused on the *maquiladoras*, Pete Emerson offers a more nuanced understanding: "Government policies that encourage *maquiladoras* and currency devaluations have triggered industrialization and rapid population growth which, in turn, causes air pollution." (Pete Emerson, e-mail to author, August 2000).

¹⁵ Peter Emerson and Carlos Rincon. "Binationally Managing Air Quality in the U.S.-Mexico Borderlands: A Case Study," Borderlines, January 2000, 1.

¹⁶ 76% of this population growth would be due to migration. (Census and Statistics Department. "Projections of Hong Kong Population 2000-2029," 5 October 2000 <http://www.info.gov.hk/censtad/end/press/population/pop_proj2029.htm>).

¹⁷ National Bureau of Statistics. "Communique on Major Figures of the Fifth National Population Census in 2001," 2 April 2001.

<<http://www.china.org.cn/baodao/english/newsandreport/2001june/new11-6.htm>>

¹⁸ See footnote 11.

Guangdong totaled US\$12 billion, 30% of the national total.¹⁹ In turn, much of Guangdong's FDI comes from Hong Kong. Over the past 20 years, Hong Kong has accounted for 70.7% of Guangdong's FDI.²⁰

Unfortunately, economic success has been accompanied by environmental degradation. Guangzhou, the major city in the Pearl River Delta, is one of China's most polluted cities. In 1997, it was ranked, along with Beijing and Shanghai, as one of the cities with the highest annual nitrogen oxide (NO_x) concentrations. The annual average of more than 100 micrograms of NO_x per cubic meter results primarily from vehicle exhaust.²¹ In 1996, 830 billion cubic meters of vehicle exhaust fumes were emitted in Guangdong. Motor vehicles emit 80% of Guangdong's nitrogen dioxide and 90% of its carbon monoxide.²² And the number of motor vehicles in Guangdong, currently in excess of 5.3 million, is increasing with growing affluence.

Industrial emissions also contribute to Guangdong's air pollution, particularly power plants and cement factories.²³ In 1999, there were 716.5 billion cubic meters of industrial exhaust fumes in Guangdong.²⁴ The electric power industry is a major culprit, particularly when it comes to sulphur dioxide emissions. In 1996, the electric power industry alone accounted for 68% of Guangdong's total sulphur dioxide (SO₂) emissions, contributing to acid rain in the region.²⁵ Guangdong is also China's leading producer of cement, manufacturing 12% of Chinese cement output in 1996.²⁶ In the same year, the cement industry was responsible for 60% of national dust emissions.²⁷ In 1996, there were 500 cement works in Guangdong, the vast majority without dust scrubbers.²⁸ As Appendix A shows, other types of industrial plants contribute to the problem as well.

In response to worsening air quality, the Guangdong government implemented the Ninth Five-Year Plan²⁹ in 1996. Starting in 1997, the plan allocates RMB 20 million annually to an Environmental Protection Fund (EPF). The fund initially gave grants to treat pollution and develop environmental technology, but since 1998, loans have become more common. Part of the money for the Environmental Protection Fund comes from the polluters themselves. Sulphur dioxide (SO₂) emissions are taxed at RMB 200/ton, money that goes into the EPF.³⁰

In a bid to lower vehicle emissions, the Guangdong government outlawed the sale of leaded gasoline in 1997 and put a moratorium on new motorcycle licenses.³¹ A "Clean Air Project" jointly organized by the Ministry of Science and Technology (MST) and the State Environmental Protection Agency (SEPA) focused on developing gas vehicles and clean alternative fuel vehicles in 12 demonstration cities,

¹⁹ See footnote 11.

²⁰ The American Chamber of Commerce in Hong Kong. "Supplement on Regional Pollution Abatement Initiatives," 29 May 2000, 1.

²¹ Hua Wang and David Wheeler. "Endogenous Enforcement and Effectiveness of China's Pollution Levy System". World Bank Development Research Group, 2000, 2.
<http://www.worldbank.org/nipr/work_paper/hua/levywp2000.pdf>

In world cities annual NO_x averages typically range from 20-90 micrograms per cubic meter.

²² These statistics are outdated, but up-to-date statistics on sources of air pollution in Guangdong are difficult to find. The difficulty of obtaining information points to a need for increased transparency. See footnote 25 for best information available.

²³ Exact data on the sources of Guangdong's air pollution is not available. The situation should improve after the publication of a Joint Study in early 2001.

²⁴ Guangdong Environmental Protection Bureau. "Guangdong Environmental Situation Announcement," 1999.

²⁵ U.S. Department of Commerce. "Market Assessment," <<http://strategis.ic.gc.ca/SSG/dd78196e.html>>.

²⁶ In 1999, China produced 520 metric tons of cement, one-third of world output (Corporate Information. <<http://www.corporateinformation.com/ensector/Construction.html>>).

²⁷ See footnote 25.

²⁸ See footnote 25.

²⁹ China's Five Year Plans set forth the country's objectives for environmental protection during the said period.

³⁰ See footnote 25.

³¹ Chinoy, 2.

including Guangzhou. In 1999, the Guangdong government also closed down 740 factories.³² These initiatives have begun to have an effect. Guangdong's air pollution index dropped by 0.3 points in 1999.³³ This drop was caused by a reduction in sulphur dioxide (SO₂), nitrogen oxides and total suspended particulate (TSP) levels.³⁴

Plans for the Tenth Five-Year Plan (2001-2006) are even more ambitious. Guangdong intends to increase investment in environmental protection from 1.8% of the province's GDP (during the Ninth Five-Year Plan) to 2.5% of GDP. Guangdong also plans to build 49 major environmental projects at a cost of roughly 40 billion yuan.³⁵ The first project, an installation of desulphuration technology at Guangzhou Petrochemical Company, was recently completed at a cost of 6 million yuan. According to official estimates, the new technology will eliminate 5,000 tons of sulphur dioxide annually.³⁶

Pressure for air quality improvement has come not only from the public, but from Beijing. An amendment to the "Law of the PRC on the Prevention and Control of Air Pollution" (effective September 2000) recognised the importance of vehicular pollution, created additional controls on new and in-use vehicles and encouraged the use of cleaner fuels.³⁷ Provincial governments are required to meet state emissions standards, but they are given great latitude in formulating plans to improve air quality. Despite this emphasis on local autonomy, the national law has several key provisions:

