



USDA Foreign Agricultural Service

GAIN Report

Global Agriculture Information Network

Template Version 2.09

Required Report - public distribution

Date: 6/12/2007

GAIN Report Number: MX7042

Mexico

Bio-Fuels

Annual Report

2007

Approved by:

Suzanne Heinen
U.S. Embassy

Prepared by:

Luis Chavez and Jeff Nawn

Report Highlights:

On April 26, 2007, the Mexican Congress voted overwhelmingly for the Bio-Fuels Promotion and Development Law. Passage of this law marks Mexico's first steps towards joining the world's bio-fuel production community. However, concerned about the potential impact bio-fuels production will have on agriculture, food production and prices, and economic development, the Government of Mexico is proceeding cautiously, and carefully analyzing the opportunities and threats that will accompany bio-fuel production and consumption.

Includes PSD Changes: No
Includes Trade Matrix: No
Annual Report
Mexico [MX1]
[MX]

SECTION I. SITUATION AND OUTLOOK

This past year the Government of Mexico (GOM) took two major steps towards developing a comprehensive, and appropriate, bio-fuels production and development policy. These steps included:

1. The GOM, through the Secretariat of Energy (SENER), commissioned a comprehensive feasibility study on the potential for ethanol and bio-diesel use and production in Mexico; and
2. The Mexican Congress approved the Bio-Fuels Promotion and Development Law in late April, 2007.

This interest in bio-fuels production comes in response to a number of domestic and global concerns. Domestically, the country is seeking a way to stimulate the rural economy. Channeling corn, sugar, or a number of other agricultural commodities, into bio-fuels production will not only drive up demand for those crops, but will stimulate a broad base of rural economic activity. Furthermore, the country is growing increasingly concerned about dwindling crude oil reserves, which have been supplying Mexico's energy needs, and much of the government's revenue base, for over 100 years. Secondary to these concerns, there is a growing consciousness in Mexico about global warming, and Mexican officials view bio-fuels as a potentially viable way of reducing greenhouse gas emissions.

The GOM commissioned feasibility study on the potential for ethanol and bio-diesel as fuel options in Mexico was funded by the Inter-American Development Bank (IADB) and the German Technical Cooperation Enterprise GTZ (German: *Deutsche Gesellschaft für Technische Zusammenarbeit*, or GTZ). Mexico's Ministry of Energy (SENER) released the 556-page study in November, 2006.

The Mexican Congress complemented this study with the approval of the Bio-Fuels Promotion and Development Law (LPDB) on April 26, 2007. The LPDB is now waiting for ratification by Mexican President Felipe Calderon. This law, though lacking in concrete objectives and mandates, is the first step towards building a legal framework that will regulate the bio-fuels industry in Mexico.

Meanwhile, the private sector has been active in developing Mexico's bio-fuels production capacity. The initial private sector response to the ethanol production boom in the United States was a series of announcements of ethanol plant construction projects throughout the country. These plants are, or were, intended to produce ethanol both for the domestic and foreign (i.e., the United States) markets. Of the many ethanol plant projects that were announced, only one, in the State of Sinaloa, is actually under construction. The rest are in the process of securing financing, or are waiting until there is more certainty about the demand for bio-fuels in Mexico and the U.S.

SECTION II. STATISTICAL INFORMATION

Exports, HTC 2207.10 (in thousands of liters)

Country	2002	2003	2004	2005	2006
Canada	484.99	1,936.99	1,469.38	2,473.24	2,516.48
United States	11.03	495.94	10.20	480.37	1,242.42
Guatemala	0	267.05	126.89	63.71	149.31
Bermuda	2,072.88	1,655.00	22.98	0	2,885.21
Puerto Rico	1,839.84	1,427.07	502.47	16.00	0
Others	1,224.33	1,200.14	115.50	54.79	2,328.29
Total	5,633.07	6,982.21	2,247.43	3,088.12	9,121.73

Imports, HTC 2207.10 (in thousands of liters)

