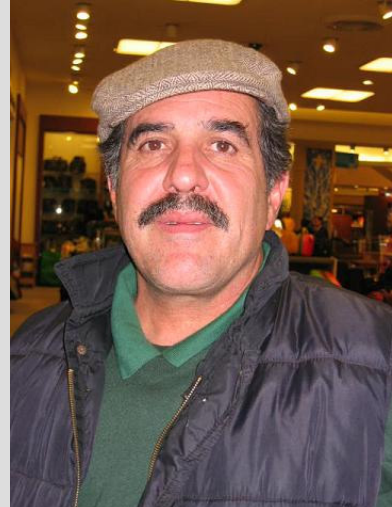


# ENERGY PROJECT EXPO CENTRE MÉXICO 2007-2010

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MEXICO

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## Executive Summary

Access to energy is a priority. Energy can play a crucial role in the efforts to improve the lives of people across the world. Lack of access to adequate, affordable, reliable, safe and environmentally benign energy is a severe constraint on development. People do not want energy in itself but the energy services it provides for cooking, lighting, heating, transport, water pumping, etc.

Energy can contribute to sustainable development, but one solution does not fit all needs. Flexibility of approach is needed to fit with specific contexts. More attention needs to be paid to social aspects related to energy use, taking a people-centred-holistic approach, reaching beyond the technical issues to deliver energy services that meet peoples' needs and priorities.

Reliance on fossil fuels and biomass will continue for many years, so development plans should include traditional energy sources combined with cleaner, more efficient energy technology in the overall energy strategy, particularly how to encourage more sustainable management and cleaner more efficient uses. A full menu of options should be considered for providing energy services.

Independent, non-governmental organizations are necessary to foster the growth of renewable energy projects by developing, testing and demonstrating technologies designed for small and medium scale projects.

### Object

- Permanent exhibition of energy systems to foster the growth of projects, partnerships & technology transfer for development of the community and to catalyse businesses and enterprise expansion.
- Development of additional alternatives involved in pursuing commercial viability, new routes to market, social and environmental objectives.
- Provide sustainable solutions against pollution.
- Increasing access to energy services, integrating energy into development processes.
- Better understanding of the role of energy in poverty reduction.
- Opportunities and challenges for the international development community.

### Focus

- The potential role of renewable energy in meeting the Millennium Development Goals.
- Alternative, innovative and efficient energy systems for small and medium scale projects
- Expand knowledge within an holistic approach –environmental conservation.
- Energy as instrument for socio-economic development.
- Energy needs for sustainable human well-being.
- Clean energy options to meet energy requirements.

### Location & Facilities

Location:

- Land along main highway (2 Ha.) where suppliers can exhibit their technologies.

Facilities:

- Store-café.
- Office.
- Apartment.
- Warehouse.
- Parking.
- Pond & Gardens.

# Investment Estimate

| Concept                  | First 5 Months  | Following 7 Months   | Second Year  | Third Year  | Total: 3 Years   |
|--------------------------|---|--|--|---|--|
| Initial Operations:      | MX\$ 100,000  | None   | None   | None  | MX\$ 100,000   |
| Land Rent:               | MX\$ 100,000  | None   | MX\$ 100,000   | MX\$ 110,000  | MX\$ 310,000   |
| Construction:            | MX\$ 1,100,000  | None   | None   | None  | MX\$ 1,100,000   |
| Machinery & Equipment:   | None  | MX\$ 170,000   | None   | None  | MX\$ 170,000   |
| Operation & Maintenance: | None  | MX\$ 427,000   | MX\$ 732,000   | MX\$805,000   | MX\$1,964,000  |
| Promotional Materials:   | None  | MX\$ 25,000  | MX\$ 25,000  | MX\$ 25,000   | MX\$ 75,000  |
| Public Relations:        | None  | MX\$ 100,000   | MX\$ 100,000   | MX\$ 100,000  | MX\$ 300,000   |
| <b>TOTAL</b>             | <b>MX\$ 1,300,000</b><br><b>US\$ 130,000</b><br><b>£ 65,000</b> | <b>MX\$ 722,000</b><br><b>US\$ 72,200</b><br><b>£ 36,100</b> | <b>MX\$ 957,000</b><br><b>US\$ 95,700</b><br><b>£ 47,850</b> | <b>MX\$ 1,040,000</b><br><b>US\$ 104,000</b><br><b>£ 52,000</b> | <b>MX\$ 4,019,000</b><br><b>US\$ 401,900</b><br><b>£ 200,950</b> |

