



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

TX

TAMRC-IM-8-91



TAMRC REPORT

**THE U.S.-MEXICO FREE TRADE AGREEMENT:
NATURAL RESOURCE
AND ENVIRONMENTAL ISSUES**

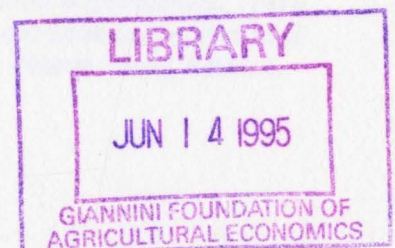
Dr. Teofilo Ozuna, Jr.
Dr. Ramon Guajardo Quiroga*

*U.S.-Mexico Free Trade Issue Paper Series
TAMRC International Market
Research Report No. IM-8-91
April 1991*

TXAMRC

TEXAS AGRICULTURAL MARKET RESEARCH CENTER REPORT

**Department of Agricultural Economics
Texas Agricultural Experiment Station
Texas Agricultural Extension Service
Texas A&M University, *System.*
College Station, Texas**



**THE U.S.-MEXICO FREE TRADE AGREEMENT:
NATURAL RESOURCE
AND ENVIRONMENTAL ISSUES**

Dr. Teofilo Ozuna, Jr.
Dr. Ramon Guajardo Quiroga*

*U.S.-Mexico Free Trade Issue Paper Series
TAMRC International Market
Research Report No. IM-8-91
April 1991*

* Assistant Professor of Agricultural Economics, Department of Agricultural Economics, Texas A&M University, College Station, Texas, and Professor of Agricultural Economics, Facultad de Agronomía, Universidad Autónoma de Nuevo Leon, Monterrey, Nuevo Leon, Mexico.

**U.S.-MEXICO FREE TRADE AGREEMENT:
NATURAL RESOURCE AND THE ENVIRONMENTAL ISSUES**

Texas Agricultural Market Research Center (TAMRC) U.S.-Mexico Free Trade Issue Paper Series, TAMRC International Market Research Report No. IM-8-91, by Dr. Teofilo Ozuna, Jr. and Dr. Ramon Guajardo Quiroga, Texas Agricultural Market Research Center, Department of Agricultural Economics, Texas A&M University.

ABSTRACT: In this paper various natural resource and environmental issues that could occur or be further aggravated by the proposed Agreement are highlighted. These include water quantity and quality, air quality, coastal resources, wildlife, land use, and hazardous materials. The majority of these resources are of the transnational common pool resource type. Current or potential transnational environmental externalities will be difficult to resolve. International initiatives are needed to coordinate border development goals in order to deal more effectively with these environmental externalities. Hence, one of the most crucial steps towards an environmentally sustainable development of the U.S.-Mexico border region is to insure that the U.S.-Mexico Free Trade Agreement (FTA) will address these issues. The U.S.-Mexico FTA provides the opportunity to shift from a basically reparative to a more anticipatory and preventive natural resource and environmental strategy.

The Texas Agricultural Market Research Center (TAMRC) has been providing timely, unique, and professional research on a wide range of issues relating to agricultural markets and commodities of importance to Texas and the nation for more than two decades. TAMRC is a market research service of the Texas Agricultural Experiment Station and the Texas Agricultural Extension Service. The main TAMRC objective is to conduct research leading to expanded and more efficient markets for Texas and U.S. agricultural products. Major TAMRC research divisions include International Market Research, Consumer and Product Market Research, Commodity Market Research, and Contemporary Market Issues Research.

