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OPPORTUNITIES IN MEXICO: ENVIRONMENTAL EQUIPMENT AND SERVICES

MARKET PROFILE - MEXICO

Department of Foreign Affairs and International Trade / Ministère des Affaires étrangères et du Commerce international
Latin America & Caribbean Branch

Baker & McKenzie

Environment Canada / Environnement Canada

Market Profile – Mexico

Opportunities in Mexico: Environmental Equipment and Services was developed jointly by the Department of Foreign Affairs and International Trade (DFAIT) and Prospectus Inc. This market profile was made possible through the support of the Toronto office of Baker & McKenzie and Environment Canada.

This market profile is designed to provide an overview of the market for **Environmental Equipment and Services** in Mexico. Although efforts have been made to avoid errors and inaccuracies in this document, it is not intended to be used as the only source of market information on this sector. We encourage the reader to use this publication as one of several resources for commercial dealings with Mexico.

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© Minister of Supply and Services, November 1995
Catalogue No. E73-9/39-1995E
ISBN 0-662-23188-0

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Published by Prospectus Inc.

Printed in Canada.

Disponible en français.

OPPORTUNITIES IN MEXICO

ENVIRONMENTAL EQUIPMENT AND SERVICES

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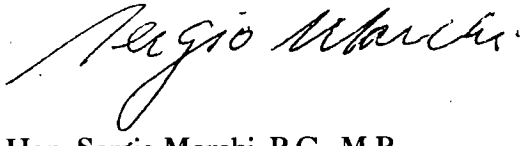
FROM ENVIRONMENT CANADA

My department is delighted to co-sponsor *Opportunities in Mexico: Environmental Products and Services*. The Government of Canada is serious about improving opportunities for our environmental industries; pursuing new trade in this sector is an excellent way to accomplish this goal.

Canadian environmental companies have already gained considerable access to the Mexican market. This is beneficial for jobs and growth in both our countries, and it is good for the health of our citizens. Alternatives to outdated commercial practices not only bring greater efficiency with greater production at lower costs, they make sustainable development a reality.

Our governments also have a history of working together on the environment in some very key areas. Under the Canada-Mexico Environmental Cooperation Agreement, we continue to share solutions to some of our most severe environmental problems. And recently we added the new Environmental Technology and Industry Program to the Agreement. It will give Canadians a new route to exchange technologies in areas such as the clean-up of hazardous sites and modernization of water quality management.

We believe this initiative generates substantial opportunities for Canada's environmental industries. This publication helps introduce Canadian business to those opportunities. It's an in-depth look at the Mexican market, its size, trends and distribution channels. If your business is involved in the design or marketing of environmental products and services, and if you want to explore new possibilities, make *Opportunities in Mexico* your guide.



Hon. Sergio Marchi, P.C., M.P.
Minister of the Environment

FROM BAKER & MCKENZIE, BARRISTERS & SOLICITORS

With more than fifty offices in 27 countries, Baker & McKenzie is the largest law firm in the world. In Mexico, the firm has had a very significant presence since 1961. In Mexico City, the firm operates locally under the name *Bufete Sepulveda* and in all other locations in Mexico the firm is known as Baker & McKenzie. The firm currently has offices in the cities of Juárez, Mexico City, Monterrey, and Tijuana, with expansion plans to the other growing industrial regions in Mexico. A substantial percentage of all foreign companies establishing operations in the *maquiladora* regions have retained the services of Baker & McKenzie to assist them in all aspects of their endeavours in this regard.

The lawyers of the firm combine expertise in Mexican law with an understanding of the business environment and governmental process in Mexico. The firm enjoys an excellent reputation in business and government circles as one of the leading Mexican firms dealing with international and domestic business transactions. The lawyers from the four Mexican offices regularly meet with their Canadian counterparts to discuss coordination of business activities in the North American context and to encourage trade and investment activities between Canada and Mexico. Partners of the Mexican offices serve on a number of domestic and international bodies as representatives of both national business organizations and the Mexican government. Partners of the Mexican offices regularly advise the Mexican government on international business matters including the recent NAFTA negotiations.

The Toronto office, in existence since 1962, is an integral part of the North American practice of the firm which includes nine offices in the United States and four in Mexico.

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The North American Free Trade Agreement (NAFTA)

The NAFTA expands Canada's free-trade area of 270 million people into a market of 360 million — a market larger than the population of the 15 countries of the European Union and one with a total North American output of $7 trillion.

Mexico is Canada's most important trading partner in Latin America. Two-way merchandise trade with Mexico exceeded $5.5 billion in 1994 and is expected to exceed $7 billion by the end of the decade.

Canadian direct investment in Mexico is growing rapidly, increasing from $452 million in 1992 to over $1.2 billion in 1994.

This guide has been prepared with the problems inherent to the new exporter in mind. However, it is not exhaustive. The differing circumstances, interests and needs of individual companies will influence their strategies for the Mexican market.

Further assistance can be obtained by addressing requests to:

International Trade Centres (see Where To Get Help) or contact the InfoCentre at:

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Cleaning Up the Environment

Mexico's economic crisis has temporarily slackened environmental enforcement, but in the medium term, the nation's environmental problems are simply too severe to ignore.

The environmental sector has become a promising market for Canadian exporters. Although environmental products and services have not traditionally ranked among Canada's major exports to Mexico, new markets are beginning to emerge. These opportunities derive mainly from recent efforts by Mexican authorities to strengthen regulation of the environment and improve public infrastructure. While the devaluation of the peso in late 1994 sharply reduced imports of most products, the nation's environmental problems are simply too severe to ignore. Although some major projects are now on hold, none have been cancelled, and some observers see the return of annual growth in the 15 percent range by the end of 1996. Mexico is under mounting pressure to act decisively, partly as a result of the North American Free Trade Agreement (NAFTA) and partly because of U.S. intervention, especially in the border region. Both the World Bank and the Inter-American Development Bank have allocated funding for Mexican environmental projects. Moreover, Mexico currently lacks the technical capabilities and the service industry needed to meet these new demands on its own.

The contamination of the Mexican environment has reached alarming levels. More than 25 percent of all industry is located in the Valley of Mexico, where excessive emissions, high altitude and temperature inversions combine to make Mexico City the most polluted city in the world.

At the national level, only 20 percent of municipal wastewater and 15 percent of industrial wastewater were treated in 1994. Less than 10 percent of industrial air emissions are controlled. Only 20 percent of municipal solid waste is disposed of in a landfill. The technology to solve these problems will initially come from foreign firms. Gradually, technology will be transferred and Mexican firms will increase their participation, in partnership with foreign firms.

Public alarm about environmental pollution has provoked government action, most notably the 1988 *Ley de Equilibrio Ecológico y Protección al Medio Ambiente*, Law of Ecological Equilibrium and Environmental Protection. This was followed by new enforcement mechanisms in 1992. But other government policies have made it difficult for many small- and medium-sized companies to comply. For example, a tight money policy has kept interest rates high. Also, trade liberalization has exposed companies to aggressive foreign competition and lowered their profit margins.

In spite of these constraints, substantial increases in the demand for environmental equipment and services have resulted from a combination of public projects and increased enforcement in the private sector. Mexico's public spending on the environment rose from US $95 million in 1988 to US $2.5 billion in 1993. And, the devalued peso has now begun to increase the cash flow of Mexican manufacturers.

In the first stages of the national effort to gain control over the environment, the emphasis has been on consulting and training services. Thousands of environmental assessments and risk analyses have been completed, and there have been continuing efforts to train regulatory staff. The *Universidad Nacional Autónoma de México (UNAM),* National Autonomous University of Mexico and the *Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM),* Monterrey's Technological Institute, have established degree programs in environmental sciences and they are forming ties with foreign universities to upgrade their programs.

As the process has matured, a market for measurement and analytical equipment has developed. In the long term, the market for pollution control systems is expected to dominate spending. Eventually, Mexican environmental expenditures are expected to rise from the current 1 percent of gross domestic product (GDP) to about 2 percent, which is the same proportion as in the United States.

THE MEXICAN ENVIRONMENTAL SECTOR

The environmental sector makes up 1 percent of Mexico's gross domestic product (GDP). That is about the same proportion as in Canada, but with three times the population, Mexico's needs are much greater.

The Mexican environmental sector is relatively small, about half the size of Canada's, but it is growing rapidly. Public expenditures on the environment totalled US $2.5 billion in 1993. The market for environmental technologies is of particular interest because a large proportion of it is imported. This market is forecast to grow from about US $1.9 billion in 1994 to an estimated US $3.3 billion in 1996. This forecast, by the United States Agency for International Development (USAID), was published in March 1995, and includes the effects of the 1994 devaluation.

As a proportion of gross national product (GNP), Mexico's environmental sector is about the same size as Canada's: around 1 percent. But since it has more than three times Canada's population, Mexico's environmental needs are considerably greater.

The growth of the environmental sector has been encouraged by the North American Free Trade Agreement (NAFTA), particularly the so called "side agreement", the North American Agreement on Environmental Cooperation. It encourages the NAFTA parties to enforce their own environmental regulations. Since Mexican requirements are strict, but so far poorly enforced, the Mexican government's new commitment to enforcement will lead to considerable growth.

Estimates of the size of the Mexican environmental market vary widely. Most of those cited in this profile come from a March 1995 market study by USAID. Similar estimates published in 1994 by the U. S. Department of Commerce indicate a somewhat smaller market. The reason is that the USAID study includes services, equipment, components, build-operate-transfer (BOT) and operation concessions. It also tends to use wider definitions of subsectors.

The U.S. Department of Commerce estimates are based on official import data for environmental equipment and are, therefore, relevant mainly to sales of specialized environmental equipment rather than the overall market. The USAID approach is considered more appropriate, given the trend toward the provision of integrated solutions rather than specific types of equipment. Some experts believe that the USAID estimates are too high, particularly considering the aftermath of the peso devaluation of December 1994. Nonetheless, they are the best estimates available, and they provide a good understanding of broad market trends.

Projected Performance of Mexican Environmental Markets, 1994–96

Market	US $ millions 1994	1995	1996	Average annual percentage growth 1994–96
Water pollution control*	841	1,085	1,288	24
Solid and hazardous waste**	261	324	402	24
Energy efficiency	270	323	386	20
Renewable energy	149	657	699	174
Fixed-source air pollution control	360	400	456	13
Environmental consulting	18	20	23	13
Remediation	21	24	29	18
Total	**1,920**	**2,833**	**3,283**	**21**

* Figures exclude selected large projects which could mask underlying trends.
** Excludes renewables.

Source: United States Agency for International Development (USAID), Office of Energy, Environment and Technology, 1995.

Subsectors

Companies in the environmental sector provide services and technology for protecting the environment from damage from all forms of human activity as well as repairing previous damage and conserving natural resources. The sector includes services such as engineering, research and training, in addition to the manufacture of pollution abatement equipment and instrumentation.

The sector can be divided into three main subgroups: air pollution, water supply and sewage treatment, and solid waste disposal (including hazardous waste). Remediation and consulting services often deal with more than one source of environmental damage and are treated separately in some of the accompanying tables. In addition, there is a significant and growing renewable energy and energy efficiency market in Mexico. This is sometimes considered part of the environmental sector because thermal electricity generation is a major source of pollution.

Mexico faces problems of crisis proportions in all of these areas. These problems result from inadequate environmental infrastructure and expertise, combined with a rapidly growing population as well as rising urbanization and economic growth. Increased government regulation of the environment is gradually forcing officials of both public agencies and private corporations to take remedial action. These factors combine to create substantial opportunities for Canadian suppliers of environmental technologies.

The Role of Imports

Eighty percent of Mexico's environmental technology is imported. To develop a domestic capability, local producers will need to form partnerships with foreign experts.

Imports play a major role in Mexico's efforts to manage its environmental problems. In 1993, imports of environmental control equipment totalled almost US $1.2 billion, about 80 percent of the entire market. Imports also made up a substantial proportion of the market for environmental services, estimated at roughly US $800 million. On the other hand, Mexican companies dominate the market for construction services, which are a major part of most environmental projects.

The share of imports ranges from about 93 percent in the hazardous waste subsector to 42 percent in renewable energy equipment. Solid waste handling equipment, the largest subsector, is 73 percent imported.

Environmental Equipment Market, 1993

US $ millions

	Market	Imports	Share (percent)
Water pollution	174.0	140.0	80.5
Solid waste	723.9	527.3	72.8
Hazardous waste	455.0	424.0	93.2
Air pollution	71.2	64.2	90.2
Energy	71.0	29.6	41.7
Total	**1,495.1**	**1,185.1**	**79.3**

Source: United States Department of Commerce, *Environmental Technologies Marketing Plan*, 1994.

Market Shares

The United States claims about two-thirds of the Mexican environmental import market. Canada holds a 4 percent import market share in air pollution control equipment, which is about double its share of most other environmental products. The trade data do not include services and it is, therefore, difficult to estimate Canada's exports accurately. Recently the market has moved towards the provision of integrated solutions rather than specific technologies. Equipment imports provide a relevant, but fairly narrow, perspective of the sector. Broader estimates of individual markets are presented elsewhere in this profile.

Canadian firms have competitive advantages in certain market segments, but they must compete with established Mexican suppliers, as well as the many international corporations already active in the market. Given this active competition, some of the more successful Canadian companies operating in Mexico have concentrated on market niches where they have a particular advantage. Some of them have formed joint ventures with Mexican firms or consortia with other Canadian companies.

Water Supply and Sewage Treatment

Some 3 billion cubic metres of raw municipal sewage and more than 2 billion cubic metres of untreated industrial effluent is dumped into Mexico's natural water system every year.

Mexico is faced with both a scarcity of natural water and severe water pollution from household, industrial and agricultural sources. Supply shortages and government policy changes have driven water prices to unprecedented levels, particularly for industrial use. This has generated a demand for equipment to reduce consumption through recycling at the plant level. Increasing pollution of the nation's river basins is creating a demand for pollution control and water treatment technologies on a larger scale. A substantial proportion of water supply and sewage treatment expenditures are for construction services. Mexico is relatively self-sufficient in these services, but it must import a large proportion of the equipment and technical services involved. By one estimate, Mexican imports of water treatment equipment and services totalled US $140 million in 1993, which was more than 80 percent of the market.

Water Supply

Mexico's water resources are distributed unevenly relative to both its land mass and its population. Half of the water resources are concentrated in the south-east. Northern Mexico, which comprises almost one-third of the nation's area and includes the city of Monterrey, has only 3 percent of the water. The country's largest cities are in the centre of the country, where water resources are located at much lower altitudes than most of the population. Substantial energy is required to pump water to where it is needed. According to government sources, there are 13 million people who live in urban areas who do not receive potable water because of lack of infrastructure.