- **Emissions fees:** Provinces must impose reasonable emissions fees, taking into account the dual imperatives of environmental protection and economic growth.³⁸
- **Clean energy:** Local governments must adopt measures to promote the use of clean energy (LPG, natural gas, electricity) and decrease reliance on coal and other high pollution fuels.
- **Desulfurization:** If they exceed emissions standards, newly-built or renovated thermal plants must include desulfurization equipment in the design.
- **Liability:** Polluters are required to pay compensation to individuals or groups who have suffered damages. Criminal liability can be pursued in serious cases where violations of environmental law constitute a crime.³⁹

The "Technical Policy on Prevention and Control of Motor Vehicle Pollution," jointly issued SEPA, MST and the State Administration of Machinery Industry, set new emission standards for vehicles in June 1999. These new standards are based on European (Euro) standards. The law introduced Euro 1 standards for diesel vehicles in 2000 and will introduce Euro 2 standards in 2003.⁴⁰ In comparison, Euro 3 is the current standard in Hong Kong, with Euro 1 introduced in 1995 and Euro 2 in 1997.

2. US-Mexico Border: Current Situation

³² US Consulate General Guangzhou. "Guangdong Environment: Some Progress, But Many Problems Remain." December 2000. <<http://www.usembassy-china.org.cn/english/sandt/Gdrevpub-web.html>>

³³ "Pollution in Guangdong Decreasing," People's Daily, 11 July 2000.

<http://english.peopledaily.com.cn/200007/11/eng20000711_45223.html>

³⁴ Min Chan, Deputy Director, Guangdong Environmental Protection Bureau. Speaking at "Seminar on Building a Competitive Pearl River Delta Region: Cooperation, Coordination and Planning," Hong Kong, 8 July, 2000.

³⁵ China Central Television. "Guangdong to Add Investment in Environmental Protection," 31 August 2001. <<http://www.cctv.com/english/news/20010831/59235.html>>

³⁶ "South China's Guangdong Spends Heavily on Air Pollution Control," People's Daily, 7 August 2001. <http://www.zhb.gov.cn/english/news_detail.php3?id=927>

³⁷ Y Yuan. "Environmental Policy on vehicle emissions and fuel in China," 2nd China/Asia Clean Fuels Conference, Sinopec. Beijing, China, 1-2 March 2001.

³⁸ Emissions fees are taxes on industrial emissions. In Guangdong, for example, SO₂ emissions are taxed at RMB 200/ton.

³⁹ China Legal Change.

<<http://www.china-legal-change.com>>

⁴⁰ See footnote 36

In the early 1990s, pollution along the US-Mexico border was extreme. A 1990 American Medical Association group described parts of the US-Mexico border as “*a virtual cesspool and breeding ground for infectious disease.*”⁴¹ Air pollution, water contamination from raw sewage and toxic waste and improper disposal of hazardous materials were all serious problems. Concern over the environment increased with the passage of the North American Free Trade Agreement (NAFTA) in 1993. Environmentalists worried that free trade would accelerate environmental degradation, especially as US factories relocated to Mexico to take advantage of lax environmental laws. As a result of these concerns, the mid-1990s saw a dramatic increase in the number of institutions addressing cross-border pollution.

Among these institutions, approaches to cross-boundary pollution vary widely. Some are private initiatives, some public, some are written into law, some are ad hoc committees. The following is a summary of approaches to cross-boundary pollution along the US-Mexico border with an eye towards evaluating which types of collaboration have been most effective.

2.1 Government Initiatives

2.1.1 Multilateral Legal Approaches: The North American Agreement on Environmental Cooperation (NAAEC)

In January 1994, Canada, Mexico and the US negotiated a trilateral side accord to NAFTA, the North American Agreement on Environmental Cooperation (NAAEC). The NAAEC was created out of political necessity: the Clinton Administration needed an environmental accord to win support from the US Congress for NAFTA. All three governments also wanted to appease environmental critics who were worried that free trade would mean increased environmental degradation.

In addition to its political importance, the NAAEC had practical consequences. It created the Commission for Environmental Cooperation (CEC), an organization that conducts research on air quality issues, including air management and monitoring, and facilitates information exchange between federal officials from the three countries involved.⁴² The NAAEC also provides a mechanism for investigating lax enforcement of environmental laws in member nations. Under Articles 5, 14 and 22 of the NAAEC, any person, non-governmental organization (NGO) or member nation can assert that a state has failed to enforce its environmental laws. If the Secretariat decides the accusation has merit, it requests a factual record. The preparation of a factual record triggers a complex series of arbitration panels, potentially culminating in a fine or trade sanctions of up to US\$20 million against the offending nation.⁴³ As of 1999, there had been 20 complaints against member nations. Only two were recommended for the development of a factual record, with 11 cases still pending.⁴⁴

While the research activities of the CEC have garnered acclaim, its environmental law enforcement mechanism has not. The rules of procedure for resolving state-to-state disputes are not clearly laid out in Article 5 and the citizen submission process is similarly unclear. Each case faces complex procedural requirements, making it nearly impossible to achieve a successful resolution.⁴⁵

Applicability to Hong Kong: In 1999, Chief Executive Tung Chee-hwa and Guangdong Governor Lu Ruihua, announced that Hong Kong and Guangdong would cooperate in six areas of environmental

⁴¹ See footnote 13.

⁴² CEC website. “Facilitating Trilateral Coordination in Air Quality Management.” <http://www.cec.org/programs_projects/pollutants_health/air_quality/proj311.cfm>

⁴³ North American Agreement on Environmental Cooperation, 1993. <<http://www.cec.org>>

⁴⁴ Steven Mumme. “NAFTA’s Environmental Side Agreement: Almost Green?” Borderlines, October 1999, 2.

⁴⁵ See footnote 44.

protection.⁴⁶ This was a broad agreement to cooperate in various areas, rather than a detailed plan. In view of the fact that the “one country, two systems” principle is at an early stage of implementation and Hong Kong and Guangdong need time to explore a collaborative relationship, a general agreement was an important step in the right direction.