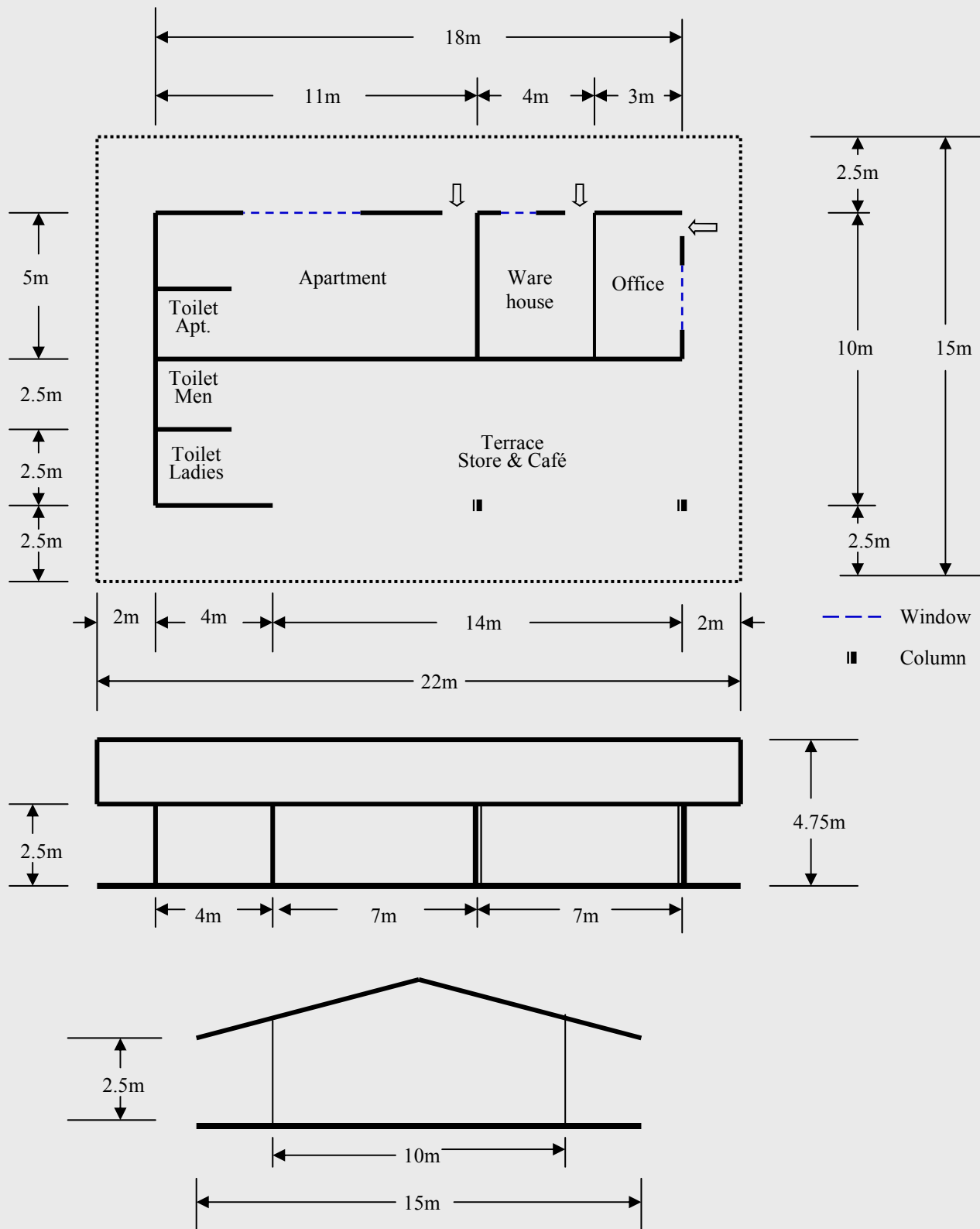
## Description of Concepts

| Concept   | Description  |
|---|--|
| Initial Operations:   | <ul style="list-style-type: none"> <li>Investigation, planning, development, coordination, supervision and other activities related to the initiation of the project.</li> </ul>   |
| Land Rent:  | <ul style="list-style-type: none"> <li>Rent 2 hectares along main highway for the construction of the expo-centre, on a two year contract, yearly payment basis.</li> </ul>  |
| Construction:   | <ul style="list-style-type: none"> <li>Buildings (light construction) :<br/>(apartment 80 M<sup>2</sup> -office 20M<sup>2</sup> &amp; store 40 M<sup>2</sup> -warehouse 40M<sup>2</sup>) MX\$750,000</li> <li>Fencing: MX\$50,000</li> <li>Gardens, pond &amp; irrigation system: MX\$ 260,000</li> <li>Parking Lot (gravel): MX\$ 30,000</li> </ul> |
| Machinery & Equipment:  | <ul style="list-style-type: none"> <li>Gardening equipment: MX\$50,000</li> <li>Tools for maintenance of facilities: MX\$10,000</li> <li>Furniture &amp; equipment for office and store: MX\$60,000</li> <li>Merchandise to sell at store: MX\$50,000</li> </ul>   |
| Operation & Maintenance:<br>(salaries, fees & expenses: average/year) | <ul style="list-style-type: none"> <li>Director/Administrator/Supervisor/Coordinator (Jorge A. DelaVega L.): MX\$300,000</li> <li>3 to 4 Employees: MX\$300,000</li> <li>Accountant (external): MX\$60,000</li> <li>Materials for maintenance: MX\$50,268</li> <li>Municipal services &amp; office expenses: MX\$50,000</li> </ul>                   |
| Promotional Materials:  | <ul style="list-style-type: none"> <li>Brochures, stationary, website.</li> </ul>  |
| Public Relations:   | <ul style="list-style-type: none"> <li>Company and/or personnel for promotion.</li> </ul>  |