Country	2002	2003	2004	2005	2006
Brazil	39,952.67	46,078.56	78,849.35	82,291.53	55,414.43
United States	76,656.47	86,650.33	32,963.58	23,570.52	18,710.25
Guatemala	7,184.89	11,897.88	10,929.00	255.00	40.00
Cuba	11,564.08	6,862.43	7,082.42	170.21	0
China	0	0	0	0	14,288.46
Others	9,534.50	15,539.13	14,983.44	7,173.44	3,607.96
Total	144,892.63	167,028.35	144,807.81	113,460.71	92,061.11

Exports, HTC 2207.20 (in thousands of liters)

Country	2002	2003	2004	2005	2006
United States	9,931.54	37.13	20.55	1.30	50.05
Taiwan	0	4,787.08	0	0	0
Guatemala	15.20	0.08	31.60	40.18	13.10
Brazil	4.72	3.85	7.55	6.23	5.69
Ecuador	2.39	8.88	7.66	6.18	19.73
Others	14.98	37.41	50.37	19.57	21.88
Total	9,968.83	4,874.43	117.74	73.48	110.46

Imports, HTC 2207.20 (in thousands of liters)

Country	2002	2003	2004	2005	2006
United States	1,830.05	309.80	180.92	1,007.43	48.82
Spain	0	0	0	49.32	0
Germany	0	0.02	0	0	0
Singapore	0	0.02	0	0	0
Saudi Arabia	0.41	0	0	0	0
Total	1,830.46	309.85	180.92	1,056.75	48.82

Source: Ministry of Economy (SE), Mexico's Central Bank & Mexico Customs Authority

SECTION III. NARRATIVE ON SUPPLY, DEMAND, POLICY & MARKETING**PRODUCTION**Ethanol

Technically speaking, Mexico already produces ethanol, but not for fuel purposes. Instead, the roughly 80 million liters of ethylic alcohol produced from sugar cane in 13 sugar cane mills that have distilling facilities are destined to the alcoholic beverage and pharmaceutical industries. At full capacity and efficiency, it is calculated that total production capacity for ethanol is currently almost 170 million liters per year.

Future ethanol production is another story. There is a great deal of talk and speculation about the construction of a number of corn based ethanol plants. Of the more than ten alleged projects underway, only one project is currently under construction in the state of Sinaloa, a U.S. \$56 million project developed by Destilmex.

Policy developments, such as the approval of the Bio-Fuels Law, have inspired confidence among private investors who are expecting to begin ethanol projects within the next five years. However, the country's lacks of a solid long-term public policy strategy, and some of the elements missing in the recently approved Bio-Fuels Law, are promoting uncertainty among investors.

Bio-diesel

Similarly, bio-diesel generation in Mexico is limited to few small-scale plants with a total production of approximately 3,300 MT per year. Information on the different ventures is as follows:

- Grupo Energeticos – Using beef tallow, current production levels are of 300 cubic meters/month (3,200 MT/year). Grupo Energeticos is projecting to double the output and build another facility in the state of Oaxaca in the near future;
- Monterrey Institute of Technology (ITESM) – A research plant with an output capacity of 200 liters, uses waste vegetable oil as feedstock and currently runs at a capacity of about 8 cubic meters/month (84 MT/year). The production is used to make a 20% bio-diesel blend (BD-20) that fuels a student transport bus, two diesel-engine cars owned by ITESM staff, and an emergency generator for peak-hour electricity generation;
- Vasconcelos University – Located in the state of Oaxaca and using waste vegetable oil, this research bio-diesel plant has a capacity of 3.6 cubic meters/month (38 MT/year). The production is used to make a BD-20 blend used in the University's bus;
- Other projects – There are additional private efforts and projects that include bio-diesel production in Mexico, but they are scarcely documented and it is difficult to include them in a national survey on bio-diesel development. For example snack manufacturer SABRITAS, is contemplating using its waste grease for bio-diesel production for use it in the company's vehicle fleet.

Future Prospects for Bio-fuels Production

This past year the Mexican government commissioned a comprehensive study on the potential for development, production, and use of bio-fuels in Mexico. This report was commissioned in response to a desire to stimulate rural economic activity, and in the face of declining national crude-oil reserves. After analyzing the Mexican prospects for ethanol production, the report's authors arrived at several conclusions and recommendations.

