

THE PURPOSE OF THE PROGRESS REPORT

This report describes progress toward achieving environmental improvements in the border region as a result of Border XXI Program activities. The report also describes the challenges faced in addressing environmental degradation in the transboundary context, as well as specific limitations of the Border XXI Program. It evaluates progress toward achieving the mission and objectives of the Border XXI Program and details the achievements of each of the nine Border XXI workgroups since the program's inception in 1996.

In addition, the report provides quantitative data based on indicators used to evaluate the effectiveness of border environmental policy and to measure environmental and human health quality in the border area. The development of environmental indicators was initiated under the *1996 U.S.-Mexico Border XXI Program: Framework Document (Framework Document)* to determine whether United States-Mexico environmental policies and implementation efforts have been addressing the most urgent environmental, human health, and natural resource issues adequately. The indicators in this report update the information published in the *1997 United States-Mexico Border Environmental Indicators Report (1997 Indicators Report)*. Appendix 1 to this report provides an explanation of the various types of indicators this report describes.

Finally, the report presents assessments of and recommendations on the mission, goal, and three strategies of the Border XXI Program provided by the two federal advisory committees for the border—the Good Neighbor Environmental Board (GNEB) in the United States and its counterpart in Mexico, the *Consejo Consultivo para el Desarrollo Sustentable, Región 1* (CCDS, or Region I Advisory Council for Sustainable Development).

Since the current border plan concludes at the end of 2000, the lead agencies for Border XXI hope this report will serve as a tool for designing the next phase of binational planning. While many achievements have been made,

the governments of both countries recognize that there is room for improvement in several areas. An important step in ensuring further progress is the inclusion of state, local, and tribal governments, as well as the public (“public” refers to residents, industry, and nongovernmental and private organizations that have a stake in the border) in the establishment of (1) priorities for the border region, and (2) activities that address those priorities. This chronicle of achievements and shortcomings during five years of intensive binational coordination will help establish a context for dialogue among federal agencies and other border stakeholders. Through the exchange of ideas and opinions, the federal governments hope to initiate a new phase of participation by stakeholders in the development and implementation of the next phase of binational cooperation.

Introduction



THE NEED FOR BINATIONAL COOPERATION

The U.S.-Mexico border area is a dynamic region having a distinct composition that is as much differentiated by social, economic, and political contrasts as it is bound by cultural fusion and the unique interdependency of its transborder city pairs. It is also one of the most rapidly growing regions in each country. Many factors associated with that growth, such as increases in commercial activity, traffic congestion, and consumption of natural resources, have been linked to environmental degradation and deterioration of the quality of life. Given the complex structure of the stakeholders that have border interests—two sovereign countries, 10 border states, several municipalities and counties, tribal nations, national and international organizations, and the residents of the border—addressing those concerns requires a coordinated, binational response.

THE U.S.-MEXICO BORDER XXI PROGRAM: 1996–2000

Under the U.S.-Mexico Border XXI Program, the United States and Mexico collaborate on projects designed to protect the

environment and natural resources of the border region, as well as the health of its residents. The program is an innovative, binational effort to coordinate environmental and natural resources management in the border region. The Border XXI Program works to: (1) alleviate or avoid negative environmental pressures associated with development and (2) foster forms of social and economic growth that are less damaging to the environment than those patterns experienced in the past.

With the principal goal of promoting sustainable development, the program seeks a balance among social and economic factors and environmental protection in border communities and natural areas. The *Framework Document* outlined these strategies to accomplish that goal:

- **Ensure Public Involvement**
- **Build Capacity and Decentralize Environmental Management**
- **Ensure Interagency Cooperation**

The Border XXI Program serves as a coordinating mechanism to bring together federal, tribal, state, and local entities from both countries to work cooperatively toward achievement of those objectives. The lead agencies for the Border XXI Program are the U.S. Environmental Protection Agency (EPA) and Mexico's *Secretaría de Medio Ambiente, Recursos Naturales y Pesca* (SEMARNAP, or Secretariat of Environment, Natural Resources, and Fisheries). In the United States, the U.S. Department of the Interior (DOI) serves as the lead agency for natural resources activities coordinated under Border XXI, and the U.S. Department of Health and Human Services (HHS) shares the coordination lead with EPA on environmental health activities. In Mexico, the *Secretaría de Salud* (SSA, or Secretariat of Health) is responsible for coordinating environmental health activities, and the *Secretaría de Desarrollo Social* (SEDESOL, or Secretariat of Social Development) helps coordinate activities related to solid waste.