Mexico City, in particular, faces enormous problems. Eighty percent of its water is pumped from aquifers, at a rate which exceeds capacity by half. This is causing subsidence of the land and damage to surface structures. Most of the rest of Mexico City's water is pumped 127 kilometres from the Cutzamala River. This requires a lift of more than a kilometre, at a huge energy cost.

The mismanagement of water supplies is also a serious problem. Considerable quantities are lost through leakage. Metering water consumption and tariffs based on consumption have only recently been introduced. In Mexico City, four Mexican companies working with foreign partners have been contracted to install water metres and to conduct a study of water usage. The ultimate goal is to privatize the entire system.

Other major cities are following Mexico City's example to meet the increasing demand for potable water. The cities of Cancún, Naucalpan, Guadalajara and Puebla are already working under similar schemes to transfer the potable water system to the private sector. The State of Mexico, after the completion of a feasibility study, is in the process of preparing the technical requirements that must be met by companies to bid on four wastewater treatment plants for the cleaning of the *Lago de Guadalupe*, Lake Guadalupe.

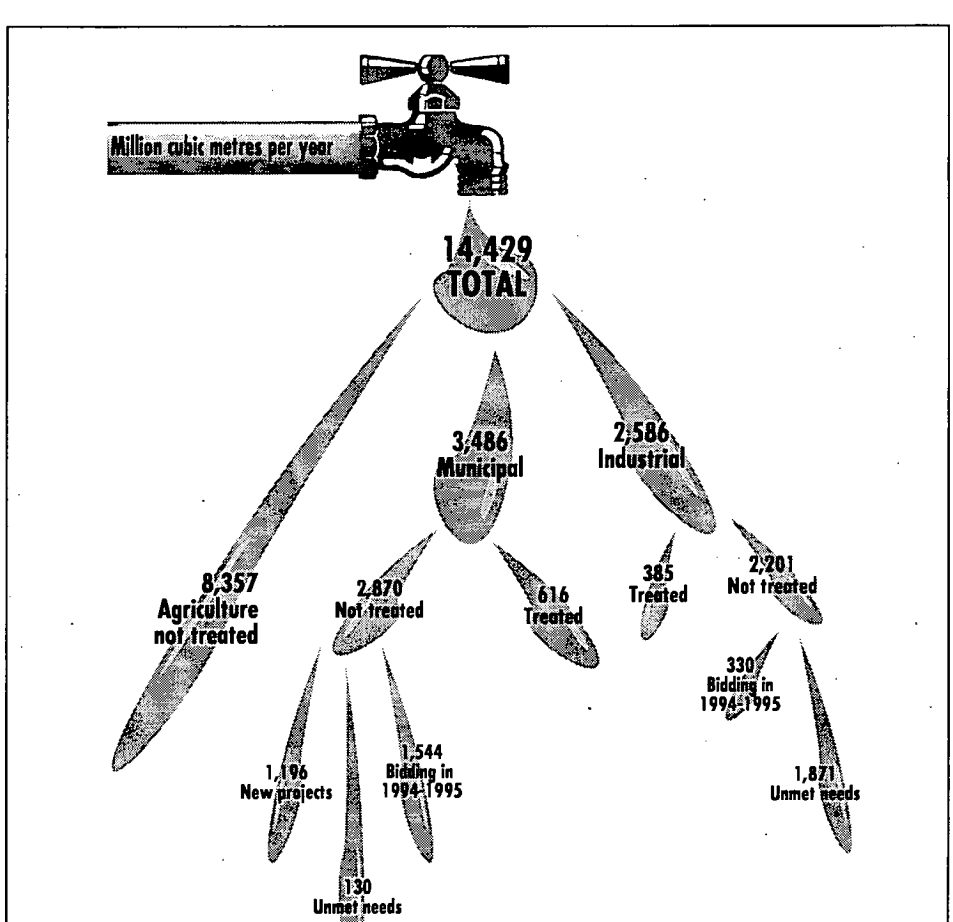
The price of water is high and it varies greatly from city to city. In 1993, household water prices ranged from a low of C $0.13 per cubic metre in the Hermosillo region, to as much as C $0.37 in Ciudad Lerdo. Prices escalate rapidly with consumption and are much higher for industrial use. Industrial prices in the Federal District begin at C $0.45 and rise with consumption to C $1.18 per cubic metre. Prices have risen dramatically over the past two years as the government has removed subsidies and begun to implement cost-recovery pricing. The high price of water for industrial use, has placed a new emphasis on recycling water at the plant level.

SEWAGE TREATMENT

Two-thirds of Mexico's 320 river basins are considered polluted by government authorities. Twenty of them receive almost 80 percent of all organic waste. Water pollutants come from municipal, industrial and agricultural sources. Mexico generates almost 14,500 million cubic metres of wastewater annually.

Municipal sewage treatment capacity is grossly inadequate. About 24 percent of total wastewater discharges come from municipal sources. Around 22 million people who live in urban areas do not have sewage service. Most plants use the stabilization lagoon and activated mud techniques. Less than 400 plants treat only 18 percent of municipal discharges, leaving some 2.9 billion cubic metres per year that is discharged untreated into the natural water systems.

Estimated Wastewater Generation in Mexico – 1994



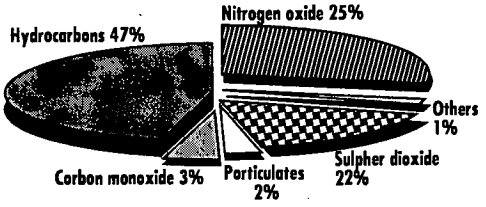
Source: United States Agency for International Development (USAID), Office of Energy, Environment and Technology, 1995.

The wastewater capacity of the industrial sector is also very low. The industrial sector generates 18 percent of all wastewater and it is estimated that only about 15 percent of it is treated. Over 80 percent of total industrial discharges come from nine highly polluting industries: sugar, chemicals, pulp and paper, petroleum, beverages, textiles, iron and steel, electronics, and food processing.

Agriculture and cattle production are the largest sources of water contamination, accounting for some 58 percent of total discharges. Pig farming is considered the most serious threat. Farmers use raw sewage to irrigate some crops, and some vegetables have been found to be contaminated with fecal bacteria, posing a serious health problem.

Air Pollution Control

Contributions to Fixed-source Air Pollution in Mexico City



The use of high-sulphur automotive fuels and heavy crude industrial fuel oil is the biggest single contributor to Mexico's severe air pollution problem. But toxic industrial emissions are a growing problem.

Mexico's large urban centres suffer from very serious air pollution. The most critical problems are in the regions of Mexico City, Guadalajara and Monterrey, which are responsible for 40 percent of all atmospheric emissions. Air pollution is particularly severe in the Valley of Mexico, especially in the Mexico City area. Roughly one-quarter of all Mexican industry is situated in this area, and Mexico City alone has close to four-million motor vehicles. The petrochemical producing state of Veracruz has specialized problems, and the rapidly expanding industrial areas in northern Mexico are also considered critical.

Mexico City is widely regarded as the most polluted city in the world. Industrial emissions are almost entirely uncontrolled, but transportation is by far the biggest polluter, accounting for three-quarters of all emissions. Fuel oil and gasoline that is produced by *Petróleos Mexicanos (PEMEX),* the national oil company, has a very high sulphur content. Internal combustion engines operate inefficiently at the city's altitude of 2,240 metres. The solutions to these problems lie mainly in the automotive industry, and are not discussed in detail in this profile.

Industrial air pollution is a serious problem because very few plants have emission control systems and because they release a large amount of highly toxic substances. The official standards are not specific enough to effectively regulate these emissions, even if adequate enforcement resources were available. One reason for the lack of enforcement in this area is the perception that it would result in severe economic and political consequences.

The most serious problems are in the pulp and paper, cement, and textile industries: together they account for almost 60 percent of industrial pollution. Part of the industrial air pollution problem results from extensive use of heavy crude oil for fuel. Action on air pollution control is most likely to occur in industries where there is a direct economic benefit, or where air quality is a factor in maintaining product standards.

Solid and Hazardous Waste Disposal

Only 4 percent of Mexico's solid waste is disposed of properly. There is only one public hazardous waste disposal facility, and virtually all clinical waste goes straight into municipal landfills.

Although solid waste disposal is a serious problem, it has so far received less attention than air and water pollution. Only about 4 percent of Mexico's needs for solid and hazardous waste have been met.

There are three main categories of solid waste: municipal waste, industrial waste, and hazardous and clinical waste. Total solid waste amounts to more than 525,000 tonnes per day, of which more than 88 percent is of industrial origin. About 3 percent of solid waste is considered hazardous.

The mining and foundry industries alone produce more than 337,000 tonnes per day of waste material. The oil, chemical and agricultural industries are also major contributors to the solid waste problem.

Municipal garbage has been increasing due to population growth and changes in consumption patterns, and has now reached more than 60,000 tonnes per day. There were only 97 municipal landfill sites in Mexico in 1993, and only 11 of those met regulatory standards. About three-quarters of the population has no access to landfill facilities.

There is an informal, but extensive system for the recycling of glass, cardboard and plastics by *pepenadores*, people who collect and sell this material to recycling factories. About US $2 million worth of material is recycled in Mexico City every day. This is considered an obstacle to the privatization of municipal waste collection.

Hazardous Waste

Mexico's hazardous waste handling capacity covers only about 14 percent of the country's needs. The private sector and *paraestatales*, state-owned companies — especially *Petróleos Mexicanos (PEMEX)*, the national oil company — account for most of the market.

While there are a few privately operated hazardous waste disposal sites, Mexico currently has only one functioning hazardous waste dump which is open to the public. This facility is located at Mina, Nuevo León and is operated by *Residuos Industriales Multiquim (RIMSA)*. A second site in the state of San Luis Potosí has been authorized to be built by *Química Omega de México* and U.S.-based Metalclad, but it has run into problems with the state government. There are presently no standards for the disposal of polychlorinated biphenyls (PCBs), although a new standard is scheduled to be published in 1996 by the *Instituto Nacional de Ecología (INECO)*, National Institute of Ecology.

Mexican companies will haul away hazardous waste at a very low price, but they have no proper way of disposing of it. Extremely hazardous materials are stored until a better alternative becomes available. Presently shipping hazardous waste to *RIMSA* is considered too expensive.

Hospital waste is rarely disposed of properly. Most hospitals do not separate infectious waste from general waste and, even if they do, they seldom have any way of disposing of it. Only three hospitals now have incineration permits, because there are no official standards. As a result, most hazardous clinical waste is disposed of in municipal landfills. Incinerator standards are now being developed and once they are approved, the government will begin an enforcement program. This should stimulate a demand for hospital incineration technologies because a large demand already exists.

Waste is categorized as hazardous by Mexican law if it is corrosive, reactive, explosive, toxic, inflammable, and/or biopathogenic in accordance with the Basel Convention on Hazardous Waste. It is estimated that about 15,500 tonnes of industrial hazardous waste were generated in Mexico every day of 1994.

Solid/Hazardous Waste Generated in Mexico, 1993

Area	Tonnes per day
Mexico City area	5,515
Southern states	3,588
Central states	2,100
Pacific states	1,500
Nuevo León	950
Northern states	847
Total	**14,500**

Source: United States Department of Commerce, ISA9312.

The World Bank is presently considering a US $300 million loan to support the development of a national policy on toxic and hazardous waste, and to provide assistance in financing the necessary infrastructure to dispose of toxic waste.

CUSTOMERS

Multinational corporations and large Mexican grupos, are the best prospects for equipment sales. Governments have become promoters rather than sponsors of infrastructure projects.

Purchasers of environmental technologies in Mexico include: government agencies concerned with the environment; *paraestatales*, state-owned companies; and privately-owned industrial enterprises.

GOVERNMENT ENVIRONMENTAL AGENCIES

Governments and government agencies have traditionally been the most important buyers of environmental equipment in Mexico. Government expenditures for environmental protection totalled US $2.5 billion in 1993. More than one-third of these expenditures were allocated to mass transit and clean fuel programs. Another third was for conservation and protection of endangered species. The remaining third was devoted to environmental infrastructure, water facilities and other equipment.

Since 1991, many environmental activities have been decentralized to Mexico's 31 states. Twenty-nine states have their own environmental laws. State and municipal organizations are now the biggest buyers of water supply and wastewater projects as well as solid waste systems. Recent budget limitations have forced the states and municipalities to consider build-operate-transfer (BOT) and other investment-based financing arrangements. This has opened new opportunities for foreign environmental firms, typically in partnership with Mexican construction companies.

Under the former government of Carlos Salinas, environmental expenditures were coordinated through major national programs, in particular the *Programa Nacional de Protección Ambiental*, National Program for Environmental Protection. A separate program concerned itself with pollution prevention in the Valley of Mexico. The *Programa de las 100 Ciudades*, 100 Medium Cities Program, concentrated on infrastructure development. The *Programa Nacional de Agua Potable para Zonas Rurales*, National Program for Water Supply in Rural Areas, was managed by the *Comisión Nacional del Agua (CNA)*, the National Water Commission.

One of the first priorities of the government of President Ernesto Zedillo when it came to power in December 1994, was to establish a new secretariat for the environment, the *Secretaría del Medio Ambiente, Recursos Naturales y Pesca (SEMARNAP)*, Secretariat of the Environment, Natural Resources and Fisheries. It took over the environmental responsibilities of two other departments. These changes appear to have superceded most of the former government's programs. The *Programa Nacional de Protección Ambiental*, National Program for Environmental Protection, was due to expire in 1994 in any event. The *CNA*'s water program is still technically in place, but on hold. The division of responsibility between federal departments and agencies remains in some doubt as *SEMARNAP* gradually exerts its jurisdiction.

Meanwhile, the *Departamento del Distrito Federal (DDF)*, Department of the Federal District, responsible for the Mexico City area, is in the process of enacting its own environmental laws and will soon play a much larger role in enforcement. The main agencies responsible for environmental purchases under the new regime are described in the following sections.

Secretariat of the Environment, Natural Resources and Fisheries

A new secretariat called the *Secretaría del Medio Ambiente, Recursos Naturales y Pesca (SEMARNAP)*, Secretariat of the Environment, Natural Resources and Fisheries, now has overall responsibility for the environment, including regulation and enforcement.

Previously, environmental issues were handled by the *Secretaría de Desarrollo Social (SEDESOL)*, Secretariat of Social Development. *SEDESOL* continues to have overall responsibility for urban planning, which includes some involvement in wastewater and solid waste issues. At the same time, the *Comisión Nacional del Agua (CNA)*, National Water Commission, and the *Instituto Mexicano de Tecnología del Agua (IMTA)*, Mexican Institute of Water Technology, were transferred to *SEMARNAP* from the *Secretaría de Agricultura y Recursos Hidráulicos (SARH)*, Secretariat of Agriculture and Water Resources. Since the new secretariat is still in the process of organization, there is some uncertainty about how powerful a voice it will have. With a budget of only N $4 billion pesos, roughly US $670 million in July 1995, it has insufficient resources to make major improvements. Some observers speculate that the agencies that administer environmental policies and programs will have considerable autonomy and that they will attempt to use private sector participation to bolster their programs. The four principal agencies involved are the following:

- *Instituto Nacional de Ecología (INECO)*, National Institute of Ecology
- *Procuraduría Federal para la Protección del Ambiente (PROFEPA)*, Federal Office for Environmental Protection

- *Instituto Mexicano de Tecnología del Agua (IMTA),* Mexican Institute of Water Technology
- *Comisión Nacional del Agua (CNA),* National Water Commission

These agencies have autonomous decision-making authority, but are dependent on *SEMARNAP* for funding.

