



Transnational Cooperation in
Environmental Health
along the U.S. -Mexico Border

2013

U.S.- Mexico Border Health Series



Pan American Health Organization



Regional Office of the World Health Organization

110
1902 - 2012

U.S. - MEXICO BORDER OFFICE
Anniversary
70
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OFICINA FRONTERA MEXICO -EEUU



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List of Tables	iv
List of Figures	iv
Preface	v
Acknowledgements	vii
Executive Summary	ix
Chapter 1: Introduction	1
1.1 The U.S.–Mexico Border Region	1
Chapter 2: Evolution of Transnational Environmental Health Cooperation Along the U.S.–Mexico Border Region	5
2.1 Stages of Transnational Environmental Health Cooperation along the U.S.–Mexico Border	6
2.1.1 <i>Stage I: Organized border public health professionals (1940s–1960s)</i>	6
2.1.2 <i>Stage II: Creation of national bureaucracies for environmental protection (1970s–1980s)</i>	7
2.1.3 <i>Stage III: Specialized border bureaucracies for public health and environmental protection (1990s–2000s)</i>	9
Chapter 3: Proposal for a New Stage of Transnational Environmental Health Cooperation Along the U.S.–Mexico Border Region	19
Chapter 4: Conclusions	23
4.1 Implications for Other International Border Regions	24
References	26
Acronyms	29

TABLE OF CONTENTS

List of Tables

Table 2.1 Annexes of agreement on cooperation for protection and improvement of the environment in the border area signed in La Paz, Baja California Sur, Mexico, 1983. 8

Table 2.2 Summary of environmental health priorities identified by Project CONSENSUS 12

Table 2.3 Most significant environmental public health events in and for U.S.–Mexico border region since the 1940s 15

List of Figures

Figure 1.1 U.S.–Mexico border region according to 1983 La Paz Agreement 2

Figure 2.1 Stages of cooperation in transnational environmental public health along U.S.–Mexico border 5

Figure 3.1 Envisioned model of transnational cooperation on environmental public health along U.S.–Mexico border 19

Figure 3.2 Schematic representation of the socio-ecological model 20

PREFACE

Since the 1880s, there has been documented concern for transnational health matters along the United States of America (U.S.)–Mexico border, including environmental health issues such as water and sanitation. In 1892, the first collaborative agreements on border health between the United States and Mexico were reached at the annual meeting of the American Public Health Association in Mexico City. However, the major impetus for mutual resolution of border health problems came in the late 1930s. Involvement of the United States in World War II and initiation of the 1942 Bracero Program in Mexico increased the trade and flow of people across the border. Limited communication between health authorities on both sides of the border prompted a request to open a field office of the Pan American Health Organization (PAHO) in El Paso, Texas, United States, in 1942 and the no longer operative, U.S.–Mexico Border Health Association in 1943. In addition, in 1944, the duties and responsibilities of the International Boundary Commission created in 1889 were expanded to provide binational solutions to issues that arise during application of U.S.–Mexico treaties regarding not only boundary demarcation, but also national ownership of waters, sanitation, water quality, and flood control in the border region, renaming it International Boundary and Water Commission. Since then, formal transnational cooperation in environmental health along the U.S.–Mexico border has evolved from interactions of professionals at the local level to specialized national and binational government programs and institutions as well as international organizations.

Reflecting the importance of cooperation with regard to transnational environmental health along international border regions, we are pleased to present this document, which analyzes the evolution of such cooperation along the U.S.–Mexico border region and proposes a model of cooperation for the coming years. PAHO is committed to facilitate strategic collaborative efforts between the United States and Mexico to strengthen this process and to advance equitable and sustainable cooperation for transnational environmental health cooperation programs in other international border regions in the Americas. Please join us in acting to increase the number, quality, and effectiveness of these programs in border regions. This will contribute to a significant improvement in the health and well-being of girls, boys, women, and men in some of the most vulnerable areas of our continent.

Dr. Carissa F. Etienne
Director
Pan American Health Organization



ACKNOWLEDGMENTS

The PAHO / WHO U.S.-Mexico Border Office is pleased to present a historical and prospective analysis of the binational border collaboration, experiences and lessons learned to improve environmental health. More transcendent is the proposal to strengthen this collaboration with a more innovative and comprehensive and sustained participation of community stakeholders on both sides of the border. This publication would not be possible without the contributions of many people who generously contributed by reviewing drafts and providing valuable suggestions. We thank those who have contributed to the development of this publication. In particular, we wish to thank Dr. Paula B. Ford and to Dr. E. Lee Rosenthal, both faculty and researchers from the University of Texas at El Paso, and the reviewers of the Border Environment Cooperation Commission, the U.S. Environmental Protection Agency and the U.S.-Mexico Border Health Commission.

The research and writing of this technical report was prepared by Dr. Marcelo Korc, Advisor on Sustainable Development and Environmental Health for PAHO, with the orientation and technical support from Dr. Maria Teresa Cerqueira, Chief of the PAHO/WHO U.S.-Mexico Border Office and Dr. Luis A. Galvão Cassanha, Sustainable Development and Environmental Health Area Manager for PAHO HQ. Translation, editing, graphic design and layout for this publication were coordinated by Lorely Ambriz, Alliances Development and Knowledge Management Specialist of PAHO U.S.-Mexico Border Office.

The analysis of the evolution of the structures and modes of cross-border binational collaboration shows that through the years this partnership has certainly helped to improve the environmental health and quality of life at the border. However, the times, the actors and contexts are changing and require institutions to also change to meet new challenges. It is our intention to continue to work on these efforts and we hope that this publication is a contribution in strengthening the structures and increasingly purposeful ways that contribute to improving the health and quality of life for people in the U.S.-Mexico border.





EXECUTIVE SUMMARY

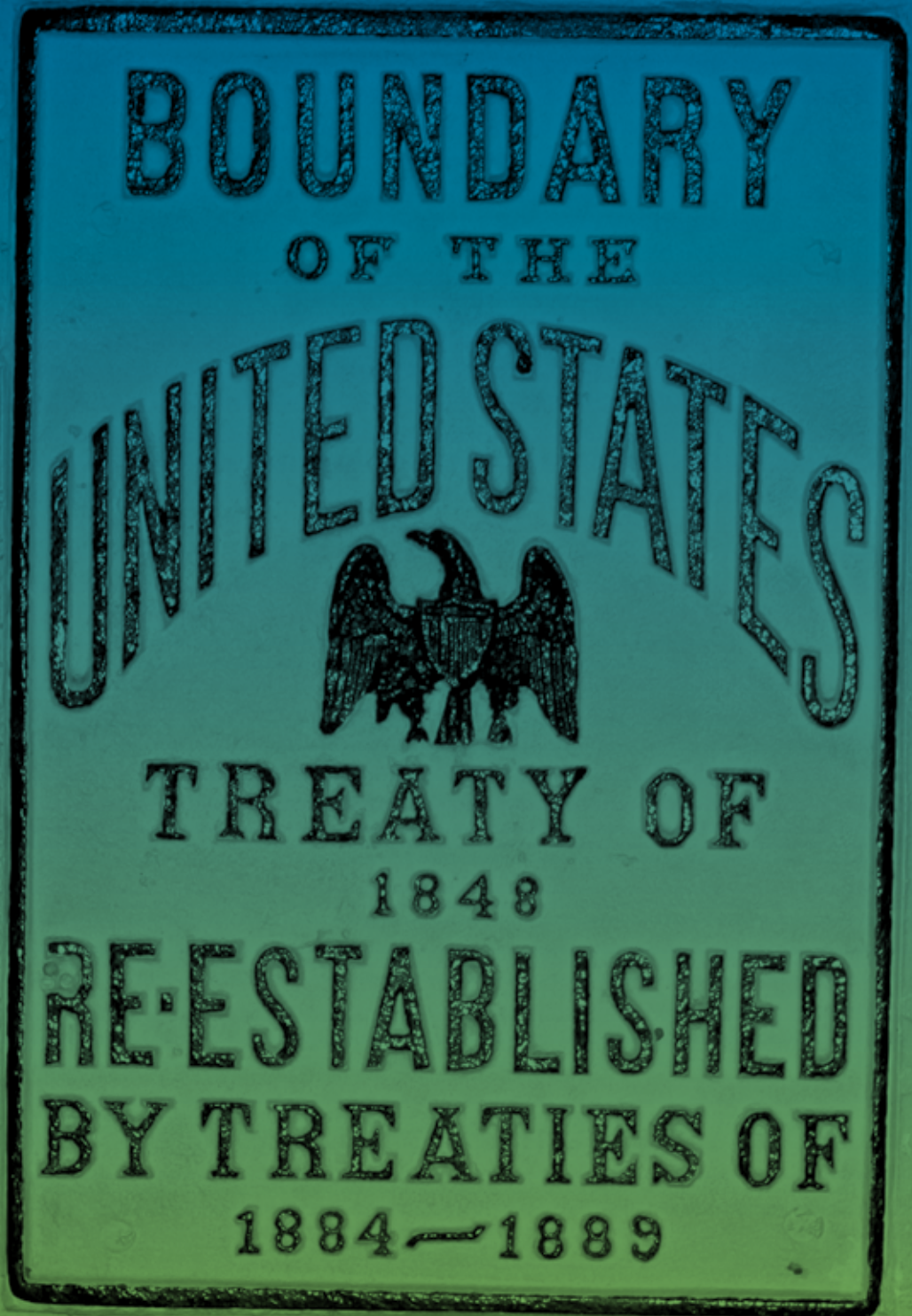
The United States of America (U.S.) and Mexico have a rich history of formal transnational cooperation in environmental health issues along the border between the two countries. However, the organizations and systems within which this cooperation takes place have received limited attention. This document focuses on the professionals, organizations, and systems that constitute the field of transnational cooperation in U.S.–Mexico border environmental health. It analyzes the stages of this process and proposes a model of cooperation for the coming years. It examines strengths and weaknesses of each stage using community organization and community building constructs such as legitimacy, capacity, social capital, organizational structure, and resources.