Nine binational workgroups implement the Border XXI Program by developing projects that address specific objec-

tives. Each workgroup operates under the guidance of two chairpersons, or “co-chairs,” one representing the United States and one representing Mexico. Six of the workgroups have long-standing histories of binational cooperation in the areas of (1) water, (2) air, (3) hazardous and solid waste, (4) pollution prevention, (5) contingency planning and emergency response, and (6) cooperative enforcement and compliance. In 1996, three additional workgroups were created under the Border XXI Program to provide a more comprehensive approach to border environmental concerns. Those workgroups focus on issues related to (7) environmental information resources, (8) natural resources, and (9) environmental health.

THE BASIS OF U.S.-MEXICO BORDER RELATIONS

The level of positive cooperation that exists between the United States and Mexico on environmental matters reflects the importance of the relationship between the two countries in the area of environmental issues. After a long history of formal coordination between the two countries, particularly on water and water infrastructure issues, the United States and Mexico formally broadened cooperation on border environmental issues by signing the La Paz Agreement in 1983.¹ The *La Paz Agreement* established a general framework for developing cooperative environmental efforts to reduce, eliminate, or prevent sources of air, water, and land pollution.

In February 1992, the environmental authorities of both federal governments released the *Integrated Border Environmental Plan for the U.S.-Mexican Border Area* (IBEP). The IBEP, a two-year plan, was the first binational federal initiative created under the assumption that increased liberalization of trade would place additional stress on the environment and human health along the border.

The trilateral *North American Free Trade Agreement* (NAFTA) was signed in December 1992 and entered into force in 1994. In November 1993, the presidents of the United States and Mexico signed a bilateral agreement establishing the Border Environment Cooperation Commission (BECC) and the North American Development Bank (NADB) to help develop and finance solid waste, water supply, and wastewater infrastructure in the U.S.-Mexico border

¹ The *Agreement between the United States of America and the United Mexican States on Cooperation for the Protection and Improvement of the Environment in the Border Area* was signed in La Paz, Baja California Sur, Mexico on August 14, 1983, and entered into force on February 16, 1984.

area. The primary role of the BECC has been to provide technical assistance to border communities and to certify environmental infrastructure projects in the border region for consideration for financing by the NADB and other government and private sources. The NADB's primary role has been to facilitate financing for the implementation of projects certified by the BECC.

The United States and Mexico also have a history of cooperation on natural resources issues that includes a number of agreements and initiatives to protect migratory birds, native habitats, and marine resources and to reduce degradation or exploitation of forests, air, soil, and natural areas. With regard to the U.S.-Mexico border, the 1997 letter of intent between DOI and SEMARNAP is particularly significant because it builds upon existing cooperative conservation activities and facilitates a holistic approach to the preservation of border ecosystems and habitats in transboundary protected natural areas.² Appendix 2 provides a more detailed description of other notable agreements related to cooperation between the United States and Mexico on natural resources issues.

In 1996, the Border XXI Program was initiated to build on the experiences of and improve the specific efforts undertaken under the IBEP and earlier environmental agreements. Border XXI also includes the BECC and the NADB as full partners in water, wastewater, and solid waste infrastructure activities.

**CONDITIONS, TRENDS,
AND PRESSURES ON
THE U.S.-MEXICO BORDER**

Geographic and Demographic Data

As defined in the *La Paz Agreement*, the U.S.-Mexico border

region extends more than 3,100 kilometers (almost 2,000 miles) from the Gulf of Mexico to the Pacific Ocean, and 100 kilometers, or 62.5 miles, on either side of the U.S.-Mexico border (see the map in Figure 1-1 on page 6 and Table 1-1).

