

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

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

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* 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.

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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 exist 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).

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 Secretaría de Desarrollo Urbano y Ecología (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.

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**THE U.S.-MEXICO FREE TRADE AGREEMENT:
AGRICULTURAL TRANSPORTATION ISSUES**

Stephen W. Fuller*

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* Professor of Agricultural Economics, Department of Agricultural Economics, Texas A&M University.

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AGRICULTURAL TRANSPORTATION ISSUES**

Texas Agricultural Market Research Center (TAMRC) U.S.-Mexico Free Trade Issues for Agriculture Series, TAMRC International Market Research Report No. IM-7-91, by Stephen W. Fuller, Department of Agricultural Economics, Texas A&M University, April 1991.

ABSTRACT: This paper examines agricultural transportation issues relating to a U.S.-Mexico Free Trade Agreement (FTA) and considers the implications for both agriculture and the transportation industry in the U.S. and Texas. Priority agricultural transportation issues to be monitored during negotiations include access of the U.S. trucking industry to Mexico, administrative constraints at border crossings, and the inadequate and outdated Mexican transportation system.

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THE U.S.-MEXICO FREE TRADE AGREEMENT: AGRICULTURAL TRANSPORTATION ISSUES

Although the most comprehensive in Latin America, the Mexican land transportation system and infrastructure has been inadequate to handle the increase in trade Mexico has experienced in recent years (GAO). The Mexican rail system is reportedly outdated and lacks the capacity to carry the increasing cargo from the United States (GAO). Mexican storage capacity is severely limited and roads are in a state of general disrepair. Tremendous delays in loading, unloading, and movement within Mexico are frequently reported. Complicated, lengthy, and cumbersome customs clearance procedures at border crossing points add to the delays and the costs of transporting goods to and from Mexico. Consequently, resolving transportation issues may be as important as eliminating trade barriers as a means of boosting U.S.-Mexico agricultural trade. This paper examines transportation issues relating to a U.S.-Mexico FTA and considers the implications for both agriculture and the transportation industry in the U.S. and Texas.

BACKGROUND

Transportation services in Mexico include motor carriers, railroads, marine, and air. The railroad network in Mexico is government-owned and operated. Maritime and air transport industries in Mexico are also owned and operated by the federal government. Motor carriers are operated by the private sector but were heavily regulated until July 1989. Trucks transport an estimated 80% of Mexican commerce. Motor carriers play an extremely important role in the U.S. import of horticultural products from Mexico. Further, Mexico's railroad, maritime, and port system are extremely important to growing U.S. exports of grain and oilseed exports to that country.

Railroads

The Mexican railroad network includes almost 20,000 kilometers (km) and is operated by the government-owned Nacionales de Mexico. Railroads connect to the United States at several border points, including Brownsville, Texas (Matamoras, Tamaulipas); Laredo, Texas (Nuevo Laredo, Tamaulipas); Eagle Pass, Texas (Piedras Negras, Coahuila); Presidio, Texas (Ojinaga, Chihuahua); El Paso, Texas (Ciudad Juarez, Chihuahua); Nogales, Arizona (Heroica Nogales, Sonora) and Calexico, California (Mexicali, Baja California Norte). The Union Pacific System connects at Brownsville and Laredo, Texas. A shortline road operating between Corpus Christi and Laredo, the Texas-Mexican Railroad, also connects to Laredo, Texas. The Santa Fe connects with Mexico at El Paso and Presidio, Texas while the Southern Pacific offers service to Eagle Pass, Presidio, Nogales, and Calexico. Data for estimated overland crossings of the grain and grain products exported from the U.S. to Mexico in 1987 indicate that Laredo (53%), El Paso (22%), and Brownsville crossings (10%) handle about 85% of overland grain and related shipments (Table 1).