The analysis highlights the evolution of the process of cooperation in transnational public health along the U.S.–Mexico border from professionals organized around specific health problems deemed to be of common concern to both countries in the 1940s to specialized border bureaucracies and comprehensive binational border environmental protection programs in the 2000s. Three stages of cooperation in transnational environmental health were identified:

- 1. Stage I:** Organized border public health professionals (1940s–1960s).
- 2. Stage II:** Creation of national bureaucracies for environmental protection (1970s–1980s).
- 3. Stage III:** Specialized border bureaucracies for public health and environmental protection (1990s–2000s).

The study also highlights the need for a new era of cooperation. This era would be characterized by development of a transnational border public health and environmental protection partnership of binational border organizations that works toward establishing a long-term border-wide strategic cooperation process. The proposed mode of cooperation would promote a “one border” identity culture in environmental health; build positive relationships between U.S. and Mexican professionals and community leaders; increase the role of the public health sector; address environmental health issues in a holistic, evidence-based, and systematic manner; promote implementation of truly transnational environmental health processes; be able to access permanent financial resources; and reduce the financial and organizational asymmetries between the two countries.

CHAPTER 1



THE DESTRUCTION

INTRODUCTION

Global health refers to the health of populations in a global context and transcends the perspectives and concerns of individual nations (Brown, Cueto, and Fee, 2006). One emphasis of global health is the development of transnational public health programs designed for border regions. Along the United States of America (U.S.)–Mexico border region, professionals, administrators, academics, and community leaders from both countries belonging to nongovernmental and government organizations have been formally cooperating in addressing shared public health issues for more than 100 years, starting with the first collaborative agreements on border health between the United States and Mexico at the 1892 annual meeting of the American Public Health Association in Mexico City (Ruiz, 2003).

This document focuses on transnational environmental health programs along the U.S.–Mexico border. It analyzes the stages of cooperation in transnational environmental health along the border and proposes a model of cooperation for the coming years. This information can be used in developing such cooperation programs in other international border regions.

1.1 The U.S.–Mexico Border Region

The boundary between the United States and Mexico traces its roots to the 1848 Treaty of Guadalupe Hidalgo (United States of America and the Mexican Republic, 1848) and the 1853 Gadsden Treaty (United States of America and the Mexican Republic, 1853). These treaties established temporary joint commissions to survey, map, and demarcate with ground landmarks defining the boundary between the two countries. After more than 100 years of bilateral negotiations, the 1970 Treaty resolved all pending international boundary differences between the two countries (United States of America and Mexico, 1970).

The current U.S.–Mexico border region extends for 1 952 miles (3 141 kilometers), stretching from the Gulf of Mexico to the Pacific Ocean. The 1983 La Paz Agreement (United States of America and United Mexican States, 1983) defines the border area as the land within 100 kilometers on either side of the international boundary. The border area includes 48 U.S. counties in four states¹ and

94 Mexican municipalities in six states,² which contain 15 pairs of sister cities.³ The U.S.–Mexico Border Health Commission, a binational health commission created with the signing of an agreement between the two federal governments in 2000, limited the border area to the 44 U.S. counties and 80 Mexican municipalities that have most of their population within the 100-kilometer limit (U.S.–Mexico Border Health Commission, 2003) for the purpose of their program to improve health on the border (see Figure 1); the area constitutes a total population of approximately 14.94 million people (7.45 million males and 7.49 million females)—about 7.44 million (3.68 million males and 3.76 million females) in the United States (U.S. Census Bureau, 2009) and 7.50 million (3.77 million males and 3.73 million females) in Mexico (Instituto Nacional de Estadística y Geografía, 2010). Between 2000 and 2010, the U.S. border population increased by about 12% and the Mexican border population increased by about 18%.

About 84% of the U.S.–Mexico border population is urban. Mexico's three largest urban municipalities—Ciudad Juárez in Chihuahua, Tijuana and Mexicali in Baja California—account for almost half of the total Mexican border population. More than 80% of the U.S. border population is concentrated in six counties: San Diego in California; Pima in Arizona; and Cameron, El Paso, Hidalgo, and Webb in Texas. San Diego alone, the wealthiest of the U.S. border counties, represents about 40% of the U.S. border population. About half of the U.S. border population is Hispanic, primarily of Mexican ancestry (U.S. Census Bureau, 2009; Pew Hispanic Center, 2009).

¹Arizona, California, New Mexico, and Texas.

²Baja California, Coahuila, Chihuahua, Nuevo León, Sonora, and Tamaulipas.

³San Diego–Tijuana (California–Baja California), Calexico–Mexicali (California–Baja California), Yuma–San Luis rio Colorado (Arizona–Sonora), Nogales–Nogales (Arizona–Sonora), Naco–Naco (Arizona–Sonora), Douglas–Agua Prieta (Arizona–Sonora), Columbus–Palomas (New Mexico–Chihuahua), El Paso–Juárez (Texas–Chihuahua), Presidio–Ojinaga (Texas–Chihuahua), Del Rio–Ciudad Acuña (Texas–Coahuila), Eagle Pass–Piedras Negras (Texas–Coahuila), Laredo–Nuevo Laredo (Texas–Tamaulipas), McAllen–Reynosa (Texas–Tamaulipas), Weslaco–Rio Bravo (Texas–Tamaulipas), and Brownsville–Matamoros (Texas–Tamaulipas).

FIGURE 1.1. The U.S.-Mexico border region according to the La Paz Agreement of La Paz, South Baja California, Mexico, 1983.



The native indigenous population along the Mexican border area in 2005 was approximately 130 000 people, located primarily in Baja California, Tamaulipas, Chihuahua, and Sonora (Comisión Nacional para el Desarrollo de los Pueblos Indígenas, 2005). The estimated American Indian population during 2005–2009 along the U.S. border area was approximately 80 000 people, located primarily in California and Arizona (U.S. Census Bureau, 2009). Five native indigenous groups have a permanent land base that extends to both sides of the border: the Kickapoo peoples in Coahuila, known as the Kickapoo in Texas and Arizona; the Kumiai peoples in Baja California, known as the Kumeyaay in California; and the Papago, Cucapá, and Yaqui peoples in Sonora, known as the Tohono O’odham, Cocopah, and Pascua Yaqui, respectively, in Arizona.

The U.S.–Mexico border area represents a binational geopolitical system based on strong social, economic, cultural, and environmental connections with different policies, customs, and laws. Important dimensions of this binational system include commerce, tourism, sister-city familial ties, Mexico’s twin assembly plants or *maquiladoras* (foreign-owned factories in Mexico where lower-paid workers assemble imported parts into products for export [Merriam-Webster, n.d.]), ecological services, a shared heritage, social partnerships, and immigration.

Since the 1940s, the area has experienced continuous growth associated with the 1942–1947 guest worker Bracero Program (laborers contracted in Mexico to work in the U.S. agricultural sector), the Border Industrialization Program initiated in 1965, and the North American Free Trade Agreement, which took effect in 1994. Projected population growth rates in the border region exceed anticipated national average growth rates for each country. If current trends continue, the border population is expected to increase to about 20 million people by 2020 (Peach and Williams, 2003).

Trade has also increased significantly, particularly since the North American Free Trade agreement came into force. For example, in 2008, cross-border land trade between the United States and Mexico totaled just over US\$293 billion, about three times the cross-border trade recorded in 1995, and 13 300 trucks crossed the border daily, up 70% from 1995 (El Colegio de la Frontera Norte and Woodrow Wilson International Center for Scholars, Mexico Institute, 2009). However, the region is experiencing several challenges, including violence on the Mexican side of the border and deceleration of the *maquiladora* industry stemming from the economic slowdown in the U.S. economy and enhanced efforts at U.S. border immigration enforcement. This may slow development and affect cross-border trade and travel. Personal legal border crossings from Mexico to the United States decreased from 313.8 million in 2006 to 229.7 million in 2010 (Research and Innovative Technology Administration, 2010). In addition, the number of apprehensions of unauthorized Mexican migrants in the United States decreased from 1.17 million in 2005 to 0.45 million in 2010 (U.S. Department of Homeland Security, 2011).

The United States and Mexico have different legal systems, government structures, and governance. The United States is a federation with an elaborate layering of power. Under the U.S. Constitution, national and state governments are granted certain exclusive powers and share other powers. Mexico is a federation in the process of decentralizing competencies and finances to states and municipalities and of strengthening the decentralized institutions. However, Mexico still has a highly centralized political system. In addition, the management system of the U.S. government favors a merit-driven civil service, whereas in Mexico it is more tied to political affiliations (Herzog, 2000; Rodríguez, 1997). These differences have influenced transnational cooperation along the border.

Despite differences between the countries, formal transnational cooperation in environmental health along the border has continued since the 1940s—from interactions of professionals at the local level to specialized national and binational government programs and institutions and international organizations (Collins-Dogrul, 2006).