The border region has major deserts and mountain ranges and several shared rivers and aquifers. The region has a variety of climates, from the Mediterranean conditions of Tijuana, Baja California and San Diego, California to the semitropical climate of Tamaulipas and the arid regions of Arizona and New Mexico. The marked variety in climate contributes to a remarkable biological diversity. In fact, the border lands are home to rare or endemic species, many of which are listed as endangered or threatened in the United States. In addition, more than 700 species of neotropical birds annually migrate through the region.

Population Growth and Urban Development

Populations in the urban centers along the border have increased significantly over the past 20 years, spurred by the expansion of the *maquiladora* sector—the relocation of new industries to the area and the associated increase in jobs—and the increasing ease with which people, goods, and services move across the border. Almost 90 percent of the people residing in the border region live in city pairs, each pair composed of a U.S. and a Mexican city closely related by proximity. Many of the “sister cities,” as they are known, share common air and water resources, which are managed by two governments that have different legal systems and priorities and exhibit different levels of development. Today, the border region is home to more than 10.6 million people, with approximately 5.8 million people in the United States and 4.8 million in Mexico.³ Native American tribes in the U.S. bor-

The U.S.-Mexico Border at a Glance	
TWO COUNTRIES	
10 STATES	
The border extends along the southern boundaries of California, Arizona, New Mexico, and Texas on the U.S. side, and the northern boundaries of Baja California, Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas in Mexico.	
25 U.S. COUNTIES	
79 MEXICAN MUNICIPIOS	
27 U.S. FEDERALLY RECOGNIZED INDIAN TRIBES	
14 PAIRS OF SISTER CITIES	
San Diego-Tijuana, Calexico-Mexicali, Yuma-San Luis Río Colorado, Nogales-Nogales, Naco-Naco, Douglas-Agua Prieta, Columbus-Palomas, El Paso-Ciudad Juárez, Presidio-Ojinaga, Del Rio-Ciudad Acuña, Eagle Pass-Piedras Negras, Laredo-Nuevo Laredo, McAllen-Reynosa, and Brownsville-Matamoros	

Table 1-1

2 The 1997 Letter of Intent for Joint Work in Natural Resources Areas on the U.S.-Mexico Border, an agreement between DOI and SEMARNAP.
 3 Peach, James and James Williams. "Population and Economic Dynamics on the U.S.-Mexican Border: Past, Present, and Future." The U.S.-Mexico Border Environment: A Road Map to a Sustainable 2020. Paul Ganster, ed. Southwest Center for Environmental Research and Policy (SCERP), Monograph Series, No.1, 40.

der area range in size from 9 to 17,000 members.

Generally speaking, the population growth rates in the border region exceed the national average for each country. It is likely that the border population will continue to rise over the next few years, with an increase of from 5 to 12 million people from 2000 to 2020. Table 1-2 illustrates population growth in the border region.

Economic and Social Conditions

The precursor to the economic boom on the border emerged in 1965 with Mexico’s *maquiladora* program, an initiative that encouraged laborers to move to the border area to work in assembly plants. The program allowed foreign-owned businesses to establish assembly plants, or *maquiladoras*, in Mexico for export production. When NAFTA was implemented in 1994, border activity was spurred further by an increase in trade between the United States and Mexico. The *maquiladora* industry currently is the second largest source of export earnings in Mexico. Today, more than 3,000 *maquiladora* plants throughout the country employ more than one million workers. More than 2,000 of those plants are located in the border region.

While export earnings, industrial activity, and overall economic growth have increased since the signing of NAFTA, the levels of prosperity and quality of life in the border region have not followed suit. Although NAFTA has fostered the creation of some high-wage jobs, especially in various technical areas, most of the jobs created in the border region have been in low-wage and service industries. Notwithstanding the overall increase in jobs and output, poverty and social disparity abound in many border areas.

The U.S. border population tends to be poorer than that of the rest of the country, with more than 20 percent living below the poverty level, compared with 12 percent in

the United States as a whole.⁴ Per capita income on the U.S. side of the border generally falls below the U.S. average. In 1995, no U.S. border county had a per capita income higher than that of its respective state.⁵ At the national level, the minimum wage is approximately 8 to 10 times higher in the United States than in Mexico.