The NAAEC is not the best model for future accords for Hong Kong-Guangdong, however. To be effective, the environmental law enforcement mechanism of the NAAEC would have to be clearer and less complex to make financial penalties for non-enforcement more likely. As a result, it is unlikely that either the Hong Kong SAR government or the Guangdong government would ever agree to such a mechanism. Nor is it clear that imposing financial penalties for non-enforcement of environmental laws is the best way to clean up air quality. In interviews, environmental officials from both Hong Kong and Guangdong expressed fear that air pollution clean-up efforts would turn into a “blame game,” making polluters intransigent.⁴⁷ A more collaborative, cooperative approach might work better, as evidence from the Paso del Norte Air Quality Task Force suggests (see section 2.2.1). And while the research activities of the CEC have been valuable, they can be handled jointly by the Hong Kong and Guangdong authorities, local research organisations, and the private sector.

2.1.2 Government-to-Government Cooperation: La Paz, IBEP and Border XXI

In 1983, the US and Mexico governments signed the Agreement for the Protection and Improvement of the Border Area (La Paz Agreement), a formal document defining the border region and setting the basis for cooperation. Ten years later, under criticism about NAFTA, the US and Mexico released the Integrated Border Environmental Plan for the Mexican-US Border Area (IBEP) which set shared goals and tried to reconcile trade liberalization and environmental protection. Troubled by low funding levels and poor organizational structure, some criticized the IBEP as an empty document, designed to build political support for NAFTA. NGOs complained that the drafters of the IBEP ignored public participation.⁴⁸

Inter-governmental cooperation culminated in the 1995 Border XXI (B21) program. Because both sides were concerned about ceding sovereignty, Border XXI is not a treaty, but a non-binding commitment operating under the authority of the 1983 La Paz Agreement. Its stated goal is to “*enhance and increase, though collaboration and cooperation, the ability of authorities on both sides of the border to implement their respective domestic legislation and relevant binational agreements between the US and Mexico.*”⁴⁹ Established as a 5 year program, B21 created nine binational working groups to implement its goals. Each workgroup issues Biennial Progress Reports as well as Annual Implementation Plans. The Air Workgroup, for example, is responsible for developing and implementing air quality improvement programs.⁵⁰ Responding to criticisms about the IBEP, both the US EPA and Mexico’s Secretariat for Environment, Natural Resources and Fisheries (SEMARNAP) solicited public feedback about the first draft of B21. In addition, they also made the Biennial Progress Reports and the Annual Implementation Plans publicly available and agreed to hold public meetings every two years to discuss B21 implementation.⁵¹

⁴⁶ These six areas were: 1. Complete a joint study on regional air quality. 2. Study the feasibility of adopting common diesel fuel standards. 3. Cooperate in forestry conservation through information exchange. 4. Re-enforce cooperation on controlling pollution of Dongjiang. 5. Enhance data exchange on water quality in the Pearl River Delta. 6. Play close attention to the environmental impact of town planning and development. (Tung Chee-hwa. “1999 Policy Address,” October 1999. <<http://www.info.gov.hk/pa99/english/part5-1.htm>>)

⁴⁷ Interviews by the author, June and July 2000.

⁴⁸ George Kourous. “The Border XXI Program: An Overview,” *Borderlines*, April 1999, 1.

⁴⁹ See footnote 48.

⁵⁰ Environmental Protection Agency (EPA). “Border XXI Program Framework Document.” <<http://yosemite.epa.gov/oia/MexUSA>>

⁵¹ See footnote 50.

However, criticism of B21 has continued. Although the number of binational projects designed to improve environmental quality increased by 10% between 1996 and 1997, true binational environmental management has been slow to come. Usually, the federal agencies share information, agree on goals and then go home to implement pollution reduction projects unilaterally. It is difficult to tell if just getting government officials to meet with each other has improved coordination or not.⁵² The root of the problem may be B21's lack of focus. The program has a broad mandate and many think it seeks to take on too much.⁵³ Lack of public participation is problematic as well. The B21 workgroups are comprised exclusively of government officials and fail to include the public in decision-making or take advantage of NGO expertise.⁵⁴

B21's mandate expired in 2000. The US and Mexico are busy creating a successor document, but nothing has appeared thus far. Statements made by the Environmental Protection Agency (EPA) suggest that an updated version of B21 will seek greater cooperation with stakeholders, particularly tribes and states.⁵⁵

Applicability to Hong Kong: With the creation of the Hong Kong-Guangdong Joint Working Group on Sustainable Development and Environmental Protection in 1999, Hong Kong and Guangdong have taken steps towards government-to-government cooperation.⁵⁶ Yet there is still some way to go. Communication between Hong Kong and Guangdong is irregular. Part of the problem is that "both sides interpret 'non-interference' [in each other's affairs] as non-communication."⁵⁷ Practicing "one country, two systems" is a challenge. Two parallel systems need to find a way to plan and implement solutions to cross-boundary concerns which does not result in one system being subsumed by the other. Recognizing that communication needs improvement, a local Hong Kong green group, the Conservancy Association, recommended creating a council of mayors from major cities to address pollution.⁵⁸ It was envisaged that this group would coordinate environmental policy with Hong Kong. Regardless of whether a new council is the answer, Hong Kong and Guangdong governments need to improve policy coordination on environmental issues. As they do so, the lessons of the US-Mexican experience are worth bearing in mind.

Inter-governmental working groups are not an end unto themselves, but as a step towards true joint management. The Hong Kong and Guangdong authorities must design and implement programs together, not merely set goals and settle for unilateral implementation. But before joint management can occur, the Hong Kong and Guangdong governments must create a set of environmental indicators to measure progress in air quality. One of the largest successes of B21 was the 1997 creation of a set of environmental indicators, approved by both the US and Mexico. For air, indicators include the number of exceedances of each country's ambient air standard and the ambient air concentrations of selected pollutants in cities on both sides of the border.⁵⁹ Without shared indicators, it is impossible to measure project effectiveness. The experience of B21 also suggests that it pays to keep goals specific. Lofty statements make it difficult to either focus on a mission or measure improvement.

⁵² See footnote 48.

⁵³ George Kourous. "Border Environment Policy: Where Do Things Stand?" Borderlines, December 2000. <<http://www.us-mex.org/boderlines/2000/bl73new.html>>

⁵⁴ See footnote 48.

⁵⁵ See footnote 53.

⁵⁶ The group was created as a result of the 1999 agreement between Hong Kong and Guangdong. At its first meeting on June 8, 2000 the Group decided to focus on the six priority areas outlined in the 1999 Policy Address.