National Institute of Ecology

The *Instituto Nacional de Ecología (INECO),* National Institute of Ecology, is based in Mexico City with a staff of 500. It has three principal functions: formulating new standards and regulations, assessing environmental impact and risk, and granting permits for industrial plants. The *INECO* is also helping to increase environmental expertise within state governments.

Standards and regulations must follow the framework established by the *Ley de Normas y Metrología,* Law of Standards and Measurements. Although the government planned to have some 200 environmental standards finalized by the end of 1994, less than 60 were actually published. Some of the work for standards development was contracted to Canadian firms, with funding provided under the Government of Canada's Green Plan.

Environmental Impact Assessment and Risk Assessment regulations require that new industrial operations in specified industries must submit an Environmental Impact Assessment (EIA) prior to construction. A total of 396 EIAs were submitted in 1992. The *INECO* maintains a register of companies that are allowed to do EIAs.

Permits for air emissions, water discharges and hazardous waste handling are issued by the *INECO* for a range of specified industries. Federal public works projects, public highways, federal tourism projects and all industries in the Mexico-U.S. border area also require permits.

Federal Office for Environmental Protection

The *Procuraduría Federal para la Protección del Ambiente (PROFEPA),* Federal Office for Environmental Protection, is Mexico's environmental enforcement agency. *PROFEPA's* mandate is to monitor compliance with air, waste and noise legislation and standards. It conducts investigations, inspections and environmental audits. Inspectors can impose sanctions ranging from fines or plant closures to performance bonds.

PROFEPA is responsible for enforcement of all environmental regulations that concern hazardous waste. This excludes wastewater unless it is considered hazardous or generates hazardous sludge. Some observers believe that enforcement of water regulations will be transferred to *PROFEPA* from the *Comisión Nacional del Agua (CNA),* National Water Commission, in the near future.

Another mechanism available to the Federal Office for Environmental Protection, is the environment audit. Until recently, these audits have been financed by the *Secretaría de Desarrollo Social (SEDESOL),* Secretariat of Social Development. They are conducted by approved private consultants and evaluated by the *Instituto Nacional de Ecología (INECO),* National Institute of Ecology. *PROFEPA* is now asking industry to do its own audits on a voluntary basis. According to *PROFEPA* officials, in the first quarter of 1995, 109 requests for audits were sent out. Of these, 18 were accepted, 65 were rejected, and there has been no response from the other 26. Efforts are underway to make environmental audits tax deductible, which would increase audit activity by private corporations.

National Water Commission

The *Comisión Nacional del Agua (CNA),* National Water Commission, was created in 1989. It has a mandate that covers the regulation of drinking water, as well as sewage and industrial wastewater for the entire county. It issues permits for all water resources and wastewater discharges into water basins.

The *CNA* also provides technical support to states and municipalities that operate their own water and sewage systems. Under the previous government, there was a major effort to decentralize responsibility for water to state and municipal *organismos operadores,* operating agencies. There are now about 40 cities in Mexico that have complete responsibility for their own water resources. This has not been entirely successful, and the state governments are now moving to take control because of a lack of technical expertise at the municipal level.

In response to the devaluation, the *CNA* is reportedly relaxing its enforcement of regulations affecting municipal water facilities. Municipalities will now have until 1997 (rather than 1995) to comply with new standards.

Mexican Institute of Water Technology

The *Instituto Mexicano de Tecnología del Agua (IMTA)* is the Mexican Institute of Water Technology. The *IMTA's* mandate is to develop and transfer technologies related to the efficient use of water, and to provide water management training. It offers consulting and engineering services, and is responsible for training municipal and state employees involved in water treatment. In 1993, the operation of *IMTA's* technical workshops for water systems was contracted to five foreign companies, including the Ontario Environmental Training Consortium.

Secretariat of Communications and Transportation

The *Secretaría de Comunicaciones y Transportes (SCT),* Secretariat of Communications and Transportation, is now responsible for transporting hazardous waste. They will issue all relevant standards and will regulate the transportation companies. In spite of this change, the *Instituto Nacional de Ecología (INECO),* National Institute of Ecology, still has to approve any transportation of hazardous waste.

Secretariat of Social Development

The *Secretaría de Desarrollo Social (SEDESOL),* Secretariat of Social Development, continues to have overall authority for urban planning policy. *SEDESOL* will continue to be responsible for developing infrastructure, including new municipal and state wastewater treatment plants and solid waste facilities. According to officials interviewed for this profile, its role will be more "promotional" in the future, since the secretariat does not have a budget for direct project sponsorship.

Municipalities

The *Banco Nacional de Obras y Servicios Públicos (BANOBRAS),* National Bank of Construction and Public Works, has been encouraging the privatization of municipal water systems. Last year, it allocated funds for 1995 to pay for technical studies to help municipalities to develop feasible packages. Most observers believe that little of this financing will actually be realized, because of the economic crisis. Most private companies interested in participating in build-operate-transfer (BOT) projects are already doing their own studies and offering them to the municipal and/or state governments for review.

Department of the Federal District

The *Departamento del Distrito Federal (DDF)*, Department of the Federal District, is responsible for the Mexico City area, including 16 municipalities. The *DDF* is equivalent to a state, and wields considerable influence over environmental issues within its boundaries. The *DDF* is currently developing its own environmental laws, which are expected to be enacted during 1995.

Environmental Program for the Border Zone

There are severe environmental problems in the northern border region, due to the presence of a large number of *maquildadora*, in bond, plants. The Government of Mexico coordinates its activities in this region through the *Programa Ambiental para la Zona Fronteriza*, Environmental Program for the Border Zone. Most of the publicly-sponsored environmental programs in this region are joint ventures with the United States, through the Border Action Plan. The North American Development Bank will provide financing and guarantees for up to US $3 billion in environmental work along the border. Canada is not a member of this bank. Therefore, Canadian companies will face a disadvantage with respect to government-sponsored work in the northern border region.

State-owned Companies

Paraestatales, state-owned companies, have traditionally been major users of environmental technologies. Although a large number of them have been sold to private investors over the past few years, energy continues to be reserved for the public sector under the Mexican constitution. There are two major *paraestales*: *Petróleos Mexicanos (PEMEX)*, the national oil company, and the *Comisión Federal de Electricidad (CFE)*, Federal Electricity Commission.

Until the end of 1994, both *PEMEX* and the *CFE* were accountable to the *Secretaría de Energía, Minas e Industria Paraestatal (SEMIP)*, Secretariat of Energy, Mines and State-owned Industry. In its first three weeks of power, the administration of President Zedillo replaced it with a much smaller *Secretaría de Energía (SE)*, Secretariat of Energy. The new ministry has responsibility for overall management of the nation's energy development, production and distribution. Most industry experts are skeptical, however, that the *SE* will be able to assert much influence over *PEMEX* and the *CFE*, considering that their directors continue to have independent access to President Zedillo.

Petroleos Mexicanos

Petróleos Mexicanos (PEMEX), the national oil company, manages the exploration, production and marketing of virtually all crude oil and refined oil products in the country. In 1993, *PEMEX* was divided into a holding company with several operating subsidiaries.

The *PEMEX* Environment Division has a mandate to develop standards and consolidate environmental information. One of its functions is to conduct environmental assessments and to ensure compliance with government regulations. Many of these assessments are contracted to private consultants, mainly from the United States. The subsidiaries each have equivalent, but smaller, environment departments.

PEMEX Gas and Petrochemicals Division is making a priority of site and soil remediation. It has many properties that are contaminated with acids and spent oils. *PEMEX* Refineries Division is in the process of rehabilitating the wastewater treatment plants at five of its refineries. In July 1994, it awarded build-operate-transfer (BOT) contracts, worth up to US $50 million each, to four private companies. The successful bidders were typically joint ventures between Mexican construction companies and foreign environmental engineering companies. The refinery unit also has major problems with hazardous waste disposal, especially for polychlorinated biphenyls (PCBs).

Federal Electricity Commission

The *Comisión Federal de Electricidad (CFE),* Federal Electricity Commission, is a state-owned corporation responsible for providing electrical power to all of Mexico. The *CFE* established an environmental division in 1992 that includes a staff of about 40. The division undertakes environmental impact assessments, risk assessments and also evaluates air, water and solid waste emissions. The *CFE* expects to complete approximately 60 assessments per year.

Like other public enterprises operating in the Valley of Mexico and the northern border area, the *CFE* is under government pressure to reduce air pollution. *CFE* officials say that they have a strong preference for fuel substitution rather than abatement technologies. They also believe that better combustion engineering will reduce harmful emissions at source. The *CFE* also faces major problems with hazardous waste, including spent oils, tires, batteries, sulphuric acid, chlorine, pesticides and polychlorinated biphenyls (PCBs).

PRIVATE INDUSTRY

Most industry analysts seem to agree that in the medium term, industrial pollution control will provide the best prospects for foreign suppliers. The needs in this area have only barely begun to be met, and Mexican buyers have confidence in imported environmental technologies. This implies long-term growth, which is expected to accelerate once the economy stabilizes, perhaps in 1996.

In the short run, the economic crisis will prevent smaller Mexican manufacturers from buying. They simply do not have the capital to invest in anything that is not directly related to cost competitiveness. Even before the devaluation, the smaller firms were strapped for funds because of high interest rates and intense competition resulting from trade liberalization.

The companies that are still buying include multinational enterprises and large export-oriented Mexican firms because they have access to capital. However, they continue to be targets of government enforcement, especially since this has been slackened for small firms that are in jeopardy as a result of the devaluation of the peso in December 1994. In the current economy, regulators are reluctant to take action that will throw people out of work.

In the medium term, all industrial firms will be subject to enforcement. Moreover, the development of new *Normas Oficiales Mexicanas (NOMs)*, official standards, is still progressing, and the *Departamento del Distrito Federal (DDF)*, Department of the Federal District, is preparing to increase enforcement within its own jurisdiction. The application of this regulation to smaller firms will create a huge market for environmental technologies. According to the *Cámara Nacional de la Industria de Transformación (CANACINTRA)*, National Chamber of Manufacturing Industry, more than 96 percent of 30,000 plants located around Mexico City are small- to medium-sized operations, most of which generate hazardous waste of some type.

The industrial environmental market is heavily weighted towards services such as hazardous waste management, storage, site assessment and remediation. Most companies are currently storing rather than treating waste. In the future, portable technologies for clean-up and elimination at the source will be in demand. Equipment for recycling water at the plant level is also in strong demand, because industrial water prices are rising rapidly.

Mexico's privatization policies are increasing the size of the industrial market. Typically, *paraestatales*, state-owned companies, that are sold to the private sector are in desperate need of modernization. Indeed, large investments in new technology are often a requirement of the sale agreement. Also, the government has greater leverage over private firms than it does over *paraestatales*.

Major Purchasers of Air Pollution Equipment

Industry	Major purchasers	
Chemicals	Hoechst	BASF
	Bayer	Dow Chemical
	Monsanto	Union Carbide
	Amoco	Celanese
	Dupont	
Transportation	Auto Emissions Verification Centres under the *Programa de Verificación Vehicular.*	
Mining and metals	Grupo Peñoles	Grupo San Luis
	Grupo Frisco	Industrial Minera México
Plastics	Envases Cuautitlán	General Electric
	VISA	Auriken México
	Vitro Envases	Mattel de México
	Plásticos Líquidos	Samsonite
	Sylpyl	Industrial El Refugio
	Fester	Industrial Novedades Plásticas
Textiles	Covadonga Textil	Alfombras Imperial Afelpados Finos
	La Nueva Textil	Acabados Texmelucan
	Magatex	Anglo Textil
	Fábrica de Hilados y Tejidos Santa Alicia	Aztlán Textil
Pulp and paper	Kimberley-Clark	Grupo Industrial Durango
	Cartón y Papel	Cajas Corrugadas
Electric appliances	Elektra	Sony
	General Electric	Panasonic
	Koblenz	Motorola
	Crolls	Black and Decker
	Philips	Sunbeam
	Braun	
Rubber	Michelin	Good Year
	Euzkadi	General Popo
	Firestone	Pirelli
	Tornel	

Source: United States Department of Commerce, ISA9402.

Major Purchasers of Solid Hazardous Waste Management Systems

Industry	Major companies	
Chemical/petrochemical	Hoechst	Basf
	Bayer	Dow Chemical
	Monsanto	Union Carbide
	Amoco	Petróleos Mexicanos (PEMEX)
	Dupont	
Hospitals	Seguro Social Salubridad (ISSSTE)	
	Hospital American British Cowdray (ABC)	
	Hospital Angeles del Pedregal	
	Hospital de México	
	Hospital Infantil de México	
	Hospital Médica Sur	
Pharmaceuticals	Abbott Laboratories	
	A.H. Robbins	
	American Cyanamid	
	Bristol-Myers	
	Squibb	
	Eli Lilly	
	Johnson & Johnson	
	Searle	
	Upjohn	
	Warner Lambert	
Mining and metals	Grupo Peñoles	Grupo Frisco
	Grupo San Luis	Industrial Minera México
In-bond industry	2,042 plants	
Auto repair	3,000 gas stations	
	2,500 car dealers	
	4,000 small repair shops	
Other industries	Food	Textiles
	Wood	Paper
	Metalworking	Rubber

Source: United States Department of Commerce, ISA9312.