CHAPTER 2

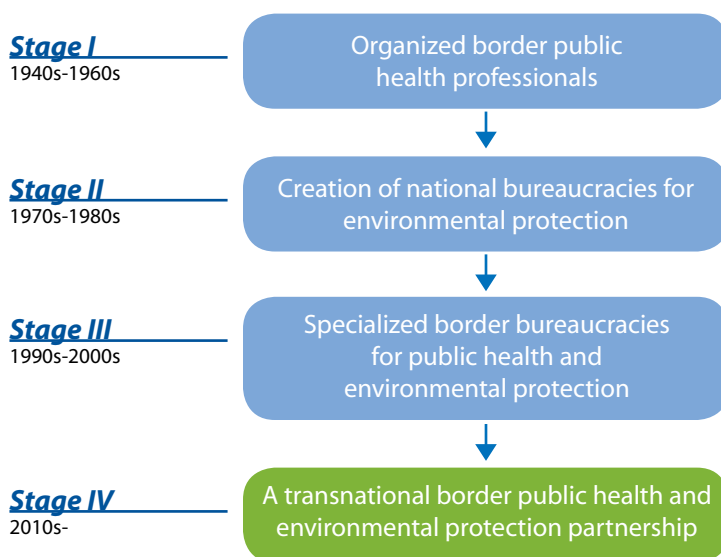


EVOLUTION OF TRANSNATIONAL ENVIRONMENTAL HEALTH COOPERATION ALONG THE U.S. – MEXICO BORDER REGION

The United States and Mexico have a rich history of formal transnational cooperation in environmental health issues along the border. However, the organizations and systems within which this cooperation takes place have received limited attention. Collins-Dogrul (2006) began to fill this gap by focusing on the professionals and organizations that constitute the U.S.–Mexico border health field. This study enhances Collins-Dogrul's work by focusing on the professionals, organizations, and systems that constitute the field of cooperation in transnational U.S.–Mexico border environmental health. This group of professionals and organizations constitutes the border environmental health community within which different cooperation processes have been implemented since the 1940s.

This study focuses on identifying the stages of transnational cooperation in environmental health along the U.S.–Mexico border. Using community organization and community building constructs such as legitimacy, capacity, social capital, organizational structure, and resources (Minkler, Wallerstein, and Wilson, 2008; Cresswell, Burke, and Navarrete, 2009), it analyzes the strengths and weaknesses of each stage. The study also proposes a model of cooperation for the coming years.

FIGURE 2.1. Stages of cooperation in transnational environmental public health along U.S.–Mexico border.



2.1 Stages of Transnational Environmental Health Cooperation along the U.S.–Mexico Border

Cooperation in transnational environmental health along the U.S.–Mexico border has passed through three stages; a fourth stage is proposed for the coming years (see Figure 2.1). Since the cooperation process is continuous, the stages were defined in terms of decades to reflect their overlap.

2.1.1 Stage I: Organized border public health professionals (1940s–1960s)

This stage is characterized as the beginning of a continuous formal cooperation in public health along the U.S.–Mexico border.

A field office of the Pan American Health Organization (PAHO), then known as the Pan American Sanitary Bureau (PASB), in El Paso, Texas, coordinated the transnational cooperation efforts on public health in the border area between the two countries, and the U.S.–Mexico Border Health Association (USMBHA), a nongovernmental organization of local public health professionals from both sides of the border created in 1943, provided the structure for direct cooperation. National health authorities of the United States and Mexico were instrumental in requesting PAHO (then PASB) to lead the transnational cooperation activities in the border region, and local health professionals, primarily state and local health officials, on both sides of the border were instrumental in creating the USMBHA to provide a structure for direct exchange of information and technical cooperation on common health problems. To provide greater coverage and unite the efforts for dealing with health problems in border communities, USMBHA established local sister cities binational health councils along the border with representatives of state and local government and the community (Ruiz, 2003; Alvarez, 1975). The binational health councils remained active even after USMBHA went into legal dormancy in 2010.

U.S. and Mexico public health professionals organized around specific health problems deemed to be of common concern to both countries. Environmental health issues—in particular, water and sanitation issues in border cities such as Nogales, Sonora–Nogales, Arizona (International Boundary and Water Commission, 1958; International Boundary and Water Commission, 1967); Agua Prieta, Sonora–Douglas, Arizona (International Boundary and Water Commission, 1964; International Boundary and Water Commission, 1965a); and Tijuana, Baja California–San Diego, California (International Boundary and Water Commission, 1965b)—were a priority for both countries. Government agencies and other health institutions were brought into this process through their employees' voluntary participation in these groups.

The strengths of this mode of cooperation included:

- **Legitimacy:** PAHO (then PASB) was a legitimate international organization and the USMBHA was a legitimate binational border organization dedicated full time to transnational border health issues accompanied by the acceptance of local institutions and public health professionals from both countries.
- **Committed, capable, and diverse local human resources:** A balanced pool of experienced and motivated local public health professionals on both sides of the border participated in the effort.
- **Development of social capital:** Gradual positive relationships including trust, reciprocity, and civic engagement were built between local public health professionals on both sides of the border.
- **Effective organizational structure:** Local binational health councils coordinated by the USMBHA provided a direct and effective structure for transnational cooperation.

The weaknesses of this mode of cooperation included:

- **Limited incentives for binational institutional investment:** U.S. and Mexican government and nongovernmental institutions were brought into the process primarily through the voluntary part-time participation of their employees and had few incentives to invest in the process directly.
- **Limited access to financial resources:** Local binational health councils did not have access to permanent resources under their control.

The global environmental movement of the 1960s that led to the creation of specialized national bureaucracies for environmental protection in the United States in 1970 (Lewis, 1985) and in Mexico in 1971 and to the First United Nations Conference on the Human Environment in 1972 (Buss, 2007) influenced cooperation in environmental health between the two countries. Along the U.S.–Mexico border region, the 1960s also marked the beginning of the Mexican government Border Industrialization Program or *Maquiladora* Program. This program contributed to population growth in the area and to an increase in environmental health issues.



United Nations Conference on Human Environment in 1972
The President of the Stockholm Conference, Ingemund Bengtsson, (right) at the end of the meeting of 1972 photo by Carlos Torres.

2.1.2 Stage II: Creation of national bureaucracies for environmental protection (1970s–1980s)

This stage is characterized as laying the foundation for environmental cooperation at an international level, creating national environmental protection agencies in the United States and Mexico, and establishing the 1983 binational La Paz Agreement on environmental cooperation in the border area.

In the United States, environmental health issues became a central component of the newly created U.S. Environmental Protection Agency (EPA) with enactment of the Clean Air Act of 1970, which evolved from the 1955 Air Pollution Control Act and the 1967 Air Quality Act and the Clean Water Act of 1972, which evolved from the 1948 Federal Water Pollution Control Act. For the first time, the 1970 and 1972 Clean Air and Clean Water Acts specifically required the EPA to develop and enforce air- and water-quality standards to protect public health (U.S. Environmental Protection Agency, 2012; Copeland, 2010). Public health agencies were consigned primarily to research and technical support roles.

In Mexico, the responsibilities for environmental health issues were distributed among national public health and environmental protection agencies. In 1982, the Secretariat of Urban Development and Ecology (*Secretaría de Desarrollo Urbano y Ecología, SEDUE*) was created as the national agency for environmental protection. Several areas attended by the Secretariat of Health were transferred to SEDUE. In 1988, the General Law on Ecological Equilibrium and Environmental Protection (*Ley General del Equilibrio Ecológico y la Protección al Ambiente*) established the basis for national environmental protection policies, including environmental standards and environmental management regulations (*Centro de Estudios Sociales y de Opinión Pública, 2006*). The law states that the national environmental protection agency has the responsibility for enacting environmental standards to protect public health, and the national health agency has the responsibility for establishing and upholding

the values of the standards. This division in the distribution of responsibilities has contributed to the establishment of multiple approaches to environmental health issues without common language, objectives, and methods among agencies.

By the authority of the 1944 treaty (United States of America and Mexico, 1946), which entrusted the International Boundary and Water Commission (IBWC) to give preferential attention to solving border sanitation and water-quality problems, the U.S. and Mexican governments agreed in 1979 to recommend solutions for border sanitation problems in cases of superficial waters that cross the border, including coastal waters and those flowing along the Rio Grande and Colorado River boundary (International Boundary and Water Commission, 1979). Subsequent IBWC minutes individually addressed specific border sanitation and water-quality issues (International Boundary and Water Commission, n.d).

In 1983, the U.S. and Mexican governments signed the agreement on cooperation for the protection and improvement of the environment in the border area in La Paz, Baja California Sur, Mexico (United States of America and United Mexican States, 1983). The agreement established a framework for cooperation on environmental problems that has been carried forward since that time. The EPA and SEDUE were jointly charged with searching for and implementing solutions to problems related to air, water, and land pollution along the border. The agreement centered primarily on the coordination efforts of federal agencies and was limited to specific technical issues included in five annexes signed between 1985 and 1989 (see Table 2.1). According to Sánchez (2002), the political pressures on binational cooperation to find fast solutions to specific border environmental issues and the lack of international experience of the EPA and SEDUE may explain the narrowness of the agreement.

