

The Environmental Technologies Industry in Mexico

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Background

Mexico is Colorado's second largest export market following Canada. Since NAFTA's implementation, Colorado's exports to Mexico have increased to approximately \$1 billion in 2007, up from less than \$200 million in 1994, and accounting for almost 13% of total Colorado exports.

With a population of nearly 110 million and a trillion dollar economy, Mexico is a critical market for Colorado exporters, and in particular small and medium sized Colorado companies who often target Mexico as an early stepping stone in their export expansion process. Mexico's historical average inflation rate from 2003-2007 was favorable for trade at 4.2%. Economic growth and stability and the benefits of a mature, fair and liberalized trade environment where U.S. made goods are readily accepted, further support this activity. Mexico has 12 free trade agreements, including NAFTA, with over 40 countries, putting more than 90% of trade under free trade agreements.

Mexico offers well defined and growing sales opportunities for Colorado environmental companies. Mexico's environmental sector purchases were estimated at over US\$6 billion in 2007 and are growing at a faster rate than the overall Mexican economy.¹ Over the past five years demand grew over 7% per year, a trend expected to accelerate as a result of the Calderon administration's ambitious goals in nearly all segments of Mexico's environmental sector. Areas of focus include wastewater treatment, air emissions control, waste management and hazardous waste control and containment.

According to Mexico's Secretariat of Economy, U.S. exports represented 49.6% of all imports into Mexico in 2007. Based on the ITA's HTS code categorization of the Environmental Technologies Sector, Colorado exported nearly \$25 million in manufactured goods to Mexico in this sector in 2007. The top sub-sector for environmental exports to Mexico from Colorado was wastewater management products, at \$12.7 million.²

Competitive Environment

Mexico's environmental industry is relatively young; regulations were introduced in the early nineties, and the Secretariats of the Environment and Natural Resources were created only 14 years ago. Since then, regulations and enforcement have become progressively more stringent, creating a market for increasingly sophisticated technologies, equipment and services for pollution minimization and control among both private and public sector enterprises.

The competitive environment is strong. There is a significant presence of American, Canadian, Spanish, French, English and Japanese companies in Mexico's environmental sector and in some areas, especially those not requiring sophisticated technologies, local companies have a leading position. For civil works

¹ Source: CONIECO (National Council of Environmental Industries)

² Source: U.S. Department of Commerce, "Trade Statistics for Environmental Exports" and WISER Trade, utilizing 6-digit HS codes

projects, combining imported technologies with local labor often warrants better pricing and improved probability of success.

In general, there is solid acceptance for American products and services in Mexico, especially for those that are price-competitive against international competitors and that offer adequate local support.

In renewable energy, currently all technologies for energy generation using wind, solar, mini-hydro, biogas recovery, and alternative fuel production are imported. The German company Q-cells announced a major investment for the production of solar panels in Northeastern Mexico and could supply part of the local demand a few years from now.

Competition in the soil remediation sub-sector is strong as there are over 70 companies offering remediation services in Mexico; however, most of these companies rely on imported equipment and technologies. Colorado companies will find opportunity in this sector, especially in the area of heavy metals, as very few local companies have the technology to perform this type of remediation.

Key Opportunities

Mexico's environmental industry offers opportunities for Colorado environmental and clean-tech companies in virtually all sub-sectors. The following sections describe the characteristics, challenges, market size and opportunities for each sub-sector.

a) Water and Wastewater

Mexico has uneven drinking water service coverage averaging 90% of the population, approximately 103 million people. Urban areas reach 95% coverage with the rate dropping to about 72% for rural communities. Demand for infrastructure development is high in this segment, as Mexico ranks 14th in Latin America for water and sanitation infrastructure competitiveness. Mexico is also challenged by water pollution problems. Currently only 36% of the municipal waste water is treated while the remaining 64% is discharged as raw sewage into rivers, lakes and the ocean.

The main priorities of the Mexican Government from 2007-2012 are:

1. Increase potable water coverage, especially in rural communities.
2. Increase the overall efficiency of drinking water distribution systems and water utilities.
3. Significantly raise wastewater treatment indexes and promote its re-use and exchange.

The U.S. Commercial Service estimates the total market in 2007 for potable water, municipal, and industrial wastewater treatment, water recycling, and water desalination equipment and services to have reached approximately US\$3.5 billion and will grow at a rate greater than 5% per year. Of the total market demand, for equipment and services, 85% is imported while the remaining 15% is supplied by local products and technologies. The U.S. supplies approximately 65% of the water and wastewater equipment imported into Mexico.³

Upcoming investment projects that will offer short term business opportunities for Colorado technology and equipment suppliers range from small water purification plant expansions, to integrated water supply projects in major cities. The Mexican government has produced specific plans to develop 18

³ Water and Wastewater Equipment and Services Industry, U.S. Commercial Service, May 2007.

major drinking water projects in the next 5 years as well as develop hundreds of small projects to bring water to rural communities.

Opportunities for Colorado companies include:

- Water purification technologies
- Wastewater treatment technologies including activated sludge, membrane filtration, reverse osmosis and bio-chemical processes
- Water and wastewater treatment plant design, construction, and rehabilitation
- Integrated water planning and water reuse technologies, including desalination
- Metering, leak detection, and monitoring equipment

b) Renewable Energy

Renewable energy continues to grow in popularity in Mexico as a result of rising hydrocarbon prices and the strong existing potential in the country for wind, solar, mini-hydro and biomass projects. Mexico needs to diversify its energy portfolio, reduce environmental impacts, improve energy efficiency, and meet its commitments under the Kyoto Protocol for expanding renewable energy generation.