1. Mexico is a dry country, which limits the opportunities to expand irrigated agriculture for energy purposes. Sugar is the most feasible ethanol feed-stock in Mexico, and distilling facilities can be constructed in tandem with current sugar mills.
2. Mexico exports crude oil, but imports gasoline and gasoline additives. If economically competitive, ethanol could save resources and postpone the need to invest in additional refining capacity to produce gasoline for the domestic market.
3. Ethanol can be destined initially for the export markets, such as the United States, and particularly California, where Mexico is favorably placed, geographically and trade wise, as a member of NAFTA.
4. Because PEMEX (Mexico's national gas company) would be the sole buyer of fuel ethanol, its processes must be modernized, including changes in refining processes, storage and handling infrastructure, and fuel distribution. PEMEX must ensure the retail network of gas stations is thoroughly inspected and maintained to receive ethanol gasoline blends.
5. Existing energy legislation and regulations must be modified to allow for the introduction of ethanol gasoline blends. New legislation, regulations, and specifications must be developed and implemented by the appropriate GOM agencies.

The feasibility study also included a detailed production cost analysis of ethanol and bio-diesel in order to evaluate the potential for the bio-fuels market in Mexico. The findings for both products are as follows.

Ethanol

Average costs for ethanol production from different crops.

Crop	Cost of one liter of ethanol (in US \$)
Sugar cane	0.20
Corn	0.17
Wheat	0.17
Sugar beet	0.20
Sorghum	0.15
Cassava	0.25

Source: Mexico Bio-Fuels Feasibility Study, 2006

Sorghum proved to be the most cost effective producer of ethanol in Mexico, and sugar cane, sugar beets, and cassava the most expensive.

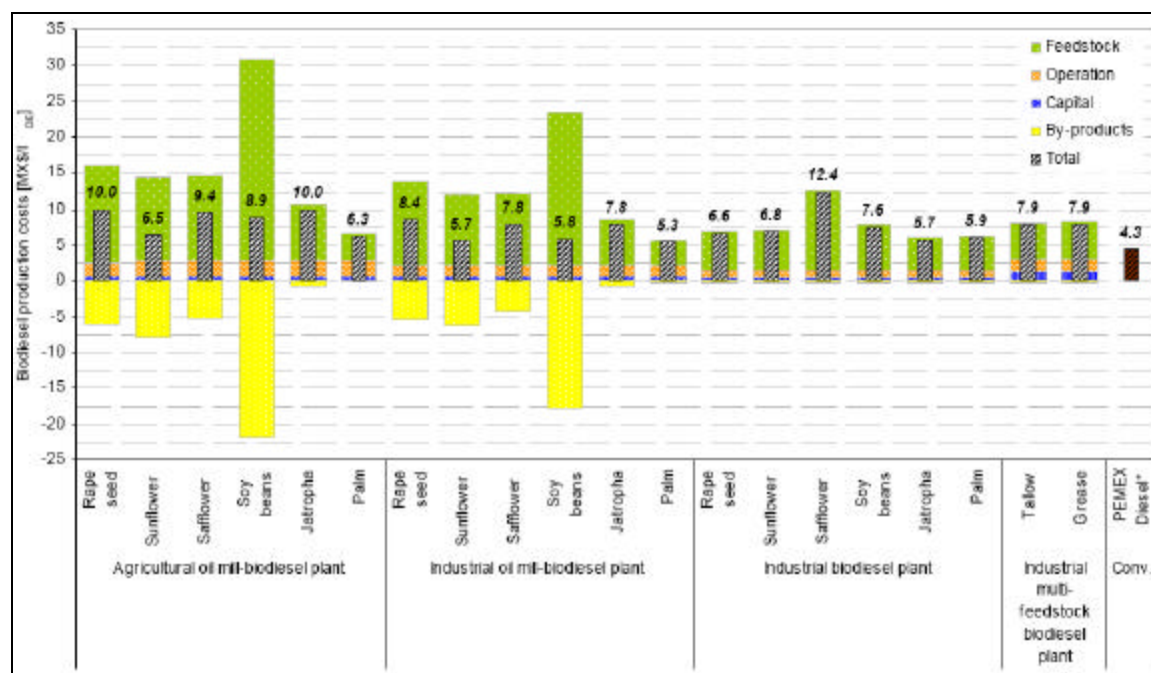
Ethanol production through sugar cane is promoted in the LPDB, and has also been addressed in the Calderon Administration's National Sugar Development Plan (PRONAC). Through the PRONAC, the Mexican government highlights the need to diversify the sugar industry and foresees the participation of the industry in bio-energy production, seeking to build capacity to produce about 7,840 barrels a day (120 million gallons per year) of ethanol by 2012. However, there remain significant hurdles before sugar cane can become a major ethanol feedstock in Mexico. Currently, most of the sugar cane production goes into the production of sugar. Thus, producing enough sugar cane to satisfy domestic sugar demand, as well as potential demand for ethanol, would necessitate a large increase in yields, as well