U.S.-MEXICO FREE TRADE AGREEMENT: NATURAL RESOURCE AND THE ENVIRONMENTAL ISSUES

EXECUTIVE SUMMARY

Increased demographic and economic growth along both sides of the U.S.-Mexico border as well as increased economic integration between the U.S. and Mexico have led to severe natural resource and environmental problems which often spill across the political boundary. The realization of a U.S.-Mexico Free Trade Agreement (FTA) could not only increase these problems, but given the expected additional investment that could flow into Mexico, it may create environmental problems in non-border areas as well. This paper highlights various natural resource and environmental issues that could occur or be further aggravated by a U.S.-Mexico FTA. Key points made in the paper include the following:

- As trade between the two countries increases under a U.S.-Mexico FTA, trade-related activities along the border will also expand and intensify. Under these conditions, existing natural resource and environmental problems along the U.S.-Mexico border could exacerbate. A U.S.-Mexico FTA, however, could provide the opportunity to shift from a reparative and typically wasteful strategy to a more anticipatory, preventive, and efficient resource and environmental strategy. Adopting such a strategy will enable policymakers to minimize natural resource and environmental problems resulting from a U.S.-Mexico FTA and to plan for a more ecologically sustainable development of the U.S.-Mexico border region.
- There is no question that the U.S.-Mexico FTA will further affect the natural resources and environment of the border region and also of non-border areas in Mexico. However, much of the existing natural resource and environmental problems have occurred as the U.S. and Mexico economies have begun to integrate economically more and more over time. How much more the economies will integrate because of a U.S.-Mexico FTA and to what extent will this additional integration affect natural resource use and the environment is yet to be determined. This, however, does not mean, that the natural resource and environmental problems that exists or could come about due to a U.S.-Mexico FTA should be left unattended.
- Most natural resources along the U.S.-Mexico border region can be characterized as transnational common pool resources. These resources include surface water, groundwater, air, some wildlife species, and coastal resources. The common pool characteristic of the transnational resources along the border often complicates not only the efficiency of resource use and management but also the resolution of transnational externalities (e.g., pollution, degradation, and depletion) which exist or could emerge along the border.
- The most critical resource and environmental issue under a freer U.S.-Mexico trade regime relates to water quantity and quality. Currently, the entire surface flow of the Rio Grande river is fully appropriated. Thus, additional water supplies to meet increased demands under a U.S.-Mexico FTA will require either significant conservation efforts or increased transfers from water intensive uses (agriculture) to municipal and industrial uses, or the increased use of groundwater. Evaluating the economic tradeoffs among each alternative source of water supply is no easy task and will require significant research efforts.

- The majority of natural resources in the U.S.-Mexico border area are of the transnational common pool resource type. Current or potential transnational environmental externalities will be difficult to resolve. International initiatives are needed to coordinate border development goals in order to deal more effectively with these environmental externalities. one of the most crucial steps towards an environmentally sustainable development of the border is to reach an international agreement which will address these issues. The proposed U.S.-Mexico FTA could offer this opportunity as well as the chance to shift from a basically reparative to a more anticipatory and preventive natural resource and environmental strategy.
- Increased trade induced by a U.S.-Mexico FTA will likely result in greater traffic (automobiles and trucks) across the border. Inefficient customs procedures on both sides of the border (USITC) contribute to long delays which waste energy and impact air quality as traffic waits to cross the border. Other air quality issues include toxic waste burning, dust from population centers, industrial emissions, crop dusters spraying agricultural chemicals, paint fumes stemming from furniture producing maquiladoras, etc. These transboundary air quality externalities will probably heighten if a U.S.-Mexico FTA comes into effect.
- A U.S.-Mexico FTA will probably result in some animal and crop production shifts across the border as well as more intensive use of the border land. The potential conversion of this land to intensive crop production due to a U.S.-Mexico FTA could impose soil erosion costs, water contamination, loss of wildlife habitats, coastal zone impacts and economic and social consequences far greater than the private benefits of land conversion.
- The proposed U.S.-Mexico FTA could also potentially impact natural resources and the environment outside the border region. These impacts could occur through increased extraction or consumption rates of Mexico's natural resource base or through the occurrence of adverse externalities resulting from this process. Additionally, the issue of chemical and food safety is of major concern.
- The priority issues for natural resources and the environment relating to a U.S.-Mexico FTA include possible institutional arrangements for managing transnational border resources, strengthening government to government coordination on natural resource and environmental issues, a critical need for research, differing environmental standards and norms between the two countries, and designing environmental protection into border facilities.