⁵⁷ Ma Lik, Hong Kong delegate to the National People's Congress. Quoted in Todd Crowell and Yulanda Chung. "Coming together," Asiaweek, 21 April 2000, <<http://www.cnn.com/ASIANOW/asiaweek/magazine/2000/0421/econ.main.html>>

⁵⁸ Cheung Chi-fai. "Anti-pollution Council Urged," South China Morning Post, 28 August 2000, 4.

⁵⁹ EPA. United States-Mexico Border Environmental Indicators, 1997 (Washington D.C.: EPA doc. No. 909-R-98-001, 1998).

2.1.3 *Building Environmental Infrastructure: the North American Development Bank (NADBank) and the Border Environment Cooperation Commission (BECC):*

The North American Development Bank (NADBank) and the Border Environment Cooperation Commission (BECC), two interdependent institutions, were created in 1993 under NAFTA. The BECC certifies environmental infrastructure projects for financing by the NADBank and other funding sources. Certification is based on a set of criteria that encompass environmental, health, and sustainable development standards (see Appendix B). Projects are certified by a 10-member board of directors, five from the US and five from Mexico, two of whom represent the public.⁶⁰ To date, the BECC has certified 36 of 100 projects submitted and guaranteed US\$843.8 million in funding.⁶¹ At first, BECC found that the bulk of proposals came from large cities with the resources to put together project proposals. To address this problem, the EPA gave the BECC a US\$10 million grant to provide technical assistance in the project development stage to smaller communities.⁶² The grant helped ameliorate the problem, but small communities still complain that the system is biased towards bigger communities with more resources.

NADBank provides guidance on infrastructure planning and loans money to finance environmental infrastructure projects. Loan money is provided equally by the US and Mexican governments.⁶³ Under orders from the US Congress, NADBank only loans money at market-based interest rates, not at the concessionary lower rates common to other development banks.⁶⁴ As of March 2000, the NADB had committed US\$209 million for 26 infrastructure projects related to water, sewage and municipal waste.⁶⁵ Loans are re-paid by charging a "user fee" per gallon of wastewater generated. User fees are verified by monitoring equipment installed in each household.⁶⁶

Critics of NADBank argue that market-based interest rates make the loans inaccessible to the poor communities most in need of environmental infrastructure. In response to this criticism, NADBank created the Border Environmental Infrastructure Fund (BEIF). The BEIF distributes EPA grant money to build water and wastewater infrastructure in needy communities (US\$170 million in 1997).⁶⁷ While the BEIF helped, market-based interest rates have kept loan volume low. Only US\$15 million in loans have been distributed.⁶⁸ Frustrated with the slow pace of environmental improvement, a combination of organized labor, consumer and environmental groups argue that the BECC and NADBank were only

⁶⁰ Scott Graves. "Citizen Activism and BECC Policymaking," *Borderlines*, February 1999, 1. Before making decisions, the Board of Directors is required to consult with a binational 18 member advisory council. The members of both the Board and the Council come from a wide variety of backgrounds. Current board members include former employees of the EPA, a former science professor from the Universidad Nacional Autonoma de Mexico, and a former researcher at the Southwest Research and Information Center, a NGO focused on environmental issues. (<<http://www.cocef.org>>).

⁶¹ "BECC-NADB Joint Status Report," 31 March 2000
<<http://www.cocef.org>>

⁶² Tina Faulker. "BECC Technical Assistance to Small Communities," *Borderlines*, February 1999, 11.

⁶³ Both Mexico and the United States contribute \$225 million of paid-in capital and \$1.275 billion of callable capital. The callable capital serves as collateral, lowering the cost of money NADBank borrows from other institutions. (North American Development Bank. "Summary of Programs and Operations."
<<http://www.nadbank.org>>).

⁶⁴ There are many communities in the border region without credit ratings. The NADBank was intended in part to provide loans, or more importantly loan guarantees, to such communities so that private banks would lend to them. (Mark Spalding, personal communication with the author, August 2000).

⁶⁵ See footnote 61.

⁶⁶ Mark Spalding. Personal communication with the author, August 2000.

⁶⁷ Mark J. Spalding. "NAFTA Plus 5, On the Right Track? An Assessment of the BECC/NADBank Institutions, 2nd Edition," January 1999, draft provided by the author.

⁶⁸ Environmental Protection Department. "Reforming the North American Development Bank and the Border Environment Cooperation Commission," 2 October 2001.
<<http://www.epa.gov/usmexicoborder/index.htm>>

created to gain support for NAFTA and that their work amounts to a string of “*broken promises*.”⁶⁹ These groups also criticize NADBank for lack of transparency. Loan decisions are usually made in private, without public input. It is standard practice for banks to safeguard client privacy, but NADBank uses public funds, leading to NGO demands for greater public access to information.

In contrast, supporters of the institutions call the BECC a model for public participation and transparency. The certification criteria were released in 1996 after more than a year of public analysis and revision. As part of the certification criteria, project sponsors are required to seek public feedback and establish a community participation plan. The public is also invited to comment on projects at community meetings preceding the BECC’s quarterly meetings. This emphasis on public input is meant to ensure the quality of projects certified. Citizens are viewed as experts on their home communities and the potential impact of infrastructure projects. In response to critics, some also point out that NADBank and the BECC have only been operational since 1996, a short time frame in which to measure environmental progress. Compared to the World Bank, which took fifteen months to make its first loan, NADBank and the BECC have moved rapidly.⁷⁰ In this time, the BECC has also suffered funding cuts, making its job more difficult.⁷¹

In November 2000, the US and Mexican governments agreed on two main reforms for NADBank and the BECC. Under an experimental program, NADBank will begin lending some money at lower interest rates. It will also expand its loans to include a wider range of environmental areas and increase opportunities to lend.⁷²

Applicability to Hong Kong: The interlocking structure of NADBank and the BECC is innovative. Isolated from financial pressures, the BECC is free to veto projects that do not meet its criteria. And NADBank can only finance projects certified by the BECC, ensuring that approved projects meet sustainable development criteria. In contrast, other development banks, including the World Bank, do an environmental review only after assessing a project’s financial viability.⁷³ Voices in Hong Kong, notably the Hong Kong American Chamber of Commerce (AmCham), have called for a fund to furnish low-interest loans for environmental technology.⁷⁴ To put sustainability rhetoric into practice, such a fund should certify projects before they receive funding. As AmCham suggests, polluting companies could also be required to contribute to the fund in proportion to their emissions. These contributions could augment funding from the Hong Kong and Guangdong governments.