The Mexican Constitution currently reserves the right to own and operate railroads for the Mexican government. Private ownership or operation, either Mexican or foreign, is not permitted. The Mexican rail system is characterized by outdated infrastructure, facilities, and procedures. There is a critical lack of rolling stock. Both U.S. and Mexican industry spokesmen have noted cases in which rail cars were often unavailable for transport (USITC, October 1990). The Mexican rail system reportedly lacks the capacity to carry the increasing cargo bound from the United States to Mexico. Imported supplies awaiting transport face delays as long as 2 weeks or more (GAO).

Further complications are created by outdated unloading facilities that delay turnaround time of U.S. cars destined to Mexico. Due to inadequate warehouse capacity for unloading, U.S. rail cars

are often used for storage. A 1989 study by Union Pacific determined that the average turnaround time for U.S. rail cars moving to Mexico City was 40 days (GAO).

Over the past decade about 60% of the bulk commodities moving from the U.S. to Mexico has moved by sea and 40% by rail. As trade volume increased in recent years, however, up to 80% of the U.S. bulk commodities moved by sea and 20% by land. Consequently, U.S. sellers lose some of their comparative advantage in the Mexican market (GAO). Particularly vulnerable are U.S. grain exports to Mexico which must compete with the products of Argentina and Australia.

Motor Carriers

Trucking is the leading transport industry in Mexico because railroad capacity has not grown in recent decades. About 82% of Mexican freight is carried by motor carriers. Since 1982, trucking has been adversely affected by slow or negative growth in per capita real income in Mexico and the internal budget and external debt crises. Highway construction came to a virtual standstill in recent years and the replacement of trucks and trailers has been inadequate. Authorities attempted to correct for inadequacy of highway transportation with regulatory measures but this appeared to cause additional problems (Landro).

Because trucks have been expensive in Mexico, entry into the industry has required a major initial investment and has been difficult to accomplish. In addition, over-regulation of the industry has erected additional barriers to entry. Until the recent deregulation, trucking in Mexico was divided into 11 routes nationwide. The industry was managed by regional cartel-like organizations called "freight service centers" that determined cargo movement in their respective areas. These centers granted concessions to carriers and also allocated shipments of cargo between truckers. Each trucker was restricted to designated routes and types of cargoes. In turn, the centers were controlled by a small number of large truckers. These truckers enjoyed oligopolistic profits and, therefore, were able to withstand the adversities of the macroeconomic environment such as price controls and increasing costs of operation (USITC, April 1990).

Prior to deregulation, shippers were adversely affected by the oligopolistic behavior of the trucking industry in many ways. Most importantly, shippers were not free to choose their carriers. Moreover, the oligopolistic nature of the system resulted in an increase in shipping costs, contributed to the obsolescence of the trucking fleet, weakened the quality of services, and left certain areas without service (Landro).

The new trucking deregulation decree addresses the provisions in the 1989-94 National Development Plan which calls for updating and modernizing pertinent institutions and regulatory mechanisms to make Mexican transportation more efficient and competitive. Mexican officials hope that the relative freedom now granted in setting rates and the resulting price decline will reduce the excessive profit margins of carrier oligopolies. Officials also expect that a liberalized highway transportation market will encourage services to be provided for poorly served areas and generally increase the availability of trucking for users (USITC, April 1990).

Among other provisions, the Mexican government's annual program for 1989 authorizes private companies, including foreign investors, to participate in building and maintaining highways. Until last year, the Federal government has been the only authority in charge of planning and carrying out the coordination of the Federal deregulation program with municipal authorities in Mexico (USITC, April 1990).

Of the 1.479 million metric tons (mt) of fresh Mexican produce imported into the U.S. in 1988/89, 32% arrived at the U.S. border in small trucks, 56% in tractor-trailer rigs, 11% by

piggyback, and the remainder by airplane. Leading import locations included Nogales (58%), Reynosa (18%), Tijuana (6%), San Luis (6%), Mexicali (4%), and four additional crossings in Tampico (6%). Most fresh vegetable imports from Mexico require hauls ranging from 300 to 700 miles. Based on suggested rates for refrigerated vans in August, 1990, motor carrier rates are estimated at about \$500/truckload (22.5 ton) for a 300 mile haul (\$1.11/cwt). For a 700 mile trip, the truckload rate would be about \$935 (\$2.08/cwt). In general, these rates appear to be higher than comparable interstate hauls in the United States (Fuller and Hall).