Major Purchasers of Water Pollution Control Equipment

Industry	Major customers	
Petrochemicals	Hoechst	Amoco
	Bayer	Dow Chemical
	Monsanto	Union Carbide
	Dupont	Celanese
		BASF
Sugar	Machado	Beta San Miguel
	Escorpión	Grupo Azucarero Mexicano
	Sucrum Santos	
Food processing	Anderson Clayton	La Azteca
	Herdez	Kraft
	Compañia Nestlé	General Foods
	Clemente Jacques	Gamesa
	Del Monte	McCormic
	Gerber	General Mills
	Nabisco Famosa	Carnation
Beverages	Coca-Cola	Cervecería del Pacífico
	PepsiCo	Cervecería Modelo
	Bacardi	Garci-Crespo
	Bebidas Mundiales	Jugos del Valle
	Bebidas Purificadas	Peñafiel
	Casa Cuervo	Cervecería Moctezuma
	Cervecería Cuauhtémoc	Sociedad Cooperativa de Trabajadores de Pascual
	Tequila Sauza	
Textiles	Alfombras Imperial de México	Aztlán Textil
	Afelpados Finos	Covadonga Textil
	Acabados Texmelucan	Fábrica de Hilados y Tejidos Santa Alicia
	Anglo Textil	La Nueva Textil
		Magatex
Pulp and paper	Kimberley-Clark	Grupo Industrial Durango
	Cartón y Papel de México	Cajas Corrugadas
Electric appliances	Elektra	Sony
	General Electric	Panasonic
	Koblenz	Motorola
	Crolls	Black and Decker
	Phillips	Sunbeam
	Braun	
Iron and steel	Grupo Autrey-Ancira	Acabados de Acero
	Grupo Villacero	Acero Solar
	Caribbean Ispat	Hojalata y Lámina

Source: United States Department of Commerce, ISA9405.

Mexican companies are confined mostly to the low-technology construction side of the industry. But companies from the United States, Europe and Japan are putting up stiff competition for high-tech equipment and services.

MEXICAN COMPETITORS

The strength of Mexico's domestic environmental industry lies mainly in construction services. In general, the smaller the role of technology in a project, the more competitive Mexican companies can be. Nonetheless, the trend towards build-operate-transfer (BOT) infrastructure programs is cutting into the domestic market share because foreign competitors often make the key purchasing decisions.

Most Mexican environmental consulting companies are small- to medium-sized. There are only a few Mexican companies that produce technology-based products. Typically, they are either spin-offs of local consulting companies that have developed their own technologies or representatives of foreign manufacturers.

Two of Mexico's largest construction firms, *Fypasa/Operadora de Ecosistemas* and *Grupo Mexicano de Desarrollo* are regarded as the market leaders. They have consistently underbid foreign competitors, especially in the price-sensitive municipal infrastructure field. They are expected to be major players in the emerging market for BOT water projects. These companies are capable of doing most of their own design work, but typically import considerable amounts of equipment. *Tribasa, ICA, Atlatec, Obras Portuarias de Coatzacoalcos* and *Bufete Industrial* are other Mexican companies frequently mentioned as BOT competitors.

The Monterrey conglomerate *Cydsa* is another major participant in Mexico's environmental market. Its environmental improvement division has increased its annual sales from US $5 million in 1991 to US $65 million in 1993; in 1994 sales were projected to increase by 35 percent. According to a company spokesperson quoted in *Business Mexico*, the firm is designing, constructing and operating two municipal BOT water treatment plants in Chihuahua, as well as two more located at refineries owned by *Petróleos Mexicanos (PEMEX)*, the national oil company.

Medium-sized Mexican companies have won some recent infrastructure bids, but many observers doubt their technical ability to complete them successfully, unless they form joint ventures with foreign technology providers. The market is very competitive and municipal BOT projects often attract 20 to 25 proposals.

Foreign Competitors

The United States enjoys substantial advantages over other foreign competitors in the Mexican environmental sector. The relationship between the two countries regarding border environmental issues is a major factor, especially since many of the border programs are financed by the United States. The American Environmental Protection Agency (EPA) has a high level of technical credibility, and many Mexican standards are patterned after it. Geographic proximity is also an obvious advantage.

The U.S. claims about two-thirds of the Mexican market, followed by Germany with an 18 percent share. Other major importers are Japan, France and the United Kingdom. The Canadian share is small, but growing rapidly.

The American government and many European and Asian governments are promoting sales through a variety of technical assistance and financing packages. For example, the North American Development Bank has been providing financial assistance. This is a Mexican-American bilateral arrangement, which provides financing and guarantees for up to US $3 billion worth of border environmental projects. The Europeans and Japanese are offering soft loans and attractive financing terms.

The most important weakness of American companies is that they tend to offer less technical service and have less local presence than European and Asian competitors. They tend to be generalists, instead of focussing on niche markets. Mexican buyers complain that some American firms are culturally insensitive and less interested than some other sellers in doing business "the Mexican way".

In 1994, a major contract to upgrade Mexico City's water distribution and wastewater collection system was awarded to two French and two British companies. The project is reportedly worth US $760 million and was financed by the World Bank.

International Air Pollution Control Companies Operating in Mexico

Foreign firm	Representative in Mexico
Altech Systems Corporation	
American Air Filter	Purificación de Aire Mexicana, S.A. de C.V.
Atlas Electric Devices Company	Equipar, S.A. de C.V.
CM Kemp Manufacturing Company	Avante Ingenieros, S.A. de C.V.
Cole Palmer Instruments Company	Distribuidares y Representacianes Heru.
Dianex Corporation	Productos Tecnoquímicos Durubier Rasales, S.A.
FARR Campany	Filtration Systems de México
Pura Fil, Inc.	Purificación de Aire Mexicana, S.A. de C.V.
Radian Carporatian	Corporación Radian Mexicana, S.A.
Thermo Environmental	Leeds and Northrup Instruments Mexicana, S.A.
Westinghouse Environmental	Schultz, S.A. de C.V.

Source: United States Department of Commerce, ISA9402.

International Water and Sewage Companies Operating in Mexico

Foreign firm	Representative in Mexico
Ashbrook Siman-Hartley	Servicos de Ingeniería del Medio Ambiente, S.A.
Babcock & Wilcox	Babcock & Wilcox de México
Culligan International	Industrias Mass
Degremont	Degremont de México
Dorr-Oliver, Inc.	Dorr-Oliver de México, S.A. de C.V.
Envirex, Inc.	Belco Mexicana, S.A. de C.V.
Générale d'eau	Grupa Bufete Industrial
Graver Water	Industrias Econdyne, S.A. de C.V.
Hach Company	General de Laboratorios, S.A. de C.V.
Illinois Water Treatment	Itensa, S.A.
Leeds & Northrup	Leeds & Northrup Mexicana S.A.

continued on next page

Foreign firm	Representative in Mexico
Lowsco Corp.	Lawsco Mex, S.A. de C.V.
Lyonnaise des Eaux	
Memtec International	ARNI, S.A.
Millipore Corporation	Millipore, S.A. de C.V.
Radian Corporation	Corporación Radián S.A. de C.V.
Western Water Equipment	Soliqtec, S.A. de C.V.

Source: United States Department of Commerce.

International Solid Waste Companies Operating in Mexico

Foreign firm	Representative in Mexico
Atmos	Atmos, S.A.
Aralco	Aralco, S.A. de C.V.
Babcock and Wilcox	Babcock and Wilcox de México
Browning-Ferris	Demos International
Chemical Waste Management	Grupo Hermes
Dietzgen	
Dorr-Oliver	Dorr-Oliver de México, S.A. de C.V.
Fisher Governer	
Foxboro	
Hach	General de Laboratorios, S.A. de C.V.
Honeywell	
Horr and Choperena	Horr and Choperena, S.A.
Laidlaw	
Lawscomes	Lascomex, S.A. de C.V.
Leeds and Northrup	Leeds and Northrup Mexicana, S.A.
Perkin Elmer	
Sigma Engineering	Sigma Engineering, S.A. de C.V.
Taylor Instruments	
Uniloc	
Wallace and Tierman	

Source: United States Department of Commerce.

There has been a strong move away from government-financed technology procurements in favour of "non traditional" turnkey solutions. Build-operate-transfers (BOTs) are especially popular for municipal infrastructure projects.

ECONOMIC TRENDS

In late December 1994, the government of Mexico stopped supporting the peso, which was seriously overvalued. Within a week it had lost one-third of its value relative to the U.S. dollar. This led to a series of reactions, known in Mexico as *la crisis*. Government expenditures were cut, the national value-added tax was increased and a variety of other austerity policies were implemented.

As a result of this crisis, many government-funded environmental programs have been put on hold. This includes, for example, the *Programa Nacional de Agua Potable para Zonas Rurales*, National Program for Water Supply in Rural Areas, environmental expenditures by the *Comisión Federal de Electricidad (CFE)*, Federal Electricity Commission, and virtually all environmental projects of *Petróleos Mexicanos (PEMEX)*, the national oil company. No programs have been officially cancelled, but the lack of money has brought government activity almost to a standstill.

On the other hand, the crisis is forcing government agencies, particularly the *Comisión Nacional del Agua (CNA)*, National Water Commission, to consider alternate forms of financing. A variety of privatization schemes, especially build-operate-transfer (BOT) packages, are being considered for new facilities. The recently-privatized Aguascalientes project is considered a model for the future. Many existing facilities are also considered candidates for operate and maintain (O&M) contracts.

The devaluation has also led to a relaxation of enforcement of environmental standards, especially as they apply to small companies and municipalities. The *CNA* is now giving municipalities until 1997, instead of 1995, to comply with wastewater standards. Small companies are being given particular leeway since environmental enforcement can lead to layoffs.

COMPANY PROFILE
CINTEC ENVIRONNEMENT INC.

Cintec is a medium-sized environmental consulting company based in LaSalle, Quebec. It entered the Mexican market in late 1993.

Cintec's activities in Mexico have focussed exclusively on PCB management, although the company is also interested in contaminated soil treatment. Their Mexican partner is *Perfotec*, which also specializes in hazardous waste. Their current arrangement is a joint-venture: Cintec provides technology and skills and, once staff is fully trained, *Perfotec* will provide sales, marketing, and operational expertise.

Recently, Cintec demonstrated its technology to *Petróleos Mexicanos (PEMEX)*, the national oil company. Testing was required to prove that Cintec's technology was capable of the cost-effective reduction of PCBs to the standards of the American Environmental Protection Agency.

The demonstration required a significant resource commitment, including three full-time staff (one engineer, two technicians) working in Mexico City. A Cintec executive noted that while the partnership has been successful, the parties had to reconcile their differences in terms of time allowances so as to achieve results.

COMPANY PROFILE
MACVIRO CONSULTANTS INC.

Toronto-based MacViro consultants began business in Mexico in 1993. The company is now approved by the Mexican government to complete environmental audits.

MacViro has also attempted to obtain a licence to complete full environmental impact assessments. It has not yet received a response to its application, and a company spokesperson describes the process as "difficult".

During the summer of 1994, MacViro participated in the development of proposals for eight build-operate-transfer (BOT) sewage plants in the state of Morelos. But they found it difficult to stay price competitive, given the large number of Mexican competitors.

MacViro has developed an informal partnering relationship with a Mexican company that distributes industrial chemicals and has extensive contacts in the industrial market. The company is currently re-examining its market strategy, and is considering moving into hospital waste and hospital incineration projects.

The *Banco Nacional de Obras y Servicios Públicos (BANOBRAS)*, National Bank of Construction and Public Works, is also working to help municipalities through the crisis. *BANOBRAS* officials are meeting with international financial institutions including the World Bank and the Inter-American Development Bank (IADB) to try to restructure upcoming projects to make them more feasible.

The devaluation has been only slightly damaging to larger industrial companies including multinationals and Mexican *grupos*, because they usually have substantial foreign currency earnings and debt financing. Although they are placing greater reliance on external financing, they are reportedly continuing with major environmental projects.

Estimates of the duration of the financial crisis are necessarily speculative. The consensus is that the private sector will remain depressed for at least 12 months and possibly as long as 24. Officials from the *Secretaría de Desarrollo Social (SEDESOL)*, Secretariat for Social Development, believe that some environmental spending will be restored within six months, but that the overall market will not improve much until 1996 or 1997, because accessing available funds from the World Bank and the IADB require matching state contributions. According to *BANOBRAS*, some state governments are expected to default on their existing loans as a result of the devaluation.

In spite of these short-term difficulties, some observers expect environmental expenditures to rebound to annual growth rates in the 15 percent-plus range because the effect of the devaluation has been to postpone rather than cancel programs. Other experts think that the effects of the devaluation may be more prolonged.

MARKET TRENDS

There has been a major trend towards proactive marketing for sales to state and municipal governments, rather than waiting for bid requests. This is especially true for potential build-operate-transfer (BOT) water projects. Foreign and Mexican companies alike are defining potential projects and completing the feasibility studies at their own risk. Previously, feasibility studies were commissioned by the state or municipal government with federal financing. The project would be put up to tender after the study defined the specifications. Now there is no government money available for studies and projects are being initiated by the private sector. According to interviews with government officials, Canadian companies have not been active in this type of promotion.

Company Profile
Goodfellow Consultants Inc.

Goodfellow Consultants Inc. (GCI) is a Mississauga-based, Ontario engineering firm that designs detailed solutions for ventilation and air pollution control. Approximately 60 percent of their revenues are generated from exports. They do not consider Mexico to be one of their primary export markets because the current economic environment prevents a clear market focus.

In 1986, GCI designed air emission capture hoods for *Hylsa*, a Monterrey-based facility. In 1992 and 1993, the company developed three environmental standards for the *Instituto Nacional de Ecología (INECO)*, National Institute of Ecology. Two were sourced through a bilateral cooperation agreement between Canada and Mexico and the third was through the World Bank.

Subsequently, GCI made a decision to develop a more permanent presence in the Mexican market. They developed two "technical cooperation agreements". The first was with *Control Ambiental e Ingeniería Van Ruymbeke*, a Mexico City firm focussing on Environmental Impact Assessments (EIAs) and remediation work. The second was with *Procesadora Metalmécanica de Toluca*, a manufacturer of air pollution control equipment.

According to a GCI executive, a careful selection process was necessary to identify suitable partners. More than 50 potential partners were interviewed before a choice was made.

The shortage of funds is also driving a trend towards broadly-based regional projects encompassing the needs of more than one municipality. The state governments are also encouraging the integration of water supply and wastewater treatment projects.

One example of the integrated approach is the *Comisión Metropolitana para la Prevención y Control de la Contaminación Ambiental en el Valle de México*, Metropolitan Commission for the Prevention and Control of Environmental Pollution in the Valley of Mexico. This commission includes the *Departamento del Distrito Federal (DDF)*, Department of the Federal District, as well as 27 surrounding metropolitan municipalities. The commission was set up to encourage cooperation on environmental projects to improve their efficiency.

The *Secretaría de Desarrollo Social (SEDESOL)*, Secretariat for Social Development, is currently trying to act as a promoter of environmental projects. It is working with the *Cámara Nacional de la Industria de la Construcción (CNIC)*, National Chamber of the Construction Industry, to try and encourage self-generated private projects. Its approach is to identify possible projects and then try to match them with private capabilities. This does not, however, eliminate the need for a formal concessioning process with competitive tenders.

A new trend towards process change rather than "end-of-pipe" solutions is beginning to emerge. So far only the multinationals and larger Mexican conglomerates have begun to see this as the most efficient way of managing environmental problems. This concept is expected to spread gradually to medium-sized Mexican companies.