U.S.-MEXICO FREE TRADE AGREEMENT: NATURAL RESOURCE AND THE ENVIRONMENTAL ISSUES

Natural resource, environmental, and economic interdependencies along the U.S.-Mexico border are becoming more evident each year. Accelerated demographic and economic growth along both sides of the border have led to severe natural resource and environmental problems which often spill across the political (legal) boundary separating these two countries. Up to now, suggested solutions to these pressing problems have, in most cases, been of a reparative rather than a preventive nature.

In August 1990, Mexican President Salinas de Gortari proposed negotiations on a free trade agreement (FTA) between the United States and Mexico. A month later, President Bush notified the U.S. Congress of the intent to enter free trade negotiations with Mexico. A U.S.-Mexico FTA would probably increase Mexico's access to U.S. markets, the flow of capital to Mexico, and the economic growth rate of Mexico. Benefits to the U.S. economy could include expanded trade, lower prices, increased competitiveness, and enhanced ability of U.S. firms to exploit economies of scale (USITC). Certain sectors of the U.S. and Mexican economies, however, will likely have a negative impact because of some production shifts.

As trade between the two countries increases under a U.S.-Mexico FTA, trade-related activities along the border will also expand and intensify. Under these conditions, existing natural resource and environmental problems along the U.S.-Mexico border could exacerbate. A U.S.-Mexico FTA, however, could provide the opportunity to shift from a reparative and typically wasteful strategy to a more anticipatory, preventive, and efficient resource and environmental strategy. Adopting such a strategy will enable policymakers to minimize natural resource and environmental problems resulting from a U.S.-Mexico FTA and to plan for a more ecologically sustainable development of the U.S.-Mexico border region.

The objective of this paper is to anticipate natural resource and environmental issues which may arise or increase due to a U.S.-Mexico FTA. The aim is to use fragmented knowledge and data from both sides of the border to visualize and anticipate probable resource and environmental problems associated with a U.S.-Mexico FTA that need to be prioritized and researched in the near future. It should be noted that although the focus of this paper is on the U.S.-Mexico border region, the issues highlighted here have implications for the interior of both countries.

BACKGROUND

Some background information will help facilitate later analysis of the relationship between natural resources and the environment and a U.S. Mexico FTA. After providing some information of the U.S.-Mexico border region, border and non-border natural resource and environmental issues are discussed.

The U.S.-Mexico Border Region

The U.S.-Mexico border region for this paper is defined as U.S. counties and Mexican municipios (municipalities) adjacent to the 2000-mile-long U.S.-Mexico border. The border region includes four U.S. states (California, Arizona, New Mexico, and Texas) and six Mexican states (Baja California, Sonora, Chihuahua, Coahuila, Nuevo Leon, and Tamaulipas). All border cities on the U.S. side have a "twin city" on the Mexican side. These border cities are highly linked socially, culturally, and most importantly economically to each other.

The population of the U.S.-Mexico border region is becoming increasingly concentrated in the various border cities situated along both sides of the border. In Mexico, the number of inhabitants along the maquiladora zone was estimated to be 2.6 million in 1980 and 3.3 million in 1990. The population for this zone is expected to surpass 5 million by the year 2000 (National Wildlife Federation). In the U.S., the total number of inhabitants in counties adjacent to the border was estimated to be about 4 million in 1980 and 5.2 million in 1990.

Mexico's maquiladora and the U.S. retailing industries by far constitute the largest part of the border region's economic base. During 1989, Mexico's maquiladora industry employed 437,064 workers (most of them women) in 1,795 facilities. About 78% of the Mexican maquiladoras are located in the border region. On the U.S. side, the retailing industry provides 26% of the region's employment. These retailers serve not only the U.S. border cities but also Mexican consumers from the border cities and from further inland. Retail sales to Mexicans account for about one-third to two-thirds of the retail sales of the U.S. border communities (USITC).

Other important industries in the U.S.-Mexico border region include wholesaling, transportation, customs brokerages, and recreation and tourism services. Agriculture constitutes only a small fraction of the economy of the U.S.-border region (USITC). There are, however, some areas in the border region such as the Upper and Lower Rio Grande Valley in Texas, some areas in New Mexico, and the border area of the Mexican state of Tamaulipas in which agriculture does play an important role in the economy.