**Investment as part of the promotional expenses of companies which exhibit their products for sale at the Expo Centre.**  
**Investment and operation cost at the Expo-Centre divided between the number of exhibitors.**

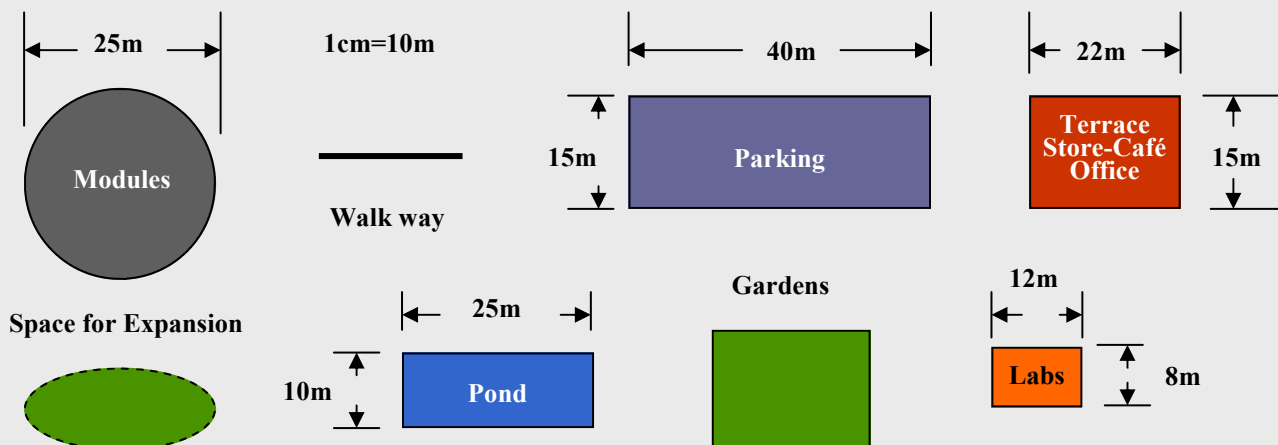
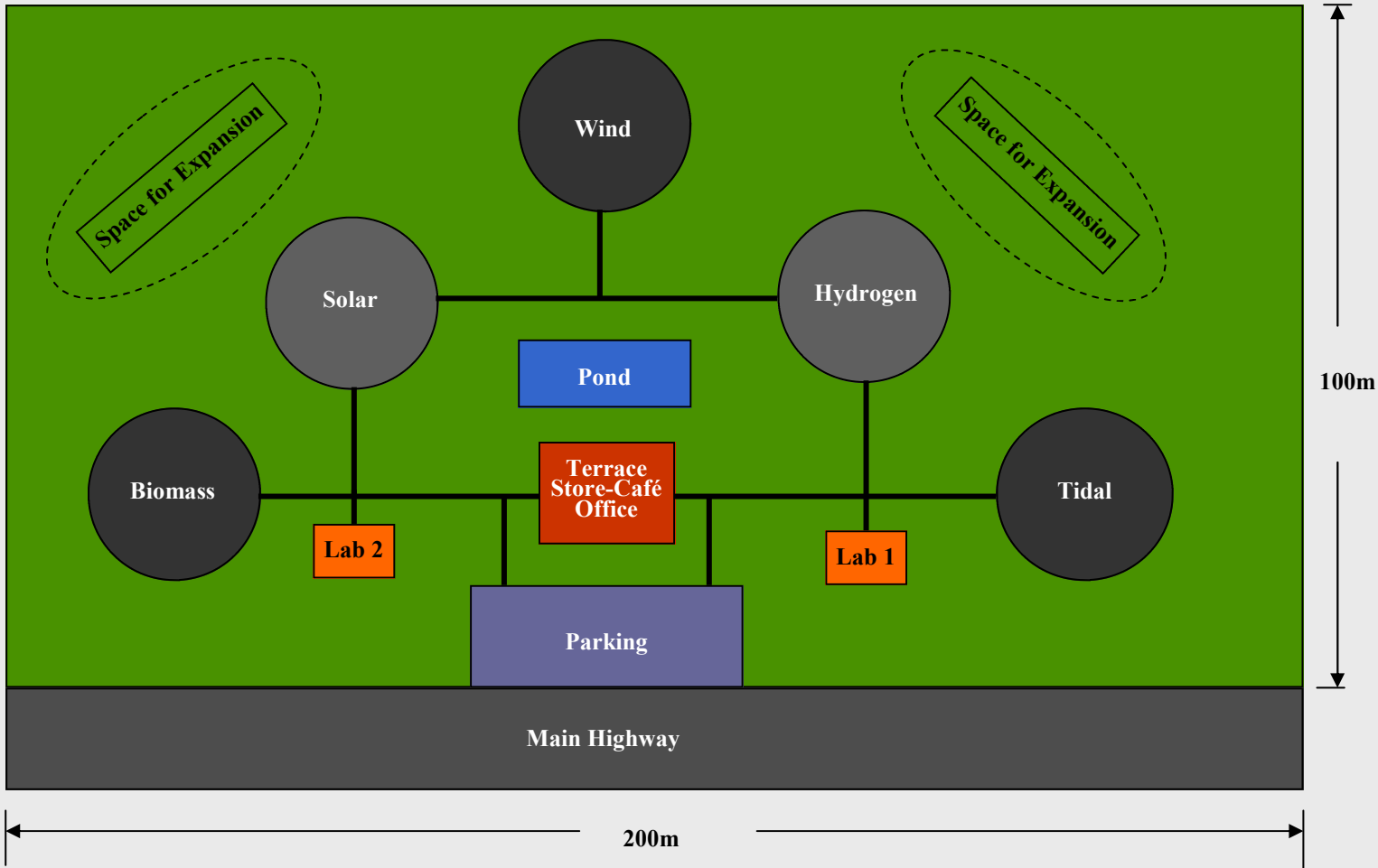
**Energy Project  
Expo Centre  
Mexico 2007-2010**  
*Building Sketch*  
First Option (Jan.07)