In contrast to the national trend, the per capita income of the border region in Mexico is high and improving, and the poverty rates in the Mexican border states are below average. However, the average per capita income on the Mexican side of the border is still less than half of that on the U.S. side.⁶

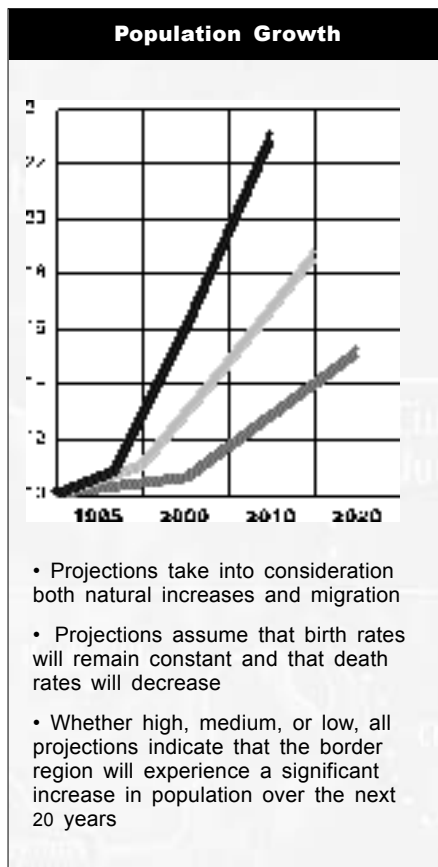


Table 1-2

Border Environmental and Public Health Issues

While economic activity has continued to increase and the border population has continued to grow at astonishing rates, the needs for environmental and infrastructure improvements have not always been met at a comparable rate. As a result, the border area faces many binational environmental challenges, such as limited water supply and poor water quality, inadequate or nonexistent sewage treatment, air pollution, little or no treatment and disposal of hazardous and industrial waste, the potential for chemical emergencies, incidence of infectious diseases, and lack of verification of compliance in the transboundary shipment of hazardous wastes. Those challenges continue to affect the environmental and economic vitality of the region. For example, substandard conditions are apparent in many border areas, and many residents of both countries live without electrical, drinking-water, and sewerage connections. In addition, some conditions have been linked to such health risks as elevated blood lead levels and respiratory and gastrointestinal diseases.

The depletion of natural resources presents another envi-

⁴ 1997 Indicators Report, 5.
⁵ Peach, James and James Williams, 42.
⁶ Organisation for Economic Cooperation and Development (OECD) Environmental Performance Reviews: United States, (202).

ronmental challenge for the border region. Lacking economic alternatives, people tend to use natural resources without taking into consideration the long-term effects of unsustainable use.⁷ The destruction of native habitats through population growth and the resulting expansion of urban development, ranching and agricultural activities, mining, recreation, and tourism have had a severe effect on the natural resource base in the border region, where geographic and climatic conditions make it difficult to support important habitats along rivers and streams and elsewhere. Although binational efforts have been made to protect certain endangered species, such as the masked bobwhite quail, the desert pupfish, and the Mexican gray wolf, funding available for addressing depletion of natural resources and other border environmental problems is limited.⁸

Increased water consumption, both domestic and industrial, and the border region's largely arid climate have made maintenance of an adequate water supply one of the most serious environmental challenges on the border. The problem is expected to worsen, and many communities face grave challenges in meeting the rising demand for water that the projected population growth would bring. Contamination of groundwater and surface water also is a problem, since supplies often are threatened by agricultural runoff and the discharge of raw sewage and industrial pollution into the rivers and aquifers along the border. With available sources limited, ensuring that existing water supplies remain uncontaminated is one of the key challenges in ensuring a sustainable future for the border region.