Ports

Principal Mexican ports involved in agricultural commerce include Ensenada, Baja California Norte (citrus, grain); Guaymas, Sonora (grain, cotton); Lázaro Cárdenas, Michoacan (grain, food processing); Manzanillo, Colima (grain); Salina Cruz, Oaxaca (coffee); San Carlos, Baja California Norte (cereal, cotton); Tampico, Tamaulipas (grain); Topolobampa, Sinaloa (grain); Yukalpetin, Yucatan (vegetables -- cold storage); Veracruz, Veracruz (cereals); Progreso, Yucatan (cereals); Tuxpan, Veracruz (cereals); Mazatlan, Sinaloa (cereals) (Ports of the World).

Mexico imported approximately 64% of its grain, oilseed, and related products via their ocean ports and the remainder (36%) overland in 1984. Approximately two-thirds of these marine-carried imports arrived at Gulf ports and about one-third at Pacific ports. Leading Mexican port areas in 1984 for the receipt of imported grains and associated products included: Tampico (18%), Tuxpan (14%), Veracruz (23%), Guaymas (18%) and Mazatlan (7%).

Although many Mexican ports have deep water, few provide a good harbor. Because five ports handle about 80% of all tonnage, port congestion is often a problem. Increased petroleum shipments, lack of cargo-handling facilities, and administrative bureaucracy also contribute to port congestion. For this reason, some Mexican shippers find it expedient to send their agricultural exports through Texas or California ports (GAO).

POTENTIAL EFFECTS OF A U.S.-MEXICO FTA

In general, the Mexican transportation sector has suffered from inadequate investment and improper regulation and management by the public sector. Consequently, transportation capacity is constrained and additional congestion could be expected at higher trade levels. Regardless, the recent deregulation of the motor carrier industry and relaxation of restraints on foreign capital investment hold promise for this sector's future.

An often cited constraint or inefficiency to expanded U.S./Mexico trade is the Mexican prohibition against U.S. truck operation on Mexican highways. The longstanding Mexican discrimination against U.S. motor carrier operation led the U.S. to retaliate against Mexican carriers in 1984. U.S. legislation restricted the operation of Mexican truckers to commercial zones adjacent to the border. Disallowing commercial vehicle traffic between the two countries necessitates additional intermodal/intramodal transfer costs.

The motor carrier industry would likely be the most affected of the U.S. transportation industries by a U.S.-Mexico FTA (USITC, February 1991). U.S. imports of trucking services from Mexico under an FTA would most likely increase significantly, primarily as a result of pronounced wage differentials between Mexican and U.S. workers. However, the overall effect on U.S. imports

Table 1. Estimated Border Imports of Grain and Related Products by Mexico at Crossing Points, 1987

	Brownsville	Rio Grande City	Nuevo Progreso	Laredo	Eagle Pass	Presidio	El Paso	Nogales	Mexicali
	mt	mt	mt	mt	mt	mt	mt	mt	mt
Corn	49,180	0	0	569,573	2,500	28,000	166,409	0	23,549
Sorghum	169,191	53,586	101,805	248,870	28,129	4,000	125,407	44,956	53,539
Soybeans	16,192	0	0	216,625	0	0	228,652	0	7,792
Wheat	0	0	0	61,409	0	0	0	0	0
Soybean Meal	2,563	0	0	33,712	0	0	5,057	4,908	2,542
Soybean Oil	278	0	0	0	0	0	0	0	0
Sunflower	8,900	0	0	39,696	0	0	3,479	0	0
Others	7,971	0	0	113,090	0	0	12,265	4,423	4,523
TOTAL	254,275	53,586	101,805	1,282,975	30,629	32,000	541,269	54,287	91,945

Source: Compañia Nacional De Subsistencias Populares (CONASUPO)