TABLE 2.1. Annexes of agreement on cooperation for protection and improvement of the environment in the border area signed in La Paz, Baja California Sur, Mexico, 1983

ANNEX	Issue
I	Solution of border sanitation problem at San Diego, California–Tijuana, Baja California (1985)
II	Regarding pollution of environment along inland international boundary by discharges of hazardous substances (1985)
III	Regarding transboundary shipments of hazardous wastes and hazardous substances (1986)
IV	Regarding transboundary air pollution caused by copper smelters along the common border (1987)
V	Regarding international transport of urban air pollution (1989)

The strengths of this mode of cooperation included:

- **Legitimacy:** The legal framework of the 1983 La Paz Agreement legitimized transnational cooperation in environmental protection issues including environmental health along the U.S.–Mexico border.
- **Incentives for organizational investment:** The specificity of the agreement encouraged national environmental protection agencies to invest in implementation of binational projects included in the Annexes of the agreement.
- **Access to financial resources:** National environmental protection agencies from both countries could request and had access to resources under their control.

The weaknesses of this mode of cooperation included:

- **Limited development of social capital:** The agreement used primarily a top-down approach, developed by national environmental protection agencies of both countries. The inclusion of local environmental protection and public health professionals and institutions in the process was limited.
- **Limited organizational structure:** The agreement specified the areas of cooperation but did not create a binational organizational structure to implement it.
- **Limited integration with existing organizations and projects:** The agreement did not mention integration with existing environmental health organizations such as the USMBHA and its local binational health councils.
- **Limited role of the public health sector:** The leading role of the newly created environmental protection agencies in environmental health issues enabled them to have more control over the environmental health agenda.

In the 1990s, the action plan Agenda 21 adopted at the United Nations Conference on Environment and Development (United Nations, 1992), the North America Free Trade Agreement environmental side agreements (Canada, United Mexican States, and United States of America, 1993), and the growing development of local technical capacity and increased funding in public health and environmental protection along the U.S. side of the border region influenced the bilateral cooperation in environmental health between the two countries.

2.1.3 Stage III: Specialized border bureaucracies for public health and environmental protection (1990s–2000s)

This stage is characterized by the establishment of specialized border bureaucracies in public health and environmental protection, primarily in the United States, and the implementation of comprehensive bottom-up binational environmental programs along the border coordinated by national environmental protection agencies.

The California Office of Binational Border Health, the Texas Office of Border Health, and the New Mexico Border Health Office opened in 1993 and the Arizona Office of Border Health opened in 1994. At the federal level, border health programs started a few years later. The U.S. Health Resources and Services Administration began its Border Health Program in 1996 and the U.S. Centers for Disease Control and Prevention started the U.S.–Mexico Border Infectious Disease Surveillance Project in 1997. At the local level, border health programs proliferated in county health departments, community-based organizations, and universities. Reportedly, this significant growth in technical capacity and institutionalization of border health issues in the United States was not observed on the Mexican side of the border (Collins-Dogrul, 2006).

Efforts by U.S. border public health professionals and institutions to create a binational health authority and the growing interest in border issues because of the North American Free Trade Agreement led the U.S. Congress to pass a law in 1994 authorizing the U.S. president to reach an agreement with Mexico to establish a binational commission to address border health problems. In July 2000, the U.S.–Mexico Border Health Commission (USMBHC) was created with the signing of an agreement by the U.S. Secretary of Health and Human Services and Mexico's Secretariat of Health (United States of America and United Mexican States, 2000). In March 2001, the Commission established a 10-year binational agenda for improving health on the U.S.–Mexico border known as Healthy Border 2010 (U.S.–Mexico Border Health Commission, 2003) that included environmental health goals and objectives. However, at the mid-term review of the U.S. portion of the agenda, the environmental health objectives were dropped because of lack of measurable data to measure progress of the proposed indicators, leaving the federal responsibilities for transnational environmental health cooperation along the border primarily to the EPA (U.S.–Mexico Border Health Commission, 2009). The Mexico section of the commission did not drop the environmental health objectives from its portion of the agenda but its actions were limited.

In the field of environmental protection, the early 1990s marked the beginning of implementation of Agenda 21. As a result of the implementation of this global comprehensive action plan and the North American Agreement on Environmental Cooperation, which came into effect in 1994,

Canada, Mexico, and the United States created the Commission for Environmental Cooperation as a trilateral mechanism to address regional environmental concerns, to help prevent potential trade and environmental conflicts, and to promote the effective enforcement of environmental law (Commission for Environmental Cooperation, 1993). The Commission for Environmental Cooperation has played a role in catalyzing cooperation among these countries to create joint initiatives for enhancing air quality and managing chemicals, on a North American scale, to prevent or correct the adverse effects of pollution on human and ecosystem health. In addition, the Border Environment Cooperation Commission (BECC) and its sister institution, the North American Development Bank (NADB), were created to infuse resources for environmental infrastructure on the U.S.–Mexico border (United States of America and United Mexican States, 2002).

In parallel to these developments, in the United States, an independent federal advisory committee managed by the EPA called the Good Neighbor Environmental Board was created by the Enterprise for the Americas Initiative Act of 1991 to advise the federal government on environmental and infrastructure issues and needs within the states contiguous to Mexico (U.S. Environmental Protection Agency, 2010a). In addition, the EPA became involved in international trade negotiations for the first time, strengthened its international activities program, and expanded its border activities, establishing border liaison offices in El Paso, Texas, and San Diego, California, in the United States and at the U.S. Embassy in Mexico City in 1994 (Sánchez, 2002).



During the same period, in Mexico, the federal government restructured its environmental institutions. In 1989, it created the National Commission on Water (*Comisión Nacional del Agua*) to manage all water-related issues. In 1992, it transformed SEDUE into the Secretariat of Social Development (*Secretaría de Desarrollo Social*) and created the National Institute of Ecology (*Instituto Nacional de Ecología*) and the Environmental Attorney Office (*Procuraduría Federal de Protección al Ambiente*) as decentralized units of the environmental agency to strengthen environmental research and enforcement, respectively (*Centro de Estudios Sociales y de Opinión Pública*, 2006; Mumme and Sánchez, 1992). In 1994, as a consequence of the implementation of Agenda 21, Mexico transferred all the environmental protection responsibilities including the National Commission on Water, National Institute of Ecology, and Environmental Attorney Office to the new Secretariat of Environment, Natural Resources and Fisheries (*Secretaría de Recursos Naturales y Pesquería, SEMARNAP*). In addition, in 1995, it created independent advisory committees similar to the U.S. Good Neighbor Environmental Board called Advisory Councils for Sustainable Development (*Consejos Consultivos para el Desarrollo Sustentable*) managed by SEMARNAP (*Secretaría de Medio Ambiente y Recursos Naturales y Programa de las Naciones Unidas para el Desarrollo, n.d.*).

At the state level, in the United States, the Texas Natural Resource Conservation Commission (now Texas Commission on Environmental Quality) established an Office of Border Affairs and Environmental Equity in 1993. In Mexico, SEMARNAP expanded its border activities by initiating a process of decentralizing environmental management in the six border states. These efforts had limited success because of lack of financial resources and institutional capacity, both centrally and locally, and because of a legal framework that did not account for decentralization (U.S. Environmental Protection Agency and Mexican Secretariat of Environment, Natural Resources and Fisheries, 2001). At the local level, as a result of grassroots organizing efforts, Appendix 1 to Annex V of the 1983 La Paz Agreement established the binational Joint Advisory Committee for the improvement of air quality in Ciudad Juárez, Chihuahua; El Paso, Texas; and Doña Ana County, New Mexico in 1996.

During this stage, transnational environmental health issues were first identified by the 1991 binational consultation process in health called Project CONSENSUS (U.S.–Mexico Border Health Association, 1991) and were partially included in the Sister Cities Projects from 1991 through 1997 (Ruiz, 2003). These initiatives were coordinated by USMBHA and PAHO and involved all three levels of government. Project CONSENSUS identified three areas that needed to be addressed (U.S.–Mexico Border Health Association, 1991): water, soil, and air pollution; hazardous wastes; and education and legislation (see Table 2.2).



TABLE 2.2. Summary of environmental health priorities identified by Project CONSENSUS

AREA	RECOMMENDATIONS
<p>Water, soil, and air pollution</p>	<p>General</p> <ul style="list-style-type: none"> • Binational standards for pollution control need to be promoted. • Water and air pollution problems are shared by border communities. <p>Specific</p> <ul style="list-style-type: none"> • Decrease number of contaminated shallow water wells. • Decrease measurable pollutants in air. • Reduce deterioration of environment with priority of eliminating waste disposal and water contamination. • Identify and abate pollution sources affecting water quality in the Rio Grande. • Quantify the level of contaminants in the environment and initiate abatement efforts as necessary. • Increase potable water availability and sewage treatment facilities. • Implement preventive and corrective actions in order to decrease the risk and harm to health associated with pollution of water, air, and soil. • Decrease environmentally related disease conditions.
<p>Hazardous wastes</p>	<p>General</p> <ul style="list-style-type: none"> • Binational programs should focus on toxic waste, transportation, legislation, and control. • Transportation of hazardous materials along the border is a binational concern. <p>Specific</p> <ul style="list-style-type: none"> • Ensure proper disposal of hazardous waste generated in association with the <i>maquila</i> industry.
<p>Education and legislation</p>	<p>Generales</p> <ul style="list-style-type: none"> • Binational environmental health programs should focus on education and training. • <i>Maquiladora</i> and agricultural issues should be addresses binationally. <p>Specific</p> <ul style="list-style-type: none"> • Establish a binational entity empowered to address and improve health and environmental needs on the U.S.–Mexico border. • Increase binational coordination through responsible national organizations • Prevent food contamination with pesticides.