The Mexican government will devote significant resources in coming years for the development of wind farms in Mexico's southwest region. It will also invest in geo-thermal power plants and strengthen its promotional activities and incentives to encourage clean energy project development.

By 2012 the Mexican government plans to increase power generation capacity by 9,000 MW and the index of renewable generation to 25%. The government plan calls for 588 MW of new wind power, 158 MW in geothermal and 1,504 MW in hydro. Private companies are expected to develop 1,996 MW of renewable energy generation projects in wind power, biofuels, solar, hydro and alternative fuel generation.

Opportunities for Colorado companies include:

- Engineering and design services for wind, solar and hydro projects
- Renewable energy technologies
- Distributed energy such as small wind and distributed solar

c) Municipal Waste

Mexico generates between 88,100 - 94,200 metric tons/day of municipal waste; approximately 89% is collected and slightly over 60% is deposited in controlled landfills. The remaining is deposited in open-air dumps. The Mexican government passed a new law for municipal waste reduction and management in 2004 setting guidelines for proper waste handling. This law has spurred private investment for landfill development and operation. In most Mexican cities, waste collection and disposal services are provided by the local governments; however there is a trend towards awarding concessions to private operators.

A successful biogas recovery and energy production system was established in Monterrey in the late 1990s as a World Bank-funded pilot project. Since then, another 22 municipalities have initiated projects that involve biogas recovery systems and electric power generation. Currently there are eight feasibility studies underway for biogas power generation projects in Guanajuato, Monterrey, Mexico City and the State of Mexico. Generation potential for these projects exceeds 50MW.

Opportunities for Colorado companies include:

- Waste management including separation, reuse, recycling, co-processing, treatment, storage, transport and final disposal
- Landfill leak protection technologies
- Gas capture technologies
- Special treatment processes for construction waste, tires, and non-hazardous industrial waste

d) Hazardous Waste

The Mexican Government tracks approximately 3.7 – 4 million tons of hazardous waste per year, generated by 12,514 companies. Private sector estimates calculate hazardous waste generation in Mexico at about 8-9 million tons per year. Mexico lacks the infrastructure required to properly handle and dispose this waste, and large volumes end up in municipal landfills or are illegally dumped. Currently there are only two hazardous waste confinement sites in Mexico, and efforts by international companies to install new capacity have failed, so generators need to either use one of the two facilities available – both charging high prices – or export their waste, which has become a common practice.

While demand for new hazardous waste disposal facilities exists, the permitting process is complex and clear rules for new investments are yet to be developed, thus investment in this sector remains a high-risk opportunity.

Opportunities for Colorado companies include:

- Technologies to reduce hazardous waste generation and waste volume
- Hazardous waste handling and transportation equipment
- Hazardous waste management, collection, and recycling

e) Soil Remediation

It is estimated that about 20% of the total sites requiring remediation in Mexico are the responsibility of private industry. They are the result of widespread activities of the oil and gas, mining, metal mechanic and chemical industries in Mexico, which for many years operated with disregard of their impact on soils, dams, swamps, lakes and other natural areas, the number of sites potentially requiring remediation is very large. An estimated 1800 sites belonging to the mining, chemical and petrochemical industries in Mexico will require remediation from organic and inorganic compounds.

The federal government is still in the process of developing an inventory of polluted sites. Based on preliminary information, the greatest potential is found within the national oil and gas company (PEMEX), the power generation company (CFE), the national railway company (FNM), the largest fertilizer manufacturer (FERTIMEX), the communications and transport ministry (SCT) and the airport administration company (ASA), to name a few.

Opportunities for Colorado companies include:

- Risk analysis and site characterization
- Remediation of sites, especially those polluted with heavy metals
- Soil remediation utilizing hydrocarbon recovery technology

f) Air Pollution Control

There are two main drivers for air pollution monitoring and control technologies in Mexico: 1) The Pro-Aire Programs, which are comprehensive air pollution control programs for specific cities and 2) The Kyoto Protocol. Mexico is a signatory of the Kyoto Protocol, and is listed as a non-Annex I country, meaning that Mexico can receive funding from developed countries in exchange for emission reduction certificates. Mexico has made commitments for CO² reduction emissions for 2025.

There are 14 ProAire programs in Mexico. Each ProAire program has specific measures, depending on the sources of the air-pollution problem in the particular region. These programs call for the deployment of air quality monitoring infrastructure; development of an inventory of pollution sources; issuance of specific emissions (some times stricter) limits; and development of specific measures to mitigate emissions from fixed and mobile sources.

While each program is different as the sources of air pollution in each city vary, the common elements include mandating industry to install air emission control equipment, deploying air monitoring networks in the cities and in some cases mandating vehicles to pass emissions tests every 6 months. Other specific measures, include, for example, stricter regulations for certain types of polluting agents, or the promotion of certain types of fuels such as natural gas or low-sulfur gasoline.

Opportunities for Colorado companies include:

- Emission control technologies and technologies to improve combustion
- Software and monitoring equipment
- Industrial controls
- Dust control equipment
- Greenhouse Gas (GHG) Management

Market Entry Barriers and Threats

There are no major impediments for Colorado companies to enter or expand into Mexico's environmental sector; however, the following is a list of potential impediments, challenges and barriers to profitably entering the Mexican market:

- Government tenders are, in many cases, closed to companies with a presence in Mexico, so establishing a local office or partnering with a reputable in-country company may be necessary
- Competitive pricing by local companies; Competition from international suppliers, especially from Canada, Spain, France, England and Japan
- Longer sales cycles for government-sponsored projects
- In some cases companies may need to provide advice on how to fund or make projects financially feasible