A serious shortage of space in urban areas is driving demand for more compact wastewater systems. The lack of space for landfill sites is also a major problem, especially in the Mexico City area, and this is creating demands for alternative disposal systems. In particular, there are virtually no facilities available for the destruction of non-hazardous industrial waste.

Solutions Integration

The Mexican environmental market is in the midst of a shift towards the purchase of integrated solutions rather than specific equipment and technologies. Buyers are no longer looking for technologies. They want a complete financial and technological package. This means that the provision of competitive financing has become a key success factor. Build-operate-transfer (BOT) arrangements are particularly popular for wastewater and solid waste facilities, including hazardous waste. Mexico City, for example, is currently evaluating options for a concessioned facility to treat hazardous wastes.

The trend towards integrated solutions creates a competitive advantage for larger firms and is putting pressure on smaller companies to form joint ventures. Increasingly, the successful suppliers are those who can cover the entire process from environmental audits to turnkey construction, including facility management and client training. Companies with sophisticated engineering departments try to apply their own technologies first, and then go to specialized foreign providers for specific technologies.

THE TREND TOWARDS INTEGRATED SOLUTIONS
US $ MILLIONS, 1994

	Traditional	Non-traditional	Total
Market opportunity	**Product and technology oriented**	**BOTs[1], O&M[2], and other investment-oriented packages**	
Wastewater (excluding PEMEX BOTs)	311.0	530.0	841.0
Air pollution	30.4	330.0	360.4
Solid and hazardous waste	60.5	250.0	310.5
Total	**401.9**	**1,110.0**	**1,511.9**

[1] BOT: build-operate-transfer
[2] O&M: operate and maintain

Source: United States Agency for International Development (USAID), 1995.

PRODUCT OPPORTUNITIES

In the early stages of Mexico's program to transform its environment, the biggest opportunities were in services such as engineering and design, environmental assessment and training. Demand has now begun to increase for measurement and analytical equipment, and laboratory services. As the program matures, demand will shift towards the supply of environmental control equipment, especially integrated packages.

Company Profile
Roche Ltée. Groupe Conseil

Roche Ltée is a Sainte-Foy, Quebec-based environmental consulting company that is active in a wide variety of Latin American markets. The company entered the Mexican market in the late 1980s, concentrating primarily on service-oriented projects such as environmental assessments and audits. Their decision to enter the market was based upon perceived market potential rather than specific opportunities.

So far, the company has completed approximately 15 Mexican projects, including a cost/benefit analysis of atmospheric emissions in Mexico City, funded by the Canadian International Development Agency (CIDA), and a forestry management project for the International Development Bank in the state of Guerrero.

Roche is now attempting to move into build-operate-transfer (BOT) infrastructure projects, but they have found that obtaining financing for such operations is difficult.

Roche has formed a partnership with a smaller Mexican environmental company. Work is shared on an informal basis. Roche originally tried to establish a relationship with a larger Mexican partner, but found it difficult to reach agreement on essential details of the arrangement.

One Roche executive offers the following advice for other Canadian companies:

- ☐ Local partners are essential. They provide contacts, networking and payment collection.
- ☐ Contracts should be specified in American dollars.
- ☐ Contracts may not be firm when government administrations change.

Water and Sewage Treatment

Mexican government authorities consider shortages of good-quality water and pollution of the water system as the most important environmental problem. State and municipal governments dominate this market. More than US $5 billion has been officially allocated to new facilities, but virtually all of this planned investment has been frozen because of the economic crisis.

The government is now placing emphasis on privatization schemes including build-operate-transfer (BOT), and operate and maintain (O&M) concessions. It is possible that the planned spending might be cancelled altogether if concession plans are successful. According to officials from the *Comisión Nacional del Agua (CNA),* National Water Commission, as of July 1994, some 50 existing wastewater plants were considered candidates for upgrading and management by concessionaires.

Full-scale privatization is also considered a high priority, but the high cost of capital and the risks of collecting water tariffs from financially-troubled municipalities have made this difficult. It is currently illegal to cut off potable water supplies to non-paying customers.

The *Banco Nacional de Obras y Servicios Públicos (BANOBRAS),* National Bank of Construction and Public Works, provides a financing package designed to minimize risk to concession operators by guaranteeing concession payments for the period of concession. The program is open to both Mexican and foreign companies.

In the industrial sector, an estimated 100 water treatment facilities with an average value of US $2 million each were installed in 1993. Investment in this area is suffering because of capital shortages. Reduced enforcement for small- to medium-sized companies is also having a depressing effect on the market. In addition, industrial plants are often reluctant to upgrade when the local municipal plants are operating at sub-standard levels.

Once the economic and enforcement environments have stabilized, substantial growth is expected, with particular emphasis on the following products and services:

- micro-processor based control systems;
- systems that do not generate sludge;
- instrumentation, particularly water consumption metres;
- consulting services for water management programs; and
- design engineering services for treatment facilities.

Estimated Market for Water Pollution Control
US $ millions

	1993	1994	1995	1996	Average percentage growth 1993-96
Municipal: instrumentation	39	45	52	61	16
Municipal: build-operate-transfer (BOT)	160	200	240	287	21.5
Municipal: operation / maintenance / distribution contracts	40	50	65	85	28.5
Multilateral funded	80	80	160	195	34.5
Traditional government funded	300	200	260	300	0
Industrial: instrumentation	30	36	43	52	20
Industrial: PEMEX BOTs	0	250	0	150	n/a
Industrial: wastewater treatment	200	230	265	308	15.4
Total	**849**	**1,091**	**1,085**	**1,438**	**19.2**

Source: United States Agency for International Development (USAID), 1995.

Air Pollution Control

Most improvements in air quality will result from government-initiated programs to reduce automobile emissions though the use of unleaded gasoline and catalytic converters. *Paraestatales,* state-owned companies — especially *Petróleos Mexicanos (PEMEX),* the national oil company, and the *Comisión Federal de Electricidad (CFE),* Federal Electricity Commission — are also under pressure to reduce their emissions, but much of this will be accomplished through fuel substitution. For this reason, private sector customers make up most of the market for air pollution control equipment and services.

Direct sales of air pollution control equipment to end users, especially small factories, are not expected to increase substantially in the short term. In the medium term, sales of equipment and services for measuring and analyzing pollution problems will dominate the market. In the longer term, increased enforcement of air contamination regulations will lead to a growing market for control equipment, especially in those sectors and geographical areas targetted as enforcement priorities.

Estimated Market for Air Pollution Control
US $ millions

	1993	1994	1995	1996	Average percentage growth 1993-96
Monitoring equipment	15	15	15.0	17	4.2
Air testing services	0.8	0.4	0.5	0.7	n/a
Pollution obotement equipment	18.0	15.0	15.0	18.0	0
Natural gos retrofit equipment	306.0	330.0	370	420.0	11.1
Total	**339.8**	**360.4**	**400.5**	**455.7**	**10.3**

Source: United States Agency for International Development (USAID), 1995.

The government is placing new emphasis on regional air quality studies as the basis for new emissions control regulations. Air pollution regulations are expected to become stricter beginning in 1998. As a result, there will be a substantial market for quantitative analysis and studies.

According to the industry experts interviewed for this profile, other important product opportunities in the air pollution subsector include the following:

- State governments are important customers for air quality testing equipment, both mobile and stationary, for regional monitoring programs. The cities of Juárez and Tijuana are also expected to invest in air pollution monitoring equipment in the near future, but Mexico City, Monterrey, Guadalajara and Torreón already have monitoring networks.
- Vehicle verification systems, especially for a planned monitoring program in Monterrey.
- Electrostatic precipitators, especially for the cement industry.
- There will be continuing transportation studies in medium-sized cities, which will require technical support services.
- Although sales of scrubbers and other abatement technologies are surprisingly low, there is a market for cyclones and baghouses.

Solid Waste Disposal

The demand for solid waste handling systems comes mainly from municipal and state governments. The single most important market is for collection concessions, but combined concessions for collection and landfill operations are an emerging trend. Municipal garbage collection tends to be strongly influenced by union interests which do not necessarily favour privatization.

Industrial users also demand integrated disposal services. As new regulations become effective, they will increasingly require additional services.

- Soil Testing and Remediation. The Mexican government is considering new regulations to require the vendors of commercial property to obtain an environmental inspection prior to sale.
- Environmental Audits. If a proposed new measure to make environmental assessments tax deductible is enacted, it is expected that demand for audits and assessments from small- and medium-sized enterprises will increase.
- Identification of Wastes. The government is expected to develop specific classification criteria for hazardous wastes and to require disclosure of industrial inventories. This will create a demand for engineering services as well as laboratory services and equipment.

Estimated Market for Solid Waste Disposal Services
US $ millions

	1993	1994	1995	1996	Average annual percentage growth rate 1993–96
Municipal recycling	7	7.5	8.5	10	12.6
Municipal collection services	150	200	250	313	27.8
Municipal sanitary landfills	5	10	15	20	58.7
Hospital incinerations	5	5	7	9	21.6
Industrial recycling	20	18	20	23	4.8
Industrial incineration	0	20	23	77	96.2
Hazardous waste landfills	0	50	0	260	n/a
Total	**187**	**310.5**	**323.5**	**712**	

Source: United States Agency for International Development (USAID), 1995.

Hazardous Waste

The current market for hazardous waste disposal is relatively small. By one estimate, the 1995 market was US $8.5 million for hospital incineration, US $20 million for industrial recycling and US $23 million for industrial incineration. This market is expected to grow rapidly over the medium term as new regulations are enacted. In particular, Mexico's first polychlorinated biphenyl (PCB) regulations are expected in 1996.

The potential opportunities will fall into two categories. There is a need for large-scale disposal and containment facilities, as well as company-specific solutions, equipment and consulting services. In the short term, the market is mainly for consulting and storage services. In the medium term, technical services will expand to include on-site remediation and portable units operated by outside firms. In the long term, a market for permanent facilities will evolve.

Industry observers point to a number of specific product and service opportunities.

- The demand for incineration units in large manufacturing facilities will increase.
- The product market will be concentrated in technologies approved by the *Instituto Nacional de Ecología (INECO)*, National Institute of Ecology. This gives American companies with Environmental Protection Agency (EPA) approval an advantage.
- Hospital waste incinerators will be in demand as soon as new regulations are enacted.
- The transportation market will grow steadily in the medium term as enforcement forces companies to deal with hazardous wastes. This market is closed to foreign competition until the end of 1995, when it will be gradually opened. Canadian firms would have to joint venture with local transportation companies in order to participate.
- There is a market for soil remediation and groundwater clean-up from spilled oil. Simple bio-remediation is often performed on site. *Petróleos Mexicanos (PEMEX)*, the national oil company, has 3,000 gas stations with chronic leakage problems. The *Comisión Federal de Electricidad (CFE)*, Federal Electricity Commission, and *Ferrocarriles Nacionales de México (FNM)*, the Mexican National Railway, are also important customers. Remediation is often required before the privatization of state companies. Most projects will be awarded to companies that can provide turnkey solutions.

Consulting Opportunities

With the exception of the large multinational corporations, Mexican industrial organizations tend to be much less sophisticated than their Canadian counterparts. They may realize that they have an environmental problem, especially if they have already been visited by an inspector, but they often do not know exactly what the problem is. They have little experience with environmentally-appropriate production methods, and do not generally understand the underlying principles. Unfortunately, many of them believe that simple solutions are available and they easily fall prey to companies selling specific equipment rather than solutions.

There are important opportunities for Canadian consulting companies, especially those with experience in the equivalent industries in Canada. But as one expert put it, they are faced with a "double sell": they must convince customers that they need a consultant in the first place, before they can sell their particular qualifications.

Forthcoming legislation in some states may require environmental audits for all high-risk industries. This would substantially increase opportunities for environmental consultants.

Estimated Market for Environmental Consulting
US $ millions

	1993	1994	1995	1996	Growth 1993-96 in percentage
Audits	10.0	7.5	8.5	10.0	2
EIAs*	12.5	10.0	11.0	12.5	1
Total	**22.5**	**17.5**	**19.5**	**22.5**	

*Environmental Impact Assessments (EIA)

Source: United States Agency for International Development (USAID), 1995.

MARKET ENTRY STRATEGIES

A strong local presence is essential for Canadian companies moving into the Mexican market. Most find that a local partner is the best solution.

The environmental sector is new in Mexico, and local companies tend to suffer "sticker shock" when they see foreign prices for environmental services. Decision-makers do not generally understand all of the concepts necessary to distinguish good service from bad. A related problem is that Mexicans are not accustomed to paying for waste disposal services. Persistent marketing, including providing customers with technical education, is needed to overcome this fundamental barrier.

LOCAL PRESENCE

Perhaps the biggest obstacle to greater participation of Canadian firms in the Mexican environmental market is the lack of local presence. Mexicans prefer to purchase imported services and equipment from companies with a demonstrated commitment to the local market.

A practical way to establish this presence is to form a strategic alliance or partnership with a Mexican company. Canadian firms can provide expertise and technology that mesh well with the market knowledge and relatively low operating costs of local partners.

Canadians wishing to establish business relations with Mexican firms should have personnel at all levels with a working knowledge of Spanish. Mexican customers require a high level of attention and follow-up. Informality dominates and deals are frequently made only after personal relationships have been built.

DISTRIBUTION

Larger environmental firms are most likely to concentrate on turnkey projects and concessions, in which case they will deal directly with the customer. Mexican firms prefer to deal directly with the source, especially where highly technical processes and projects are involved. A local partner will probably be needed to provide day-to-day service and coordination, but the foreign supplier must be seen to be in control, because foreign technology is regarded as superior.

Distributors play a stronger role in lower technology systems and services. Hospital waste treatment is an example of an area where a local representative will be needed, because of the large number of potential clients. Each hospital makes its own purchase decisions.

A local environmental company is usually the best candidate for a partner. The industrial market requires proactive marketing techniques, and municipal markets are increasingly moving in that direction. An established Mexican environmental firm will have the market knowledge and contacts to make this happen. A strong technical link between the two partners is essential. New technology may have to be presented to potential customers on short notice — having a fully-qualified technical person on the ground in Mexico is a big advantage.

FINANCE

In spite of the overwhelming need for environmental investment in Mexico, the more optimistic projections of market growth under the North American Free Trade Agreement (NAFTA) have not been realized, even before the devaluation of the peso in 1994. In fact, many American firms that rushed into the market over the past few years are reportedly pulling out. The most important underlying factor is the inability of Mexican governments and industries to pay for the environmental technologies they need.

Financing environmental projects undertaken by small- and medium-sized enterprises is the mandate of *Nacional Financiera (NAFIN)*, the National Development Bank. It provides loan guarantees for environmental projects, and also provides equity financing for environmental companies. *NAFIN* will provide guarantees for up to half of the amount of a loan, provided that the other half is guaranteed by corporate assets or the personal assets of the directors. These loan guarantees are designed for companies which do not qualify for regular bank loans and are available to companies incorporated in Mexico, whether or not they are foreign-owned. *NAFIN's* ability to continue providing this funding is uncertain in the current economic environment.