Source: Prepared from U.S.-Mexico Border Health Association. Project CONSENSO. Final report. El Paso, Texas: Pan American Health Organization; 1991.

In 1996, led by the shortcomings identified by the short-lived 1992–1994 Integrated Border Environmental Plan for the U.S.–Mexico Border Area, a new generation of transnational cooperation in environmental protection along the U.S.–Mexico border began with the launching of the 1996–2000 Border XXI Program (U.S. Environmental Protection Agency and Mexican Secretariat of Environment, Natural Resources and Fisheries, 2001). This program increased the cooperation between the EPA and SEMARNAP. It adopted the project CONSENSUS and Sister Cities Projects' designs with an emphasis on ensuring public involvement, decentralizing environmental management through state and local capacity building, and improving communication and cooperation among officials at all levels on both sides of the border (Garza-Almanza, 2008). The program established nine binational work groups: air, contingency planning and emergency response, cooperative enforcement and compliance, environmental health, environmental information resources, hazardous and solid waste, natural resources, pollution prevention, and water. However, the program was limited to several narrow technical issues. Each environmental issue was considered an independent project, isolated from other environmental issues and detached from the social, economic, and political processes behind them. As a result, binational actions appear to have achieved only temporary solutions to long-term problems (Sánchez, 2002).

Toward the end of the Border XXI Program, the EPA and SEMARNAP held discussions with state and tribal governmental partners and local community stakeholders to explore ways to improve transnational cooperation in environmental protection. On the basis of this input, the 10-year Border 2012 Program was launched in 2003 (U.S. Environmental Protection Agency and Mexican Secretariat of Environment and Natural Resources, 2003). It was created by the EPA and Mexico's Secretariat of Environment and Natural Resources (*Secretaría de Medio Ambiente y Recursos Naturales*), which replaced SEMARNAP in 2000, in partnership with other federal agencies including the U.S. Department of Health and Human Services and the Mexican Secretariat of Health through the newly created Federal Commission for Protection against Sanitary Risks (*Comisión Federal para la Protección de Riesgos Sanitarios*), the 10 border-

state governments, and U.S. tribal governments. To accomplish the goals and objectives of the program, the EPA and the Mexican Secretariat of Environment and Natural Resources established a comprehensive organizational structure with several coordinating bodies and task forces and developed partnerships with international organizations such as PAHO; binational organizations such as BECC, NADB, and IBWC; state and local governments; and nongovernmental organizations. The program has funded directly to local institutions or through BECC and PAHO several one- to two-year environmental health projects in the border region limited to surveillance, research, training/education, and communication; a list of projects is available from the EPA (U.S. Environmental Protection Agency and Mexican Secretariat of Environment and Natural Resources, 2008). Since 2005, BECC has also provided grant management, project selection and supervision, and technical assistance.

The strengths of these modes of cooperation have included:

- **Legitimacy:** The 1983 La Paz Agreement, the 1993 North American Free Trade Agreement environmental side agreements, and the 2000 agreement to create the USMBHC accompanied by the acceptance of state and local institutions have legitimized transnational cooperation in environmental protection and public health issues along the U.S.–Mexico border.
- **Committed, capable, and diverse local human resources:** A pool of experienced and motivated persons from state and local agencies and the community from both sides of the border have participated in implementing the Border XXI and Border 2012 programs and the Healthy Border 2010 agenda.
- **Incentives for organizational investment:** The binational agreements have encouraged national, state, and local agencies to invest in implementation of binational programs such as Border XXI and Border 2012 and the Healthy Border 2010 agenda.

- **Development of social capital:** Gradual positive relationships have been built between local professionals and community leaders on both sides of the border through the binational health councils and the Border 2012 program task forces.
- **Binational organizational structures:** Truly border-wide binational organizations have been established such as BECC, NADB, and the USMBHC. In addition, the Border 2012 program has been structured to emphasize a binational border-wide bottom-up approach promoting local decision making, priority setting, and project implementation.
- **Access to financial resources:** USMBHC, BECC, and NADB have access to financial resources under their control. In addition, the EPA has included specific funds in its annual budget for the Border 2012 program.
- **Short-term project funding:** Environmental health cooperation along the U.S.–Mexico border under the Border 2012 program has been limited to short-term isolated projects because of funding mechanisms that limited the implementation of projects to one or two years.
- **Organizational asymmetry between the United States and Mexico:** The establishment of specialized border health bureaucracies in the United States has created an organizational asymmetry, enabling U.S. public health professionals and institutions to have more control over the cooperation agenda.
- **Limited role of the public health sector:** The role of binational public health professionals and organizations such as the binational health councils and the USMBHC has been limited. Environmental protection agencies increased their role in environmental health issues, expanding their control over the environmental health agenda.

The weaknesses of these modes of cooperation have included:

- **Limited binational identity:** The newly created border-wide binational organizations have not been able to create a “one border” identity and organizational culture. In addition, several governmental organizations such as the U.S. state border health offices have used the term “border” to refer to their interventions. However, because of political and legal barriers, their activities have been implemented primarily on one side of the border. Also, the Border 2012 program has been coordinated by national government agencies with limited binational border identity.
- **Financial asymmetry between the United States and Mexico:** Most funds available for Border 2012 projects have been provided by the EPA, enabling this agency to have more control over the program agenda.

Table 2.3 summarizes the most significant environmental health events in and for U.S.–Mexico border region since the 1940s.

Building on the strengths and taking into consideration the weaknesses of current modes of cooperation, a new stage of transnational border environmental health cooperation is envisioned.

TABLE 2.3 Most significant environmental public health events in and for U.S.-Mexico border region since the 1940s.

YEAR	MOST SIGNIFICANT ENVIRONMENTAL HEALTH EVENTS
1940s and 1950s	
1942	<ul style="list-style-type: none"> • Initiation of guest worker Bracero Program • Establishment of a field office of the Pan American Health Organization, then known as the Pan American Sanitary Bureau, in El Paso, Texas, United States
1943	<ul style="list-style-type: none"> • Creation of the U.S.–Mexico Border Health Association
1944	<ul style="list-style-type: none"> • Treaty between United States and Mexico: water treaty for the “Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande” and creation of the International Boundary and Water Commission
1960s	
1963	<ul style="list-style-type: none"> • First International Conference on Environmental Health U.S.–Mexico and proposal of the first Binational Program on Environmental Health
1965	<ul style="list-style-type: none"> • Beginning of Mexican government Border Industrialization Program or <i>Maquiladora</i> Program
1966	<ul style="list-style-type: none"> • Establishment of U.S.–Mexico Commission for Border Development and Friendship and initiation of first Binational Program on Environmental Health
1967	<ul style="list-style-type: none"> • End of guest worker Bracero Program
1969	<ul style="list-style-type: none"> • End of U.S.–Mexico Commission for Border Development and Friendship and of the first Binational Program on Environmental Health
1970s	
1970	<ul style="list-style-type: none"> • Treaty to resolve pending boundary differences and maintain the Rio Grande and Colorado River as the international boundary between United States and Mexico • Enactment of the U.S. National Environmental Policy Act and creation of the U.S. Environmental Protection Agency
1971	<ul style="list-style-type: none"> • Enactment of Mexico’s Federal Law to Prevent and Control Environmental Pollution and creation of the Subsecretariat of Environmental Improvement (<i>Subsecretaría de Mejoramiento del Ambiente</i>)
1972	<ul style="list-style-type: none"> • First United Nations Conference on the Human Environment in Stockholm, Sweden
1978	<ul style="list-style-type: none"> • Signing of a memorandum of understanding between the U.S. Environmental Protection Agency and Mexico’s Subsecretariat of Environmental Improvement for cooperation on environmental programs and transboundary problems
1979	<ul style="list-style-type: none"> • International Boundary and Water Commission agreement to identify border sanitation problems and solutions to superficial waters crossing the border

1980s

1982

- Establishment of Mexico's national Secretariat of Urban Development and Ecology (*Secretaría de Desarrollo Urbano y Ecología*) as the national agency for environmental protection

1983

- Signing of the agreement on cooperation for the protection and improvement of the environment in the border area in La Paz, Baja California Sur, Mexico

1988

- Enactment of Mexico's General Law on Ecological Equilibrium and Environmental Protection (*Ley General del Equilibrio Ecológico y la Protección al Ambiente*)

1989

- Creation of Mexico's National Commission on Water (*Comisión Nacional del Agua*).

1990s

1991

- Implementation of Project CONSENSUS and beginning of Sister Cities Projects

1992

- United Nations Conference on Environment and Development and launching of Agenda 21
- Transformation of Mexico's Secretariat of Urban Development and Ecology (*Secretaría de Desarrollo Urbano y Ecología*) into the Secretariat of Social Development (*Secretaría de Desarrollo Social*) and creation of the National Institute of Ecology (*Instituto Nacional de Ecología*) and the Environmental Attorney Office (*Procuraduría Federal de Protección al Ambiente, PROFEPA*)
- Launching of the Integrated Border Environmental Plan for the U.S.–Mexico Border Area (IBEP)
- Creation of the U.S. Good Neighbor Environmental Board.