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Energy Project  
Expo Centre  
Mexico 2007-2010  
Display Sketch  
Display –First Option (Jan.07)

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**Construction as part of the Expo-Centre:** Terrace Store-Café, Office, Apartment and Warehouse as in the *Building Sketch*./ Gardens, pond, walk ways./ Parking place and fencing.

**Land for rent to exhibitors and researchers:** Modules./Lab 1./Lab 2. (Each Module: 490 m<sup>2</sup>. Each Lab: 96m<sup>2</sup>).

# Mexico National Energy I

Mexico is the largest source of fossil fuel-based greenhouse gas emissions in Latin America. With 673 million tons of greenhouse gas emissions in 2000, the country occupies the 14th place in the world, accounting for 3 percent of global emissions.

The expected impacts from climate change for Mexico range from accelerated desertification, increased occurrence of fires and droughts, higher temperatures, and changes in the intensity and in the seasonality of rains to more intense hurricanes and floods, reduction of the water supply, and increase in the sea level.

Mexico is a rich country in terms of natural resources. It is one of the world's most important oil producers, with the eighth largest oil reserves, and it also has substantial natural gas reserves. Fossil fuels are therefore Mexico's main energy source with over 90 percent of total energy supply.

In the next ten years the demand for electricity is expected to increase around 75 percent, the demand for natural gas 69 percent, the demand for LNG 16 percent, and the demand for oil 34 percent. As a consequence, assuming an annual GDP growth rate of 4.5 percent, CO<sub>2</sub> emissions should reach 879 million tons by 2010.

The transport system in Mexico is of great economic importance, and in 1999 more than 2,766 million passengers and 726 million tons of cargo were transported through the system. Over the years, the traffic volume has significantly increased and this is reflected in the gradual expansion of the share of emissions originated in transport—in 2002, transport represented over 40 percent of total CO<sub>2</sub> emissions from oil.

**Mexico: National Energy Balance 2004**

| Primary Energy Sources | PJ               |
|------------------------|------------------|
| Coal                   | 198.85           |
| Fossil Fuels           | 9,359.64         |
| Crude Oil              | 7,432.56         |
| Condensed              | 178.34           |
| Not Associated Gas     | 564.51           |
| Associated Gas         | 1,184.23         |
| Electricity            | 421.81           |
| Nuclear                | 100.63           |
| Hydro                  | 254.39           |
| Geothermal             | 66.72            |
| Wind                   | 0.06             |
| Biomass                | 350.47           |
| Bagasse                | 92.06            |
| Firewood               | 258.41           |
| <b>TOTAL</b>           | <b>10,330.77</b> |

*Source: Sistema de Información Energética*

There has been an increasing interest in the assessment of the vulnerability of Mexico to climate variability and climate change and of possible adaptation measures. As was mentioned in the First National Communication on Climate Change to the United Nations Framework Convention on Climate Change, Mexico is very vulnerable to climate change. The 1982 - 1983 droughts and forest fires registered in Mexico and Central America caused damages estimated at more than US\$ 600 million. Mexico also experienced an extended drought over the last decade, which appears to be the result of climate changes. Moreover, the El Niño- La Niña events also seem to have become more frequent and more intense.