Financing from international lenders such as the World Bank and the Inter-American Development Bank (IADB) has been substantial, but it cannot keep pace with the demand. At the end of 1993, the World Bank had granted a line of credit of US $1.8 billion to be used for environmental programs between 1993 and 1995.

The IADB has extended lines of credit to Mexico to be used by water-polluting industries. IADB projects scheduled for 1995 include US $300 million for irrigation and drainage and US $600 million for a basic sanitation program. Another US $200 million is allocated for the *Programa Nacional de Agua Potable para Zonas Rurales*, National Program for Water Supply in Rural Areas in 1996. A project to develop additional wastewater facilities for Mexico City is in the project identification stage.

Much of this money will never be spent, however, because the Mexican government is currently unable to meet the requirements for matching funds. It also lacks the administrative capacity to manage many large programs at the same time. About half of the funds allocated to Mexican environmental projects have gone unused. Therefore, innovative financing is the key to increased export sales of environmental technology by Canadian firms.

Build-Operate-Transfer (BOT) Projects

The federal government is encouraging municipalities to "concession" municipal services such as wastewater treatment as well as solid waste collection and disposal to the private sector as a means of financing rapid improvements.

Build-operate-transfer (BOT) arrangements have been particularly popular in the area of water supply and wastewater treatment. One reason is that municipalities now have full jurisdiction over tariff collection and payments to plant operators. Water use and discharge tariffs have been widely implemented over the past two years. Water metres are now a government requirement, and the prices have risen dramatically.

In addition, "take-or-pay" contracts are now common for drinking water supply projects. Federal and state governments have been issuing guarantees against municipal default. BOT concessions have recently been granted for 12- to 15-year periods.

According to an executive of *Grupo Mexicano de Desarrollo*, as of the end of 1994, the private sector was involved in 27 water concessions worth almost US $1.8 billion.

Obtaining funding for BOT projects in Mexico is extremely difficult, however. As one Mexican business leader recently put it, foreign suppliers should "bring their own money" when contemplating BOT packaging.

REGULATORY ENVIRONMENT

Participation in the environmental sector depends on compliance with a long list of official standards. In addition, the company must be able to demonstrate to the Mexican authorities that they are technically qualified.

The Mexican environmental sector is regulated at the federal, state and municipal levels. The influence of various regulatory agencies on the market demand for products and services is discussed where it is relevant throughout this profile. This section provides an overview of the regulatory framework.

Mexico's system of environmental regulation is grounded in its Constitution. In general, the federal government is responsible for environmental issues that affect more than one state, including large industries, rivers and water systems. States and municipalities are usually responsible for municipal water and waste.

The 1988 *Ley de Equilibrio Ecológico y Protección al Medio Ambiente,* Law of Ecological Equilibrium and Environmental Protection, is the cornerstone of Mexico's environmental policy. This law is patterned after those in other countries, including the United States, and incorporates rules designed by the Environmental Protection Agency (EPA). It provides the framework for environmental standards and enforcement throughout Mexico.

The law is supplemented by various regulations and technical standards. The regulations outline the required procedures, while the standards provide quantitative parameters.

All states are required to publish their own environmental law and so far, 29 states have done so. They are mainly adaptations of the federal law. The states of Tlaxcala and Campeche have not yet enacted their own environmental legislation.

A new federal environmental secretariat, *Secretaría del Medio Ambiente, Recursos Naturales y Pesca (SEMARNAP),* Secretariat of the Environment, Natural Resources and Fisheries, was created by the administration of President Zedillo in late December 1994. It took over a number of key environmental agencies which were formerly part of other secretariats. Included are the *Instituto Nacional de Ecología (INECO),* National Institute of Ecology, the principal standard-setting agency, and the *Procuraduría Federal para la Protección del Ambiente,* Federal Office for Environmental Protection. Both of these entities had formerly been part of *Secretaría de Desarrollo Social (SEDESOL),* Secretariat of Social Development. At the same time, *SEMARNAP* also acquired the *Comisión Nacional del Agua (CNA),* National Water Commission, and the *Instituto Mexicano de Tecnología del Agua (IMTA),* Mexican Institute of Water Technology from the *Secretaría de Agricultura y Recursos Hidráulicos (SARH),* Secretariat of Agriculture and Water Resources.

KEY MEXICAN ENVIRONMENTAL REGULATORY AGENCIES

Agency	Environmental responsibilities	Comments
SEDESOL *Secretaría de Desarrollo Social*, Secretariat of Social Development	Overall urban planning issues as they impact upon the environment, including wastewater and solid waste management.	The *Instituto Nacional de Ecología (INECO)*, National Institute of Ecology, and the *Procuraduría Federal para la Protección del Ambiente (PROFEPA)*, the Federal Office for Environmental Protection, to the *Secretaría del Medio Ambiente, Recursos Naturales y Pesca (SEMARNAP)*, Secretariat of the Environment, Natural Resources and Fisheries in recent restructuring.
SEMARNAP *Secretaría del Medio Ambiente, Recursos Naturales y Pesca*, Secretariat of the Environment, Natural Resources and Fisheries	Overall environmental policy for Mexico	Increasing focus on privatization and concessions, and use of economic instruments in environmental policy.
INECO *Instituta Nacional de Ecología*, National Institute of Ecology	Development of official standards *(NOMs)* for all environmental fields and analysis of EIAs* submitted for approval.	Reports to *SEMARNAP*.
PROFEPA *Procuraduría Federal de Protección del Ambiente*, Federal Office for Environmental Protection	Enforcement of regulations developed by *INECO*, except for wastewater issues (unless classified as toxic).	Increasing private sector involvement in enforcement process; reports to *SEMARNAP*.
CNA *Comisión Nacional del Agua*, National Water Commission	Enforcement of wastewater regulations developed by *INECO* if effluent is discharged to a national water body such as a river, lake, bay or stream.	Possibility of moving *CNA's* enforcement responsibilities to *PROFEPA*; reports to *SEMARNAP*.
IMTA *Instituta Mexicano de Tecnología del Agua*, Mexican Institute of Water Technology	Responsible for research in water and wastewater field; focus on technology development and application.	Reports to *SEMARNAP*.

continued on next page

Agency	Environmental responsibilities	Comments
State governments	All but two states have environmental laws, and may have environmental standards stricter than federal equivalent; source of funding for municipal wastewater plants.	States will play a larger role in environmental management practices; states must approve all municipal build-operate -transfer (BOT) and concessions that last longer than three years.
Municipal governments	Responsible for solid waste collection and disposal services and enforcement of regulations governing effluent from industrial plants into the municipal drainage system.	Term of office is three years.

*Environmental Impact Assessments

STANDARDS

Mexican official standards are known as *Normas Oficiales Mexicanas (NOMs)* and are formulated by government committees in all sectors, with participation from industry, universities and research institutes. The *Instituto Nacional de Ecología (INECO)*, National Institute of Ecology, has authority under the *Ley de Equilibrio Ecológico y Protección al Medio Ambiente*, Law for Ecological Equilibrium and Environmental Protection, to develop environmental standards. By mid-1994 the *INECO* had published 58 *NOMs*. Sixteen more are planned for 1995.

The wastewater *NOMs* are issued for individual industries. Those for air pollution and hazardous wastes are organized according to source. The new standards expected in 1995 deal with all three areas.

ENFORCEMENT

The *Procuraduría Federal para la Protección del Ambiente (PROFEPA)*, Federal Office for Environmental Protection, is responsible for the enforcement of most environmental standards. Most wastewater standards are in the jurisdiction of the *Comisión Nacional del Agua (CNA)*, National Water Commission, although *PROFEPA* has some jurisdiction in that area as well. *PROFEPA* employed more than 500 environmental inspectors in 1993 and additional hirings were scheduled for 1994.

PROFEPA claims that almost two-thirds of Mexican companies were visited between July 1992 and July 1994. They say the rest will be covered within the next two years. Most observers, however, doubt that the agency had the resources to do serious inspections at so many sites. Nonetheless, there has been a dramatic increase in inspection efforts over the past few years. According to *PROFEPA* officials, recently, more than 100 companies were fined an average of about N $8,000 pesos (about US $1,300) each.

The economic crisis caused a reduction in enforcement activity, and pollution levels have increased as a result. *PROFEPA* is not shutting down as many polluting operations as it did before, for fear of increasing unemployment. This means that small- to medium-sized firms are generally not subject to any enforcement. Inspection efforts are being directed to larger firms, but even then *PROFEPA* lacks the resources for detailed technical inspections. It is also granting longer time allowances for cleanup operations. Many larger firms, especially multinational corporations, conform to international environmental standards as a point of good corporate citizenship, so the shift on enforcement will probably be focussed in particular problem industries.

There is a perception among industry experts that *PROFEPA* and *CNA* both have a tough time enforcing regulations on *paraestatales*, state-owned companies, such as *Petróleos Mexicanos (PEMEX)*, the national oil company, and the *Comisión Federal de Electricidad (CFE)*, Federal Electricity Commission. *PEMEX* has asked *PROFEPA* to allow it to conduct its own internal audits rather than use approved outside contractors.

Beginning in 1993, the Mexican government implemented a system of mandatory environmental audits for targetted companies. During a 1992 pilot program, the government paid for the audits to be conducted by American and British firms. Beginning in 1993, targetted companies had to pay for the audits which cost as much as US $100,000. For most companies, however, environmental audits are voluntary. Under this program, companies can avoid inspections of its plants by government officials by contracting for a company-wide audit by an approved firm. The audit is sent to *PROFEPA* for review. *PROFEPA* will work with the company to arrange a timetable for compliance if problems are found.

According to *PROFEPA*, out of a total of 13,000 inspections conducted in 1993, 40 percent were of industrial plants. There were 742 plant closures, 30 percent of which were for not meeting the existing 33 wastewater *Normas Oficiales Mexicanas (NOMs)*, official standards. In the first quarter of 1995, *PROFEPA* initiated 713 "actions" as a result of its inspections. One of them was a full permanent closure and there were two partial permanent closures. There were 81 temporary closures and 629 companies were fined.

Mexican government officials commented in interviews for this profile that the majority of the companies that have been inspected and found in non-compliance are willing to cooperate and will make the investments needed during the next five years to recycle and treat the wastewater they generate.

As of early 1995, the World Bank is considering an additional loan of US $25 million to provide technical assistance for the enforcement efforts of *PROFEPA*.

NORTH AMERICAN FREE TRADE AGREEMENT

Under the North American Free Trade Agreement (NAFTA), Canadian companies obtain equal treatment on federal contracts over C $50,000 for goods and services and C $6.5 million for construction services. For municipal projects, the thresholds are C $250,000 for goods and services and C $8 million for construction. State-owned enterprises that are covered by this provision include *Petróleos Mexicanos (PEMEX)*, the national oil company; the *Comisión Federal de Electricidad (CFE)*, Federal Electricity Commission, *Ferrocarriles Nacionales de Mexico (FNM)*, the Mexican National Railway; and the *Comisión Nacional del Agua (CNA)*, National Water Commission.

CANADIAN GOVERNMENT DEPARTMENTS AND SERVICES IN CANADA

DEPARTMENT OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE (DFAIT)

DFAIT is the Canadian federal government department most directly responsible for trade development. The **InfoCentre** should be the first contact point for advice on how to start exporting. It provides information on export-related programs and services, acts as an entry point to DFAIT's trade information network, and can provide copies of specialized export publications and market information to interested companies.

InfoCentre
Tel.: 1-800-267-8376 or (613) 944-4000
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InfoCentre Bulletin Board (IBB):
Tel.: 1-800-628-1581 or (613) 944-1581

The Latin America and Caribbean Branch promotes trade with Mexico. There are several trade commissioners at the Embassy of Canada in Mexico City, as well as in the satellite offices in Monterrey and Guadalajara. Trade commissioners can provide a range of services including introducing Canadian companies to potential customers in Mexico, advising on marketing channels, assisting those wishing to participate in trade fairs, helping to identify suitable Mexican firms to act as agents, and compiling strategic business intelligence on potential foreign customers.

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Tel.: (613) 996-5547
Fax: (613) 943-8806

INTERNATIONAL TRADE CENTRES

International Trade Centres have been established across the country as a convenient point of contact to support the exporting efforts of Canadian firms. The centres operate under the guidance of DFAIT and all have resident trade commissioners. They help companies determine whether or not they are ready to export, assist firms with market research and planning, provide access to government programs designed to promote exports, and arrange for assistance from the trade commissioners in Ottawa and trade officers abroad. Contact the International Trade Centre nearest you:

Newfoundland
International Trade Centre
P.O. Box 8950
Atlantic Place
215 Water Street
Suite 504
St. John's, NF A1B 3R9
Tel.: (709) 772-5511
Fax: (709) 772-2373

Prince Edward Island
International Trade Centre
P.O. Box 1115
Confederation Court Mall
134 Kent Street
Suite 400
Charlottetown, PE C1A 7M8
Tel.: (902) 566-7400
Fax: (902) 566-7450

Nova Scotia
International Trade Centre
P.O. Box 940, Station M
1801 Hollis Street
Halifax, NS B3J 2V9
Tel.: (902) 426-7540
Fax: (902) 426-2624

New Brunswick
International Trade Centre
1045 Main Street
Unit 103
Moncton, NB E1C 1H1
Tel.: (506) 851-6452
Fax: (506) 851-6429

Quebec	International Trade Centre 5 Place Ville-Marie Seventh Floor Montreal, PQ H3B 2G2 Tel.: (514) 496-4636 Fax: (514) 283-8794
Ontario	International Trade Centre Dominion Public Building 1 Front St. West Fourth Floor Toronto, ON M5J 1A4 Tel.: (416) 973-5053 Fax: (416) 973-8161
Manitoba	International Trade Centre P.O. Box 981 330 Portage Avenue Eighth Floor Winnipeg, MB R3C 2V2 Tel.: (204) 983-4540 Fax: (204) 983-2187
Saskatchewan	International Trade Centre The S.J. Cohen Building 119-4th Avenue South Suite 401 Saskatoon, SK S7K 5X2 Tel.: (306) 975-5315 Fax: (306) 975-5334
Alberta **Edmonton office is also responsible for Northwest Territories*	International Trade Centre Canada Place 9700 Jasper Avenue Room 540 Edmonton, AB T5J 4C3 Tel.: (403) 495-2944 Fax: (403) 495-4507
	International Trade Centre 510-5th Street S.W. Suite 1100 Calgary, AB T2P 3S2 Tel.: (403) 292-6660 Fax: (403) 292-4578
British Columbia **Vancouver office is also responsible for the Yukon*	International Trade Centre 300 West Georgia Street Suite 2000 Vancouver, BC V6B 6E1 Tel.: (604) 666-0434 Fax: (604) 666-8330

World Information Network for Exports (WIN Exports)

WIN Exports is a computer-based information system designed by DFAIT to help Canada's trade development officers abroad match foreign needs to Canadian capabilities. It provides users with information on the capabilities, experience and interests of more than 23,000 Canadian exporters. To register on WIN Exports, call (613) 996-5701, or fax 1-800-667-3802 or (613) 944-1078.