There is also room to improve on the NADBank/BECC model. The dual structure of NADBank and the BECC has made coordination difficult because there are two organizations (in two cities), two administrative budgets and two separate boards.⁷⁵ Instead of having a separate institution, a Hong Kong-Guangdong fund could incorporate BECC’s mandate into the loan approval process, ensuring that loans meet sustainable development criteria. A Hong Kong-Guangdong fund can also learn from NADBank’s mistakes. Loans at below-market interest rates are clearly necessary. Transparency and consistent funding are also needed to make the institution credible and effective.

A Hong Kong-Guangdong fund should modify the NADBank/BECC model to meet regional needs. NADBank loans have focused on wastewater infrastructure, but a Hong Kong-Guangdong fund could address both water and air pollution. In the case of air pollution, loans to finance air pollution abatement

⁶⁹ Scott Graves. “Citizen Activism and BECC Policymaking,” *Borderlines*, February 1999.

⁷⁰ See footnote 66.

⁷¹ In 1998, the BECC only received US \$1.54 million in Congressional allocations instead of the promised US \$1.6 million. Funding remained stagnant in 1999 and Mexico matched US cuts, underfunding the BECC and making operation difficult (See footnote 67).

⁷² See footnote 68.

⁷³ See footnote 67.

⁷⁴ See footnote 20.

⁷⁵ See footnote 68.

technology such as chimney scrubbers may be useful. A Hong Kong-Guangdong fund could even provide grants, as appropriate.

2.1.4 *Unilateral Legislation: the Border Smog Reduction Act*

Passed in 1998, the Border Smog Reduction Act was drafted by the US in response to the San Diego Air Pollution Control District's finding that 7,000 vehicles registered in Mexico and driven daily to the US produce up to 14% of the region's total air pollution. The bill allows federal border officials to turn back commuter vehicles at the border if they are not registered in California.⁷⁶ Vehicles registered in California must pass the Smog II check every other year or undergo repairs.⁷⁷

Applicability to Hong Kong: When it comes to unilateral legislation and technical solutions, the Hong Kong-Guangdong border is ahead of the US-Mexico border. All vehicles crossing the Hong Kong-Guangdong border must be registered in Hong Kong and meet Hong Kong emissions standards, an equivalent piece of legislation to the Border Smog Reduction Act.⁷⁸ Still, further legislation could help improve air quality, especially because cross-border traffic could rise as much as 400% by 2016.⁷⁹

One of the main problems in Hong Kong is the accessibility of cheap, high sulphur diesel fuel across the border. Goods vehicles running cross-boundary routes buy cheaper, dirtier fuel on the other side before returning to Hong Kong. While there are legal limits to the amount of fuel that can be imported by cross-border vehicles, it is hard to patrol. In 1999, the SAR government estimated that 40% of the diesel used in Hong Kong was high sulphur diesel. Since then, the percentage of high sulphur diesel has probably dropped because only Ultra Low Sulphur Diesel (ULSD) is currently available in Hong Kong. The Hong Kong government removed the duty on ULSD in 2000 to make it price competitive. For the future, the challenge will be improving the fuel standard on the Mainland.⁸⁰

⁷⁶ "House Passes Cross-Border Pollution Bill." <<http://www.asasshop.org/news/july98/house.htm>>

⁷⁷ Steve La Rue. "Customs Will Bar Vehicles Evading California's Laws," Union Tribune, 30 March 1999.

⁷⁸ Environmental Protection Department. Personal Communication with the author, October 2001.

⁷⁹ Immigration Department. Annual Report 1999-2000. <http://www.info.gov.hk/immd/a_report>

⁸⁰ Vehicle age is also an issue. Older vehicles pollute far more than their younger counterparts.

2.2 Private-Sector Involvement

2.2.1 *The Coalition Approach: The Joint Advisory Committee (JAC) and the Binational Air Quality Alliance (BAQA)*

About 2.5 million people live in the Paso del Norte region, an area encompassing the sister cities of Ciudad Juarez (Mexico), El Paso (Texas) and Sunland Park (New Mexico). Ringed by mountains, the three cities share a common, polluted air basin. The American Lung Association has warned residents of all three cities that they face increased risk of respiratory disease because of particulate matter pollution.⁸¹ Under US-EPA standards, El Paso has been designated a “non-attainment area” for ozone, carbon monoxide and particulate matter.⁸² Normally, economic penalties accompany non-attainment status, but El Paso has avoided sanctions by proving that pollution comes from across the border.⁸³ Air quality studies show that sources of pollution include motor vehicles, heavy industry, production processes at manufacturing plants and dust from highway traffic.⁸⁴

Concerned about air pollution, a binational group of citizens formed the Paso del Norte Air Quality Task Force in 1993. In addition to implementing pollution reduction projects, the Task Force quickly began lobbying for an International Air Quality Management District (IAQMD) which would cover the entire airshed. The IAQMD would coordinate air quality monitoring and develop programs to improve air quality. Eventually, the Task Force hoped the IAQMD would have the power to set a cap on pollution emissions and begin emissions trading.⁸⁵ Emissions trading would give individual polluters greater flexibility in meeting pollution standards. New or expanding polluters in El Paso, for example, could offset their pollution by paving roads in Ciudad Juarez.⁸⁶ For the US, cross-border initiatives may be the most cost-effective way to get cleaner air. Air quality experts agree that cutting air pollution in Mexico will be cheaper and more effective than striving for further reductions in the U.S.⁸⁷

In 1996, the US and Mexico took the first step towards joint management by signing an agreement establishing an international air basin encompassing the regions of El Paso County (Texas), Dona Ana County (New Mexico) and the metropolitan area of Ciudad Juarez (Mexico) within 100km of the border. Along with the shared airshed, the agreement created the Joint Advisory Committee (JAC) to address transboundary management. Serving as an advisor to government, the JAC makes recommendations to the Binational Working Group on Air Quality. The JAC also monitors air quality, fosters joint planning and conducts public education and outreach. The 20 JAC members are drawn from the US and Mexico and include representatives from business, NGOs, government and academia.⁸⁸

As of yet, emissions trading has not occurred in the IAQMD, although it is expected to happen one day. As part of a study on the feasibility of emissions trading, government officials are developing baseline

⁸¹ Peter M. Emerson, Carlos F. Angulo, Christine L. Shaver and Carlos A. Rincon. “Managing Air Quality in the Paso del Norte Region,” in Richard Kiy and John D. Wirth eds. Environmental Management on North America’s Borders (Texas: Texas A&M University Press, 1998), 128.