as a very significant increase in production areas. Additionally, Mexico currently maintains high prices for sugar and sugar cane that do not promote an efficient cost structure for the production of bio-energy. Thus major changes to the industry’s structure would be necessary before such production is economically feasible. Many have also pointed out that successful development requires substantial investment in plants and infrastructure as well as the participation of Mexico’s energy sector.

The use of corn as ethanol feedstock, as is done in the U.S., has also been discussed at length in Mexico, both within the government and the private sector. Mexico is a net importer of corn. With 2006 production at roughly 22 MMT, and imports from the U.S. at roughly 10 MMT (including cracked corn), it is unlikely that Mexico will be able to develop the capacity to meet its own domestic demand for corn, and also be able to supply the bio-energy industry, without a significant increase in investment in grain production.

Bio-diesel

The following figure shows a calculation of bio-diesel production costs in comparison to PEMEX diesel (without taxes and duties) in MX\$ per liter.



Source: Mexico Bio-Fuels Feasibility Study, 2006

Cost components such as feedstock costs, operation of the plant, and capital related costs are shown as expenditures, while the credits for by-products (i.e. for press cake, crude glycerin and fertilizer) are shown as receipts. The sum of both is the outcome, indicated as total bio-diesel production costs. Of the agricultural crops investigated, safflower, sunflower, rapeseed, and jatropha proved to be the most efficient producers of bio-diesels.

CONSUMPTION

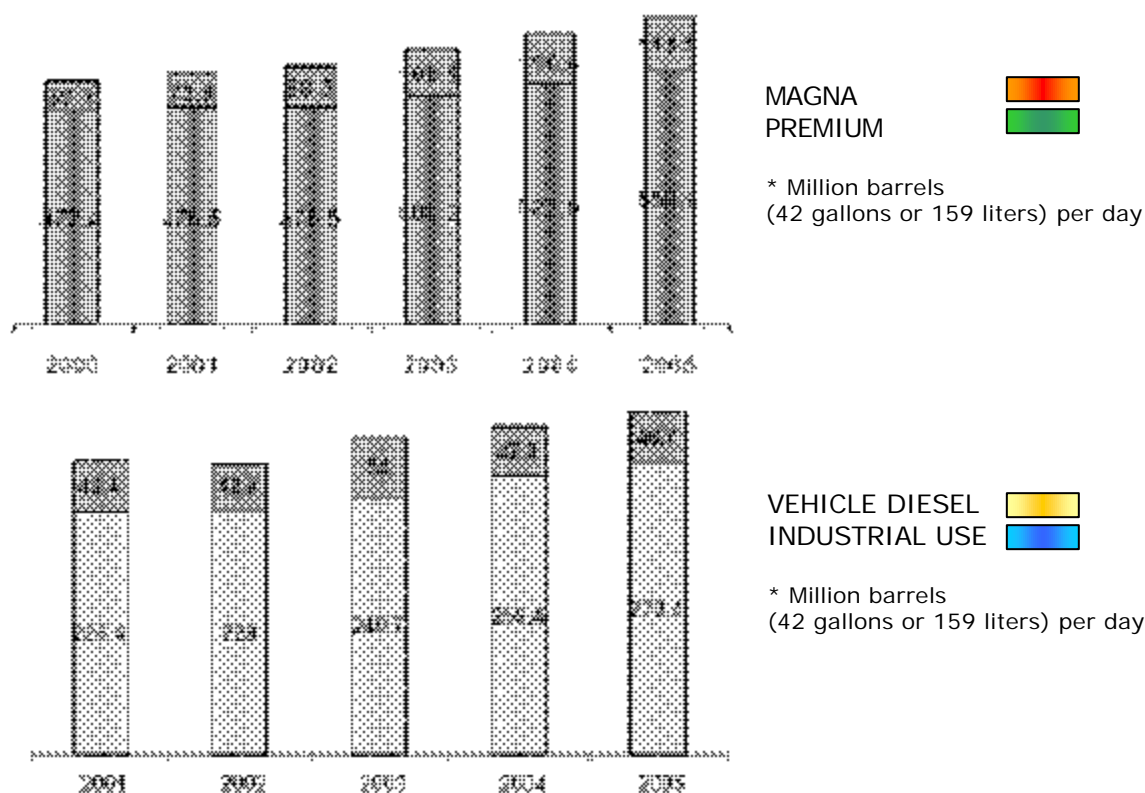
Mexico produces approximately 82 million liters of ethylic alcohol annually, which are not used within the transportation fuel market, but rather processed by the chemical, pharmaceutical and alcoholic beverage industries. The size of this market in Mexico totals