1993

- Signing of the North America Free Trade Agreement with environmental side agreements that established the Commission for Environmental Cooperation, the Border Environment Cooperation Commission, and the North American Development Bank
- Establishment of the California Office of Binational Border Health, Texas Office of Border Health, and New Mexico Border Health Office
- Establishment of the Texas Natural Resource Conservation Commission (now Texas Commission on Environmental Quality) Office of Border Affairs and Environmental Equity

1994

- End of IBEP
- Opening of Arizona Office of Border Health
- Opening of U.S. Environmental Protection Agency's border liaison offices in San Diego, California, and El Paso, Texas, and at the U.S. Embassy in Mexico City
- Creation of Mexico's Secretariat of Environment, Natural Resources and Fisheries (*Secretaría de Recursos Naturales y Pesquería, SEMARNAP*) and transfer of all environmental protection responsibilities including National Commission on Water (*Comisión Nacional del Agua*), National Institute of Ecology, and PROFEPA to SEMARNAP.

1995

- Creation of Mexico's Advisory Councils for Sustainable Development (*Consejos Consultivos para el Desarrollo Sustentable*).

1996

- Beginning of U.S. Health Resources and Services Administration's Border Health Program
- Launching of Border XXI Program
- Establishment of binational Joint Advisory Committee for improvement of air quality in Ciudad Juarez, Chihuahua; El Paso, Texas; and Doña Ana County, New Mexico

1997

- Beginning of U.S. Centers for Disease Control and Prevention's Border Infectious Disease Surveillance Program
- End of Sister Cities Projects

2000s	
2000	<ul style="list-style-type: none"> • End of Border XXI Program • Creation of Mexico's Secretariat of Environment and Natural Resources (<i>Secretaría de Medio Ambiente y Recursos Naturales</i>) replacing SEMARNAP • Creation of U.S.–Mexico Border Health Commission
2001	<ul style="list-style-type: none"> • Launching of binational Healthy Border 2010 agenda • Establishment of Mexico's Federal Commission for Protection against Sanitary Risks (<i>Comisión Federal para la Protección de Riesgos Sanitarios</i>), which integrates several areas of Mexico's Secretariat of Health including the General Directorate of Environmental Health
2003	<ul style="list-style-type: none"> • Launching of Border 2012 Program
2008	<ul style="list-style-type: none"> • Elimination of environmental health objectives from U.S. portion of the Healthy Border 2010 agenda
2010	<ul style="list-style-type: none"> • Suspension of operations of U.S.–Mexico Border Health Association

Source: Own elaboration.

People of Good Will, Working Together: The International Boundary and Water Commission

Hombres de Buena Voluntad, Trabajando Juntos: La Comisión Internacional de Límites y Aguas

Article XXI
Treaty of Guadalupe Hidalgo
If unhappily any disagreement should hereafter arise between the governments of the two republics, ... the said governments, in the name of those nations, do promise to each other that they will endeavor, in the most sincere and earnest manner, to settle the differences so arising and to preserve the state of peace and friendship in which the two countries are now placing themselves; using for this end, mutual representations and pacific negotiations.

Artículo XXI
El Tratado de Guadalupe Hidalgo
Si desgraciadamente en el tiempo futuro se suscitare algún punto de desacuerdo entre los gobiernos de las dos Repúblicas ... los mismos gobiernos a nombre de ellas se comprometen a procurar de la manera más sincera y empeñosa, allanar las diferencias que se presenten, y conservar el estado de paz y amistad en que ahora se poseen los dos países; usando al efecto de representaciones mutuas de negociaciones pacíficas.



CHAPTER 3



PROPOSAL FOR A NEW STAGE OF TRANSNATIONAL ENVIRONMENTAL HEALTH COOPERATION ALONG THE U.S.-MEXICO BORDER REGION

In spite of recent efforts to implement a long-term binational cooperation program along the U.S.–Mexico border that includes environmental health issues such as Border 2012, few projects have been truly transnational. In addition, projects have been short term and isolated without being attached to a long-term strategic process and with limited participation of the border public health sector. To overcome these limitations and to establish a truly binational environmental health cooperation process along the U.S.–Mexico border, a new era is envisioned. This era would be characterized by (see Figure 2.2):

- A partnership of truly binational border-wide organizations with political and legal mandates for working on both sides of the border such as USMBHC, NADB, BECC, and IBWC to manage and coordinate the cooperation process. This partnership would develop a common vision, mission, and strategic plan for transnational cooperation along the border and establish a structure for decisions, communication, and coordination.
- A strong collaboration between the public health and environmental protection sectors based on the public health approach (Institute of Medicine, 2009) to help develop a common approach, language, goals, objectives, and methods. A technical advisory committee consisting of professionals, researchers, and community leaders from both sides of the border could help guide this process.
- The establishment of a long-term border-wide strategic cooperation process with a commitment of ongoing financial, human, and technical resources by the two countries and support of international organizations. This long-term border-wide strategic process would be complemented by implementation of local projects.
- The implementation of local projects coordinated by local partnerships of binational border entities, such as the binational health councils and the Joint Advisory Committee, organized around binational environmental health issues along the border with access to resources under their control.

FIGURE 3.1. Envisioned model of transnational cooperation on environmental public health along U.S.–Mexico border



FIGURE 3.2. Schematic representation of the socio-ecological model



To reduce and prevent transnational environmental health problems along the U.S.–Mexico border region, we suggest using a public health approach based on the socioecological model (Figure 2.3) framework (Sallis, Owen, and Fisher, 2008). This approach is holistic, evidence based, systematic, interdisciplinary, and intersectoral. It allows for the inclusion of risk and protective factors from multiple domains of influence (e.g., individual, close relationship/family, community, and wider society). Thus, if there is evidence from environmental protection models on community risk factors and from health behavior models on individual risk factors, they can be incorporated in the same ecological model.

The public health approach involves four steps:

1. Defining the environmental health problems through systematic collection of information about its magnitude, scope, characteristics, and consequences.
2. Investigating why environmental health problems occur by determining their causes and correlates, the factors that increase or decrease the risk of their occurrence (risk and protective factors), and the factors that could be modified through interventions.
3. Exploring ways to reduce and prevent the environmental health problem by using the above information and designing, implementing, and evaluating interventions.
4. Disseminating information on the effectiveness of interventions and increasing the scale of proven effective interventions. Approaches to reduce and prevent environmental health problems, whether targeted at individuals or entire communities, should be properly evaluated for their effectiveness and the results should be shared. This step includes adapting programs to local contexts and subjecting them to rigorous reevaluation to ensure their effectiveness in the new setting.



This new mode of cooperation would:

- Legitimize a truly binational border-wide cooperation in transnational environmental health issues.
- Create a “one border” identity culture in environmental health.
- Build positive relationships between U.S. and Mexican professionals and community leaders.
- Increase the role of the public health sector in environmental health issues.
- Address environmental health issues from a holistic, evidence-based, and systematic public health perspective instead of using fragmented and narrow approaches.
- Promote the implementation of truly transnational environmental health projects under the umbrella of binational border-wide programs such as the Border 2012 and 2020 Environmental Programs and the Healthy Border 2010 and 2020 agendas.
- Be able to access permanent financial resources under the control of participating binational border-wide institutions—such as NADB, BECC, USMBHC, and IBWC—without having to rely exclusively on short-term project funding mechanisms provided by national agencies.
- Reduce the financial and organizational asymmetry between the United States and Mexico in environmental health by centralizing coordination of the cooperation in a partnership of existing binational border-wide institutions instead of institutions from a specific country.



CHAPTER 4



CONCLUSIONS

The objective of this document was to analyze the evolution of cooperation in transnational environmental health along the U.S.–Mexico border. The document showed three stages of cooperation. The first stage (1940s–1960s) was characterized for U.S. and Mexico public health professionals organized around specific health problems deemed to be of concern to both countries and coordinated by PAHO and USMBHA. This mode of cooperation was legitimate, had an effective organizational structure, and promoted the participation of and built positive relationships between experienced and motivated local public health professionals on both sides of the border. However, there were limited incentives for binational institutional investment and limited access to financial resources.

The second stage of cooperation (1970s–1980s) laid the foundation for international environmental cooperation, the creation of national environmental protection agencies in both countries, and the establishment of the 1983 binational La Paz Agreement on environmental cooperation in the border area. This mode of cooperation was legitimate, encouraged national investment in implementing binational environmental protection projects, and had access to financial resources. However, there was a limited role of the public health sector, limited local organizational structure, limited integration with existing projects, and limited development of local social capital.

The third stage of cooperation (1990–2000s) was characterized by establishment of specialized border bureaucracies in public health and environmental protection, primarily in the United States, and implementation of comprehensive binational environmental protection programs along the border coordinated by national environmental protection agencies. This mode of cooperation was legitimate, established truly binational organizational structures, promoted the participation of and built positive relationships between professionals on both sides of the border, encouraged organizational investment, and had access to financial resources. However, a “one border” identity could not be consolidated, the role of the public health sector was limited, financial and organizational asymmetries between the United States and Mexico were enhanced, and funding mechanisms promoted the implementation of short-term isolated projects.

Building on the strengths and taking into consideration the limitations of current modes of cooperation, a new era characterized by a partnership of truly binational border-wide organizations to manage and coordinate the cooperation process, a strong collaboration between the public health and environmental protection sectors, and establishment of a long-term border-wide strategic cooperation process complemented by implementation of local projects was envisioned.