For real adaptation to climate change, the element of water is perhaps the most important one, given its scarcity in Mexico and its impact on agricultural activities and on the environment in general. It will be necessary to find a substitute for the agricultural irrigation mechanisms that are currently used. Urban areas will have to adapt by finding forms of recycling or re-using water. Sea water desalinization could also become necessary in the long run. Plans for territorial reorganization could be implemented in order to improve land use and reduce the vulnerability of populations to meteorological phenomena stemming from climate change. A second line of measures to reduce vulnerability would be to establish meteorological warning centres and decision-making systems.

**A World Bank Group mission visited Mexico from October 24-28, 2005. The objectives of this mission were:**

## **Immediate**

To initiate a dialogue with Mexico on the G-8 initiative, brief Mexican Government and private sector representatives on the G-8 proposed role of the World Bank Group and some immediate milestones over the next six months, and seek their views on the needs and priorities. The results of this process have fed into an Investment Framework prepared by the Government of Mexico with the support of the World Bank Group for discussion with the Ministers of Finance at the IMF-World Bank Board meetings in April 2006.

## **Medium-Term**

To develop a process for regular and intense Government of Mexico/World Bank Group engagement on clean energy for development and climate risk management activities of both national and global scope. To explore areas where the Government of Mexico might wish to see more specific engagement through lending and equity investment, grant (GEF), carbon finance, and advisory activities of the World Bank Group.

*-Source. International Monetary Fund (IMF) and World Bank (April 2006)*

# Mexico National Energy II

The World Bank Group team met with representatives from the Federal Government (Presidencia, Ministry of Finance, Ministry of Energy, Ministry of Environment, National Ecology Institute - INE); important para-estatal entities (CFE, FIDE and PEMEX); the Government of the Federal District (Mexico City); and private sector associations (aluminum, chemicals, and water utilities). Agreed follow-up actions include:

- Designation of the Inter-Ministerial Climate Change Committee as the Mexican counterpart agency to elaborate the Investment Framework in partnership with the World Bank Group.
- Deepening the process for determining Mexico priorities under the Investment Framework in terms of (i) evaluating work already performed under the National Climate Change Action Plan (presently under preparation), (ii) identifying additional analytical requirements, and (iii) identifying high potential investments and associated policy requirements for diffusion and replication of climate friendly technologies.
- Identifying institutions or individuals to explore selected analytical questions and prepare terms of reference for further analytical work.
- Evaluating financial mechanisms and amounts needed to stimulate low-carbon development initiatives.
- Promoting a shared vision and effective strategy on vulnerability and impacts assessment and their translation into effective adaptation measures.
- Hosting the next meeting of energy and environment ministers, currently proposed for September 2006 in Mexico City, as a follow-up to the November 2005 ministerial meeting.

## **The most important opportunities for near term action include:**

**Adaptation.** Improving Mexico's ability to deal with current climate variability is an important step to coping with potential future climate change impacts. An immediate focus on measurement, forecasting, and analysis of climatic trends, especially extreme events like droughts, floods, and storms, would be beneficial. Also, it would be useful to start the process of identification and formulation of specific adaptation measures that would address anticipated climate change impacts. In this context it would be important to: (i) improve understanding of the risks that Mexico faces in terms in rainfall patterns and increase evaporation rates on water basins, intensification of hurricanes and weather events on coastal areas, and expected flooding of coastal areas and inland watersheds resulting from sea level rise, among others (as well as the risks associated with current climate variability as enhanced through the El Niño Southern Oscillation and global climate change); (ii) analyze the most vulnerable sectors and localities; (iii) design a screening tool and analysis for proposed new infrastructure investments; and (iv) identify pilot measures that could illustrate the costs and benefits of adaptation.

## **Technology and Knowledge Transfer**

The transfer of clean technologies and associated know-how from industrialized to developing countries is particularly important from Mexico's perspective. Some of the country's priorities are:

- Deeper understanding of energy security and how source, fuel, and technology diversification can promote economic stability and growth.
- Technical and economic integration of new types of energy sources (e.g., renewable) within existing energy/utility infrastructure.
- Stimuli for private sector involvement in clean energy development and deployment, including design of subsidy schemes that are transparent and efficient.
- Electricity interconnection contracts (Third party generation and cogeneration, self-supply, and wheeling).
- High efficiency conversion of fossil fuels (e.g. gasification of refinery wastes).
- Capacity building to exploit the carbon markets and carbon finance to promote learning- by-doing.
- Integration of environmental and sustainability factors in investment planning.
- A complementary package of investment loans and grants to aid technology transfer.