The availability of environmental infrastructure in the border region is another prominent issue. On both sides of the border, growth in many areas has surpassed basic infrastructure capacity. The problem is particularly acute along the border in Mexico, where many communities lack wastewater treatment, transportation systems are inadequate or nonexistent, and energy demand is high. Further, resources to support additional infrastructure development are scarce. Although many communities on the U.S. side

are served by basic infrastructure, much of it is in need of repair or replacement or requires significant expansion. In the report *U.S.-Mexico Border Ten-Year Outlook: Environmental Infrastructure Funding Projections*, the NADB (see The Basis of U.S.-Mexico Border Relations) states, "About \$1.1 billion in needed border infrastructure project costs can already be identified for the period 1999–2003." The NADB further predicts that, for the period 2004 through 2009, project costs for wastewater, water supply, and municipal solid waste infrastructure will amount to a minimum of roughly \$1 billion.

In poor, unplanned, and generally unincorporated settlements along both sides of the U.S.-Mexico border, infrastructure deficiencies are particularly acute. Many of those settlements, known in the United States as *colonias* and in Mexico as *asentamientos irregulares* (because of their unauthorized use of land), have sprung up without formally sanctioned local governance and traditionally have been unable to gain access to individual or community services. In most cases, the settlements have developed without water supplies, wastewater treatment facilities, or solid waste collection systems. Lack of adequate disposal of solid waste often forces residents to dispose of waste by illegally dumping or burning it. Those practices contribute to serious environmental degradation, such as contamination of groundwater supplies, and have been associated with health problems. According to the Organisation for Economic Cooperation and Development (OECD), public health problems, such as hepatitis-B and skin rashes, are common in the *colonias* (OECD: United States, 81).

Indigenous communities and U.S. border tribes are also impacted negatively by various transborder environmental problems, including air pollution from off-reservation activity, traffic congestion, extraction of natural resources, and burning or illegal dumping of solid and hazardous waste. Several binational rivers and groundwater basins lie within, near, or under U.S. Indian reservations; pollution in those waters is a concern to several tribal communities. In addition, tribal communities have expressed concern about limited emergency response capabilities, lack of training

COLONIAS are residential settlements in areas that lack basic services, such as paved roads, drainage, electricity, potable water, and wastewater treatment. In the United States, colonias are found mostly in New Mexico and Texas. The estimated population of colonias is more than 400,000.

⁷ Cornelius, Steve. *Fragmentation of Natural Resource Management in the Sonoran Desert*. The Sonoran Institute. February 1998.

⁸ Carrera, Julio, Principal Investigator. *Alternatives for the Use of the Natural Resources of the Region between Santa Elena and Boquillas, Mexico, Final Report*, Cooperative Agreement No. CA7029-2-0004 between the Big Bend National Park, Ross State University, and *Profaua*, A.C., 21.

and equipment to respond to hazardous waste transportation spills and accidents, and risks that may be attributable to a lack of information about the transport of hazardous waste through their reservation lands.

Some border residents suffer from other public health problems, such as asthma and high blood lead levels. Emissions from vehicles, industrial sources, the burning of trash, and residential heating and dust from unpaved roads all contribute to poor air quality and threaten the health of border residents. Moreover, the wastes generated by industrial activity are also potentially dangerous, especially when those wastes are disposed of inappropriately in sewer systems, on the ground, or in ravines. Surface-water contamination from industrial pollution and agricultural chemicals is also a serious problem in many areas. Another concern is the danger to border residents posed by exposure to pesticides through pesticide residues on food and the spraying of pesticides on fields that are located near homes and schools. There is also growing

concern about the improper use and storage of household pesticides.

A SKETCH OF THE PROGRESS REPORT

Chapter 2 presents an analysis of the advances made and challenges faced by the Border XXI Program as they are related to the fulfillment of the principal goal and strategies outlined in the *Framework Document*. Chapter 3 highlights the key accomplishments of the nine Border XXI workgroups since the program's inception. Using the commitments outlined in the *Framework Document* and the *1997 Indicators Report* as a point of reference, the remaining chapters detail the principal issues, themes, objectives, achievements, and future perspectives of the Border XXI workgroups. Finally, in the addenda to this report, assessments and recommendations are presented by the U.S. and Mexican federal advisory committees for the border.



In 1983, the *La Paz Agreement* was signed, providing a formal foundation for cooperative environmental efforts. The agreement defined the border region as the area lying 100 kilometers, or 62.5 miles, to the north and south of the U.S.-Mexico boundary.

Figure 1-