⁸² A “non-attainment area” fails to meet EPA air standards.

⁸³ Ronald G. Ketter. “Paso del Norte Air Quality Task Force: A Case Study,” Paso del Norte Air Quality Task Force, March 1998, 15.

⁸⁴ See footnote 81.

⁸⁵ For emissions trading to occur, a country, region or company must set a limit on the overall allowable level of emissions. After a limit has been set, emission trading allows companies and countries to trade emission permits as a way of mitigating air pollution.

⁸⁶ Kirk P. Watson and Peter M. Emerson. “Border Towns Need Air Pollution Program,” Austin American-Statesman, 14 July 1993, A-18.

⁸⁷ Robert Bryce. “Air-Polluting Tale of Two Cities,” The Christian Science Monitor, 25 May 1994.

⁸⁸ Carlos Rincon and Pete Emerson. “Binationally Managing Air Quality in the US-Mexico Borderlands: A Case Study,” Borderlines, January 2000, 1.

data for Volatile Organic Compounds (VOCs)⁸⁹ and nitrogen oxides (NO_x), a necessary part of any trading scheme.⁹⁰ Proponents see supplemental Environmental Projects (SEPs) as another positive step towards emissions trading. SEPs occur when a company is fined for violating an environmental law and chooses to fund a pollution reduction project instead of paying the fine to a government agency. The first binational SEP occurred in 1997 when El Paso's GI Corporation paid an EPA penalty by investing in new pollution-reducing soldering machinery for its manufacturing facility in Ciudad Juarez.⁹¹ Since then, two other SEPs have taken place through the state government. As for the future, the JAC is well-situated to serve as a "certifying agency" for any emissions trading scheme. JAC could monitor compliance and oversee emissions transactions.⁹² Caps on emissions would be set by the Binational Air Quality workgroup, already established under B21.

Even without emissions trading, air is improving in the Paso del Norte airshed. In 1998, for the second year in a row, El Paso met US EPA carbon monoxide and ozone standards. The US EPA heralds El Paso as a success story.⁹³ Air quality experts credit the regional approach, especially the initiatives of the Paso del Norte Task Force in Ciudad Juarez. Among other projects, the Task Force spearheaded a program to get Juarez's 400 brick-making factories, some of the worst polluters in the region, to switch over to cleaner fuels. Brick-makers traditionally burn tyres and wood, generating high emissions of pollutants. Task Force members went into the community and spoke to brick-makers' wives, highlighting the increased health risks to children caused by pollution. As a result, about 80% of the brick-makers switched to liquid petroleum or sawdust fuels, reducing emissions by up to 40%.⁹⁴ Coupled with government lobbying, these kinds of initiatives have helped clear the air in El Paso-Juarez.

In the San Diego-Tijuana area, the Binational Air Quality Alliance (BAQA) operates similarly to the Joint Advisory Committee. The 40 binational members of BAQA are NGO representatives, academics, businessmen, and government employees. Steve Bimson, the US co-chair of the BAQA, describes the group's purpose as twofold: 1) raising public awareness of air pollution and 2) putting pressure on government agencies to address the problem. Recently incorporated as a non-profit in early 2000, BAQA is just beginning to get its projects off the ground. Early projects include a survey on air quality issues and soliciting support from key government officials.⁹⁵

Applicability to Hong Kong: The US-Mexico border realized the greatest improvements in air quality when government formed coalitions, like the JAC and the BAQA, with businessmen, academics, NGOs and citizens. These groups made government accountable and created momentum on an issue, accelerating the pace of change. The JAC and the BAQA operate similarly to the Hong Kong American Chamber of Commerce's proposed Commission on Regional Corporate Responsibility.⁹⁶ Such a coalition of stakeholders could be a powerful force for improving air quality, especially with the participation of business representatives, government officials and NGOs on both sides of the border. A Hong Kong-Guangdong working group should consider a threefold mission: analysis, education and advocacy. Through these three areas, the working group could provide expertise to government and build public will to address cross-border air pollution.

⁸⁹ VOCs contribute to ozone formation, cause eye, respiratory and skin irritations, and can be carcinogenic.

⁹⁰ Peter Emerson, personal communication, July 2000.

⁹¹ See footnote 81.

⁹² See footnote 81.

⁹³ Patrick Barta. "El Paso, With Juarez's Help, May End Its Bad-Air Days," The Wall Street Journal, 18 August 1999, B-1.

⁹⁴ See footnote 93.

⁹⁵ Steve Bimson. Personal communication, July, 2000.

⁹⁶ This would include business leaders, environmental experts and government representatives from Hong Kong, Guangdong and Beijing. The group would develop environmental standards based on international best practice and identify incentives and sanctions for an accelerated timetable of achieving the standards. (See footnote 20).

The Paso del Norte experience also shows that government involvement, although useful, is not absolutely necessary. Just as the Paso del Norte convinced brick-makers to switch over to cleaner fuels, a joint Hong Kong-Guangdong coalition of NGOs, business representatives and citizens could persuade smaller polluters to install dust scrubbers or desulfurization equipment. There is no reason why the private sector cannot kick-start the process by organizing a working group and inviting government involvement.

When organizing a working group, the US-Mexico experience shows that the following issues are key:

- Membership:

Creating the strongest possible group is critical. Both the BAQA and the Paso del Norte Task Force indicate the importance of getting the right people—those with the power to make things happen—involved. There are over 100 binational groups in the San Diego-Tijuana region addressing a range of issues from immigration to commerce.⁹⁷ In a significant number of cases, groups are ineffective because there is insufficient participation on the Mexican side. Frustrated with cultural differences, Americans tend to take over the groups while the Mexicans quit.⁹⁸ To avoid the same trap, any Hong Kong-Guangdong air quality working group must have a strong Guangdong presence. Linguistic parity is key. Low rates of Mexican participation are tied to the fact that English is often the working language of binational groups. Between Hong Kong and Guangdong, meetings will likely need to occur in three languages: Cantonese, Putonghua and English.