Program for Export Market Development (PEMD)

PEMD is DFAIT's primary export promotion program. It supports a variety of activities to help Canadian companies expand into export markets.

PEMD shares up to 50 percent of eligible expenses. Program financial assistance is a repayable contribution, not a grant, and must be approved in advance. Funded activities include:

- Market Development Strategies, which consist of a package of support for visits, trade fairs, and market support initiatives, under one umbrella of the company's marketing plan.
- New to Exporting Companies, which provides a vehicle for these companies to seek out individual export opportunities, either through a market identification visit or participation in an international trade fair.
- Capital Projects Bidding for specific projects outside Canada involving international competition/formal bidding procedures.
- Trade Association Activities undertaken by non-sales national trade or industry associations on behalf of their member companies.

Support is provided for certain types of government-planned activities, such as outgoing trade missions of Canadian business representatives and incoming missions to Canada of foreign business persons and officials who can influence export sales. For general information, call the InfoCentre at 1-800-267-8376. For applications for assistance, call the International Trade Centre nearest you.

International Financing

DFAIT helps Canadian exporters interested in pursuing multilateral business opportunities financed by international financing institutions (IFIs). Canadian exporters and trade associations can access market data, obtain a better understanding of the competition, and determine if an IFI-funded market opportunity is practical and worth pursuing. DFAIT can provide information and advice on the availability of Canadian government-funded assistance programs and can assist companies in developing effective export marketing. For further information, contact:

International Financing Division
Department of Foreign Affairs and International Trade
Lester B. Pearson Building
125 Sussex Drive
Ottawa, ON K1A 0G2
Tel.: (613) 995-7251
Fax: (613) 943-1100

Technology Inflow Program (TIP)

Managed by DFAIT and delivered domestically by the National Research Council, TIP is designed to help Canadian companies locate, acquire and adopt foreign technologies by promoting international collaboration. The Department of Industry (DI) also helps in program promotion. TIP officers respond to requests to identify technology sources and opportunities for cooperation between Canadian and foreign firms. The Program also helps Canadian firms make exploratory visits abroad to identify and gain first-hand knowledge of relevant foreign technologies, as well as how to negotiate to acquire them. For information, call (613) 993-5326.

Investment Development Program

The Investment and Technology Bureau (TID) promotes Canada as an attractive, competitive destination for business investment to potential foreign investors. It actively encourages investments that take the form of new plant and equipment, joint ventures or strategic partnerships. The Bureau is especially interested in attracting investment that introduces new technology into Canada, which is key to creating new jobs and economic opportunities. It also helps Canadian companies to find international investment partners and to access international sources of capital and technologies. TID provides support to the chief executive officers of Canadian subsidiaries of multinationals which are seeking to attract manufacturing and R&D mandates to Canada. It also monitors and analyzes investment trends and perceptions of Canada as an investment site. TID works closely with the "geographic" branches of DFAIT and the investment counsellors at Canadian missions around the world, as well as with provincial and municipal authorities, and professional and business organizations. For more information, contact:

Investment and Technology Bureau (TID)
Department of Foreign Affairs and International Trade
Lester B. Pearson Building
125 Sussex Drive
Ottawa, ON K1A 0G2
Tel.: (613) 995-4128
Fax: (613) 995-9604

Department of Industry (DI)

DI was created with a broad mandate to make Canada more competitive by fostering the growth of Canadian businesses, by promoting a fair and efficient marketplace for business and consumers, and by encouraging commercial ventures in scientific research and technology. In the area of small business, it has been given specific responsibility to:

- develop, implement and promote national policies to foster the international competitiveness of industry; the enhancement of industrial, scientific and technolgical development; and the improvement in both the productivity and efficiency of industry;
- promote the mobility of goods, services, and factors of production within Canada;
- develop and implement national policies to foster entrepreneurship and the start-up, growth and expansion of small businesses;
- develop and implement national policies and programs respecting industrial benefits from procurement of goods and services by the Government of Canada; and
- promote and provide support services for the marketing of Canadian goods, services and technology.

The regional offices of DI work directly with Canadian companies to promote industrial, scientific and technological development. They help clients recognize opportunities in a competitive international marketplace by providing services in the areas of business intelligence and information as well as trade and market development. DI also promotes and manages a portfolio of programs and services.

The following are areas in which DI regional offices have special competence:

- access to trade and technology intelligence and expertise;
- entry points to national and international networks;
- industry-sector knowledge base;
- co-location with International Trade Centres conncected to DFAIT and Canadian posts abroad;
- client focus on emerging and threshold firms; and
- business intelligence.

For more information, call (613) 941-0222.

Office for Technology Exchange and the Environment
Department of Industry
235 Queen Street
Ottawa, ON K1A 0H5
Tel.: (613) 954-3085
Fax: (613) 952-9564

Business Service Centre
Department of Industry
235 Queen Street
First Floor, East Tower
Ottawa, ON K1A 0H5
Tel.: (613) 952-4782
Fax: (613) 957-7942

NAFTA Information Desk
Department of Industry
235 Queen Street
Fifth Floor, East Tower
Ottawa, ON K1A 0H5
Fax: (613) 952-0540

The Business Opportunities Sourcing System (BOSS)

BOSS is a computerized databank that profiles over 25,000 Canadian companies. It lists basic information on products, services and operations of use to potential customers. The system was established in 1980 by the Department of Industry (DI) in cooperation with participating provincial governments. BOSS was originally established so that trade commissioners posted around the world by DFAIT could find Canadian companies that might be able to take advantage of foreign market opportunities. Today, more than 11,000 domestic and international subscribers use the system, not only to locate Canadian suppliers, but also to obtain market intelligence and identify market opportunities. The majority of subscribers are Canadian companies. For more information, call (613) 954-5031.

Market Intelligence Service (MIS)

MIS provides Canadian businesses with detailed market information on a product-specific basis. The service assists Canadian companies in the exploitation of domestic, export, technology transfer and new manufacturing investment opportunities. The intelligence is used by Canadian businesses in decisions regarding manufacturing, product development, marketing and market expansion. A request for information can be custom-tailored to meet each client's particular need. Previously-published customized reports are also available on request. The database is updated quarterly and annually. MIS is offered free of charge by fax, letter or telephone. For more information, contact:

Strategic Information Branch
Department of Industry
235 Queen Street
First Floor, East Tower
Ottawa, ON K1A 0H5
Tel.: (613) 954-5031
Fax: (613) 954-1894

Revenue Canada

Revenue Canada, Customs Program Branch provides a NAFTA Help Desk telephone line with service available in Spanish. Revenue Canada publications and customs notices are available by calling or faxing the NAFTA Information Desk. For more information, contact:

NAFTA Spanish Help Desk
Tel.: (613) 941-0965

NAFTA Information Desk
Revenue Canada, Customs Programs Branch
191 Laurier Avenue West
Sixth Floor
Ottawa, ON KIA 0L5
Tel.: 1-800-661-6121, or (613) 941-0965
Fax: (613) 952-0022

Canadian International Development Agency (CIDA)

An important possible source of financing for Canadian ventures in Mexico is the special fund available through. CIDA under the Industrial Cooperation Program (CIDA/INC). This program provides financial contributions to stimulate Canadian private-sector involvement in developing countries by supporting long-term business relationships such as joint ventures and licensing arrangements. INC supports the development of linkages with the private sector in Mexico by encouraging Canadian enterprises to share their skills and experiences with partners in Mexico and other countries. A series of INC mechanisms help enterprises to establish mutually beneficial collaborative arrangements for the transfer of technology and the creation of employment in Mexico.

There are five INC mechanisms that help eligible Canadian firms to conduct studies and that provide professional guidance and advice to potential clients. Where a project involves environmental improvement, technology transfer, developmental assistance to women, job training or job creation, early contact with CIDA's Industrial Cooperation Division is suggested. An important CIDA criterion is that the project creates jobs in Mexico without threatening jobs in Canada. In fact, most CIDA-assisted projects have produced net increases in Canadian jobs. For more information, contact:

Industrial Cooperation Division
Canadian International Development Agency
200 Promenade du Portage
Hull, PQ K1A 0G4
Tel.: (819) 997-7905/7906
Fax: (819) 953-5024

Atlantic Canada Opportunities Agency (ACOA)

Atlantic Canadian companies seeking to develop exports to Mexico may be eligible for assistance from the ACOA. The Agency works in partnership with entrepreneurs from the Atlantic region to promote self-sustaining economic activity in Atlantic Canada.

ACOA provides support to businesses as they look to expand existing markets through the development of marketing plans. Efforts include monitoring trade opportunities arising from global economic change, communications efforts to promote the region, trade missions and associated activities, as well as better coordination with federal and provincial bodies that influence trade and investment opportunities. For more information, contact:

Atlantic Canada Opportunities Agency
Blue Cross Centre
644 Main Street
P.O. Box 6051
Moncton, NB E1C 9J8
Tel.: 1-800-561-7862
Fax: (506) 851-7403

Western Economic Diversification Canada (WD)

WD is responsible for federal economic development activities in Western Canada. The Department works in partnership with the western provinces, business, industry associations and communities to stimulate the western Canadian economy.

WD's "New Directions" program will work to enhance the export position of western companies by boosting their competitiveness in domestic and global markets.

The Department no longer provides repayable loans to individual companies, but seeks new innovative partnerships within both the public and private sectors. These partnerships will address the needs of small- and medium-sized enterprises for information, business services and captial, particularly for high growth industries critical to Western Canada's economic diversification.

One of WD's new products focused on export development is the International Trade Personnel Program. This federal-provincial initiative links export-focused western firms with recent post-secondary graduates. The program accomplishes two important socio-economic goals: it gives companies the extra person-power they need to penetrate new markets, and it gives recent graduates valuable work experience. Under the new program, the length of export-development projects may vary from one to three years. Approved projects will be eligible for assistance ranging from $7,500 for one year, to a maximum of $37,500 per graduate. For more information, contact:

Western Economic Diversification Canada
The Cargill Building
240 Graham Avenue
Suite 712
P.O. Box 777
Winnipeg, MB R3C 2L4
Tel.: (204) 983-4472
Fax: (204) 983-4694

EXPORT DEVELOPMENT CORPORATION (EDC)

EDC is a customer-driven, financial services corporation dedicated to helping Canadian businesses succeed in the global marketplace. EDC provides a wide range of risk management services, including insurance, financing and guarantees to Canadian exporters and their customers around the world.

EDC's products fall into four main categories:

- export credit insurance, covering short- and medium-term credits;
- performance-related guarantees and insurance, providing cover for exporters and financial institutions against calls on various performance bonds and obligations normally issued either by banks or surety companies;
- foreign investment insurance, providing political risk protection for Canadian investments abroad; and
- export financing, providing medium- and long-term export financing to foreign buyers of Canadian goods and services.

EDC has established relationships with leading commercial and public sector institutions in Mexico and Latin America. Exporters can call (613) 598-2860 for more information.

Smaller exporters, with annual export sales under C $1 million, should call the Emerging Exporter Team at 1-800-850-9626.

Exporters in the information technology sector can call EDC's Information Technologies Team at (613) 598-6891.

For information on the full range of EDC services, contact any of the following EDC offices:

Ottawa
Export Development Corporation
151 O'Connor Street
Ottawa, ON K1A 1K3
Tel.: (613) 598-2500
Fax: (613) 237-2690

Vancouver
Export Development Corporation
One Bentall Centre
505 Burrard Street
Suite 1030
Vancouver, BC V7X 1M5
Tel.: (604) 666-6234
Fax: (604) 666-7550

Calgary
Export Development Corporation
510-5th Street S.W.
Suite 1030
Calgary, AB T2P 3S2
Tel.: (403) 292-6898
Fax: (403) 292-6902

Winnipeg
**office also serves Saskatchewan*
Export Development Corporation
330 Portage Avenue
Eighth Floor
Winnipeg, MB R3C 0C4
Tel.: (204) 983-5114
Fax: (204) 983-2187

Toronto
Export Development Corporation
National Bank Building
150 York Street
Suite 810
P.O. Box 810
Toronto, ON M5H 3S5
Tel.: (416) 973-6211
Fax: (416) 862-1267

London
Export Development Corporation
Talbot Centre
148 Fullarton Street
Suite 1512
London, ON N6A 5P3
Tel.: (519) 645-5828
Fax: (519) 645-5580

Montreal
Export Development Corporation
Tour de la Bourse
800 Victoria Square
Suite 4520
P.O. Box 124
Montreal, PQ H4Z 1C3
Tel.: (514) 283-3013
Fax: (514) 878-9891

Halifax
Export Development Corporation
Purdy's Wharf, Tower 2
1969 Upper Water Street
Suite 1410
Halifax, NS B3J 3R7
Tel.: (902) 429-0426
Fax: (902) 423-0881

National Research Council (NRC)

Canadian companies hoping to succeed in the Mexican marketplace may require additional technology to improve their competitiveness. The NRC works with Canadian firms of all sizes to develop and apply technology for economic benefit. The Council manages the Industrial Research Assistance Program (IRAP), a national network for the diffusion and transfer of technology.