Demographic growth and unplanned economic activity in the border region has adversely affected the area's resources and the environment (e.g., water quality and quantity, air quality, wildlife species, and coastal resources). Various natural resources are being exploited at indiscriminate rates while others have been contaminated, degraded, or threatened with extinction. U.S. and Mexican border infrastructure, which has not developed concomitantly with the growth in demographics and economic activity, is also currently strained beyond its capacity (Kelly and Kamp). This lack of infrastructure has also added to the environmental problems occurring at the border.

There is no question that the U.S.-Mexico FTA will further affect the natural resources and environment of the border region and also of non-border areas in Mexico. However, much of the existing natural resource and environmental problems have occurred as the U.S. and Mexico economies have begun to integrate economically more and more over time. How much more the economies will integrate because of a U.S.-Mexico FTA and to what extent will this additional integration affect natural resource use and the environment is yet to be determined. This, however, does not mean, that the natural resource and environmental problems that exists or could come about due to a U.S.-Mexico FTA should be left unattended.

Border Resources and Environmental Issues

Most natural resources along the U.S.-Mexico border region can be characterized as transnational common pool resources¹. These resources include surface water, groundwater, air, some wildlife species, and coastal resources. The common pool characteristic of the transnational resources along the border often complicates not only the efficiency of resource use and management but also the resolution of transnational externalities² (e.g., pollution, degradation, and depletion) which exist or could emerge along the border. Consequently, the several resource and environmental issues along the U.S.-Mexico border are outlined as issues which affect both sides of the border simultaneously although not necessarily to the same extent. Additionally, it should be observed that although the issues have been classified by resource type, they are ecologically interdependent.

Water Quantity and Quality

The most critical resource and environmental issue under a freer U.S.-Mexico trade regime relates to water quantity and quality. Currently, the entire surface flow of the Rio Grande river is fully appropriated. Thus, additional water supplies to meet increased demands under a U.S.-Mexico FTA will require either significant conservation efforts or increased transfers from water intensive uses (agriculture) to municipal and industrial uses, or the increased use of groundwater. Evaluating the economic tradeoffs among each alternative source of water supply is no easy task and will require significant research efforts.

The transboundary common pool characteristic of much of the groundwater resources along the U.S.-Mexico border also poses critical resource management problems. Until recently, there has been little effective groundwater planning and regulation on either side of the border. Given the common pool characteristic of the aquifers and the differences in administrative, regulatory, and enforcement capacity between the U.S. and Mexico, mining of the border aquifers is likely to occur in the near future. International cooperation in designing, developing and enforcing institutional or other solutions is essential in addressing this potential resource problem.

The quality of surface water along the U.S.-Mexico border is also of much concern. Demographic and economic growth along the border has caused adverse effects on the water quality of the Rio Grande river and rivers along the California-Baja California area. The maquiladora industry, agricultural drainage water from the U.S. side of the border, and the lack of adequate sewage treatment facilities (on both sides of the border), are the main contributors to water contamination. This surface water is currently so polluted that it is unfit for human consumption

¹Elinor Ostrom defines common pool resources as "natural or man-made facilities that produce a flow of use units per unit of time (or several flows of different types of use units) where exclusion from the resource is difficult or costly to achieve and the resource can potentially be utilized by more than one individual or agent simultaneously or sequentially." A transnational common pool resource is one where two or more nations share a common pool resource.

²Nicholson states that "An externality occurs whenever the activities of one agent affect the activities of another agent in ways that are not taken into account by the operation of the market." Transnational externalities occur whenever activities in one country have a direct (non-market) impact on production or consumption activities in another country via some common environmental medium such as watercourses, common air mantles, or ecosystems. Such impacts may be bilateral or multilateral, unidirectional or bidirectional, or various combinations of these (d'Arge and Kneese). Another type of transnational externality is the case where an industrial facility owned by a corporation based in another country pollutes in the host country (Neff).

unless extensively treated.

Groundwater sources along this border region are also subject to potential contamination from industrial chemicals, pesticides and herbicides, hazardous waste, and saltwater intrusion due to aquifer draw-down. Given that the cleanup of a polluted aquifer is difficult, costly, and often impractical, joint research to minimize this potential problem is urgently needed.