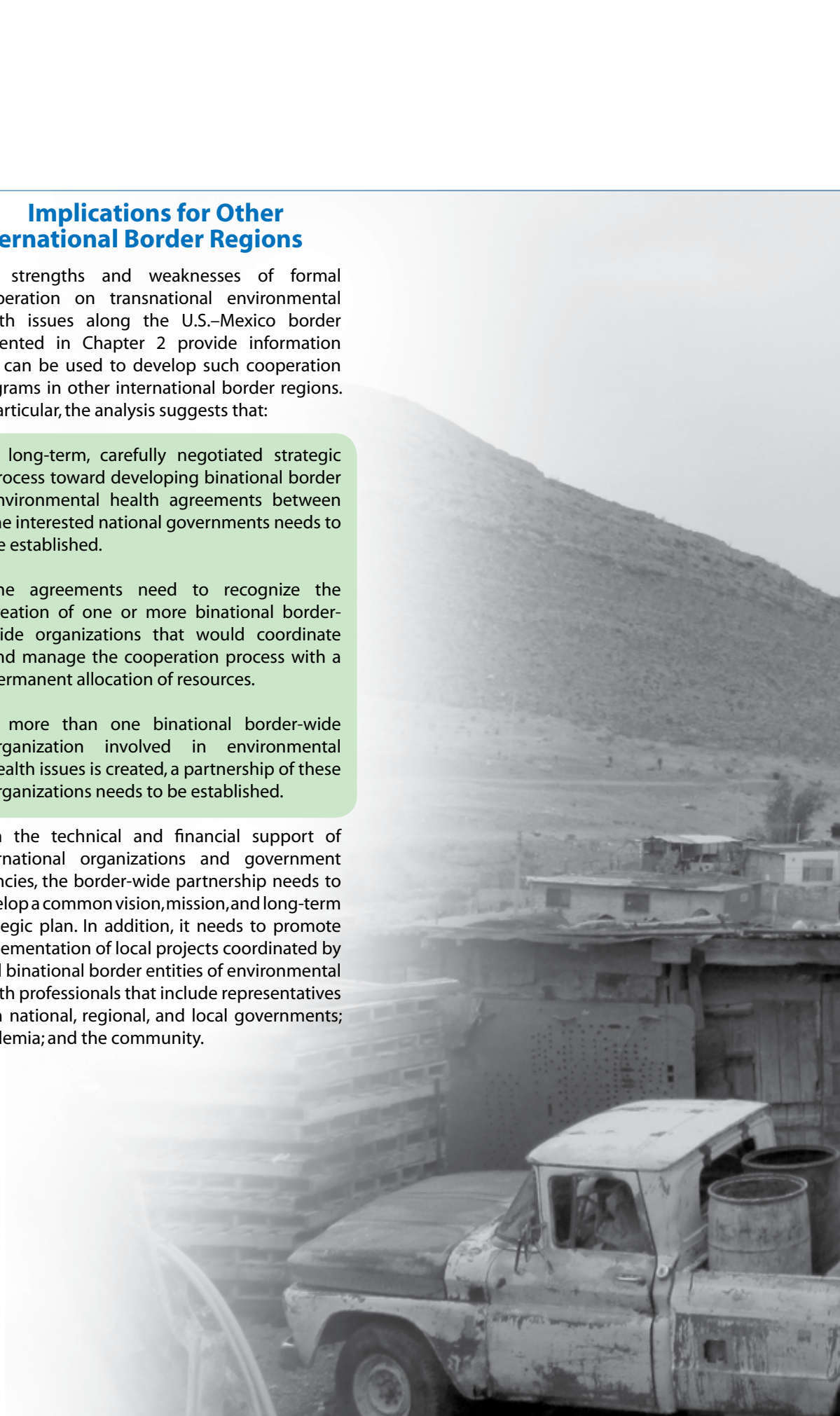
This mode of cooperation would promote a “one border” identity culture in environmental health; build positive relationships between U.S. and Mexican professionals and community leaders; increase the role of the public health sector; address environmental health issues in a holistic, evidence-based, and systematic manner; promote implementation of truly transnational environmental health processes; be able to access permanent financial resources; and reduce financial and organizational asymmetries between the two countries.

4.1 Implications for Other International Border Regions

The strengths and weaknesses of formal cooperation on transnational environmental health issues along the U.S.–Mexico border presented in Chapter 2 provide information that can be used to develop such cooperation programs in other international border regions. In particular, the analysis suggests that:

- A long-term, carefully negotiated strategic process toward developing binational border environmental health agreements between the interested national governments needs to be established.
- The agreements need to recognize the creation of one or more binational border-wide organizations that would coordinate and manage the cooperation process with a permanent allocation of resources.
- If more than one binational border-wide organization involved in environmental health issues is created, a partnership of these organizations needs to be established.

With the technical and financial support of international organizations and government agencies, the border-wide partnership needs to develop a common vision, mission, and long-term strategic plan. In addition, it needs to promote implementation of local projects coordinated by local binational border entities of environmental health professionals that include representatives from national, regional, and local governments; academia; and the community.





REFERENCES

- Alvarez HR. Health without boundaries. El Paso: U.S.–Mexico Border Public Health Association; 1975.
- Brown TM, Cueto M., Fee E. The World Health Organization and the transition from international to global public health. *Am J Public Health*. 2006;96(1):62–72.
- Buss R. The encyclopedia of earth. Stockholm, Sweden: United Nations Conference on the Human Environment; 2007. Available from: [http://www.eoearth.org/article/United_Nations_Conference_on_the_Human_Environment_\(UNCHE\),_Stockholm,_Sweden](http://www.eoearth.org/article/United_Nations_Conference_on_the_Human_Environment_(UNCHE),_Stockholm,_Sweden). Accessed 7 February 2010.
- Canada, United Mexican States, and United States of America. North American Agreement on Environmental Cooperation. Montreal, Canada: Commission for Environmental Cooperation; 1993. Available from: <http://www.cec.org/Page.asp?PageID=1226&SiteNodeID=567>. Accessed 26 September 2011.
- Centro de Estudios Sociales y de Opinión Pública. Antecedentes. Medio ambiente. Mexico, D.F.: Centro de Estudios Sociales y de Opinión Pública; 2006. Available from: http://archivos.diputados.gob.mx/Centros_Estudio/Cesop/Eje_tematico/2_mambiente.htm#_ftn18. Accessed 26 February 2011.
- Collins-Dogrul J. Managing US–Mexico “border health”: an organizational field approach. *Soc Sci Med*. 2006;63:3199–211.
- Comisión Nacional para el Desarrollo de los Pueblos Indígenas. Sistema de indicadores sobre la población indígena de México, con base en: INEGI, II Censo de Población y Vivienda, México, 2005. Mexico, D.F.: Comisión Nacional para el Desarrollo de los Pueblos Indígenas Programa de las Naciones Unidas Para el Desarrollo; 2005. Available from: <http://www.cdi.gob.mx/localidades2005/estados/mexi.htm>. Accessed 26 February 2011.
- Commission for Environmental Cooperation. North American agreement of environmental cooperation. Montreal, Canada: Commission for Environmental Cooperation; 1993. Available from: <http://www.cec.org/Page.asp?PageID=1226&SiteNodeID=567>. Accessed 24 February 2011.
- Copeland C. Clean Water Act: a summary of the law. Washington, D.C.: Congressional Research Service; 2010. Available from: <http://www.cnire.org/nle/crsreports/10May/RL30030.pdf>. Accessed 28 February 2012.
- Cresswell AM, Burke GB, Navarrete C. Mitigating cross-border air pollution: the power of a network. Albany: Center for Technology in Government, Research Foundation of the State University of New York; 2009. Available from: http://www.ctg.albany.edu/publications/reports/jac_mitigating/jac_mitigating.pdf. Accessed 26 February 2011.
- El Colegio de la Frontera Norte and Woodrow Wilson International Center for Scholars, Mexico Institute. Strategic guidelines for the competitive and sustainable development of the U.S.–Mexico transborder region. Monterrey, Nuevo León: Border Governors Conference; 2009.
- Garza-Almanza VG. Modelo de integración transfronteriza en salud y ambiente. *Cultura Cient Tecnológica*. 2008;5(28):18–28.
- Herzog LA. Cross-border planning and cooperation. In: Ganster P, ed. The U.S.–Mexican environment. A road map to a sustainable 2020. Southwest Center for Environmental Research and Policy Monograph Series, no. 1. San Diego: San Diego State University Press; 2000. Pp. 139–62.
- Institute of Medicine. Environmental health sciences decision making: risk management, evidence, and ethics: workshop summary. Washington, D.C.: National Academies Press; 2009.
- Instituto Nacional de Estadística y Geografía e Informática. Censo de población y vivienda 2010. Cuestionario básico. Aguascalientes, Mexico: Instituto Nacional de Estadística y Geografía e Informática; 2010. Available from: <http://www3.inegi.org.mx/sistemas/TabuladosBasicos/Default.aspx?c=27302&s=est>. Accessed 26 February 2011.
- International Boundary and Water Commission. Joint operation and maintenance of the Nogales International Sanitation Project. Minute no. 206. El Paso, Texas, and Juárez, Chihuahua: International Boundary and Water Commission; 1958. Available from: <http://www.ibwc.gov/Files/Minutes/Min206.pdf>. Accessed 1 March 2012.
- International Boundary and Water Commission. Operation and maintenance of the international plan for treatment of Agua Prieta, Sonora and Douglas, Arizona sewage. Minute no. 216. El Paso, Texas, and Juárez, Chihuahua: International Boundary and Water Commission; 1964. Available from: <http://www.ibwc.gov/Files/Minutes/Min216.pdf>. Accessed 1 March 2012.