*-Source. International Monetary Fund (IMF) and World Bank (April 2006)*

# Mexico National Energy III

## **Clean Development Mechanism (CDM) and the Future of Carbon Trading**

Mexico is accelerating its participation in carbon market and includes CDM as an important tool to reach its development objectives. However, it is concerned with the uncertainty of the post-2012 period and the high transactions costs of the CDM, both of which are having a negative effect on the infant carbon market. Mexico can play a major role in helping to shape to provide longer-term market signals.

## **Clean Energy Development.**

Among the sectors where large reductions in greenhouse gas (GHG) emissions may be possible at moderate incremental costs are:

### **Energy efficiency.**

Industrial and refinery cogeneration, industrial and commercial energy efficiency, buildings, electric power, urban transport, and water and sanitation utilities.

### **Transport.**

Expand the experience and lessons from the work on transport and climate in Mexico City to other cities, including the work on harmonization of urban planning, air quality, and transport, and continuing the work already started on low carbon emission modes of transport (engines and fuels).

### **Waste management.**

Solid waste management, including landfill gas recovery, composting, biogas from animal husbandry.

Gas flaring and industrial gases reduce GHG by-products from production processes (i.e. hydrocarbons extraction, cement, and aluminium production).

**Renewable Energy.** There are various promising renewable energy options for Mexico to develop:

### **Hydropower.**

Mexico depends on hydro for a relatively modest percentage of its electricity and will likely need to expand hydro to diversify its increasingly gas-based power system. Hydro, both large and small-to-medium scale, is renewable and may be preferable to many of the alternatives for electricity generation.

### **Wind and Geothermal.**

Mexico harbours some of the best wind resources in the world which to date are untapped. The country is now embarking on a commercialization strategy beginning with a combination of public and private sector projects. Geothermal resources are also substantial, but to date only about 1/3rd of the estimated economic potential has been exploited.

### **Bio-energy.**

There is strong government interest in developing bio-energy in rural areas, including biogas systems, and biomass cogeneration.

Approximately 10 percent of Mexico's primary energy is from renewable energy (about 16 Mtoe), including fuel-wood and agriculture residues that account for 53 percent of its renewable energy share. Mexico depends on hydro for a relatively modest percentage of its electricity, and will likely need to expand hydro to diversify its increasingly gas-based power system. Mexico has some of the best wind resources in the world which to date are untapped, but is now embarking on a commercialization strategy beginning with a combination of public and private sector projects. Geothermal resources are also substantial, but to date only about 1/3rd of the estimated economic potential has been exploited. The proposed World Bank- GEF large Scale Renewable Energy Development Project will support the development of wind sector.

*-Source. International Monetary Fund (IMF) and World Bank (April 2006)*



# Mexico Country Brief I

With the highest per capita income in Latin America, Mexico is firmly established as a middle-income country, but it still faces huge gaps between rich and poor, north and south, urban and rural. Since the catastrophic 1994-95 financial crisis thrust millions of Mexicans into poverty, there has been rapid and impressive progress in building a modern, diversified economy, improving infrastructure and tackling the roots of poverty. According to the recent poverty report prepared by the World Bank, 48% of the population was living in poverty in 2004, an improvement over the 64% of the total population living in poverty following the 1995 crisis.

With the highest per capita income in Latin America, Mexico is firmly established as a middle-income country, but it still faces huge gaps between rich and poor, north and south, urban and rural. Despite Mexico's recent progress, the country's economic transition has been more difficult than anticipated 10 years ago. After the debt crisis was solved and NAFTA was successfully launched, Mexico was expected to enter a period of prolonged and sustained economic development. However, the crisis of the mid-1990s and the resulting economic downturn show that unresolved structural development problems still exist. The advantages offered by NAFTA could be undermined if Mexico does not address competitiveness –a key priority for development– and the creation of quality jobs, both of which will help reduce poverty levels. Over five decades, the World Bank has provided crucial expertise and financial support to Mexico.

Presently, the Bank is financing 28 projects in the country, with an average annual commitment of up to \$1.7 billion. In addition, the 2004-2008 Country Assistance Strategy in partnership with Mexico (CAS), designed in consultation with Mexican authorities at federal, regional and municipal levels, as well as civil society representatives, envisages loans totaling about \$4.8 billion over the next four years and is designed to support the government's commitment towards fighting poverty and inequality. As a result, the CAS addresses Mexico's development objectives through the following four pillars:

## **1. Reduce poverty and inequality**

Help design, monitor, and assess social protection and poverty-related programs, as well as improve the quality of education. Improve the equity and equality of opportunities, focusing on groups that lack access to basic social services, such as health and pensions. Broaden access to basic infrastructure, social housing, and land ownership. Facilitate participation in decision-making processes and improve women's and indigenous groups' access to opportunities.