Under a U.S.-Mexico FTA, the demand for groundwater and surface water resources of the region will increase, thereby exerting further pressure on the already scarce water resources of the region. Additionally, water quality problems will intensify if not properly studied, monitored, and controlled.

Coastal Resources

The commercial and sport fishing sector as well as the recreation and tourism sectors located at the mouth of the Rio Grande river are heavily dependent upon the freshwater inflows to the bays and estuaries located in the area. However, if upstream diversions or contaminations of the freshwater inflows to the bays and estuaries occur as a result of a U.S.-Mexico FTA then detrimental effects (transboundary externalities) could occur in the commercial and sport fisheries sector as well as the recreation and tourism sectors of the border coastal region. Increased trade in the fisheries sector due to a U.S.-Mexico FTA could also, if left unmonitored, accelerate the rate of exploitation of current fishing grounds and increase the destruction of various species such as dolphins and sea turtles. A holistic approach is needed to address and resolve these transboundary externality issues.

Air Quality

Increased trade induced by a U.S.-Mexico FTA will likely result in greater traffic (automobiles and trucks) across the border. Currently, inefficient customs procedures on both sides of the border (USITC) contribute to long delays which waste energy and impact air quality as traffic waits to cross the border. Other air quality issues include toxic waste burning, dust from population centers, industrial emissions, crop dusters spraying agricultural chemicals, paint fumes stemming from furniture producing maquiladoras, etc. These transboundary air quality externalities will probably heighten if a U.S.-Mexico FTA comes into effect.

Wildlife

Various areas along the U.S.-Mexico border are home for a variety of wildlife and plant species. There is much biodiversity in this area. Currently, there are several wildlife refuges in the border area containing many species which are on the endangered species list. Hunting markets (leasing) for white-wing dove and white-tailed deer are well developed on the Texas side of the border and are being developed on the Mexican side near Laredo, Texas. Fresh and salt water fish are also important wildlife resources for some of the areas along the border. An important issue of a U.S.-Mexico FTA is the likely impact it will have on the habitats of hunted or fished species or those habitats contributing to the region's biodiversity.

Land Use

A U.S.-Mexico FTA will probably result in some animal and crop production shifts across the border as well as more intensive use of the border land. The potential conversion of this land to intensive crop production due to a U.S.-Mexico FTA could impose soil erosion costs, water contamination, loss of wildlife habitats, coastal zone impacts and economic and social consequences far greater than the private benefits of land conversion. About 80% of Mexico's territory is subject to some degree of erosion in 1980 (World Bank). Hence, there is a need for research on the conjunctive management of livestock, wildlife, and crop production within the border region. Farm and range land conversion to urban and industrial uses due to increased population influx in the area and heightened trade-related economic activity may also result in adverse externalities. Quantification and alternative resolutions for these externalities is needed.

Hazardous Materials

The use of hazardous materials along the U.S.-Mexico border is increasing. The Mexican maquiladora industry, U.S. agriculture, and Mexican agriculture are the predominant users of these materials. The maquiladora industry mainly employs solvents, acids, alkaline substances, and heavy metals whereas the agricultural sectors use various agri-chemicals in their production processes. The use of hazardous materials along the U.S.-Mexico border raises two types of problems: (a) the generation of hazardous waste and its final disposal and (b) the exposure of workers to hazardous materials. The lack of facilities on both sides of the border to treat, recycle, or dispose of these materials in a legal and secure manner further aggravates the problems associated with hazardous materials. It is expected that agricultural production shifts in the region as well as increased maquiladora activity due to a U.S.-Mexico FTA could intensify this hazardous material problem. Thus, there is an urgent need for short-term actions and long-term planning to control hazardous waste. Further delays in addressing this pressing and potentially increasing problem could lead to severe environmental and public health effects on both sides of the border region.

Non-Border Resource and Environmental Issues

The proposed U.S.-Mexico FTA could also potentially impact natural resources and the environment outside the border region. These impacts could occur through increased extraction or consumption rates of Mexico's natural resource base or through the occurrence of adverse externalities resulting from this process. Additionally, the issue of chemical and food safety is of major concern.