- International Boundary and Water Commission. Improvement and expansion of the international plan for the treatment of Agua Prieta, Sonora and Douglas, Arizona sewage. Minute no. 220. El Paso, Texas, and Juárez, Chihuahua: International Boundary and Water Commission; 1965a. Available from: <http://www.ibwc.gov/Files/Minutes/Min220.pdf>. Accessed 1 March 2012.
- International Boundary and Water Commission. Emergency connection of the sewage system of the city of Tijuana, Baja California to the metropolitan sewage system of the city of San Diego, California. Minute no.222. El Paso, Texas, and Juárez, Chihuahua: International Boundary and Water Commission; 1965b. Available from: <http://www.ibwc.gov/Files/Minutes/Min222.pdf>. Accessed 1 March 2012.
- International Boundary and Water Commission. Enlargement of the international facilities for the treatment of Nogales, Arizona and Nogales, Sonora sewage. Minute no. 227. El Paso, Texas, and Juárez, Chihuahua: International Boundary and Water Commission; 1967. Available from: <http://www.ibwc.gov/Files/Minutes/Min227.pdf>. Accessed 1 March 2012.
- International Boundary and Water Commission. Recommendations to the solution to the border sanitation problems. Minute no. 261. El Paso, Texas, and Juárez, Chihuahua: International Boundary and Water Commission; 1979.
- International Boundary and Water Commission. Minutes between the U.S. and Mexican sections of the IBWC by project. El Paso, Texas, and Juárez, Chihuahua: International Boundary and Water Commission; n.d. Available from: http://www.ibwc.gov/Treaties_Minutes/Minutes_ByProject.html. Accessed 24 February 2012.
- Lewis J. The birth of EPA. *EPA Journal*. 1985. Available from: <http://www.epa.gov/aboutepa/history/topics/epa/15c.html>. Accessed 7 February 2010.
- Merriam-Webster. Dictionary. Maquiladora. Springfield, MA: Merriam-Webster; n.d. Available from: <http://www.merriam-webster.com/dictionary/maquiladora>. Accessed 24 February 2012.
- Minkler M, Wallerstein N, Wilson N. Improving health through community organization and community building. In: Galnz K, Rimer BK, Viswanath K, eds. *Health behavior and health education. Theory, research, and practice*, 4th ed. San Francisco: John Wiley & Sons; 2008. Pp. 287–312.
- Mumme S, Sánchez RA. New directions in Mexican environmental policy. *Environ Manag*. 1992;16(4):465–74.
- Peach J, Williams J. Population dynamics of the U.S.–Mexican border region. *Southwest Center for Environmental Research & Policy Monograph*. San Diego: SCERP/SDSU Press; 2003. Available from: <http://www.scerp.org/population.htm>. Accessed 23 February 2011.
- Pew Hispanic Center. State and county databases and demographic profiles. Washington, D.C.: Pew Hispanic Center; 2009. Available from: <http://pewhispanic.org/states/>. Accessed 15 July 2011.
- Research and Innovative Technology Administration. Border crossing/entry data: query detailed statistics. Washington, D.C.: Bureau of Transportation Statistics, Research and Innovative Technology Administration; 2010. Available from: http://www.bts.gov/programs/international/transborder/TBDR_BC/TBDR_BCQ.html. Accessed 26 September 2011.
- Rodríguez VE. Decentralization in Mexico: from reforma municipal to solidaridad to nuevo federalismo. Boulder, Colorado: Westview Press; 1997.
- Ruiz A, ed. Sixty years of commitment to border health. United States–Mexico field office of the Pan American Health Organization. El Paso: Pan American Health Organization; 2003.
- Sallis JF, Owen NO, Fisher EB. Ecological models of health behavior. In: Galnz L, Rimer BK, Viswanath K, eds. *Health behavior and health education. Theory, research, and practice*, 4th ed. San Francisco: John Wiley & Sons; 2008. Pp. 465–486.
- Sánchez RA. Binational cooperation and the environment at the U.S.–Mexico border: a Mexican perspective. In: L. Fernandez and R. T. Carson, eds. *Both sides of the border*. Alphen aan den Rijn, Netherlands: Kluwer Academic Publishers; 2002. Pp. 53–71.
- Secretaría de Estado de Medio Ambiente y Recursos Naturales y Programa de las Naciones Unidas para el Desarrollo. *Consejos consultivos para el desarrollo sustentable. Antecedentes*. Mexico, D.F.: Secretaría de Estado de Medio Ambiente y Recursos Naturales y Programa de las Naciones Unidas para el Desarrollo; n.d. Available from: ccds.semarnat.gob.mx. Accessed 24 February 2011.
- United Nations. Earth Summit. Agenda 21. The United Nations Programme of Action from Rio. New York: UN Department for Economic and Social Affairs, Division for Sustainable Development; 1992. Available from: <http://www.un.org/esa/dsd/agenda21/>. Accessed 23 February 2011.

REFERENCES

- United States of America and the Mexican Republic. Treaty of Peace, Friendship, Limits, and Settlement. Guadalupe Hidalgo: United States of America and the Mexican Republic; 1848.
- United States of America and the Mexican Republic. Treaty. Relative to boundary line, transit of persons, etc. across the Isthmus of Tehuantepec. Mexico, D.F.: United States of America and the Mexican Republic; 1853.
- United States of America and Mexico. Utilization of waters of the Colorado and Tijuana Rivers and of the Rio Grande. Treaty Series 994 of 1944. Washington, D.C.: Government Printing Office; 1946.
- United States of America and Mexico. Treaty to resolve pending boundary differences and maintain the Rio Grande and Colorado River as the international boundary. Washington, D.C., and Mexico, D.F.: United States of America and Mexico; 1970.
- United States of America and United Mexican States. La Paz Agreement. 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. La Paz, Baja California: United States of America and United Mexican States; 1983.
- United States of America and United Mexican States. Agreement between the government of the United States of America and the government of the United States–Mexico Border Health Commission. Washington, D.C., and Mexico D.F.: United States of America and United Mexican States; 2000.
- United States of America and United Mexican States. Protocol of amendment to the agreement between the government of the United States of America and the government of the United Mexican States concerning the establishment of a Border Environment Cooperation Commission and a North American Development Bank, signed November 16–18, 1993. Washington, D.C., and Mexico D.F.: United States of America and United Mexican States; 2002.
- U.S. Census Bureau. 2005–2009 American Community Survey 5-year estimates. Washington, D.C.: U.S. Census Bureau; 2009. Available from: http://www.census.gov/acs/www/data_documentation/2009_release/ Accessed 23 February 2011.
- U.S. Department of Homeland Security. Data and statistics. Washington, D.C.: U.S. Department of Homeland Security; 2011. Available from: <http://www.dhs.gov/files/statistics/data>. Accessed 23 February 2011.
- U.S. Environmental Protection Agency. Good Neighbor Environmental Board charter. Washington, DC: U.S. Environmental Protection Agency; 2010.
- U.S. Environmental Protection Agency. History of the Clean Air Act. Washington, D.C.: U.S. Environmental Protection Agency; 2012. Available from: http://epa.gov/air/caa/caa_history.html. Accessed 28 February 2012.
- U.S. Environmental Protection Agency and Mexican Secretariat of Environment, Natural Resources, and Fisheries. The U.S.–Mexico Border XXI Program: progress report 1996–2000. Washington, D.C.: U.S. Environmental Protection Agency; 2001.
- U.S. Environmental Protection Agency and Mexican Secretariat of Environment and Natural Resources. Border 2012: U.S.–Mexico environmental program. Washington, D.C., and Mexico, D.F.: U.S. Environmental Protection Agency and Mexican Secretariat of Environment and Natural Resources; 2003. Available from: <http://www.epa.gov/usmexicoborder/docs/FrameworkDocument2012-eng.pdf>. Accessed 24 March 2011.
- U.S. Environmental Protection Agency and Mexican Secretariat of Environment and Natural Resources. U.S.–Mexico environmental program: Border 2012. A mid-course refinement (2008–2012). Washington, D.C., and Mexico, D.F.: U.S. Environmental Protection Agency and Mexican Secretariat of Environment and Natural Resources; 2008. Available from: http://www.epa.gov/usmexicoborder/docs/B2012_New_Objectives.pdf. Accessed 24 March 2011.
- U.S.–Mexico Border Health Association. Project CONSENSO. Final report. El Paso, Texas: Pan American Health Organization; 1991.
- U.S.–Mexico Border Health Commission. Healthy Border 2010. An agenda for improving health on the United States–Mexico border. El Paso, Texas, and Mexico, D.F.: U.S.–Mexico Border Health Commission; 2003.
- U.S.–Mexico Border Health Commission. Healthy Border 2010. Midterm review. U.S. border area. El Paso, Texas, and Mexico, D.F.: U.S.–Mexico Border Health Commission; 2009.

ACRONYMS

BECC:	Border Environment Cooperation Commission
EPA:	U.S. Environmental Protection Agency
IBEP:	Integrated Border Environmental Plan for the U.S.–Mexico Border Area
IBWC:	International Boundary and Water Commission
NADB:	North American Development Bank
PAHO:	Pan American Health Organization
PASB:	Pan American Sanitary Bureau
SEDUE:	Secretaría de Desarrollo Urbano y Ecología
SEMARNAP:	Secretaría de Recursos Naturales y Pesquería
USMBHA:	U.S.–Mexico Border Health Association
USMBHC:	U.S.–Mexico Border Health Commission