165 million liters per year, thus Mexico imports the remaining liters needed, mainly from the United States, Brazil, and just recently, China.

Potential Consumption

Overall demand for vehicle fuels in Mexico has increase by 10.4 percent between 2000-2005. This growth has been driven by overall population growth, strong economic growth, and rapid urbanization.

Currently in Mexico, PEMEX distributes two brands of petroleum-based gasoline: Magna, and Premium, which are oxygenated using Methyl Tert-Butyl Ether (MTBE) and Tert-Amyl Methyl Ether (TAME). PEMEX also distributes two types of Diesel: Vehicle Diesel, and Industrial Diesel. The sales for these fuels in the last years is shown in the following graphics.



If Mexico goes forward with a proposal to blend six percent ethanol with gasoline sold in the three largest metropolitan areas (Mexico City, Monterey, and Guadalajara), as has been proposed by several members of Congress and environmental groups, the potential demand for ethanol in Mexico would be very significant. A rough calculation, based on 2005 gasoline consumption figures, and assuming that 30 percent of Mexico's gasoline is consumed in those three metropolitan areas, forecasts that the Mexican market demand would be roughly 432 million gallons of ethanol per year. As Mexico currently produces less than 21 million gallons annually, a 20-fold increase in production to meet domestic demand would necessitate a significant investment in the country's agricultural production capacity. Thus, Mexico would likely look to international markets, most likely the United States and Brazil, to satisfy this demand.

TRADE

According to Mexico's Customs Administration (Aduana Mexico), ethanol is traded as ethyl alcohol. There is no equivalent to the U.S. Harmonized Tariff Code (HTC) 9901.00.50, which defines ethyl alcohol or mixtures with ethyl alcohol to be used as fuel or in producing fuel. Instead, Aduana Mexico only uses the following HTCs:

- 2207.10.01 – Undenatured ethyl alcohol (80% alcohol volume or higher).
- 2207.20.01 – Undenatured ethyl alcohol and spirits, of any strength.

The requirements for both HTCs when importing from the United States are:

- Tariff: 0%
- Must comply with labeling requirements detailed in NOM-050-SCFI-2004
- Importer must be registered in General Importer and Specific Alcohol Importer Database.
- Product can cross only through specific border crossing points (defined in Annex 21 of the General Rules for International Trade)
- Product requires additional identification markings (defined in Annex 18 of the General Rules for International Trade)
- Product can only be crossed during a specific time period during the day (from 9:00 AM to 2:00 PM)

POLICY

There is currently no specific bio-fuels promotion program operational in Mexico. However, the GOM is in the process of designing a new National Energy Plan (NEP 2007-2012) that will define the guiding principles of Mexico's energy policy. The Ministry of Energy (SENER), responsible for energy regulation and policy, is in charge of developing the NEP. Because of the interest generated in ethanol over the last year, it is highly probable that a bio-fuels section will be included in the new NEP.