Petrochemicals

Currently, ownership of Mexico's basic petrochemical production industry is reserved for Pemex. Mexican officials have also repeatedly stressed that foreign ownership of Mexico's oil and gas reserves will not be on the table for a U.S.-Mexico FTA negotiation. Nevertheless, U.S. interest in Mexico's extensive petroleum reserves has not diminished. At the present time, about 60% of Mexico's oil production is exported to the United States. Demand for Mexico's oil is increasing both internationally and domestically. However, without additional investment (about \$2 or \$3 billion per year) Mexico will probably not meet this demand (Wall Street Journal; Kelly and Kamp). Given this sectors' need for additional capital, Mexico will most likely increase oil exports and permit indirect U.S. investment in oil production. Increased trade in this sector could lead to the potential for more

rapid depletion of Mexico's oil reserves and the possible occurrence of environmental externalities.

Mining

At the present time, Mexico has significant reserves of base and precious metals. Changes in Mexico's foreign investment restrictions already permit increased copper and gold mining in Northern Mexico. If not attended to, mining operations could lead to severe environmental externalities. Associated with mining operations is the transport of toxic chemicals used in mining activities. There are also no contingency plans to attend accidents which could occur when these chemicals are being transported. Additional research is needed to determine the likely impacts a U.S.-Mexico FTA might have on the mining sector and consequently on the environment and metal resource availability.

Other Resources

Implementation of a U.S.-Mexico FTA could also affect the extraction and consumption rates of other resources such as timber, fish, and minerals that are suitable for export. The use of water, land, and other resources in non-border areas could expand and intensify. Increased investment in industries that employ these resources could overwhelm the already insufficient efforts being made in conserving these resources and in enforcing environmental laws and regulations that govern their use.

Chemical Use and Food Safety

A U.S.-Mexico FTA would probably increase trade in vegetables, fruits, nuts, and seafoods such as shrimp. Growers in Mexico who raise crops for export, however, often use agricultural chemicals (often produced in the U.S.) that do not meet U.S. standards. As such, some fruits and vegetables from Mexico are said to be contaminated with pesticide residue. With respect to seafood, some U.S. and Mexican fishing grounds are reportedly polluted with lead, mercury, cadmium, and other chemicals, thereby making seafood from these grounds unsafe for consumption. The lack of funds and expertise at U.S. ports of entry has resulted in inconsistent food inspection and process monitoring. These inconsistencies will probably worsen under a U.S.-Mexico FTA unless additional funds are not provided for inspection programs (Kelly and Kamp).

PRIORITY ISSUES FOR NATURAL RESOURCES AND THE ENVIRONMENT

Economic and demographic growth along the U.S.-Mexico border has greatly strained the natural resources and environment of the border region. The solutions to various natural resource and environmental problems to this point have been of a reparative rather than a preventive nature. The current fervor with respect to a U.S.-Mexico FTA has brought these pressing issues to the forefront. Additionally, it is expected that further economic integration as a result of a U.S.-Mexico FTA would exacerbate existing or create additional natural resource and environmental problems.

Issue 1: Institutional Arrangement for Managing Transnational Border Resources

Because most natural resources along the border are characterized as transnational common pool resources, the general resource issue is one of matching the border natural resource system to an appropriate institutional arrangement for managing the transnational border resources. Although different institutional arrangements are available, the use of a common property resource management institution would be appropriate for this border region. Under an arrangement of this type, the U.S. and Mexico would give powers to a binational agency or commission³ to regulate hazardous waste or sewage discharges and mining of commonly shared resources. This binational agency could also draft a comprehensive development plan for the border region in which the concept of sustainable development is embedded. One of the most crucial steps towards an environmentally sustainable development of the border is to insure that a U.S.-Mexico FTA addresses the need for a binational agency to address these issues. In this way, the proposed U.S.-Mexico FTA could offer the opportunity to shift from a basically reparative to a more anticipatory and preventive natural resource and environmental strategy.