Participation from business and NGOs is important too. In Hong Kong, interest in cross-boundary air pollution is at an all-time high. It is time to capitalize on that momentum and find the right partners across the border. To encourage participation from business leaders, the Paso del Norte Task force used a “bang-for-the-buck” rationale. They pointed out that it is cheaper to pave streets in Ciudad Juarez, Mexico than to buy a fourth street sweeper for El Paso, Texas. A similar economic argument holds true in Hong Kong and Guangdong. Adding air filters to Guangdong’s factories may be one of the cheapest ways to improve Hong Kong’s air quality. In addition, worsening air quality will affect both tourism and foreign investment on both sides of the border.

- Funding

Any working group needs money to run meetings, fund projects and pay for publicity. A Hong Kong - Guangdong air quality working group will need sustained funding over 5-10 years. As the experience of both the BAQA and the Paso del Norte Task force shows, setting up an effective group takes time. Sustained funding ensures that NGOs will be able to participate for the life of the project. In the US-Mexico case, the BAQA is funded by a combination of government grants and corporate monies. Money for a Hong Kong-Guangdong working group could come from the government or the private sector, or from both. By funding a working group, the private sector can, once again, kick-start the process and create opportunities for stakeholders on the two sides to work together.

2.2.2 *Thinktanks and Watchdogs*

The US-Mexico border has a multitude of organizations dedicated to researching border issues. These organizations make their information available to the public and lobby the government for change. The list of NGOs and academics working on border issues includes:

⁹⁷ See footnote 95.

⁹⁸ See footnote 95.

- **Academic Institutions:** Many area institutions, like the Southwest Center for Environmental Research and Policy ⁹⁹ and the Colegio de la Frontera Norte, study the border and publish reports on environmental affairs.
- **Advisory Boards:** Both Mexico and the US have advisory boards to counsel the president and congress on environmental issues along the border. The US board, the Good Neighborhood Environmental Board (GNEB) issues an annual report with recommendations on environmental policy. ¹⁰⁰
- **Thinktanks:** There are several local thinktanks with projects on border issues, including the Texas Center for Policy Studies (TCPS) in Austin, Texas. TCPS runs the Border Trade and Environment Project as well as the Border Institution Watch, two projects that monitor progress on environmental initiatives and hold institutions responsible for change.
- **NGOs:** A wide variety of activists and green groups lobby for increased environmental protection. They galvanize the public and offer first-hand experience and knowledge to policymakers. Groups include the Border Ecology Project and Proyecto Fronterizo de Educacion Ambiental. ¹⁰¹

These thinktanks and watchdogs have made a difference. As Wendy Laid-Benner of the US EPA says, “if you look at some of the policy papers written by border NGOs and academics you can see that they’ve had an impact. Their impact on BECC is clear. And here at the EPA we’re certainly very cognizant of them.” ¹⁰² By providing information to the public and making recommendations to policymakers, thinktanks and watchdogs ensure that border institutions are, to some degree, accountable. Government agencies are forced to respond to public demands, increasing their effectiveness.

Applicability to Hong Kong: The Hong Kong-Guangdong border needs thinktanks, NGOs and academics to focus on cross-border affairs. While the US-Mexico border has dozens of institutions specializing in cross-border affairs, the Hong Kong-Guangdong border has few. Thinktanks and NGOs play a critical role in providing policy analysis and information on the grassroots situation to policymakers. And, as in the US-Mexico example, thinktanks or NGOs can also marshal support from the public for cross-border air pollution initiatives.

Hong Kong is beginning to address this lacuna. Several Hong Kong universities have air quality research projects, both privately and publicly funded. However, Hong Kong and Guangdong still need to develop greater expertise on cross-border air pollution. Building on current programs will require additional funding, both from the private and public sectors. The private sector should consider taking the lead by funding research, particularly joint research, to build skills and expertise.

Building expertise will also require detailed information on the current situation, particularly on sources of pollution in Guangdong. When released, the joint air quality study between Hong Kong and Guangdong will be a real breakthrough. ¹⁰³ In part, the current lack of transparency stems from the Guangdong government’s practice of selling raw environmental data to scientific researchers. The data can be expensive, putting it out of the reach of NGOs and citizens. If the Guangdong government would

⁹⁹ The Southwest Center for Environmental Research and Policy (SCERP) is a consortium of nine Mexican and US universities. Partly funded by the US EPA, the SCERP does focused research to plug holes in information.

¹⁰⁰ George Kourous. “Border Environment Policy: Where Do Things Stand?” Borderlines, December 2000.

<<http://www.us-mex.org/boderlines/2000/bl73new.html>>

¹⁰¹ George Kourous. “Availability of Information on the Border Environment: An Introductory Assessment,” Borderlines, September 1999.

¹⁰² See footnote 100.

¹⁰³ According to the 2001 Policy Address, the joint study “has involved a detailed analysis of the causes of the pollution and feasible measures to improve the quality of air in the region” and “will be completed soon” (See footnote 5).

give up this revenue stream, the cost of transparency would be low: much of the necessary information could be published on the Internet.

Making data available will encourage researchers to contribute input and solutions. Access to information is also important because the government is only one means of regulating polluters. Community pressure can strongly influence the environmental performance of factories. Rather than risk conflict, factories respond to community demands. In Korea, for example, community protest prevented the opening of a chemical factory until pollution control equipment was installed.¹⁰⁴ But for markets and communities to serve as effective regulators, citizens must have access to information. Without public information, particularly as to the sources of pollution, the government will be left alone to coordinate policy. This will slow the pace of change dramatically and disintegrate public will to create effective solutions.

¹⁰⁴ For more details, see “Greening Industry: New Roles for Communities, Markets and Governments,” Chapter 3, “Communities, Markets and Public Information.”
<http://www.worldbank.org/mpa/greening/full_text.htm>
October 2001

3. Future Issues

In the long term, solving cross-border air pollution requires addressing a number of issues beyond the scope of this paper. However, the right kinds of institutions will provide a forum to identify mutually acceptable solutions among stakeholders. For the sake of completeness, related issues include:

- **Power generation:** There needs to be a shift towards cleaner fuels in generating power and better controls on emissions in Guangdong. Currently, the main fuel used for power generation is coal. The construction of a Liquefied Natural Gas (LNG) facility in Shenzhen, scheduled for 2005, will help the shift towards cleaner burning power stations in Guangdong.
- **Guangdong Industry:** Tighter controls on cement plants and other polluting industrial sources will be needed.
- **Transport:** According to some scenarios, cross-border goods traffic will increase 400% by 2016.¹⁰⁵ As both regions become more affluent, the number of motor vehicles on the road will increase as well. Cutting pollution over the long term means heavy investment in rail infrastructure, as well as a switch to cleaner fuels and vehicles.
- **Population:** Both Guangdong and Hong Kong have high projected rates of population increase. Most of the growth in population is due to migration, as people flood the affluent border region. Pollution will rise with population—true pollution reduction may be impossible without lowering rates of population increase or without radical changes to planning and lifestyles.
- **Education:** Lowering pollution ultimately hinges on environmental awareness and the public desire to demand change. Environmental education, particularly among the young, is essential.