The IRAP network supports the process of developing, accessing, acquiring, implanting and using technology throughout Canadian industry. IRAP has been in existence for 50 years and has acquired a reputation as one of the most flexible and effective federal programs. IRAP takes advantage of an extensive network of more than 190 different locations within approximately 90 communities across Canada, including numerous provincial technology centres, the NRC's own laboratories and research institutes, federal government departments, and technology transfer offices in Canadian universities. For further information, contact:

Industrial Research Assistance Program
National Research Council
Montreal Road
Building M-55
Ottawa, ON K1A 0R6
Tel.: (613) 993-1770
Fax: (613) 952-1086

Key Contacts in Canada

Sponsoring Organizations

Baker & McKenzie

Baker & McKenzie is one of the largest international law firms with offices in 35 countries. They presently have four offices in Mexico, in the cities of Juárez, Mexico City, Monterrey and Tijuana. In addition to providing legal advice, the firm's offices in Canada and Mexico work to assist Canadian companies to find the right partner to enable them to establish or expand their activities in Mexico. For more information, contact:

Baker & McKenzie
Barristers & Solicitors
BCE Place
181 Bay Street
Suite 2100
Toronto, ON M5J 2T3
Tel.: (416) 865-6910/6903
Fax: (416) 863-6275

Environment Canada

The Environmental Technology Advancement Directorate (ETAD) is Environment Canada's primary vehicle in the areas of technology and "know-how". A key objective of the Directorate is to provide the Canadian environmental industry with the tools, techniques and technologies to build its capacity and foster partnerships. In support of this goal, ETAD delivers a variety of services ranging from environmental technology advancement and evaluation to technology transfer and cooperation. In delivering these services, ETAD works closely with the department's five regional offices. The clients for these services include the Canadian environmental industry, technology suppliers, resource and manufacturing industries, as well as federal and provincial government departments, and international organizations and governments. The key components of ETAD are the:

- Environmental Technology Centre
- Technology Transfer Office
- Clean Technology Advancement Division
- Environmental Industries Division
- National Facilities Management
- Burlington Environmental Technology Office
- Wastewater Technology Centre, operated by Water Technology International Corporation
- Canadian Clean Technology Centre, operated by Water Technology International Corporation

For more information please contact:

Environmental Technology Advancement Directorate
Environment Canada
351 St. Joseph Boulevard
Eighteenth Floor
Hull, PQ K1A 0H3
Tel.: (819) 953-3090
Fax: (819) 953-9029

Business and Professional Associations

Canadian Environment Industry Association (CEIA)
6 Antares Drive
Suite 204
Phase 2
Nepean, ON K2E 8A9
Tel.: (613) 723-3525
Fax: (613) 723-0060

Canadian Environment Industry Association (CEIA) B.C.
c/o Environment & Economic Systems Development Corporation
2397 Nelson Ave.
West Vancouver, BC V7V 2R1
Tel.: (604) 922-1658
Fax: (604) 926-5415

Environmental Services Association of Alberta (ESAA)
250-10508 82nd Avenue
Edmonton, AB T6E 2A4
Tel.: (403) 439-6363
Fax: (403) 439-4249

Saskatchewan Environmental Managers Association/Special Waste Services
Association of Saskatchewan (SEMA/SWSAS)
122-15 Innovation Boulevard
Saskatoon, SK S7N 2X8
Tel.: (306) 975-0660
Fax: (306) 975-2032

Manitoba Environmental Industries Association (MEIA)
501-D Weston Street
P.O. Box 192, Station L
Winnipeg, MB R3H 0Z5
Tel.: (204) 775-6157
Fax: (204) 755-9381

Canadian Environment Industries Association — Ontario (CEIA-Ontario)/
63 Polson Street
Second Floor
Toronto, ON M5A 1A4
Tel.: (416) 778-6590
Fax: (416) 778-5702 / 778-6599

L'Association des Entrepreneurs de Services en Environnement du Québec (AESEQ)
232-1400, rue Sauvé ouest
Centre d'Achat l'Acadie Sauvé
Montréal, PQ H4N 1C5
Tel.: (514) 745-5380
Fax: (514) 745-3582

New Brunswick Environment Industries Association
c/o Geobac Technology Group Inc.
P.O. Box 367, Station A
Fredericton, NB E3B 5B3
Tel.: (506) 451-1991
Fax: (506) 457-2100

Nova Scotia Environment Industries Association
International Marine Biodiversity Development Corporation
5 Lyngby Avenue
Dartmouth, NS B3A 3T5
Tel.: (902) 465-2743
Fax: (902) 461-0799

Newfoundland Environment Industries Association (NEIA)
Box 43, Atlantic Place
602-215 Water Street
St. John's, NF A1C 6C9
Tel.: (709) 722-3786
Fax: (709) 722-3879

Association of Consulting Engineers of Canada
130 Albert Street
Suite 616
Ottawa, ON K1P 5G4
Tel.: (613) 236-0569
Fax: (613) 236-6193

Canadian Council for the Americas
The Council is a non-profit organization formed in 1987 to promote business interests in Latin American as well as Caribbean countries. The CCA promotes events and programs targetted at expanding business and building networking contacts between Canada and the countries of the region.

Canadian Council for the Americas
Executive Offices
145 Richmond Street West
Third Floor
Toronto, ON M5H 2L2
Tel.: (416) 367-4313
Fax: (416) 367-5460

Canadian Exporters' Association
99 Bank Street
Suite 250
Ottawa, ON K1P 6B9
Tel.: (613) 238-8888
Fax: (613) 563-9218

Canadian Manufacturers' Association
75 International Boulevard
Fourth Floor
Etobicoke, ON M9W 6L9
Tel.: (416) 798-8000
Fax: (416) 798-8050

The Canadian Chamber of Commerce
55 Metcalfe Street
Suite 1160
Ottawa, ON K1P 6N4
Tel.: (613) 238-4000
Fax: (613) 238-7643

Forum for International Trade Training Inc.
155 Queen Street
Suite 608
Ottawa, ON K1P 6L1
Tel.: (613) 230-3553
Fax: (613) 230-6808

Language Information Centre
240 Sparks Street RPO
Box 55011
Ottawa, ON K1P 1A1
Tel.: (613) 523-3510

Open Bidding Service
P.O. Box 22011
Ottawa, ON K1V 0W2
Tel.: 1-800-361-4637 or (613) 737-3374
Fax: (613) 737-3643

Canadian Standards Association
178 Rexdale Blvd.
Rexdale, ON M9W 1R3
Tel.: (416) 747-4000
Fax: (416) 747-4149

Standards Council of Canada
45 O'Connor Street
Suite 1200
Ottawa, ON K1P 6N7
Tel.: (613) 238-3222
Fax: (613) 995-4564

Multilateral Organizations

Inter-American Development Bank
1300 New York Avenue NW
Washington, D.C. 20577
U.S.A.
Tel.: (202) 623-1000
Fax: (202) 623-3096

The World Bank Group
Washington, D.C. 20433
U.S.A.
Tel.: (202) 477-1234
Fax: (202) 477-8391

Mexican Government Offices in Canada

The Embassy of Mexico, Mexican Trade Commissioners in Canada, and Mexican consulates can provide assistance and guidance to Canadian companies in need of information about doing business in Mexico. For more information, contact:

Embassy of Mexico
45 O'Connor Street
Suite 1500
Ottawa, ON K1P 1A4
Tel.: (613) 233-8988
Fax: (613) 235-9123

Mexican Consulate in Ottawa
45 O'Connor Street
Suite 1500
Ottawa, ON K1P 1A4
Tel.: (613) 233-6665
Fax: (613) 235-9123

Other Mexican Consulates General in Canada

Consulate General of Mexico
2000 Mansfield Street
Suite 1015
Montreal, PQ H3A 2Z7
Tel.: (514) 288-2502/4916
Fax: (514) 288-8287

Consulate General of Mexico
199 Bay Street
Suite 4440
P.O. Box 266, Station Commerce Court West
Toronto, ON M5L 1E9
Tel.: (416) 368-2875/8141/1847
Fax: (416) 368-8342

Consulate General of Mexico
810-1139 West Pender Street
Vancouver, BC V6E 4A4
Tel.: (604) 684-3547/1859
Fax: (604) 684-2485

MEXICAN FOREIGN TRADE COMMISSIONS

Banco Nacional de Comercio Exterior (Bancomext) is the Mexican Foreign Trade Commission and has offices in Canada. It offers credits, export guarantees and counselling services to Mexican companies seeking to do business in Canada.

MEXICAN BANKS WITH OFFICES IN CANADA

Banco Nacional de México (Banamex), Banco de Comercio (Bancomer), and *Banca Serfin* are private-sector banks which offer specialized services through their international trade information centres. The centres participate in a computerized communications network with access to numerous economic, governmental and financial databases throughout the world. These banks are located throughout Mexico and maintain offices in Toronto.

Banco Nacional de México (Banamex)
1 First Canadian Place
Suite 3430
P.O. Box 299
Toronto, ON M5X 1C9
Tel.: (416) 368-1399
Fax: (416) 367-2543

Banco de Comercio (Bancomer)
The Royal Bank Plaza
South Tower
Suite 2915
P.O. Box 96
Toronto, ON M5J 2J2
Tel.: (416) 956-4911
Fax: (416) 956-4914

Banca Serfin
BCE Place
Canada Trust Tower
161 Bay Street
Suite 4360
P.O. Box 606
Toronto, ON M5J 2S1
Tel.: (416) 360-8900
Fax: (416) 360-1760

CANADIAN GOVERNMENT DEPARTMENTS AND SERVICES IN MEXICO

COMMERCIAL DIVISION
THE EMBASSY OF CANADA IN MEXICO

The Commercial Division of the Canadian Embassy in Mexico can provide vital assistance to Canadians venturing into the Mexican market. The trade commissioners are well-informed about the market and will respond in whatever measures possible to support a Canadian firm's presence in Mexico.

Note: to telephone Mexico City, dial 011-52-5 before the number shown. For contacts in other cities in Mexico, consult the international code listing at the front of your local telephone directory for the appropriate regional codes.

Commercial Division
The Embassy of Canada in Mexico
Schiller No. 529
Apartado Postal 105-05
Col. Polanco
11560 México, D.F.
México
Tel.: 724-7900
Fax: 724-7982

Canadian Consulate
Edificio Kalos, Piso C-1
Local 108-A
Zaragoza y Constitución
64000 Monterrey, Nuevo León
México
Tel.: 344-3200
Fax: 344-3048

Canadian Consulate
Hotel Fiesta Americana
Local 30-A
Aurelio Aceves No. 225
Col. Vallarta Poniente
Guadalajara, Jalisco
México
Tel.: 615-6215
Fax: 615-8665

KEY CONTACTS IN MEXICO

MEXICAN GOVERNMENT SECRETARIATS AND AGENCIES

Secretariat of the Environment, Natural Resources and Fisheries
Secretaría del Medio Ambiente, Recursos Naturales y Pesca (SEMARNAP)
Periférico Sur No. 4209
Col. Jardines en la Montaña
14210 México, D.F.
México
Tel.: 628-0602/0605
Fax: 628-0643/0644

Secretariat of Social Development
Secretaría de Desarrollo Social (SEDESOL)
Av. Constituyentes No. 947
Edificio B, Planta Alta
Col. Belén de las Flores
01110 México, D.F.
México
Tel.: 271-8481/1616
Fax: 271-8862

Secretariat of Communications and Transportation
Secretaría de Comunicaciones y Transportes (SCT)
Av. Universidad y Xola, Cuerpo C, P.B.
Col. Narvarte
03020 México, D.F.
México
Tel.: 530-3060, 538-5148/0450
Fax: 519-9748

Secretariate of Commerce and Industrial Development
Secretaría de Comercio y Fomento Industrial (SECOFI)
Sub-Secretaría de Promoción de la Industria y el Comercio Exterior
Insurgentes Sur No. 1940 - P.H.
Col. Florida
01030 México, D.F.
México
Tel.: 229-6560/6561, 229-6100
Fax: 229-6568

Secretariate of Commerce and Industrial Development
Bureau of Standards
Secretaría de Comercio y Fomento Industrial (SECOFI)
Dirección General de Normas
Av. Puente de Tecamachalco No. 6
Col. Lomas de Tecamachalco
53950 Tecamachalco, Estado de México
México
Tel.: 729-9300
Fax: 729-9484

National Development Bank
Nacional Financiera (NAFIN)
Insurgentes Sur No. 1971, Piso 13
Col. Guadalupe Inn
01020 México, D.F.
México
Tel.: 325-6000, 661-7165/4044
Fax: 325-6042, 661-8418

Mexican National Railway
Ferrocarriles Nacionales de México (FNM)
Av. Jesús García No. 140, Piso 13, Ala "A"
Col. Buenavista
06358 México, D.F.
México
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Col. Huasteca
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Comisión Federal de Electricidad (CFE)
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Col. Cuauhtémoc
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National Water Commission
Comisión Nacional del Agua (CNA)
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Col. Ermita San Angel
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National Institute of Ecology
Instituto Nacional de Ecología (INECO)
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Fax: 286-6625

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Banco Nacional de Obras y Servicios Públicos (BANOBRAS)
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México
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Fax: 723-6108

Business and Professional Associations

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Asociación Mexicana de Control de los Residuos Sólidos y Peligrosos
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06500 México, D.F.
México
Tel.: 553-9601/9969
Fax: 553-9753

Association of Water and Waste Water Companies
Empresas de Agua y Saneamiento de México, A.C.
Xola No. 1458
Col. Narvarte
03020 México, D.F.
México
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Fax: 530-9621

The Nuevo León Institute of Environmental Protection
Instituto para la Protección Ambiental de Nuevo León (IPA)
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Edificio Intermex 1er. Nivel, Oficina 95
64010 Monterrey, Nuevo León
México
Tel.: 344-8575
Fax: 344-8575 ext. 1402

Mexican Institute of Water Technology
Instituto Mexicano de Tecnología del Agua (IMTA)
Paseo de Cuauhnahuac No. 8532
Col. Progreso
62550 Jiutepec, Morelos
México
Tel.: 19-3881
Fax: 19-4337

The Canadian Chamber of Commerce in Mexico
Cámara de Comercio de Canadá en México
c/o Bombardier
Paseo de la Reforma No. 369, Mezzanine
Col. Juárez
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México
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Cámara Nacional de Comercio de la Ciudad de México (CANACO)
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México
Tel.: 592-2677/2665
Fax: 705-7412, 592-3571

American Chamber of Commerce in Mexico, A.C.
Cámara Americana de Comercio en México A.C. (AMCHAM)
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National Association of Importers and Exporters of the Mexican Republic
Asociación Nacional de Importadores y Exportadores de la República Mexicana (ANIERM)
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06700 México, D.F.
México
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Fax: 584-5317

National Chamber of the Construction Industry
Cámara Nacional de la Industria de la Construcción
Periférico Sur No. 4839
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México
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Fax: 606-6720

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Cámara Nacional de la Industria de Transformación (CANACINTRA)
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Fax: 598-9467

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Confederación de Cámaras Industriales (CONCAMIN)
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Confederación de Cámaras Nacionales de Comercio (CONCANACO)
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Universidad Nacional Autónoma de México
Laboratorio Visual
Circuito Escolar, Ciudad Universitaria
Col. Coyoacán
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Monterrey's Technological Institute
Instituto Tecnológico y de Estudios Superiores de Monterrey Campus Monterrey
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Fax: 358-8931

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Col. Bosques de las Lomas
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México
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Fax: 229-7503

Obras y Proyectos, S.A. de C.V.
Grupo Mexicano de Desarrollo
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Col. Hipódromo Condesa
06170 México, D.F.
México
Tel.: 564-9403
Fax: 264-3812

Ingenieros Civiles Asociados, S.A. de C.V. (ICA)
Minería No. 145
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Fax: 688-1218

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Col. Popotla
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México
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Fax: 688-9469

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Col. Roma
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México
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Fax: 264-5985

Procesadora Metalmecánica de Toluca
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Parque Industrial Toluca
50030 Toluca, Estado de México
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Fax: 72-1445

Residuos Industriales Multiquim, S.A. (RIMSA)
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