Issue 2: Strengthening Government to Government Coordination

The relationship between the Environmental Protection Agency (EPA) and its Mexican counterpart, the Secretaria de Desarrollo Urbano y Ecologia (SEDUE), could be strengthened through legislation to improve their oversight capabilities for monitoring and enforcing environmental regulations along the border. Training and technology transfer could also occur between the EPA and SEDUE. The appropriate coordination mechanism and funding alternatives for these agencies could be addressed in the U.S.-Mexico FTA negotiations. Funding issues also need discussion in order to supplement the limited funds available to deal with transnational resource and environmental issues. A debt-for-environmental protection swaps could be one avenue.

Issue 3: The Need for Research

Resolution of transnational externalities along the border region is complex, due in part to the common pool characteristics of the resources located there and the concept of national sovereignty. National responsibility and liabilities are not clearly defined with respect to environmental degradation along the U.S.-Mexico border. Although various principles⁴ have been advanced for addressing these problems, the economic consequences of these principles for the border region have not been researched. A U.S.-Mexico FTA could provide for initiation of research in these areas.

Issue 4: Differing Environmental Standards and Norms

Differing environmental standards and norms also pose constraints for the resolution of

³ An example is the International Boundary and Water Commission between the United States and Mexico and the International Joint Commission between Canada and the United States.

⁴ d'Arge and Kneese have enumerated the following four principles: (a) polluter pays, (b) full costing, (c) victim pays, (d) common property resource institutions.

transnational externalities. In some cases, lower environmental standards or norms serve as indirect subsidies to the industry of the country in question thereby creating unfair competition. In other cases, stringent environmental standards can serve as non-tariff barriers which protect the industry of an importing country (Kelly and Kamp; The New York Times). While harmonization of environmental standards between Mexico and the U.S. is important in the long-term, it may be difficult to achieve in the short-term because of the effects on the balance of payments, national income, and employment. It may be beneficial for Mexico and the U.S. to agree on a general harmonization procedure which allows for the timing of implementation to compensate for short-term effects.

Issue 5: Designing Environmental Protection into Border Facilities

A U.S.-Mexico FTA could require that citizens or corporations which operate in Mexico to provide at least minimal environmental protection in Mexico. According to one study: "It is known from a number of studies that rather far-reaching environmental protection designed into a new facility when it is just in place will increase its cost very little" (d'Arge and Kneese). Fixing existing installations is usually more costly because of disruptions. Consequently, an agreement whereby U.S. corporations or citizens operating in Mexico agree, or are required, to design at least minimal environmental protection into their facilities would probably be beneficial to the border region. This situation is further aggravated by the fact that there are also Japanese maquiladoras located at the border. A problem for U.S.-Mexico negotiations will be dealing with pollution by firms from third countries such as Japan.

REFERENCES

- d'Arge, R.C. and A.V. Kneese, "State Liability for International Environmental Degradation: An Economic Perspective." *Natural Resources Journal* 20:427-450, 1980.
- Kelly, M. E. and D. Kamp. "Mexico-U.S. Free Trade Negotiations and the Environment: Exploring the Issues," Discussion Paper of the Texas Center for Policy Studies, 1991.
- National Wildlife Federation, "Environmental Concerns Related to a United States-Mexico-Canada Free Trade Agreement," 1990.
- Neff, A. "Not in Their Backyards, Either: A Proposal for Foreign Environmental Practices Act," *Ecology Law Quarterly* 471:477-537, 1990.
- Nicholson, W. *Microeconomic Theory*, 3rd. ed. (The Dryden Press: New York, 1985).
- Ostrom, E. "Issues of Definitions and Theory: Some Conclusions and Hypotheses," Proceedings of the Conference on Common Property Resource Management, 1985.
- The New York Times*, "Environment Versus Freer Trade," February 11, 1991.
- U. S. International Trade Commission (USITC), "The Likely Impact on the United States of a Free Trade Agreement with Mexico," USITC Publication #2353, 1991.
- Wall Street Journal*, "Can Mexico Prime the Oil Pump without Foreign Capital?" October 19, 1990.
- World Bank, "Mexico: Environmental Issues and Strategy Paper," Latin America and the Caribbean Regional Office, 1989.