In addition to bio-fuels provisions within the NEP, the Mexican government took a large step towards bio-fuels promotion on April 26, 2007, when the Mexican congress approved the Law for Promotion & Development of Bio-fuels (LPBD). The law, though lacking in any actual mandates, sets the stage for further legislative actions on bio-fuels development and use.

Biofuels Promotion and Development Law

In 2005, Mexican legislators Jose de la Vega and Cruz Lopez presented a draft of a Bio-Fuels Law, in order to establish the basic legal framework for bio-fuels development, use, and production in Mexico. The law was drafted in coordination with the Mexican Bio-Fuels Task Force. Task force members, including SENER, PEMEX, and the Federal Electricity Commission, sought to develop a national strategy for the development, support, promotion, regulation and control of bio-fuels, and to promote the correct allocation of resources and government oversight and functions.

The law established the need to focus on:

- Research and development, as well as technology transfer related to bio-fuels;
- Tax exemptions and subsidies to organizations involved in bio-fuel production and development;
- The establishment of a national bio-fuels strategy.

The rationale for the law is based on three basic objectives:

1. Reducing Mexico's dependency on fossil fuels – According to SENER 90.6% of the energy generated in Mexico originates from fossil fuels. Thus, Mexico has the potential to reduce that dependency by using alternative energy sources.
2. The promotion of cleaner and environment-friendly fuels - SENER has acknowledged that fuels with similar energetic potential can be developed from sources other than crude oil, reducing the negative impact that fossil fuels have on the environment. Several environmental organizations have suggested that ethanol be used as a substitute for gasoline additives such as Methyl Tertiary-Butyl Ether (MTBE), particularly in larger Mexican cities such as Guadalajara, Monterrey, and Mexico City, in order to reduce air pollution.
3. Development of the rural economy – Stimulating demand for agricultural products will not only promote broad-based economic development in Mexico's rural areas, but can be effective in the vitalization of the agricultural sector in general, promoting greater investment, and higher yields, for a number of agricultural crops.

The LPDB does not call for any immediate actions, or mandate actual ethanol blending in automobile fuels in Mexico. This law merely sets the groundwork for a series of complementary laws, regulations, decrees, policies, standards, criteria, rules, and codes that will be needed to achieve the defined objectives.

The approval of the law was surrounded by controversy because it was pushed through the legislature by house leadership at the very end of the congressional session. Several opposition parties complained of the fast-track treatment the law received. A number of members also balked at the way in which parliamentary procedure was ignored when amendments were made to the proposed law after it was approved by committee. In the end, the law was diluted to the point that its objectives are framed as recommendations, rather than mandates. In order to make actual progress on bio-fuels development, congress must now develop implementing legislation.

When the law was originally proposed it mandated a ten percent mix of ethanol in fuels distributed in Mexico's three major metropolitan urban areas, Mexico City, Guadalajara, and Monterey. Congress reduced this requirement to five percent, and then substituted the requirement entirely by a gradual phase-in schedule, which is to be defined in subsequent regulation. Even this requirement was reduced to a sentence reading, "...programs will define the steps to be followed and the percentages to be included in the fuels of the large urban areas." Thus, the law in no way obligates PEMEX to blend ethanol, a common request by the bill's sponsors and by environmental NGOs.

One of the main arguments used to approve the law was the need for a basic legal framework that brings certainty to investors in ethanol plants in Mexico, and helps the GOM to develop the NEP 2007-2012. Several ethanol plant projects have been announced in the states of Sinaloa, Sonora, Tamaulipas, Jalisco and Veracruz, and bio-diesel plants are projected in Queretaro, Nuevo Leon and Chiapas. However, according to legislators, the ethanol and bio-diesel produced in these plants would have no domestic market, so production would be destined for foreign markets. Still, praised by many private organizations, this law represents one of the first steps to establish a solid legal framework to regulate bio-fuel production in Mexico.