## **2. Increase competitiveness**

Contribute to public policy reforms that improve competitiveness and mitigate expected costs and adjustments in areas such as agriculture through competitiveness-related analytical work. Support the development of financial markets, improvement in access to financial services, and expansion of property ownership opportunities. Promote good corporate governance and social responsibility among companies. Encourage balanced regional development, backing government efforts to broaden coverage, improve quality, and reduce the cost of basic services and infrastructure, as well as reduce market disparities. Support education that develops personal skills and initiative by improving the skills of the work force, innovation, and product quality.

## **3. Strengthen institutions**

Contribute to democratic governance by increasing the dissemination of the World Bank Group's analytical work and knowledge sharing among all branches of government and civil society. Support improving macroeconomic forecasting, budgeting, fiscal reports, and accounting management, as well as training and accreditation for public employees, with the aim of increasing citizen confidence in institutions, transparency, and the fight against corruption. Back government federalism-related policies through capacity-building with subnational governments and a more efficient judicial system that provides access to justice for the poor and improves commercial court performance.

## **4. Promote environmental sustainability**

Address water scarcity and high deforestation rates, as well as encourage the sustainable management of natural resources. Support the mainstreaming of sustainable development principles into national policy and programs. Back development programs that address problems such as air pollution, solid waste management, greenhouse gas emissions, in addition to promoting clean-air technology and applying environmental management at national and state levels. Carry out analytical work on environmental sustainability.

*-Source: World Bank.*



# Mexico Country Brief II

## Current Projects

### Reducing Poverty

The *Savings and Rural Finance (BANSEFI) Project – Phase II* supports the Mexican government's efforts to develop savings and credit institutions that are financially viable, operationally effective, and technologically upgraded; these measures will make the institutions more accessible to traditionally underserved populations. The project will improve access to financial services for the poorest members of society, allowing them to increase their savings, investment, and risk management capabilities. The 2005-2008 CAS aims at sustained poverty reduction, which is why this project goes beyond human capital development and strengthens the financial capacity of the poor, allowing them to obtain physical and financial assets to face eventual financial shocks.

### Environment

The *Indigenous and Community Biodiversity Conservation Project* in the states of Oaxaca, Michoacán and Guerrero preserves the biodiversity-rich areas in these states, focusing on strengthening and promoting community-based initiatives. One of the project's main objectives is to take advantage of the positive cultural values and traditional management that these communities have developed regarding their natural resources.

### Competitiveness

Through the *Innovation for Competitiveness Program* the World Bank is supporting the Mexican government's efforts to improve the competitiveness of the economy, by strengthening the private sector's innovation capacity, accelerating the formation of human capital, and increasing international integration of the national innovation system.

### Agriculture

The main beneficiaries of the *Access to Land for Young Farmers Pilot Project* are poor young farmers, who can buy or rent farmland under the project, and older farmers who can transfer their lands. The program is based on an integrated rural development strategy to promote improvements in land markets and rural dynamics, and create non-agricultural economic opportunities, such as ecotourism, for young farmers.

### Education

The Education Quality Program aims to increase the autonomy and self-management capacity of schools in order to improve the quality of education, taking into account the following indicators: coverage, social participation, and academic achievement. The program's main components are scholarships, monitoring and oversight, and the development of policies to assess student performance.

### Institutional Strengthening

The State Judicial Modernization Project aims to improve justice sector performance in selected states, with the goal of increasing access to justice for all users. The project will improve transparency and strengthen institutional capabilities, organizational culture, and knowledge sharing.

-Source: World Bank.

# Mexico Country Brief III

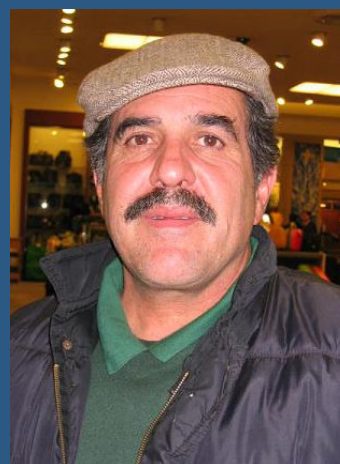
(Source: World Bank)