4. Recommendations

Building effective institutions takes time. The US-Mexico border has a 10-year head start on Hong Kong-Guangdong and their institutions are just beginning to make a difference. For Hong Kong-Guangdong, true joint management of air quality may still be some years in the future. Yet in the meantime, momentum is building and there is plenty to do.

4.1 Short Term Recommendations: Building expertise and collecting information

In the short term, more public information is needed to help develop expertise on cross-border air pollution. The release of the joint study will help fill this gap, but much more will need to be done, and done continuously, in the future.¹⁰⁶ Long-term joint air quality monitoring and quick release of data is essential. Government cannot solve this problem without the help of citizens and the private sector who, in turn, cannot effectively address the problem without detailed information on the extent and sources of pollution.

At the same time, concerned Hong Kongers need to build cross-border contacts, identifying individuals, businesses and institutions who are also concerned with air pollution. The Paso del Norte example shows that there is no need to wait for government. Coalitions of NGOs and citizens can be effective through education and advocacy. A joint Hong Kong-Guangdong coalition of NGOs, business representatives and citizens could persuade smaller polluters to install dust scrubbers or desulfurization equipment.

4.2 Medium term recommendations: Building institutions and improving coordination

¹⁰⁵ Hong Kong SAR Government and Wilbur Smith Associates Limited. "Third Comprehensive Transport Study," October 1999.

¹⁰⁶ See footnote 4 on the joint study.

In the medium term, Hong Kong and Guangdong need to establish joint institutions to address cross-border air pollution. Based on the above analysis, the most useful institutions would be:

- A **cross-boundary working group**, comprised of academics, businesspeople, NGOs and government officials. Government cannot go it alone. Improving air quality will require help—and funding—from private sector, from NGOs, from academics and from concerned citizens. In conjunction with government, this group would do policy analysis, education and advocacy. They would bring cross-border air pollution to the forefront of public attention and facilitate the transition to joint management of environmental issues.
- A **lending agency** with a structure similar to that of the NADBank/BECC model to build environmental infrastructure. Over time, cleaning up requires resources. Loans could focus on desulfurization equipment and dust scrubbers for power plants and cement plants, particularly in Guangdong. This may also help boost environmental industry, boosting GDP as well as air quality.

In addition, government-to-government coordination of environmental policy must improve. The Hong Kong-Guangdong Joint Working Group on Sustainable Development and Environmental Protection must move towards true joint management, not mere consultation. An integral part of a joint management strategy should be the creation of a cross-border air quality management district like the IAQMD. Through a cross-border air quality management district, Hong Kong and Guangdong could even explore regional emissions trading, an innovative way to use the market to reduce pollution.¹⁰⁷

4.3 Long term recommendations: Population, transport and education policies

As for the long term, the Hong Kong and Guangdong governments must coordinate policies on population growth, transport and education. Clearing the air will require not just piecemeal solutions but fundamental change in policies.

Air quality studies and management is a growing area of science and business. Hong Kong and Guangdong have an opportunity to capitalize on growing interest, take a lead and become a leader in the field, both in China and regionally.

¹⁰⁷ For more information, please see Civic Exchange's paper, "Emissions Trading in China: Opportunities and Constraints." Available at <<http://www.civic-exchange.org>>.

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APPENDIX A: TOP TWELVE GUANGZHOU INDUSTRIAL AIR POLLUTERS IN 1995

Factory	Exhaust Fumes (million of tons)	Sulphur dioxide (tons)	Smoke & Dust (tons)	Industrial Ash (tons)
Guangzhou Cement Works	2,922	451	n/a	1,079
Guangzhou Electric Power Plant	6,967	451	n/a	n/a
Guangzhou Steel Mill	11,255	2,746	350	2,990
Guangzhou Heavy Machinery Mill	62	34	14	15
Huanan Sewing Machinery Plant	12	8	n/a	40
People' s Paper Mill	539	1,418	1,560	n/a
Guangzhou Copper Material Mill	220	100	31	79
Guangzhou Alloy Mill	947	128	24	87
Guangzhou Zinc Mill	30	n/a	n/a	9
Guangzhou Chemical Factory	736	761	128	n/a
Guangzhou Lithopone Factory	386	432	121	n/a
Guangzhou Chemical Fiber Plant	1,628	1,122	109	n/a
Total amount of pollutants emitted by these top 12 factories:	25, 702	16,365	2,692	4,299
Total emissions in Guangzhou:	187,161	140,900	30,900	40,500

Source: Christine Huang, "Air Pollution Control in Guangdong," Industry Sector Analysis, US Department of Commerce, 1997, p. 3.

APPENDIX B: BECC CERTIFICATION CRITERIA

Regular Criteria	Brief Description of Requirements
Human/health/environment	<ul style="list-style-type: none"> -human health and environmental needs -environmental assessment -compliance with environmental/cultural resource laws
Technical	<ul style="list-style-type: none"> -appropriate technology -operation and maintenance plan -compliance with applicable design regulations and standards
Financial and Project Management	<ul style="list-style-type: none"> -financial feasibility -fee/rate models -sound project management
Community Participation	<ul style="list-style-type: none"> -comprehensive community participation plan, including steering committee and public meetings to guarantee local community support
Sustainable Development	<ul style="list-style-type: none"> -compliance with principles of sustainable development -natural resource conservation -community development -institutional/human capacity building
High Sustainability Recognition Criteria (optional—adapted by those looking to comply to a higher standard)	<ul style="list-style-type: none"> -pollution prevention by meeting higher standards than required -energy efficiency -biodiversity/open space protection -greater waste reduction/reuse/recycling -greater education/training programs -creation of higher wage jobs

Source: Mark J. Spalding, "NAFTA Plus 5, On the Right Track? An Assessment of the BECC/NADBank Institutions. 2nd Edition." January 1999, p. 20-21.

APPENDIX C: SUMMARY OF US-MEXICO INSTITUTIONS