| Concept   | Year 2005     |
|---|---------------|
| Inhabitants   | 103.0 million |
| Surface area (sq. km)   | 2.0 million   |
| Forest area (sq. km)  | 642,000       |
| Agricultural land (% of land area)                                | 56.2          |
| Energy use (kg of oil equivalent per capita)                      | 1,534.9       |
| Energy imports, net (% of energy use)                             | - 50.4        |
| Electric power consumption (kWh per capita)                       | 1,802.0       |
| GNI, Atlas method (current US\$)                                  | 753.4 billion |
| GNI per capita, Atlas method (current US\$)                       | 7,310.0       |
| GDP (current US\$)  | 768.4 billion |
| GDP growth (annual %)   | 3.0           |
| Inflation, GDP deflator (annual %)                                | 5.4           |
| Agriculture, value added (% of GDP)                               | 3.8           |
| Industry, value added (% of GDP)                                  | 25.9          |
| Services, etc., value added (% of GDP)                            | 70.2          |
| Exports of goods and services (% of GDP)                          | 29.9          |
| Imports of goods and services (% of GDP)                          | 31.5          |
| Gross capital formation (% of GDP)                                | 21.8          |
| Revenue, excluding grants (% of GDP)                              | 14.7          |
| Cash surplus/deficit (% of GDP)                                   | -1.2          |
| Time required to start a business (days)                          | 58.0          |
| Market capitalization of listed companies (% of GDP)              | 31.1          |
| Military expenditure (% of GDP)                                   | 0.4           |
| Fixed line and mobile phone subscribers (per 1,000 people)        | 553.9         |
| Internet users (per 1,000 people)                                 | 237.5         |
| High-technology exports (% of manufactured exports)               | 22.4          |
| Merchandise trade (% of GDP)                                      | 58.0          |
| Net barter terms of trade (2000 = 100)                            | 98.4          |
| Foreign direct investment, net inflows (BoP, current US\$)        | 17.4 billion  |
| Long-term debt (DOD, current US\$)                                | 129.6 billion |
| Present value of debt (% of GNI)                                  | 24.0          |
| Total debt service (% of exports of goods, services and income)   | 22.9          |
| Official development assistance and official aid (current US\$)   | 121.1 billion |
| Workers' remittances & compensation of employees, received (US\$) | 21.8 billion  |

# CURRICULUM VITAE

**JORGE ALEJANDRO DELAVEGA LOZANO**  
*Development and Implementation of Projects*

- Alternative Energy Resources.
- Environmental Conservation.
- Rural Sustainable Development
- Agriculture, Livestock.
- Industry & Agro-Industry.
- Organic & Conventional Production



## Experience

**July 2006 to Date Independent Consultant.** Analysis and development of project proposals to foster the growth of alternative energy projects and for rural development to improve the well-being of people.

**2005 to June 2006 Crew Chief.** Design and implementation of work methods to improve production & relationship between workers and enterprise. Evaluation of production systems. Avigrupo, S. A. de C.V. (live chicken: 120,000 daily -83 workers)

**2002-2004 Technical Sales Manager.** National & international technical assistance. Equipment for grain processing. Nixtamex, S.A. de C.V. (enterprise founded in 1953 -5 sales agents).

**1998-2001 Project Director.** Planning, development and implementation of an agricultural project for milk and beef production. Design and construction of facilities. Establishment of crops for cattle feed. Consultation service re animal husbandry. Health and reproduction programs on cattle. Aequus, S.A. de C.V. (750 Holstein cows -35 workers).

**1992-1997 Sales Director.** Imports of agricultural products and livestock for reproduction. Consultation service on import-export and technical assistance on agricultural projects. Stro-Wold International, Ltd. -since 1854 (-7 sales agents in Mexico).

**1985-1991 Plant Manager.** Plastic containers for agri-food and pharmaceuticals. Coordination of daily operations, maintenance of equipment & facilities. Plásticos Industriales Mexicanos, SA de CV (-120 workers, 3 shifts).

**1975-1984 Herd Manager.** Beef cattle management (5000 heads), personnel training, coordination of daily operations, animal health and reproduction programs. Empacadora Xalostoc, S.A. de C.V. (-125 workers, 3 shifts).

**Co-Owner** Landscape Gardening and Greenhouse (tomato). Jardines Nicolás (-7 workers).

## Personal

- Openness and transparency in communications.
- Good interpersonal skills.
- Good judgment in evaluating situations.
- Independent and self motivated.
- Service oriented personality.
- Technical Flair.
- PC MS Office.
- Fluency in English and Spanish.
- Travel flexibility.
- Age 56. Mexican nationality.
- Height: 1.75 m. Weight: 78 Kg.
- High school in Canada.
- Agricultural & foods sciences.
- Mechanical engineering practical.
- Writer in agricultural related magazines.
- Translator (English to Spanish).
- Plan and coordinate operations.

## Abilities

- Development and implementation of projects.
- Evaluation and supervision of operations.
- Implementation of strategies y solutions.
- Agri-food, agro-industrial and rural development.
- Organic and conventional production.
- Alternative energy resources.
- Environmental conservation.
- Promotion of agricultural commodities.
- Construction of facilities.
- Coordination of work areas and tasks.
- Follow through on potential developments.
- Search results on cost-benefit basis.
- Creative alternatives.
- Trade service.
- Sustainable development.
- Personnel training.
- Improvement of methods of work.